Project Information Document/ Identification/Concept Stage (PID)

Concept Stage | Date Prepared/Updated: 26-May-2022 | Report No: PIDC262197

BASIC INFORMATION

A. Basic Project Data

Project ID	Parent Project ID (if any)	Environmental and Social Risk Classification	Project Name
P178822		Substantial	Botswana Renewable Energy Scale Up Support
Region	**Country**	**Date PID Prepared**	**Estimated Date of Approval**
Eastern and Southern Africa	Botswana	26-May-2022	30-Jun-2022
Financing Instrument	**Borrower(s)**	**Implementing Agency**	
Investment Project Financing	Ministry of Finance and Economic Development	Ministry of Mineral Resources, Green Technology and Energy	

PROJECT FINANCING DATA (US$, Millions)

SUMMARY

Total Project Cost	3.56
Total Financing	3.56
Financing Gap	0.00

DETAILS

Non-World Bank Group Financing

Trust Funds	3.56
Energy Sector Management Assistance Program	3.56

B. Introduction and Context

Country Context

Botswana is a middle income country with significant mineral wealth. Botswana is a landlocked country in southern Africa. It has long been a top performer on the African continent regarding income per capita, macroeconomic management, and democratic governance. The discovery and sound administration of the world's largest diamond deposits in the 1970s underpin this success story. Nature-based luxury tourism — which took off in the 1990s — has become Botswana's second-biggest export, attracting nearly two million

visitors annually as of 2018. 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 (GFC), and it currently stands at US$6,700, placing Botswana among upper middle-income countries since 2004. Overall, buoyant diamond exports resulting in large revenue inflows combined with prudent macroeconomic management led Botswana to accumulate budget surpluses and sizeable foreign exchange reserves.

Despite Botswana's macroeconomic stability and strong GDP growth, poverty is still relatively high while inequality is very high. The share of Botswana's population living below the international poverty line (US1.90/day) has declined to 16.1 percent. Poverty is the highest in rural areas, among female-headed households and those with low levels of education. 50 percent of Botswana's poor are aged 16 years and below, with significant implications for the intergenerational transmission of poverty.

Botswana is vulnerable to the effects of climate change. Botswana has a semi-arid climate and has seen cyclic droughts caused by erratic rainfall. Botswana's per capita emissions are about 2.27 mtCO2e relative to a global average of 4.47 tCO2e per person. GHG emissions are expected to increase from 26.38 GgCO2e in 2012 to 48.97 GgCO2e by 2030. The energy sector accounts for 87 percent of total GHG emissions (excluding land use, land use change, and forestry). In its first Nationally Determined Contribution (NDC) submitted to the UNFCCC, Botswana committed to reducing GHG emissions by 15 percent by 2030. In its Third National Communication to the UNFCCC, the GOB emphasizes its adoption of renewable energy as a key mitigation measure.

Botswana has significant renewable energy resources. Botswana has a very high rate of solar irradiation, which presents a promising source of clean and affordable electricity for the country. Wind resources are underexplored and could also present an avenue for energy sector development. About 35 percent of residential homes in Botswana are not connected to the grid and rural areas are lagging with an electrification rate of 28 percent. GoB aims to achieve universal access by 2030 and has made efforts to enhance access, develop the grid, and provide affordable electricity. Renewable energy development can help reduce import dependence, enhance energy security, diversify domestic generation, and support climate mitigation.

Sectoral and Institutional Context

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 country. 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. However, domestic generation only accounted for about 78 percent of total power supply in 2018. Botswana imported 200 GWh from the Southern African Power Pool in 2019. Continued operational challenges at Morupule B have led to the plant operating below its capacity. Botswana also has diesel plants – 90 MW Orapa and 70 MW Matshelagabedi to support peaking power.

