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The Implications of the Electricity Sector Reform in The Bahamas

Beatriz Garcia-Nunes, Shane Lowe (both IMF), and Jose Luis Saboin Garcia (IDB)

SIP/2025/031

IMF Selected Issues Papers are prepared by IMF staff as background documentation for periodic consultations with member countries. It is based on the information available at the time it was completed on December 17, 2024. This paper is also published separately as IMF Country Report No 25/9.

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The Implications of the Electricity Sector Reform in The Bahamas

Prepared by Beatriz Garcia-Nunes, Shane Lowe (both IMF), and Jose Luis Saboin Garcia (IDB)*

Authorized for distribution by Swarnali Ahmed Hannan
April 2025

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Author's E-Mail Address:	bnunes@imf.org; slowe@imf.org; jluissa@iadb.org

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The Implications of the Electricity Sector Reform in The Bahamas

The Bahamas

Prepared by Beatriz Garcia-Nunes, Shane Lowe (both IMF), and Jose Luis Saboin Garcia (IDB)[1]

[1]"The authors would like to thank the Bahamian Ministry of Energy and Transport and the Bahamas Power and Light Company staff, Swarnali Ahmed Hannan, Augusto Cesar Bonzi Teixeira, Bruno Versailles, and Christoph Ungerer for their constructive inputs and feedback.

INTERNATIONAL MONETARY FUND

THE BAHAMAS

SELECTED ISSUES

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Approved By
Western Hemisphere Department

Prepared By Beatriz Garcia-Nunes, Shane Lowe (WHD); Jose Luis Saboin Garcia (IDB).

CONTENTS

THE IMPLICATIONS OF THE ELECTRICITY SECTOR REFORM IN THE BAHAMAS[1]

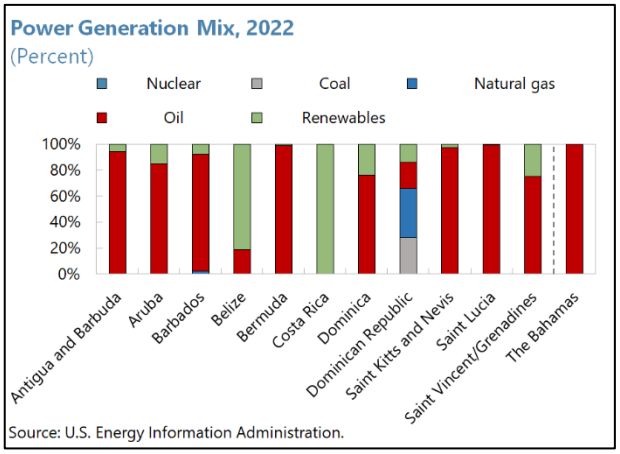
Low efficiency and reliability in the energy sector, paired with high costs, dampens competitiveness and holdups growth in The Bahamas. This chapter takes stock of the country's electricity sector and examines the potential macroeconomic impact of the government's proposed electricity sector reform that seeks to increase renewable energy and modernize transmission and distribution infrastructure. Over the medium-term, the reform has the potential to narrow the current account deficit, reduce vulnerability to commodity price shocks, boost growth, and significantly reduce CO2 emissions. However, such power projects should have a clear delineation of risk sharing between the private and public sector.

A. The Three Challenges in the Energy Sector

Challenge #1. Low Energy Security

1. Low energy security can be clustered around the pillars: (i) sustainability, (ii) elevated costs, and (iii) aging infrastructure.

2. Sustainability. The Bahamas is highly dependent on imported fossil fuels with only about 2 percent participation of Renewable Energy (RE) in the electricity mix, significantly smaller than Latin America and Caribbean (LAC) nations. For example, in 2022, the average shares of RE installed capacity in Jamaica, Barbados, Dominican Republic, and LAC were: 16 percent, 21 percent, 29 percent, and 57 percent respectively.[2] Despite the limited penetration of RE, the country has good potential for Solar Photovoltaic (PV) generation with an average solar irradiation of 5.3-kilowatt hours per square meter per day (kWh/m^2/day).[3] The energy sustainability is further exacerbated due to the dependency on imported fuel in the power and transport sectors (e.g., the use of Electric Vehicles (EV) started only recently in The Bahamas), the extensive use of rented generation using fossil fuels, and the limited use of its endogenous natural resources.



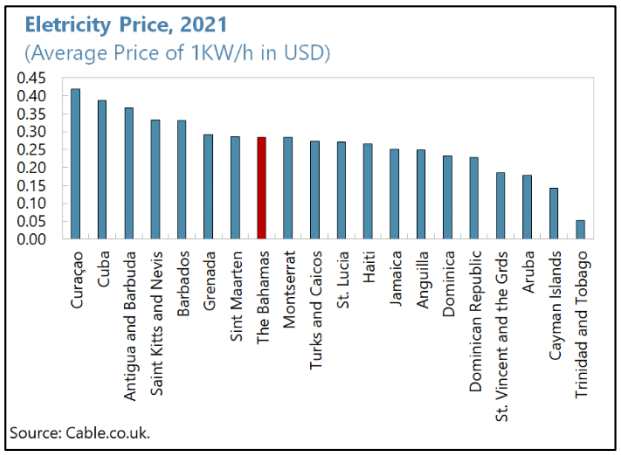
3. Elevated electricity costs. Due to inefficiencies in the transmission and distribution systems and dependence on imported diesel

[1] Prepared By Jose Luis Saboin Garcia (IDB), Beatriz Garcia-Nunes, and Shane Lowe (IMF).

