Combined Project Information Documents / Integrated Safeguards Datasheet (PID/ISDS)
BASIC INFORMATION

A. Basic Project Data

<table>
<thead>
<tr>
<th>Country</th>
<th>Project ID</th>
<th>Project Name</th>
<th>Parent Project ID (if any)</th>
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<tbody>
<tr>
<td>Rwanda</td>
<td>P160699</td>
<td>Renewable Energy Fund</td>
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<tr>
<th>Region</th>
<th>Estimated Appraisal Date</th>
<th>Estimated Board Date</th>
<th>Practice Area (Lead)</th>
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<tr>
<th>Lending Instrument</th>
<th>Borrower(s)</th>
<th>Implementing Agency</th>
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<tbody>
<tr>
<td>Investment Project Financing</td>
<td>Government of Rwanda</td>
<td>Development Bank of Rwanda (BRD)</td>
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Proposed Development Objective(s)

The Project Development Objective is to increase electricity access in Rwanda through off-grid technologies and facilitate private-sector participation in renewable off-grid electrification.

Components

- Line of credit and direct financing for off-grid electrification
- Technical assistance, capacity building and project implementation support

Financing (in USD Million)

<table>
<thead>
<tr>
<th>Financing Source</th>
<th>Amount</th>
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<td>Strategic Climate Fund Credit</td>
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<tr>
<td>Strategic Climate Fund Grant</td>
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<tr>
<td><strong>Total Project Cost</strong></td>
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Environmental Assessment Category

F - Financial Intermediary Assessment

Decision

The review did authorize the preparation to continue

Note to Task Teams: End of system generated content, document is editable from here.

Other Decision (as needed)
B. Introduction and Context

Country Context

1. **Rwanda has one of the fastest growing economies in Africa, with GDP growth averaging 7.6 percent over 2000-2015, driving substantial reductions in poverty and inequality.** Rwanda’s population is 11.6 million, of which 52 percent are women. Rwanda has one of the highest population densities in Africa, with an estimated 460 people per km². Rwanda has maintained political stability since the genocide and civil war of 1994. Agriculture, mostly subsistence farming, accounts for 30 percent of Rwanda’s GDP and employs around 70 percent of the labor force. Poverty decreased from 59 percent in 2001 to 45 percent in 2011, while extreme poverty fell from 59 percent in 2001 to 45 percent in 2011. Rwanda’s population is 11.6 million, of which 52 percent are women. Rwanda has maintained political stability since the genocide and civil war of 1994. Agriculture, mostly subsistence farming, accounts for 30 percent of Rwanda’s GDP and employs around 70 percent of the labor force. Poverty decreased from 59 percent in 2001 to 45 percent in 2011, while extreme poverty fell from 59 percent in 2001 to 45 percent in 2011.

2. **Rwanda’s long-term development vision is captured in Vision 2020, which seeks to transform the country from a low-income, agriculture-based economy to a knowledge-based and service-oriented, middle-income economy.** Vision 2020, adopted in 2000 and revised in 2011, has as its main objective to place Rwanda on a higher growth trajectory to ensure that the country achieves middle-income status by 2020. Five-year Economic Development and Poverty Reduction Strategies (EDPRS) operationalize this development vision. The ambitious second EDPRS, covering the period 2013-2018, is shaping policies and aims to achieve double-digit annual average economic growth and reduce poverty to less than 30 percent. The strategy envisages a primary role for the private sector to serve as the engine of growth and poverty reduction.

3. **Rwanda identifies energy as an essential condition for sustainable growth and development.** The GoR recognizes the importance of providing “appropriate, reliable, and affordable energy supplies for all Rwandans” if the country is to achieve middle-income status by 2020. In view of this, half of the thematic areas identified to achieve the goals of the second EDPRS – economic transformation and rural development – are intended to address the primary constraints to scaling up investment flows, including access, reliability, and cost of energy.