Botswana has developed multiple climate strategies and plans to accelerate renewable energy development in the country. According to its Vision 2036, GoB plans to increase the contribution of renewable energy to the generation mix to 15 percent by 2030 and 50 percent by 2036. In its National Energy Policy (NEP), approved by Parliament in 2021, GoB commits to providing affordable, reliable, and adequate supply of energy for sustainable development, and to improve access to energy resources. The NEP entails a major shift towards renewable energy in the overall energy mix. It promotes increased solar penetration by 18 percent of the energy mix, and promotion of improved energy efficiency by 15 percent. Given its exceptional renewable energy resources, GoB has initiated concrete steps towards advancing the development of renewable energy resources (especially solar). The government is actively exploring generation expansion scenarios in pursuit of energy mix diversification. Specifically, Botswana's Integrated Resource Plan (IRP) proposes to decommission Morupule A coal fired power plant and expects renewable energy (solar, wind, and battery storage) to contribute the majority of new generation over 2020 – 40.

The 11th National Development Plan (NDP) provided clear direction for the development of a renewable energy strategy to facilitate investment in the sector. The Mid-Term Review (MTR) of this six-year planning document was approved by Parliament in 2020, and was supplemented by the Economic Recovery and Transformation Plan (ERTP). The NDP 11 MTR and ERTP include an explicit commitment to "building resilience", including the response to climate change. The ERTP notes that for the post-Covid recovery to be sustainable, "the opportunity should be taken to accelerate this transition, e.g. moving towards solar power generation, reducing subsidies to the use of fossil fuels and introducing carbon taxes." Botswana's Vision 2036 identifies climate change, energy diversification and universal energy access as key priorities and sets a clear objective of 50 percent renewable energy contribution to the energy mix by March 2036. Through its Sustainable Energy for All (SE4ALL) Action Agenda, GoB committed to achieve universal access to electricity by 2030. Some key components are already in place: (i) Independent Power Producers (IPPs) were authorized for renewable energy projects by the Electricity Supply (Amendment) Act in 2007 and the (ii) independent national energy regulator was established by the Botswana Energy Regulatory Act of 2016. Botswana's Integrated Resource Plan (IRP) 2020 identified generation expansion projects and the associated technologies to be deployed to help Botswana meet its electricity demand in a sustainable manner. The IRP envisions a significant scaling up on renewable capacity, including 600 MW solar PV, 200 MW Concentrated Solar Power (CSP), 50 MW wind and 140 MW battery storage. The new generation capacity is expected to be developed through private sector IPPs procured by the Ministry of Mineral Resources, Green Technology and Energy Security (MMGE).

Climate change has consistently been identified as a key challenge for the country. The estimated investment requirement for the achievement of Botswana's NDC target is US$18.4 billion, which would be allocated to energy and transport infrastructure that can contribute to emission reductions. Botswana's commitment under the NDC to develop a Climate Change Policy supported by a Climate Change Strategy has already been met. These measures are intended to support implementation of the ambition conveyed in Botswana's NDC. Moreover, the National Climate Change Action Plan commits to the introduction of a carbon tax.

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 renewable energy sector. The World Bank initiated the preparation of a renewable energy roadmap under the Sustainable Renewables Risk Mitigation Initiative (SRMI) approach, which focuses on facilitating the identification of suitable risk allocation frameworks to enable the development of a bankable pipeline of projects, the maximization of socio-economic and local development benefits, and the creation of an enabling environment for renewable energy development. This is expected to inform GoB's renewable energy strategy. In response to GoB's request to explore the potential for integrating variable renewable energy (VRE) in its grid, the World Bank mobilized trust fund resources under the Promoting Green and Climate Resilient Development in Africa and Globally (AGREED) Trust Fund. A VRE integration study has been initiated to assess options for integrating VRE technologies in Botswana's power system to inform the investment required for transmission grid upgrade. In addition, an ongoing programmatic development policy finance (DPF) operation includes pillars on supporting an inclusive recovery from Covid-19 and promoting a resilient and green recovery. Proposed prior actions under the DPF2 under preparation include the expansion of energy access through a reduction in the National Electricity Standard Connection Scheme for low-income households, and a reduction in power transmission and distribution losses to strengthen Botswana Power Corporation (BPC)'s financial viability. Lastly, GoB's Expression of Interest for accessing trust fund resources to enhance readiness for implementing a carbon price through the World Bank's Partnership for Market Implementation (PMI) trust fund was approved to move forward to full proposal development in 2021. The PMI will support GoB in the design of a carbon tax covering energy-related sectors (electricity, transport, and industry). This is expected to incentivize investment in low carbon sectors by pricing the carbon externality.