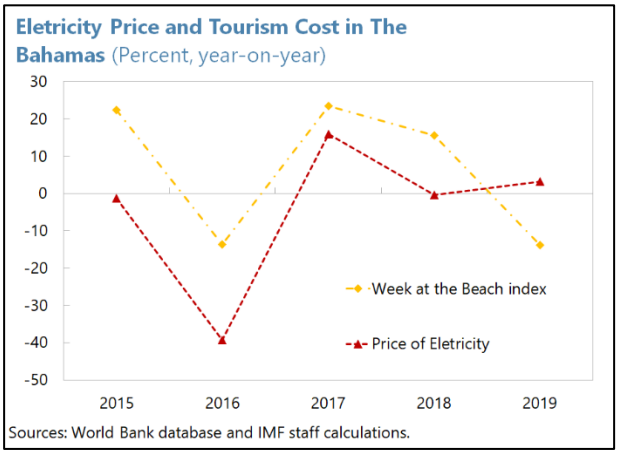
[2] OLADE, Energy panorama of Latin America and the Caribbean 2023.

[3] Solar radiation is categorized in 4 classes: irradiance higher than 4 kWh/m^2/day is very high radiation.

(twice the cost of natural gas), electricity prices in The Bahamas, at US$0.28 kWh, are above the Caribbean average of US$0.24 kWh.[4] As The Bahamas has around 30 inhabited islands and no submarine cable system for electricity transmission, the generation infrastructure has to be replicated in each island, making cost-recovery challenging for smaller islands.



- *Electricity reliability and cost is perceived by the private sector as one of the major impediments to growth.* Due to frequent power outages, off-grid self-generation is commonly used by high-income households and large resorts. More than 80 percent of firms in The Bahamas experienced power-outages in 2019/20, compared to 67 percent of firms in the Caribbean.[5] These outages happened, on average, 3 times per month in The Bahamas and created a loss of annual sales of 2.5 percent (vis-à-vis 1.7 percent in the Caribbean).



- *High electricity costs erode domestic disposable income and dampen competitiveness.* Oil price increases directly impact headline inflation through higher electricity costs (fuel surcharge) and higher transportation costs. Low energy efficiency and low penetration of renewable technologies make the country more vulnerable to international shocks and less competitive vis-à-vis other tourism destinations.[6]

4. Aging infrastructure. The country's Transmission and Distribution (T&D) system (e.g., transmission lines, substations, and transformers) has not kept pace with the increasing demand and required maintenance needs. Some transformers and substations are more than 50 years old. Therefore, it stands in need of investments to: (i) enable higher participation of RE in the electricity grid; (ii) introduce resilience to protect and mitigate against extreme weather events, considering the

[4] Ericson, Sean, and Dan Olis. 2019. A Comparison of Fuel Choice for Backup Generators. Golden, CO: National Renewable Energy Laboratory.

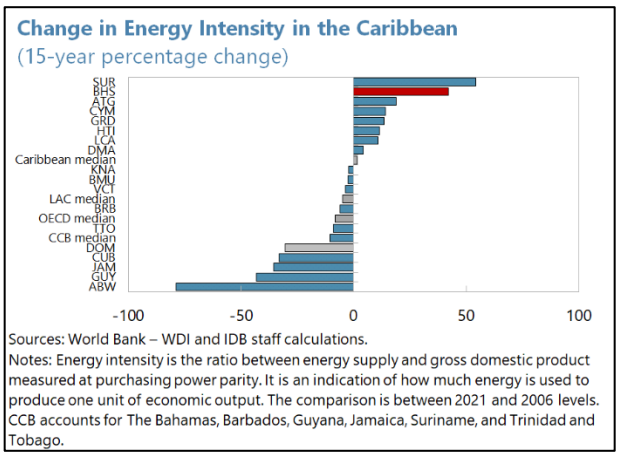
[5] IFPG Platform (competecaribbean.org)

[6] The "Week at The Beach index" is used to measure competitiveness of the tourism sector. The index measures the average cost of a 7-day-stay at a beach destination, excluding travel costs. The index is a simple average of quoted hotel rates from Tripadvisor, and over 80 million crowdsourced data points on meals and beverages from Numbeo. The index ranges from 2014 to 2023. Numbeo is a crowd-sourced cost of living database.

country's vulnerability to hurricanes and sea level rise; and (iii) improve the reliability of the grid.[7] The challenge of aging infrastructure has become more visible as the Government of The Bahamas (GOBH) has launched a Request for Proposals (RFP) to attract private sector investors to install RE generation, and these installations will require large investments in T&D systems. Moreover, there is the need to modernize the customer interface with the deployment of digital solutions, smart meters, and automated customer interface communication protocols. Digitalization can improve productivity, accessibility, and sustainability of energy systems by reducing operations and maintenance costs, enabling Demand Side Management (DSM), improving power plant efficiency, reducing unplanned outages, and extending lifetime of assets.[8]

Challenge # 2. High Energy Intensity

5. In contrast to that of the regional peers, the energy intensity in The Bahamas has increased over time.[9] The country had an energy intensity of 2.87 Mega Joule (MJ) per 2017 USD Purchasing Power Parity (PPP) GDP in 2021.[10] This amount has increased by 42 percent over the last 15 years. In contrast, countries in LAC and in the Organization for Economic Co-Operation and Development (OECD) regions have *decreased* their energy intensity by 8.2 percent and 5.0 percent over the same period, respectively. The Bahamas lacks a specific Energy Efficiency (EE) policy, and there is a large untapped potential for EE gains in the country, as EE can provide the same or better service using less energy. EE encompasses: (i) cost-effectiveness, as it can contribute to meet affordability; (ii) supply security, as it would reduce energy imports; and (iii) an enabler of climate goals, as it would reduce emissions.