Sectoral and Institutional Context

B.1 Sectoral Context

4. **While there has been significant progress in recent years, the Rwandan electricity sector faces several challenges.** Low access to electricity and high electricity cost, exacerbated by limited generation capacity, low efficiency of electricity supply, low household demand, and affordability constraints are primary obstacles to attracting and further scaling up investment flows to the country. Consumer affordability and access to finance are particularly hindering the expansion of off-grid electricity services.

5. **The total share of population with access to electricity has risen from about six percent (about 110,000 households) in early 2009, to 24 percent¹ (about 600,000 households) by mid-2016.** This is an

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¹ Current electricity access calculations assume there are approximately 2.4 million households in the country. This figure can be traced to the most recent census from 2012 and, in fact, reflects the actual number of households in that year. The National...
incredible achievement. However, the electrification rate reflects primarily grid-connected users in urban areas and remains largely concentrated in the top quintile, with almost negligible coverage in the bottom 40 percent of the population. For example, grid access within the districts of Kigali extends to 65-75 percent of the population in those areas, whereas the districts outside Kigali are characterized by lower access rates, with 10 districts (out of 30, all of which are connected) having connectivity rates of 6-15 percent of the population in those areas. Off-grid access to electricity remains low throughout the country, particularly in rural areas. According to the 2012 census, 0.48 percent of households had access to off-grid solar services and 0.17 percent to “hydroelectric or other private sources.” In 2016, off-grid access is estimated at 2.6 percent. 

6. **Rwanda is particularly affected by high electricity costs.** Cost of service delivery in 2016 was about US$0.30 per kWh, much higher than the sub-Saharan Africa weighted average of US$0.14 per kWh.³ Electricity tariffs, US$0.21 per kWh on average, are not cost reflective and are high compared to other countries in the region (e.g., Kenya and Uganda US$15 and US$17 per kWh, respectively). Additionally, the average grid connection is heavily subsidized: out of the close to US$560 connection cost per household, consumers pay an approximately US$75 connection fee over a two-year period.

7. **Limited domestic generation resources and low efficiency of power supply are among factors that drive up electricity costs.** The country’s installed capacity in mid-2016 was 204 MW (with available capacity of 180 MW and peak demand of about 160 MW), of which 42 percent is hydro, 47 percent is thermal power generation, 3 percent solar and 8 percent imports. Most thermal generation is based on imported oil products transported to the country by truck, with about half produced using expensive diesel. While hydropower supply is strongly affected by variations in hydrology, lack of adequate grid interconnection capacity leaves Rwanda with limited possibility of sourcing electricity from its neighbors, creating a very fragile condition in terms of security of energy supply. The Rwandan electricity sector also has high system losses of 22-23 percent, of which 14-15 percent are technical losses (arising from prevalence of old and dilapidated networks as well as network design weaknesses) and 8-9 percent are commercial losses (caused by pilferage, defective meters, errors in meter reading, accounting and billing deficiencies, unmetered supplies, and unpaid bills).

8. **Low household affordability and, hence, low demand for electricity further hamper Rwanda’s energy sector growth.** About 46 percent of Rwandan households are considered poor;⁴ their energy spend is quite low. Yet, households are dominant electricity consumers: they use 51 percent of all energy sold and use it primarily for lighting. As a result, almost half of the utility’s consumers currently use less than 20 kWh per month (against a minimum of 130 kWh per month to make the connection financially viable⁵); thus, a large proportion of the population cannot afford their connection. GoR has

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² Estimated Tier 1 access per Multi-tier Framework as suggested by recent evidence from solar companies’ sales. Tier 1 access includes basic applications such as task lighting, radio, and phone charging.
⁴ In Rwanda, all households are categorized into four ‘Ubudehe’ categories. Ubudehe category 1 (16 percent of Rwandan households) are the poorest/most vulnerable households and Ubudehe category 2 (30 percent of households) are poor. 16 percent of Ubudehe 1 is considered extreme poor.
⁵ Energy Sector Strategic Plan, 2015.
recently completed a survey under the SE4All Multi-Tier Framework (MTF) to better understand energy consumption patterns and affordability.\(^6\)

