



Project Information Document (PID)

Concept Stage | Date Prepared/Updated: 14-Nov-2023 | Report No: PIDC36883



BASIC INFORMATION

A. Basic Project Data

Country Botswana	Project ID P181221	Parent Project ID (if any)	Project Name Renewable Energy Support and Access Project (P181221)
Region EASTERN AND SOUTHERN AFRICA	Estimated Appraisal Date Apr 01, 2024	Estimated Board Date May 30, 2024	Practice Area (Lead) Energy & Extractives
Financing Instrument Investment Project Financing	Borrower(s) Ministry of Finance	Implementing Agency Ministry of Minerals and Energy, Botswana Power Corporation	

Proposed Development Objective(s)

To enable integration of renewable energy generation and increase access to electricity.

PROJECT FINANCING DATA (US\$, Millions)

SUMMARY

Total Project Cost	122.22
Total Financing	122.22
of which IBRD/IDA	88.00
Financing Gap	0.00

DETAILS

World Bank Group Financing

International Bank for Reconstruction and Development (IBRD)	88.00
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Non-World Bank Group Financing

Counterpart Funding	0.22
Borrower/Recipient	0.22
Trust Funds	34.00
Green Climate Fund	34.00



Environmental and Social Risk Classification

Substantial

Concept Review Decision

Track II-The review did authorize the preparation to continue

Other Decision (as needed)

B. Introduction and Context

Country Context

- 1. Botswana is an upper-middle-income country with considerable diamond and mineral wealth.** Botswana is a landlocked country in Southern Africa. It has long been a top performer on the African continent regarding economic performance, macroeconomic management, and democratic governance. Nature-based luxury tourism — which took off in the 1990s — has become Botswana’s second-biggest export-oriented activity. In this context, real Gross Domestic Product (GDP) per capita grew almost five times faster than the global average until the 2009 Global Financial Crisis, and it currently stands at US\$6,700, placing Botswana among upper middle-income countries (UMIC) since 2004.
- 2. Despite Botswana’s macroeconomic stability and strong GDP growth, the country remains highly reliant on diamonds and poverty is still relatively high.** The world’s second largest producer of diamonds, Botswana remains almost fully dependent on diamonds for its exports. The export base has remained undiversified, with diamonds accounting for nearly 90 percent of exports while productivity is low and job creation is limited. Although the government of Botswana (GoB) has invested diamond revenues with a view to improving infrastructure, health, and education, the country’s private sector remains relatively weak, leaving the economy overly dependent on the state.
- 3. Botswana remains one of the world’s most unequal countries, with a high level of extreme poverty.** Compared to other UMIC countries, Botswana's poverty rates remain high, and while declines were experienced in the early 2000s, the poverty rates have increased in recent years, exacerbated by the COVID pandemic¹. Mostly prevalent in rural areas among female-headed households and those with low levels of education. Botswana has faced structural challenges and slow growth since 2015 and is vulnerable to external shocks, particularly because it is largely dependent on a single commodity. A sustained reduction in poverty and inequality will require progress on diversification and a focus on private-sector job creation. Social interventions will need to continue to support the most vulnerable members of society.
- 4. The COVID-19 pandemic has exacerbated the vulnerabilities of Botswana’s public investment and diamond-reliant growth model and has added pressure to replace lost jobs and build a more resilient economy.** Despite strong fiscal buffer, Botswana’s economy saw a 8.5 percent contraction of GDP in 2020 during the COVID-19 pandemic² and

¹ Estimates suggest poverty increased during the COVID-19 pandemic to 64.7 percent under the UMIC line (US\$6.85 per person per day).

² GDP numbers used are from the World Bank’s World Development Indicators: <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=BW>



unemployment reached a 35-year high of approximately 24 percent³. Unemployment has particularly affected women, youth, and urban villages. A rebound in GDP growth occurred in 2021, at 11.9 percent⁴ and slowed to 5.8 percent in 2022 with an even lower forecast averaging 4 percent in the medium term. Long-term uncertainties remain, with development in the global diamond industry playing a key role, but the prospect of the industry remain volatile.