Sources: World Bank – WDI and IDB staff calculations.
Notes: Energy intensity is the ratio between energy supply and gross domestic product measured at purchasing power parity. It is an indication of how much energy is used to produce one unit of economic output. The comparison is between 2021 and 2006 levels. CCB accounts for The Bahamas, Barbados, Guyana, Jamaica, Suriname, and Trinidad and Tobago.

Challenge # 3. Limited Institutional Capacity

6. The third challenge is the limited institutional capacity in the sector. Before the creation of the Ministry of Energy and Transport (MET) in 2024, the energy sector was largely managed by

[7] The subject of resilience and Climate Change (CC) adaptation require special attention as The Bahamas is vulnerable to the impacts of CC and sea level rise. The country is considered one of the most vulnerable countries in LAC to natural hazards. Due to its archipelagic nature, its landmass is considered as coastal zone, with approximately 80 percent within 5ft. of mean sea level. The Bahamas is experiencing an increase in the frequency and intensity of tropical cyclones and hurricanes and recorded four high intensity events between 2015 and 2019. The Bahamas has experienced a steady increase in its average annual temperate over several decades, and projections show that average daily maximum temperature is likely to increase by 2.0°C by 2050. (Bahamas Second National Communication to the United National Framework Convention on Climate Change – UNFCCC).

[8] International Energy Agency (IEA) 2017. Digitalization and Energy. Digitalization and Energy – Analysis - IEA.

[9] Energy Intensity: indicates a high price or cost of converting energy into GDP.

[10] World Bank Development Indicators.

the Ministry of Public Works. The Utilities Regulation & Competition Authority (URCA) is the independent regulator and competition authority. URCA's powers and functions were set out in the Electricity Act 2015, which includes the faculty to issue licenses and regulations.[11] A feature of this previous institutional set up was limited integrated energy planning and coordination to streamline energy infrastructure investments and prioritize RE and resilience. It is expected that with the recent creation of the MET, the new ministry and associated agencies will consolidate the activities of the energy sector over time (previously fragmented across different entities). The MET, however, will need to rapidly build institutional capacity and strengthen its governance structure to manage and modernize the energy sector. As the GOBH advances the partnership with the private sector for the deployment of RE, there is the need to build internal knowledge to negotiate and manage Power Purchasing Agreements (PPAs).

B. The 2024 Electricity Reform Plan

7. The GOBH has started a large transformation in the energy sector to improve energy security (sustainability, affordability, and resilience). In 2022, the country submitted its updated Nationally Determined Contributions (NDCs) reaffirming its aim towards: (i) 30 percent reduction of GHG emissions compared to its Business-as-Usual scenario by 2030, (ii) 35 and 15 percent of vehicle purchases in electric and hybrid respectively, and (iii) at least 30 percent of renewables in the electricity mix by 2030.

8. In 2024, the GOBH announced a comprehensive electricity sector reform, aiming to repair the T&D, partially replace heavy-oil energy production with natural gas (LNG), and expand renewable energy production. The Bahamas Power and Light Company Ltd (BPL), a state-owned enterprise that currently provides electricity to all islands of The Bahamas except for Grand Bahama (Box 1), will enter into Power Purchase Agreements (PPA) with independent power producers and solar providers in New Providence and the Family Islands.[12] The MET anticipates that these reforms will reduce the energy production cost to 22.5 cents per kWh, potentially saving up to $170 million annually, and will not require direct financing from the central government. The reforms, expected to be completed by December 2025, include four components:

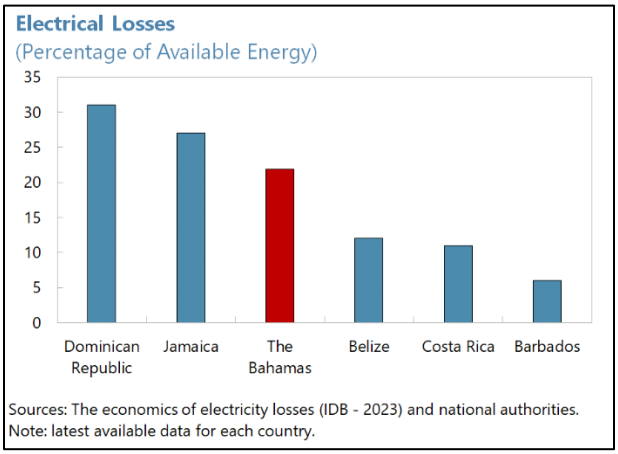
- *30 percent renewable energy target by 2030 and 120 MW of solar energy*. This will be achieved through building of 50MW utility-scale power plants in the Family Islands and expansion of existing solar projects (target of 70MW of solar energy generation with 25MW used to charge existing batteries) in New Providence. All the independent power producers selected/to be selected are required to have at least 50 percent Bahamian ownership.

[11] The Electricity Act 2024 also includes provisions for UCRA to issue licenses and regulations.

[12] A Power Purchase Agreement (PPA) in the energy sector is defined by the U.S. Department of Energy as an arrangement in which a third-party developer installs, owns, and operates an energy system on a customer's property. The customer then purchases the system's electric output for a predetermined period. This arrangement is commonly used for renewable energy generation.

- *Integrating LNG into the energy production.* BPL, through a PPA with a local company, will convert diesel electricity generation systems to LNG and build a combined cycle LNG plant in New Providence.