Relationship to CPF

The proposed small RETF is expected to support renewable energy development in Botswana. The World Bank has mobilized concessional finance from the Green Climate Fund (GCF) to facilitate the development of renewable energy generation capacity in the country. In this context, GoB has requested Trust Fund resources for financing preliminary studies for developing Botswana’s renewable energy strategy in preparation for accessing GCF resources. The small RETF is expected to support renewable resource assessment, site studies for solar and wind park infrastructure, and environmental and social impact assessments for the sites, and transaction advisors for renewable energy IPPs.

The World Bank Board of Executive Directors approved the FY2016-20 Country Partnership Framework (CPF) in October 2015 and extended it through FY21, following a Performance and Learning Review (P166021) in 2019. The proposed Performance and Learning Review (PLR) assessed progress under the FY2016-20 CPF and proposed adjustments to its substance and implementation. The proposed changes included to: 1) Extend the CPF by one year (to FY21) to allow for dynamics leading up to the October 2019 elections and then gauge the new cabinet’s priorities. 2) Intensify World Bank implementation support given client capacity constraints. In designing new projects, explore a broader mix of instruments to build institutional capacity. 3) Rebalance the scope and size of the WBG portfolio to ensure better strategic coverage of the agreed CPF pillars in line with the focus on human capital. 4) Build on the growing

collaboration between the World Bank, International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA) in Botswana to leverage private sector resources for development outcomes.

Botswana's current Country Partnership Framework (CPF) 2016-20 recognizes the importance of developing Botswana's abundant renewable energy resources. During FY22, a period not formally covered by the CPF, WB engagement has continued implementing the former CPF strategic areas. The Systematic Country Diagnostic (SCD) for Botswana found electricity supply to be a major infrastructure challenge for Botswana. It noted the important role that renewable energy could play in adding bulk generation supply to the power system, strengthening its sustainability, and for increasing off-grid electricity access in rural areas. Support for renewable energy and energy efficiency forms a part of Objective 3.3 of the CPF, which focuses on strengthening natural resource management. Increased share of renewable energy in total electricity production capacity is one of the CPF's expected results, with a baseline of 0.2 percent in 2015 and a target of 5 percent by 2020. Renewable energy also forms an important part of the CPF's thrust on sustainable environment, which notes that "Botswana is now developing policies, strategies, and plans that support the conservation and protection of natural resources and promote the use of renewable energy as alternatives." Lastly, the CPF highlights the need for greater private sector investment in sectors such as energy. It notes that, "Through ongoing technical assistance, the Bank will help GoB to identify investment projects in the renewable energy and energy efficiency sectors, and recommend implementation arrangements. The WBG could also support selected investments in the energy sector to expand rural access, increase the use of renewable energy, improve energy efficiency, and strengthen grid infrastructure and regional integration, with appropriate technical assistance in policy, regulatory, and investment planning."

The Country Private Sector Diagnostic (CPSD) under finalization also notes the importance of renewable energy development for energy security. The CPSD notes that Botswana's high dependence on electricity imports and diesel use leads to significant foreign currency outflows, and creates challenges for energy security and consistency. The availability of high quality solar resources in the country creates a relative advantage for the production of solar energy and to support energy diversification. The CPSD notes the opportunity for private sector participation in large-scale renewable energy generation outlined through the IRP. The CPSD also notes that BPC's financial weakness as an off-taker, insufficient institutional capacity, inadequate renewable energy framework, and weak local supply chains for renewable energy could pose significant challenges for private sector participation. The proposed small RETF can help address challenges associated with the development of bankable projects that can attract private sector investments using the SRMI approach, and is expected to mitigate other risks associated with private sector participation through the development of detailed studies and suitable risk allocation frameworks that effectively leverage concessional finance.

C. Project Development Objective(s)

Proposed Development Objective(s)

The development objective is to enable renewable energy development in Botswana.

Key Results

Key results include:

- improved data availability related to renewable resources in Botswana
- unlock public and private investment for Utility-scale renewable energy or support infrastructure projects
- enhance institutional capacity of MMGE to enable competitive procurement of private IPP investments in RE. including the design and implementation of bankable RE IPP projects.