5. **Gender equality and women’s empowerment in Botswana has progressed over the past 20 years with Botswana having made significant strides towards equal treatment of women under the law.** Botswana is ranked 66 out of 146 in the 2022 Global Gender Gap and is among the countries that have closed at least 70 percent of its gender gap⁵. However, gender inequality has increased over time and remains a pressing policy concern. Important gender gaps remain including low levels of women’s political representation in the National Assembly, a significant gender gap in Labor Force Participation, and high rates of Gender-Based Violence (GBV). The pace of legal reforms toward gender equality has slowed down in recent years, constituting a potential impediment to economic growth. National sex-segregation remains a reality in the country.
6. **Botswana is highly vulnerable to climate change.** Botswana has a semi-arid climate and has seen cyclic droughts caused by erratic rainfall. Botswana is highly prone to river and urban floods, water scarcity, and wildfires.⁶ Botswana are in the top three countries in Sub-Saharan Africa that are expecting an average temperature increase from 2.9 to 3.8 degrees Celsius by 2100, which makes the country highly vulnerable⁷. Botswana’s per capita emissions are about 2.27 mtCO₂e relative to a global average of 4.47 tCO₂e per person. The energy sector accounts for 87 percent of total Green House Gas (GHG) emissions (excluding land use, land use change, and forestry). In its first Nationally Determined Contribution (NDC), the GoB committed to reducing GHG emissions by 15 percent by 2030. In its Third National Communication to the UNFCCC⁸ in 2019, the GoB emphasized its adoption of RE as a key mitigation measure.

Sectoral and Institutional Context

7. **Progress on access to electricity has slowed since the COVID-19 pandemic.** At 73 percent, national electrification is low by global standards and relative to Botswana’s per capita income. The National Energy Policy adopted by Parliament in 2021 set out a strategy to ensure universal access by 2040, but progress in increasing access has slowed since the pandemic. A long-term historical trend of access increase of about 1.5 percentage points per year was interrupted by the COVID-19 pandemic in 2020 and 2021. Major disparities in access to electricity are seen between urban and rural areas. Between 2010 and 2021, access to electricity in rural areas made little progress lingering around 25 percent. 450 out of the 565 gazetted settlements were electrified as of May 2022. In urban areas, access is substantially higher (93.1 percent in 2021).
8. **Off-grid solar⁹ to support Botswana address challenges in delivering modern energy access and services to distant rural and sparsely populated areas with low demand and high grid connection costs.** Approximately 250,000 households¹⁰ are currently without grid connections, with grid access particularly low in the northwest region. Growing evidence shows that decentralized RE solutions can create value locally for electricity access, employment,

³ ILO Estimate. Accessed from World Development Indicators at <https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS?locations=BW>

⁴ World Bank Open data. <https://data.worldbank.org/indicator/NY.GDP.MKTP.KD.ZG?locations=BW>

⁵ World Economic Forum (WEF). 2020. Global Gender Gap Index

⁶ <https://thinkhazard.org/en/report/35-botswana>

⁷ IMF Article IV, 2019.

⁸ <https://unfccc.int/sites/default/files/resource/BOTSWANA%20THIRD%20NATIONAL%20COMMUNICATION%20FINAL%20.pdf>

⁹ Informed by WB report “Botswana Off-Grid Solar Action Plan” (2018)

¹⁰ As of March 2023 246,689 households lacked access to electricity based on the most recent census.



and economic growth in particular to electrify households far from existing grid infrastructure. While off-grid solar energy offers an alternative solution, people are slow to invest in solar systems as the upfront costs remains high. The GoB designed an off-grid solar program (OGSP), which seeks to assist small businesses and households with financial support (grants and loans) and increase electricity access.