- *Modernization of T&D in New Providence.* BPL currently faces significant technical losses (12.3 percent of the electricity produced) and commercial losses (9.6 percent of electricity generated is unbilled). To modernize the T&D infrastructure, BPL entered a joint venture partnership with an American company to raise the estimated $130 million needed for the upgrades and create a Special Purpose Vehicle (SPV) named Bahamas Grid Company Ltd. BPL will own 40 percent of the SPV shares and will be responsible for billing and revenue collection from electricity bills. The SPV will allocate .0025 cents per Bahamian dollar of its revenue to pay down legacy debt and another .0025 cents to a hurricane fund for use in the event of natural disasters in New Providence.



- *Rate adjustments to benefit low-income households.* A progressive rate adjustment was implemented in July 2024. The fuel charge tariff was reduced by 2.5 cents for the first 800 kWh of electricity consumed and increased by 1.5 cents for usage above 800 kWh. According to the MET, this adjustment should benefit 58 percent of residential consumers and 56 percent of regular commercial consumers. Additionally, no base rate will be charged for the first 200 kWh used by residential consumers. However, the commercial base tariff will rise from 8.7 to 10 cents per kWh for the first 900,000 units and from 6.2 to 9 cents per kWh for usage above 900,000 kWh.

Box 1. Bahamas Power and Light (BPL)

Background. The MET has the overall responsibility of the energy sector in The Bahamas and oversees the government owned public utility BPL, which is a vertically integrated utility company.[1] BPL operates 29 plants with a total generating capacity of 532 Megawatts (MW) and serves 115,000 customers. BPL was established by the Electricity Act of 2015 and has operational autonomy with its own Board of Directors. The electricity sector is regulated by the Utilities Regulation & Competition Authority (URCA).

[1] BPL is from a legislative perspective a fully owned subsidiary of Bahamas Electricity Corporation (BEC), whose sole shareholder is the Government of the Bahamas.

Box 1. Bahamas Power and Light (BPL) (Concluded)

The last audit report by URCA states that BPL lacks a cost-effective generation and system plan, despite having opportunities to lower its generation costs.[2] Fuel constitutes over half of BPL's operating expenses. In New Providence, the dispatch process does not fully adhere to a merit order due to challenges with handling heavy fuel oil and obligations with independent power producers. Additionally, BPL needs an estimated USD 500 million to refurbish and replace its aging generation, transmission, and distribution infrastructure. About 10 percent of substations require replacement, and another 10 percent need upgrades or repairs. Benchmarking reliability indicators shows that BPL customers experience more frequent interruptions compared to other utilities, though these interruptions are shorter in duration. According to the URCA audit, reliability has improved since 2021 but still falls short.

BPL has been operating at a loss since 2022 and has a large stock of debt. Its net profit margin was -20 percent and -24 percent in FY2022 and FY2023, respectively. Since FY2017, BPL's net profit margin has averaged -2 percent. The URCA audit highlighted that BPL's debt service coverage ratio has been negative for the last 2 years, reaching as low as -8.8 in 2022 and -2.5 in 2023, driven in part by a large stock of debt.

BPL does not have forward-looking and automated financial planning and management processes. BPL has a 100-day strategy plan (as of November 2023), but it does not include details and specificity. This makes it difficult to project capital expenses accurately, develop a strategy to optimize asset utilization, and makes risk management and planning reactive rather than preventative.

BPL's operation in the Family Islands is small, outdated, and relatively inefficient. According to the Utilities Regulation & Competition Authority, the average age of generation units in the Family Islands is 23 years, more than double the average age of units in New Providence (10 years).[3] Continuous generation has been difficult in these areas due to skill and capital shortages and the overburdened staff. Exploring generation options on some Family Islands could help cut costs. Hybrid systems combining solar, battery storage, and diesel could potentially power entire islands more economically than using oil.

Although effective metering and billing and processes are in place, BPL can improve in ensuring timely payment from customers. Compared to benchmarked utilities, BPL's customers take longer to pay. BPL's average collection period is 135 days, an increase of 45 percent since 2017. Moreover, collection from government customers is much lower compared to other customer categories. BPL does not enforce disconnection and arrears control process on government customers, which has led to receivables from government customers of about USD 89 million.

[2] URCA Audit of the Performance and Organizational Maturity of Bahamas Power and Light (Efficiency Audit). 30 July 2024.

[3] Utilities Regulation & Competition Authority 2023 Annual Report and 2024 Annual Plan (URCA 2023 Annual Report and 2024 Annual Plan - URCA Bahamas).

C. The Macroeconomic and CO2 Emission Effects of the Reform

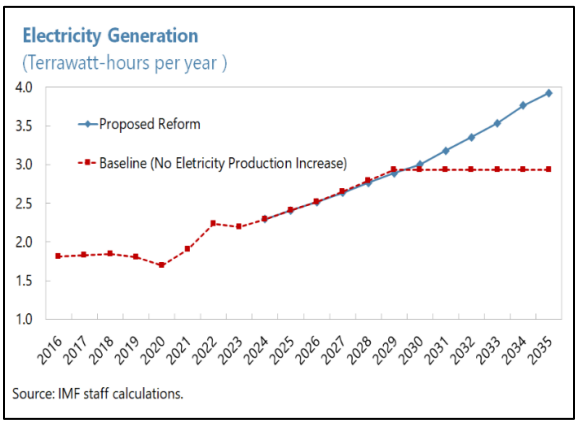
9. The macroeconomic impact of the energy transition aspect of the reform is estimated using IMF's Renewable Energy Balance of Payments (RE-BOP) tool.[13] The RE-BOP determines the marginal impact of a shift in energy production toward renewable energy on the Balance of Payments and electricity sector CO2 emissions. The RE-BOP uses a detailed power sector accounting framework (Box 2). The model uses staff's baseline and reform electricity generation scenarios, assumptions on the size of investment and sources of financing required in each scenario, and

[13] Ungerer, C., Sridar, T., and Versailles, B. (2024, forthcoming) "Towards assessing the impact of the renewable energy transition on the balance of payments", IMF Working Paper.

calibrated parameters as inputs. The outputs from the RE-BOP, namely investment, imports, and interest payments, are then used to determine the first-round effects on real GDP growth, keeping other variables the same as the baseline.