D. Preliminary Description

Activities/Components

Botswana plans to access concessional finance for renewable energy development. To support the Government's ambitious renewable energy targets, the Green Climate Fund (GCF) Board approved a funding envelop of USD 44 million of concessional financing for Botswana under the GCF Funded Activity Agreement (FAA). The funding comprises USD 30 million loan, USD 10 million guarantee, and USD 4 million grant funding. The GCF loan will provide long-term financing at concessional rates (no interest rate, no commitment fee, 0.25% all-in fee, 40-year tenor, and 10 years grace period for the country) and aims to leverage significant amounts of private capital. GCF funding for Botswana is part of the Sustainable Renewables Risk Mitigation Initiative (SRMI) Facility – covering Botswana as one of seven beneficiary Host Countries. GCF funds are to be blended with IBRD co-financing. The joint GCF-IBRD funding, together with the proposed TA of $3.56 million RETF grant, is envisaged to support public investments in shared infrastructure for solar and wind parks as well as transmission infrastructure (grid upgrades for variable renewable energy (VRE) integration, battery energy storage systems (BESS), etc.) to unlock private investments in renewable energy generation. The first investments envisaged under the Integrated Resource Plan (IRP) include: (i) 200 MW concentrated solar power (CSP) and (ii) 50 MW dispatchable wind power.

The proposed grant will support renewable resource assessment, site studies and E&S studies for solar and wind park infrastructure, transaction advisors for renewable energy IPPs, with an aim to identify potential suitable location and bankability of the proposed activities, and capacity building activities to support RE development. Specifically:

1. **Resource assessment for wind and solar:** The study aims to map out the solar and wind energy resources in Botswana. The study includes the deployment of meteorological equipment for data collection (including wind-speed sensors and anemometers) to identify the resource topology in the country, to determine the optimal locations for wind and solar parks, considering various technical and economic dimensions. It is expected to be carried out for two specific sites for wind and one site for solar by an international consulting firm. The contract is expected to result with bankable reporting data after 12 and 24 months for the solar and wind sites and will include key deliverables for wind in June 2023 and in June 2024

2. **Safeguards and site studies for solar and wind park infrastructure:** Once the sites are identified for solar and wind parks, site studies and environmental and social studies will be carried out covering the following illustrative list of topics. The full scope of the site studies will be finalized through the development of detailed terms of reference.
    - Environmental and Social Studies as per ESF
    - Topography and Geotechnical studies
    - Seismic activity
    - Dust
    - Climate Change
    - Water availability
3. **Transaction advisory services for renewable energy IPPs:** Solar and wind generation capacity is expected to be developed through private sector IPPs. Transaction advisory services will assist GoB in structuring and tendering bankable projects for independent power producers (IPPs). The initial mandate will include the 200 MW CSP and 50 MW wind, but it could be expanded to consider other solar photovoltaic (PV) projects as identified in the IRP.
4. **Capacity building for GoB for RE development:** Capacity building activities will be carried out for the project implementation unit, the Projects Energy Development Unit (PEDU) under the Ministry of Mineral Resources, Green Technology and Energy Security (MMGE) as well as the Botswana Energy Regulatory Authority (BERA). This is expected to include the appointment of experts within the PEDU and BERA to provide implementation support and the organization of south-south knowledge exchanges.

The Bank is supporting GoB to mobilize additional resources to complement the RETF. The additional support will include: i) USD 300,000 from the Promoting Green and Climate Resilient Development in Africa and Globally (AGREED) Trust Fund for the variable VRE integration study (launched in March 2022); ii) USD 2 million from the Southern Africa Power Pool Program for Accelerating Regional Transformational Energy Projects (SAPP-AREP) for the detailed feasibility studies for 200 MW CSP and 50 MW wind (to be launched in May 2022).

The IRP envisions renewable energy development being carried out by private IPPs. Therefore, the proposed studies that scope the potential for renewable energy development are expected to result in projects that will substantially mobilize private co-financing. In recent months, BERA has also granted licenses to IPPs for directly engaging in trade with the Southern Africa Power Pool (SAPP) and other regional buyers, which can strengthen regional trade going forward.