9. **GoR has an ambitious target to increase electricity access to 70 percent by mid-2018.**\(^7,8\) The second EDPRS aims for the country to achieve 70 percent access to electricity by 2018 and 100 percent access by 2020. These targets are to be achieved through a combination of on-grid and off-grid connectivity: the second EDPRS sets 48 percent of the 2018 target to be achieved through grid extension, and the remaining 22 percent through off-grid solutions. Given available funding, grid access is expected to reach 32 percent (763,000 households) by 2018 and 37 percent (870,000 households) by 2020. Moreover, the high cost of reaching rural households through the grid because of difficult terrain, together with low residential electricity demand and poor affordability, affects financial sustainability of grid-extension investments in rural areas. Finally, the EDPRS is also focused on sector strategies that enable women and men to participate, access, control, and benefit equally from growth processes in a way that recognizes their different needs in terms of access to finance, exposure to gender-based violence, and control of assets.

10. **In May 2016 GoR approved a Rural Electrification Strategy (RES) that integrates on-grid and off-grid solutions and promotes private-sector investment in areas where extending the grid is not financially viable in the short term.** The RES re-frames the 2018 access target in terms of the tier level of access as defined by the SE4All Multi-Tier Framework (MTF): the 70 percent target was defined to include 31-35 percent on-grid access; 13-17 percent off-grid access through systems providing at least Tier 2 access level; and remaining 22 percent off-grid access through systems providing at least Tier 1 access level. In order to effectively monitor implementation of the RES, Rwanda is among the first countries to conduct the energy access baseline survey using the new methodology under the MTF. The MTF baseline survey results are expected to be available before end-May 2017.

11. **The RES outlines four programs that will boost rural electrification in Rwanda by 2018.** Under Program 1, GoR plans to establish a mechanism to allow low-income households to access modern energy services through a basic solar system. Under Program 2, GoR will establish a risk-mitigation facility targeting the private sector such that solar products will be made available on financial terms that the population can afford. Program 3 would facilitate development of mini-grids by the private sector, with GoR playing a key role in identifying sites and establishing a framework through which these can become financially viable investments. Under Program 4, GoR will continue to roll out the electricity network via its Electricity Access Rollout Program (EARP), focusing on connecting high consumption

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\(^6\) The Sustainable Energy for All (SE4All) initiative launched by the Secretary General of the United Nations in 2011 aims to achieve universal access to modern energy services by 2030. The MTF was developed to monitor and evaluate energy access under SE4All by following a multidimensional approach (see: [https://www.esmap.org/node/55526](https://www.esmap.org/node/55526)). The MTF approach goes beyond binary measurement of energy access as “having or not having an electricity connection” or “relying or not relying on solid fuels for cooking”. It takes into account a multidimensional view of the energy sector by considering various service levels and attributes such as availability, quality, reliability, health/safety, convenience, and affordability, and it addresses multiple technology options (e.g., grid and off-grid electricity). MTF measures access in the tiered-spectrum, from Tier 0 (no access) to Tier 5 (the highest level of access).

\(^7\) The ESSP also targets that 100 percent of schools and hospitals will have access to electricity by 2018.

\(^8\) Given the projected rate of population growth and decreases in average household size estimated by the National Institute of Statistics Rwanda, the number of households is expected to increase by over 100,000 annually over the short to medium term. This, in effect, makes the 70 percent electrification goal a ‘moving target’.
users and driving economic growth. The RES expects through its programs to channel approximately US$120 million of investment by 2018.

B.2. Institutional context

12. **Rwanda’s electricity sector has undergone several reforms since the 1990s aimed at achieving long-term sustainability, financial credibility, and increased private-sector engagement.** The institutional structure of the electricity sector involves three key institutions: (a) the Ministry of Infrastructure (MININFRA), who sets the policy and strategy for the sector; (b) the Rwanda Utilities Regulatory Authority (RURA), who regulates the sector, approves electricity tariffs, etc.; and (c) the Rwanda Energy Group (REG) with its two subsidiaries – the Energy Development Corporation Limited (EDCL) and the Energy Utility Corporation Limited (EUCL), who are responsible for new energy development activities and electricity utility operations. The Rwanda Energy Policy (REP) sets out the overall vision and policy framework, while the Energy Sector Strategic Plan (ESSP) translates the policy directives and principles into concrete measures necessary to reach medium-term targets.