10. The analysis considers three scenarios for future energy transition. These scenarios assume that electricity production capacity does not fall below its current capacity and requires sufficient investment to offset annual depreciation. All investments in electricity production are financed equally by foreign and domestic capital.

- *Under the baseline scenario*, investment in electricity production is limited to maintaining the current stock of diesel generation assets. Electricity production grows in line with projected electricity demand, which in turn depends on baseline real GDP growth and the expected average temperature up to 2028.[14] Production does not increase after reaching the existing infrastructure's capacity and stabilizes at 2.9 tWh/year from 2029. Renewable energy generation remains unchanged at 2 percent of total electricity in the medium-term.



- *The reform scenario* assumes that the authorities transition to a target electricity generation mix of 30 percent solar energy, 50percent LNG, and the remaining 20 percent produced with diesel by 2030, with initial investments beginning in the latter half of 2024. Investment in electricity production is sufficient to replace both depreciating assets and to accommodate increased electricity demand. Consequently, electricity production grows in line with baseline electricity production and the average temperature, reaching 3.8 tWh/year by 2034.

- *In an oil-based reform scenario*, the estimated increase of electricity demand beyond the current capacity is met solely by investing in new diesel infrastructure. The electricity production mirrows the production under the "reform scenario", growing with baseline electricity production and the average temperature.

[14] Average temperature projections are in line with SSP3 for The Bahamas (Bahamas, The - Mean Projections Expert | Climate Change Knowledge Portal (worldbank.org)). The average temperature is included when estimating electricity demand due to the intensive use of air-conditioning in the country.

Box 2. The BOP Impact of the Renewable Energy Transition in Electricity Generation[1]

Driven by climate policies and technological advances, solar and wind electricity generation are reshaping national power systems and, as such, are dynamic pillars of the global energy transition. The IMF has developed an excel-based tool to help quantify some of the macro-economic effects of this transition, in particular balance of payments (BOP) effects. The tool maps current, capital, and financial account flows based on a country's renewable energy investment strategy. The results can then also be used to support discussion regarding other macro-economic aggregates.

The tool's assessment starts from (quantitative) power sector targets for solar and wind technology deployment, which are often published in a government's climate mitigation or power sector strategies. Once the projected composition of national electricity generation under a target scenario is established, energy conversion factors under each scenario are then used to estimate: (i) the annual investment cost in new electricity generation capacity through renewables, (ii) the annual cost related to the remaining share of fossil fuels in electricity generation, and (iii) the total annual cost of electricity generation. These projections can then be mapped into the BOP as follows:

- *Trade balance:* Under the target scenario, faster growth of investment in solar and wind electricity generation capacity results in higher near-term imports of goods and services and lower medium- to long-term net fossil fuel imports.
- *Capital/financial account and primary income balance:* Some of the investment in electricity generation capacity under the target (or baseline) scenario will most likely be financed externally (e.g., debt, equity, or grants), which will be recorded as foreign inflows in the capital/financing account. (The only instance where this would not be the case would be if: (i) all equipment for the installation of renewable energy (solar, wind) is produced domestically (i.e., nothing is imported), and (ii) all of this is financed through the domestic financial markets). Eventually, this foreign financing will require a combination of dividend, interest, and debt amortization payments (unless debt is refinanced) which are recorded as outflows in the financial account.

The net BOP effects will vary by country and could impact other macro-economic aggregates. For instance, the import content of renewables' investments may be larger in countries with less capacity to domestically produce and service the relevant equipment; and the financial account impact will depend on the share of foreign-financed investment, where it would also be important to account for any associated increased government borrowing (domestic or external). Meanwhile, investments in solar and wind electricity generation could partly replace on-going (or planned) new investments in fossil-fuel-based technologies. However, in some cases, this could result in a premature stranding of fossil fuel assets, affecting the financial sector.

The tool helps to determine the BOP impact of the transition towards a higher share of renewables generation. It does not, however, assess the technological and temporal feasibility or the implied capacity needs of the renewable energy target in a given country. For this, a more detailed analysis of the power sector would be needed and other tools (e.g., the WB/IMF Climate Policy Assessment Tool or CPAT) need to be used to assess whether existing sectoral policy packages are adequate to achieve the targeted electricity generation mix.

Policy recommendations will ultimately depend on placing the BOP impact suggested from this tool in the context of other developments across the economy as determined within a country's macroeconomic framework.

[1] Prepared by Christoph Ungerer, Tarun Sridhar, and Bruno Versailles (all IMF).