9. **Domestic electricity generation is dominated by coal-based electricity.** Nearly all of Botswana’s electricity is currently generated from fossil fuel-based sources, with coal accounting for over 97 percent of total electricity generation in the country¹¹. Total installed capacity is 892 MW against peak demand of 596 MW. Two coal-fired stations, the 132 MW Morupule A and the 600 MW Morupule B account for a majority of Botswana’s electricity generation. Botswana also has diesel plants – 90 MW Orapa and 70 MW Matshelegabedi to support peaking power¹². However, the rolling 5-year average (2018-2022) of domestic generation only accounted for about 62 percent of total power supply¹³. Continued operational challenges at Morupule B have led to the plant operating below its capacity.
10. **Botswana is highly dependent on electricity imports due to uncertain domestic production.** Botswana continues to rely on imports from neighboring countries in the Southern African Power Pool, which account for 38 percent of total supply¹⁴. Operational issues at Morupule and the cost of imported electricity burden both Botswana Power Corporation (BPC) and GoB’s fiscal balance. Coal generation is still considered by the country with a new power plant (300MW) under development. Consumer electricity tariffs are below the cost of supply, although the size of the subsidy has declined steadily over the past few years.
11. **Botswana has started significant policy initiatives aimed at leveraging their renewables to enhance electricity supply security.** The country has excellent solar and wind resources with a complementary profile, which presents a promising source of clean and affordable electricity for the country. Vision 2036 and the National Energy Policy (NEP) adopted in 2021 reflect ambitious targets and plans to increase domestic power supply by increasingly using RE sources. According to its Vision 2036, GoB plans to increase the RE share of the generation mix to 15 percent by 2030 and 50 percent by 2036. It identifies climate change, energy diversification and universal energy access as key priorities. This approach has been translated into the adoption of an ambitious Integrated Resource Plan (IRP) in 2022 which targets significant installed capacity of solar and wind in the country by 2030¹⁵ as well as Battery Energy Storage Systems (BESS)¹⁶, which is expected to play a key role to address Variable Renewable Energy (VRE) integration as the country is opening up to private RE generation.

Relationship to CPF

12. **Botswana’s CPF 2016-21 recognized the importance of developing Botswana’s abundant RE resources.** During FY22-23, a period not formally covered by the CPF, World Bank engagement has continued implementing the former CPF strategic areas. The 2015 Systematic Country Diagnostic noted the potential of RE for bulk generation supply, strengthening its sustainability, and for increasing off-grid electricity access in rural areas. Support for RE forms a part of Objective 3.3 of the CPF, which focuses on strengthening natural resource management. The CPF also highlights the need for greater private sector investment in sectors such as energy.

¹¹ Majority of domestic generation and imports is coal based in 2021. Diesel source contributed 2.5 percent to emergency generation.

¹² BPC Annual Report, 2021

¹³ *Generation and Distribution, STATS BRIEF, Statistics Botswana.*

¹⁴ *Generation and Distribution, STATS BRIEF, Statistics Botswana*

¹⁵ 200 MW CSP, 100 MW wind and 635 MW Photo Voltaic (PV)

¹⁶ 140 MW BESS planned in the IRP by 2030.