The proposed support will also contribute toward Botswana's broader renewable energy strategy. The Mega Solar Memorandum of Intent was signed by the Minister of Mineral Resources, Green Technology and Energy Security of the Government of Botswana in April 2021. The Mega Solar initiative is expected to add up to 5 GW of solar power and to avoid an estimated 6.5 million tons of CO2 annually. The initiative proposes to add large scale dispatchable solar capacity in Botswana and Namibia by 2024 to meet expected domestic demand for electricity; and new large scale dispatchable solar capacity to meet regional electricity demand by 2030. The ambition of Mega Solar is for Namibia and Botswana to contribute toward the decarbonization

of the Southern African electricity system through the export of clean and affordable energy. The proposed preparatory studies are expected to contribute to Botswana's objectives of renewable energy expansion and the Bank's dialogue is closely coordinated with other Mega Solar partners.

Environmental and Social Standards Relevance

E. Relevant Standards

ESS Standards		Relevance
ESS 1	Assessment and Management of Environmental and Social Risks and Impacts	Relevant
ESS 10	Stakeholder Engagement and Information Disclosure	Relevant
ESS 2	Labor and Working Conditions	Relevant
ESS 3	Resource Efficiency and Pollution Prevention and Management	Relevant
ESS 4	Community Health and Safety	Relevant
ESS 5	Land Acquisition, Restrictions on Land Use and Involuntary Resettlement	Relevant
ESS 6	Biodiversity Conservation and Sustainable Management of Living Natural Resources	Relevant
ESS 7	Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	Relevant
ESS 8	Cultural Heritage	Relevant
ESS 9	Financial Intermediaries	Not Currently Relevant

Legal Operational Policies

Safeguard Policies	Triggered	Explanation (Optional)
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 environmental and social risk is rated as substantial at concept stage. The risks that have been assessed are not simply the impacts resulting from the TA activities themselves but also the potential downstream environmental and social implications that may arise from the future investments. The risks and impacts associated with the TA activities are likely to be minimal or negligible. However, the potential downstream impacts may be significant due to the scale of the investments, the limited information available during this stage of project preparation due to the sites not yet being known as well as the institutional capacity constraints. The TA activities include detailed technical design and feasibility studies (Type 3) and capacity

building (Type 1). The E&S impacts of carrying out the TA activities themselves are likely to be minimal. Potential environmental and social risks and impacts that have been identified for the TA activities are; ESS2 labor and working conditions including minor risks of work place sexual harassment, in addition, conducting research in some geographic areas could require consultations with communities and possibly with Indigenous People, with implications under ESS10 and ESS7. Potential impacts associated with the geotechnical and seismic studies which may include limited impact on biodiversity or loss of vegetation (ESS 6), potential soil and ground water pollution due to accidental hydrocarbon spills or leaks from vehicles and generation of small quantities of waste (ESS 3) and occupational health and safety hazards and risk such as noise, dust and interaction with moving machinery/ equipment. ESS4 may also be relevant as the activities may possibly also have an impact on community health and safety, e.g. road safety through increased road circulation, possible spread of communicable diseases and minor risks of Sexual Exploitation and Abuse (SEA) /Sexual Harassment (SH) during the technical investigations. The TA outputs may have potential downstream environmental and social implications that may arise from the future investments. The locations of the study areas are not yet known and therefore the anticipated risk and impacts associated with the downstream development of the solar and wind parks cannot yet be fully assessed, and will only be known once the Environmental and Social Impact Assessment studies have been completed. However, drawing on similar solar and wind projects in the region, in particular, it is anticipated that the land take will be relatively large and as such may have implications relevant to the following standards, ESS1, 2, 3, 4, 5, 6, 8 and 10, and possibly 7 depending on whether Indigenous Peoples are present. These potential impacts will be assessed in the ESIA that is an output of the TA. Client capacity to manage E&S risks and impacts has also been considered in the overall E&S risk rating. Although the Borrower has limited experience in implementing World Bank funded projects under the Environmental and Social Framework (ESF) and currently does not have in-house E&S capacity, the Borrower will rely on an allocated resource from the Ministry of Environment, Natural Resources Conservation and Tourism (MENT) to oversee the preparation of the instruments to ensure it aligns with the ESF.

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