Table 1. The Bahamas: Assumptions on Major Parameters for RE-BOP Model

		Baseline	Proposed Reform	Oil-based Reform
Current Electricity Mix	Solar	2%	2%	2%
	LNG	-	-	-
	Petroleum (liquids and coke)	98%	98%	98%
Eletricity Mix by 2035	Solar	2%	30%	2%
	LNG	-	50%	-
	Petroleum (liquids and coke)	98%	20%	98%
Total Electricity Generation by 2035 (tWh/year)		2.9	3.9	3.9
Amounts of fossil fuel used to generate a kilowatthour (kWh)	LNG (Mcf/mWh)	7.3	7.3	7.3
	Petroleum (liquids and coke) (BOE/mWh)	1.9	1.9	1.9
Depreciation: Installed Capacity	Solar	4%	4%	4%
	LNG	3%	3%	3%
	Petroleum (liquids and coke)	4%	4%	4%
Capital cost per gross new installed capacity (2024, mUSD/MW)	Solar	3.5	3.5	3.5
	LNG	1.8	1.8	1.8
	Petroleum (liquids and coke)	3.7	3.7	3.7
GHG emissions from electricity generation (Mln metric tons of CO2)	LNG	0.1	0.1	0.1
	Petroleum (liquids and coke)	0.4	0.4	0.4
Investment Import Share		80%	80%	80%
Financing Source	Domestic	50%	50%	50%
	External	50%	50%	50%

Sources: National authorities, IDB, and IMF staff estimates.

11. The authorities' proposed reform is likely to strengthen The Bahamas' external position and boost real GDP growth over the medium-term.

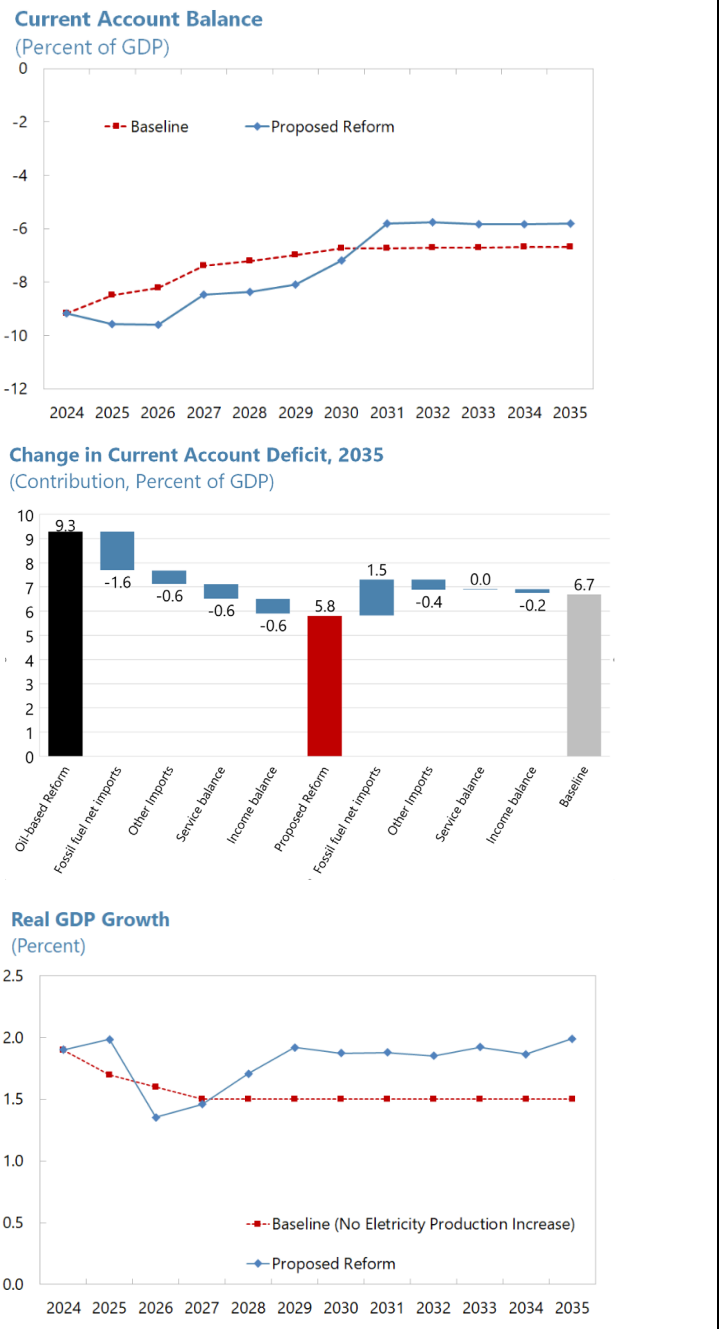
- *Under the baseline, the current account deficit narrows over the medium-term, but remains around 7 percent of GDP.* Imports continue to rise in line with stronger domestic demand, but this effect is partially offset by falling international fuel prices over the medium-term. Nevertheless, fuel imports are projected to average around 5.5 percent of GDP.[15] Real GDP growth remains unchanged at 1.5 percent over the medium-term, with the assumption that, with

[15] Fuel imports include propane, motor gasoline, aviation gasoline, kerosene, bunker "C", oil, LNG, and lubricants.

the current infrastructure, electricity capacity will reach its potential by 2028 and stagnate at around 2.9 terrawatt-hours per year.