13. **Over 20 off-grid solar companies are active in the Rwandan market, which developed as one of the most active in sub-Saharan Africa in the last decade.** While early companies received financial support from donors and others, product costs were nevertheless high and only a small share of households were able to afford purchasing lanterns and systems outright. Over the last five years, the cost of solar systems has dropped significantly and new technology has fostered the emergence of pay-as-you-go business models. As a result, products, particularly solar home systems have become far more accessible for Rwandan households. In the first half of 2016, over 100,000 Quality Verified solar products were sold in Rwanda, representing a 53 percent increase over the previous reporting period, and 5.8 percent of all Quality Verified products sold in Africa. Over 13 percent of these products were solar systems offering at least Tier 1 level of energy access. By the end of 2016, it was expected that there would be about 30,000 systems deployed in Rwanda providing at least Tier 1 access to households. In response to RES targets, several companies are interested in scaling up their operations in Rwanda, particularly to sell multi-light point solar home systems. Over US$40 million of financing would be required to deliver a multi-light point solar home system to the Tier 1-targeted 550,000 households, and over US$80 million to the Tier 2-targeted households. The operational challenge of delivering and maintaining this number of systems is also considerable.

14. **Few developers are providing mini-grid electricity services despite the existence of an encouraging legal and regulatory framework for mini-grids.** Issued by RURA in 2015, the Simplified Licensing Framework for Rural Electrification applies to small isolated grids (below 50 kW), medium-sized isolated grids (50 kW-1 MW), and small power distribution networks of at least one MW. The framework streamlines the licensing and permitting process, presents options to mini-grid companies

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9 The product meets the World Bank Lighting Global Quality Standards (using IEC Technical Specification 62257-9-5). These quality standards have been widely adopted as the third party verifiable measure of quality for off-grid lighting products and solar home system kits across the world.

10 Of 101,726 overall Quality Verified product sales, multi-light point solar systems sold over 13,600 units (including pay-as-you-go); and single solar lamps sold just over 88,000 units. Sales are registered when products are shipped into an end market and are therefore not necessarily reflective of actual sales to end-consumers for a given time period.

when the national grid arrives, and lays out the principles for setting cost-reflective tariffs. As the mini-grid sector is nascent in Rwanda, developers have expressed concerns about the workability of the framework, especially in regards to setting cost-reflective tariffs and negotiating the interconnection to the national grid with the utility. In addition, compatibility of the Simplified Licensing Framework with the new Public-Private Partnership (PPP) Law, approved in June 2016, is unclear. Furthermore, lessons learned from other programs show the necessity to complement subsidies with access to financing. In other words, access to financing is essential to bring the mini-grid investment to commissioning, while subsidies are important to improve the affordability of mini-grid electricity. Other lessons learned show that approval processes for accessing financial support should be streamlined, simple, and straightforward. In Rwanda, the lack of adequate commercial financing and cumbersome approval procedures for financial support for mini-grid development has forced developers to depend on their own equity, angel investors, and mostly donor grants to finance these mini-grids and improve the affordability of electricity connections and consumption by mini-grid customers.