13. **The World Bank has had a significant energy sector dialogue with GoB over the past three years.** Since 2019, the World Bank has been supporting GoB in the development of its RE sector. The World Bank completed a RE roadmap through the Sustainable Renewable Risk Mitigation Initiative (SRMI) under Energy Sector Management Assistance Program (ESMAP). This roadmap lays out options for the country on development of sustainable and bankable RE programs. In response to GoB's request to support the operationalization of the IRP, the World Bank in addition mobilized trust fund resources and initiated a VRE integration study to assess options for integrating VRE technologies in Botswana's power system in public investments such as BESS needed to unlock private investments in renewables. Moreover, GoB's Expression of Interest for implementing a carbon price through the World Bank's Partnership for Market Implementation (PMI) trust fund was approved in FY23 and associated technical assistance activities are about to start.
14. **The World Bank is supporting Botswana to develop sustainable and bankable RE projects,** where they have limited experience, through an ESMAP funded grant of USD 3.5 million under the SRMI. This grant will finance Technical Assistance (TA) activities supporting, among others, RE assessment, site studies and environmental and social impact assessments, feasibility studies as well as transaction advisory and capacity building for solar, wind and storage projects to empower the key stakeholders on RE development. This support will complement the GCF funding allocated from SRMI facility to the proposed project. The SRMI package (ESMAP grant and GCF funding) is expected to (i) reduce the development risk of the RE IPP projects, and to (ii) reduce the cost of the grid investments needed by blending IBRD financing with concessional funding.
15. **Activities under the proposed project are 'universally' Paris aligned.** The project is aligned with the goals of the Paris Alignment on both mitigation and adaptation, and is set out to support Botswana in achieving its commitments and targets including the NDC and other national policies and plans described above. In addition, the World Bank team is preparing a Country Climate and Development Report (CCDR) in FY24, a core diagnostic report which integrates climate change and development considerations to suggest concrete prioritized actions to reduce climate vulnerabilities and GHG emissions while delivering on broader development goals. Energy is expected to play a key role in the low carbon pathways under the CCDR.

C. Proposed Development Objective(s)

To enable integration of renewable energy generation and increase access to electricity.

Key Results

- Facilitation of RE Uptake (MW)
- Beneficiaries connected to the grid (number)
- Intermediate indicator: GHG emissions avoided (tons CO₂eq)

D. Concept Description

The proposed project will support Botswana with the successful and sustainable integration of VRE by financing the following critical grid investments under Component 1 as informed by the aforementioned VRE integration study: (i) battery energy storage systems (BESS), (ii) Static Synchronous Compensator (STATCOM) and (iii) Strengthening power system control and dispatch (upgrade of the Supervisory Control and Data Acquisition – SCADA). The project will also



support GoB with rolling out its rural electrification program under Component 2: (i) financing the grid expansion to rural villages (including a 66 kV Transmission Line (160 km) from Lobatse sub-station to Mabule sub-station and the associated substations) and (ii) contributing to finance the offgrid solar program adopted by the GoB. In addition, the project will also finance TA under Component 3 to empower the key stakeholders in developing and implementing sustainable and bankable RE projects.

Legal Operational Policies	Triggered?
Projects on International Waterways OP 7.50	No
Projects in Disputed Areas OP 7.60	No

Summary of Screening of Environmental and Social Risks and Impacts

The overall environmental and social risk rating is Substantial, at concept stage. Environmental risk rating is Moderate and Social risk rating substantial. Potentially adverse social and environmental risks and impacts, is primarily associated with the physical civil works supported under Components 1 and 2. The key risks and impacts may be related to: (i) potential small to medium scale land acquisition and land easement arrangements to be assessed further and confirmed during preparation); (ii) social aspects of environmental impacts related to construction-related activities, including health and safety; (iii) temporary labor influx needed for construction activities, and associated GBV/SEA/SH risks; and (iv) need for robust stakeholder engagement, outreach to stakeholder and beneficiaries (including any vulnerable and/or disadvantaged groups), (v) loss of vegetation, (vi) disposal and management of general and hazardous waste during the construction and BESS operational phase, (vii) nuisances related to air and noise emissions, and (ix) community health and safety. For environment the risks and impacts are considered to be low in magnitude, reversible, site-specific and can be easily mitigated. The Borrower has a legal and regulatory framework in place for managing environmental risks and impacts, however lack historical performance with implementation of ESF projects and has limited internal capacity to manage environmental risks. To mitigate the risks, the project will establish a PIU in BPC and MME with dedicated environmental specialist, furthermore funds allocated under Component 3 will support capacity building of PIU staff.

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APPROVAL

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