- *Under the reform scenario, the current account deficit widens in the near-term from new investment in solar energy and LNG electricity generators but narrows substantially in the medium-term due to less imports of oil.* New investments required to increase the capacity and shift the mix of electricty generation increase imports of both equipment and services in the near-term, and combined with higher interest payments on foreign financing, widen the current account deficit relative to the baseline. However, from 2026 onward, the current account deficit narrows, as the shares of renewable energy and LNG production increase and the volume of oil imports falls. With a eletricity generation mix of 50 percent of LNG, fuel imports are expected to fall to 4 percent of GDP. Consequently, the current account deficit narrows relative to the baseline by 2031, and remains smaller thereafter. The surge in new investments in the electricty sector (net of imported inputs and other imports of goods and services) boosts real GDP growth

Text Figure 1. Projected Macroeconomic Impact



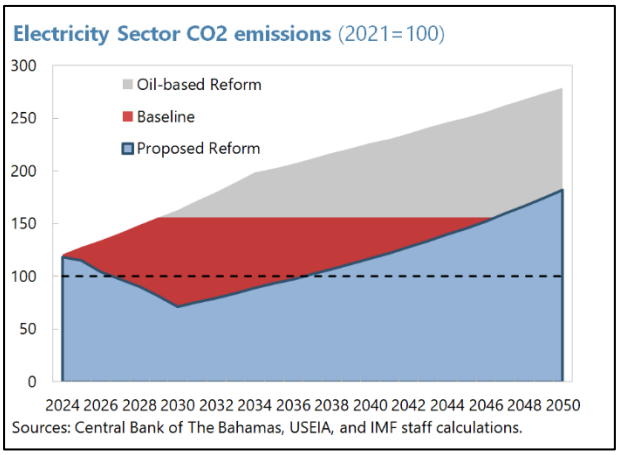
Sources: IMF staff calculations, Ministry of Energy and Transport, and IDB.

over the medium-term – by 2035, real GDP growth rises by 0.5 percentage points relative to the baseline.[16,17]

- *Under the oil-based reform scenario, the current account deficit jumps to more than 9 percent by 2035.* This reflects the increase of oil and investment imports.

12. The macroeconomic assessment considers only the first-round effects of the electricity sector reform. A larger positive impact on economic growth could arise from improvements in total factor productivity (TFP), lower domestic costs, and an increase in foreign investment beyond what is needed to complete the reform and maintain the new and existing infrastructure. On the other hand, the impact could be lower if there is weaker-than-expected execution and potential crowding-out of private sector investment due to investments in the electricity sector.

13. The proposed transition to solar energy and LNG can help The Bahamas to achieve its climate mitigation goals. Under the proposed reform, CO2 emissions from the electricity sector are expected to fall to 45 percent of those projected under the baseline by 2030. In cumulative terms, from 2024 to 2050, CO2 emissions from the electricity sector under the proposed reform scenario and the oil-based reform scenario reach 47.4 and 91.5 metric tons, respectively.



D. Fiscal Risks

14. Private sector investment can be a critical element in advancing energy sector reform, particularly in highly indebted countries. The cost of investing and maintaining infrastructure in the power sector may be difficult for governments with high debt and limited fiscal space, creating an opportunity for private sector participation. In the case of The Bahamas, high public sector debt, large gross financing needs, and elevated borrowing costs have lessened fiscal space and kept capital expenditure and capital transfers below 2½ percent of GDP over the past three years. Partnering with the private sector can also help the authorities to increase capital expenditure to their target of 3½ percent of GDP by 2025/26, while allowing space for investment in other priority areas.[18] The efficiency and execution of infrastructure projects can also benefit from the private sector's experience and expertise.

[16] Staff estimates the impact of new investments (net of imported inputs) on real GDP by deflating nominal GDP under the reform scenario by the deflator assumed under the baseline.

[17] The results are robust to a scenario where the increased real GDP growth boosts electricity production.

[18] The Bahamas 2024 Fiscal Strategy Report.

15. Access to affordable financing by private sector investors is a prerequisite for a successful Public Private Partnership. In small states, this may require a credible private partner with a strong reputation and governance structure and the financial capacity to make an equity injection into the project to reduce borrowing costs. In this regard, ensuring that the selection of private partners follows a transparent and competitive bidding process is important. This should include the publication of agreed contracts and beneficial ownership information of all private entities involved in the project.

16. Maximizing the gains from electricity reform through public private partnerships (PPPs) requires robust institutional frameworks that support private sector participation but minimizes fiscal risks. Reaping the benefits of private sector investment requires a predictable business and regulatory environment. A low-risk, regulatory environment with a clearly defined vision and rules supports competitive bidding and private sector participation. Ensuring that the risks are shared equitably between the private and public partners is critical to incentivizing the private sector to minimize cost overruns and fiscal risks. Moreover, the respective roles and responsibilities of the private sector and government should be clearly defined, in order to minimize disagreements and project execution risks.

17. An appropriate pricing mechanism is necessary to incentivize private sector participation and to ensure that the reform's gains are passed onto consumers. Transparently negotiated tariffs should be sufficiently high to cover operational costs and the debt service from new borrowing as well as to offer an appropriate financial return to encourage private investment. However, negotiating power purchase agreements which yield very little reductions in energy prices will likely not produce the positive impetus to productivity and competitiveness that is required to boost growth and reduce prices.[19]

18. Notwithstanding the potential benefits of private investment in the power sector, PPPs are not without risks, particularly to public finances. Explicit government investments or implicit government guarantees may increase the public sector's actual or contingent liabilities, due to cost overruns or should project execution fail. Moreover, because financial commitments associated with PPPs are often not publicly disclosed or incorporated into many governments' fiscal accounts, these risks can often materialize suddenly, creating sometimes large and unexpected financing needs.

[19] McIntyre and others, 2018.

Box 3. Public-Private Partnerships in The Bahamas

The IDB, in conjunction with The Economist Intelligence Unit (EIU), has developed The Infrascope, a benchmarking tool to evaluate the environment for Public-Private-Partnership development in its 26 member countries.[1]

The 2023/24 edition of the report identified three critical barriers for PPP development in The Bahamas:

- **Project preparation.** The report emphasizes the importance of carrying pre-feasibility and feasibility studies. There is a need to establish project preparation facilities and provide project preparation support.
- **Structure and sources of financing and access to capital.** The availability for financial instruments for PPPs is starting to develop in the country. In particular, the authorities will benefit from more knowledge dissemination of how these structures work (e.g. project bonds, sustainable financing, institutional investors).
- **Performance evaluation and impact.** Difficulties to evaluate the performance and the results of projects and their consequent impact on the objective populations.

These and other barriers can be surpassed by:

- **Creating a need-based PPP long-term pipeline.** Planning is essential for PPP development, including first identifying the sectors where PPPs are more idoneous and then prioritizing within the identified sectors. This requires substantial dialogues both intra- and inter- public sector as well as with private investors.
- **Creating and strengthening a PPP institutional framework.** Defining the rules of the game is essential for private sector involvement. In the case of The Bahamas, there is no PPP dedicated agency and no PPP registry. The recent PPA agreement could be a first step to initiate the creation of a national agency.
- **Leveraging other examples for private sector financing and partnering with international financial institutions.** Recent private sector investments, financed through equity investments by local Bahamians, can serve as an example of accessing long-term domestic financing for PPPs. Moreover, leveraging the relationships with IFIs on key projects can support both ex-ante and ex-post impact assessments and facilitate knowledge transfer in performance evaluation.

[1] The Infrascope Index is a tool used to benchmark how well countries can implement sustainable and efficient PPPs in critical infrastructure areas like energy, water and sanitation, solid waste management, transport and social infrastructure. Its goal is to assist policymakers in identifying obstacles to private-sector involvement in infrastructure, which, if addressed, could enhance the effectiveness of PPPs and advance broader development goals.

19. While fiscal risks cannot be completely eliminated, governments can put in place measures to minimize their occurrence and costs. Irwin and others (2018) highlight several approaches to limiting the buildup of risks. These include:

- *A leading role for the Ministry of Finance as reviewer of the PPP proposal at various stages of a "gateway process"*. This includes reviewing the project's proposal before it has gathered political momentum and granting approvals where necessary.
- *Clearly defining the risk-sharing agreement*. The risks to be borne by each party in the PPP should be clearly defined. As much as is practical, the public sector should take on only risks over which it has control or exerts some influence and has the capacity to manage that risk (e.g., Jamaica), with

partial guarantees possible in cases where all partners choose to share risks.[20] This is made easier with the introduction of PPP laws or standardized contracts.

- *Ensuring accountability for participating entities*. Executing agencies should be accountable for their roles and the management of risks in the project cycle. However, this requires that they be provided with sufficient autonomy to manage those risks.

- *Clearly define who has the authority to make payments* to permit the government to make timely and legal payments to contractors.

- *Imposing limits on the scale and scope of the PPP program*. This can include annual limits on the size of PPP payments, constraints on the size of new commitments or guarantees made during the year, or ceilings on the size of outstanding PPP commitments. Alternatively, in the past, some governments (e.g., New Zealand) have opted to treat PPPs as budgetary expenditure (subject to the applicable accounting rules), with the commensurate impacts on public sector debt. The latter approach has the effect of improving the transparency of PPPs and improves the government's capacity to manage the costs and risks of the projects.

20. The authorities have attempted to mitigate the risks of the PPP for the announced reforms in a number of ways. The fiscal risks associated with the electricity sector reform appear to be limited, with the Ministry of Finance playing a central role in the negotiations of the proposed reform and with the government not granting any guarantees to private sector participants. The authorities have also announced that some of the PPAs between the government and the private sector are expected to include key performance indicators for the private participant, which allows for penalties to be imposed should the relevant parties fall short of meeting their agreed performance commitments.[21]

E. Conclusion

21. Improving the reliability and cost of electricity generation and configurating towards renewable energy sources could boost long-term growth, narrow external imbalances, and reduce CO2 emissions. The proposed electricity sector reform seeks to shift the mix of electricity generation to 30 percent solar energy and around 50 percent LNG by 2030, modernize the transmission and distribution of electricity, and reduce the cost of electricity for low-income households. Using the IMF's RE-BOP tool, staff estimates that successful implementation could lift real GDP growth by 0.5 percentage points by 2035. Moreover, after the initial investments to modernize the grid are completed, the transition to renewable energy and LNG would reduce the demand for imported fossil fuels, narrow the current account deficit, and reduce The Bahamas' CO2 emissions from the electricity sector over the long-term.

[20] https://dbankjm.com/services/ppp-and-privatisation-division/public-private-partnerships-ppp/regulatory-frame-work/

[21]

22. Effectively managing fiscal risks is important to maximize the returns to the proposed electricity sector reform and minimize the impact of PPPs on public finances. While private sector investment in the electricity sector is welcome—including where fiscal space is limited—PPPs, particularly those including central government guarantees, are not without risks to public finances. Ensuring a leading role for the Ministry of Finance at each stage of the project, clearly defining the roles and the equitable sharing of risks between private and public entities and enforcing limits on the size of the guarantees granted to the private sector are key to minimizing these risks. To this end, the transparent and competitive selection of experienced private sector counterparts with strong financial buffers and the capacity to attract private capital would help to minimize costs and reduce the risk of unnecessary public sector intervention.