15. **Access to finance is among the major challenges hindering the development of off-grid markets.** While commercial banks and microfinance institutions are the most important sources of financing, their lending operations are constrained by the maturity of their liabilities, which consists mainly of local short-term deposits. Although Rwanda’s financial sector has become increasingly diversified in recent years (comprising commercial banks, microfinance banks, non-bank microfinance institutions, savings and credit cooperatives [SACCOs], insurance companies, pension funds, and a nascent but growing capital market), banks and microfinance institutions mainly finance traditional sectors with short-term financing needs and where collateral is readily available. As of June 2016, the general trading, construction, and manufacturing sectors respectively represented 54 percent, 23 percent, and 7.5 percent of total banks’ lending portfolio with only 0.11 percent allocated to water and energy activities, whereas 33.9 percent, 30.1 percent and 16.5 percent of the total lending portfolio of microfinance institutions was respectively allocated to general trading, construction, and agriculture. The existing and growing demand for financing in the off-grid electricity market remains untapped because financial institutions’ understanding of the nature and risks of off-grid products is very limited, making them reluctant to invest in this area. In addition, investing in sectors that require long-term financing creates a balance sheet mismatch between assets and liabilities and poses a risk to the stability of the financial institutions. Offering a combination of dedicated financing with long tenures and affordable rates in combination with technical assistance to address the knowledge gap is expected to overcome these issues.

16. **Increasing off-grid energy access will require addressing issues of affordability as well as access to finance in Rwanda.** Local SACCOs and commercial banks have yet to play any meaningful role in the off-grid sector. Right now, Rwandan SACCOs have little experience in issuing loans for solar products given the lack of understanding of the solar market and technologies, as well as long-term finance constraints. However, during consultations, SACCOs have confirmed an existing and growing demand for solar home systems. SACCOs are easily accessible for the majority of the population and can act as a bridge between solar companies and consumers. SACCOs are already providing affordable products in other sectors with a government-led mandate to focus on increasing the economic inclusion of women and youth through targeted micro-credit, entrepreneurial skills development, and sex-

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12 National Bank of Rwanda, New authorized loans data.
disaggregated data collection. If provided access to longer-term finance and the necessary assistance in understanding the solar products, SACCOs can play a critically important role in stimulating the development of the off-grid sector. Rwandan banks, as the majority of commercial banks in sub-Saharan Africa, have to observe prudential regulations limiting credit risk exposures, which implies collateral requirements, and this stimulates bank’s lending of wealthier and/or larger, well-established clients. However, banks can play a critical role as they have expressed interest and have capacity to enter the off-grid market, and are opening branches throughout the country. Several off-grid solar companies have tailored their business models to address affordability of customers through pay-as-you-go business models, extending credit to customers in order to allow them to pay for the systems in more affordable monthly installments (instead of a lump-sum purchase). Mini-grid developers have been relying primarily on donor funding to make electricity services affordable to customers who are, in general, poorer than those in grid-served areas.

17. **GoR intends to address affordability by incentivizing demand for off-grid electricity services through existing country systems.** Incentivizing demand for off-grid electricity services with the expectation that the private sector will be able to immediately serve such demand with affordable products will rapidly increase the uptake of solar systems. Although a relatively small proportion of off-grid households in Rwanda can afford a cash purchase of a Tier-1 solar system, evidence on the ground suggests that a large number of them can afford to purchase the system in installments. Data from the recently completed MTF survey shows that estimated average household expenditure on traditional lighting sources by households without access to electricity is US$1.25 per month (the median is about US$0.75 per month). Moreover, the survey revealed that (the upper) forty percent of off-grid households are spending more than US$2.5 per month of lighting expenditure. This implies that of the approximately 2.5 million households in Rwanda, about 750,000 off-grid households would be able to afford solar lighting products at an installment of around US$2.5 per month. For example, One Acre Fund\(^\text{14}\) has achieved considerable sales of off-grid products to poor households applying a 12-month payment plan with monthly installments of approximately US$3. One Acre Fund indicates that demand is higher than available supply. Meanwhile, pay-as-you-go players have already sold in excess of 50,000 Tier-1 and -2 solar home systems to relatively wealthier households, and envisioned further scaling-up opportunities given projected demand. GoR has initiated public awareness campaigns on the benefits and opportunities from off-grid electrification, which coupled with improved affordability options will lead to higher electricity consumption. Addressing affordability by working through existing country systems will facilitate the sustainability of the approach.

18. **In November 2015, the Scaling-up Renewable Energy Program (SREP)\(^\text{15}\) approved the Rwanda Investment Plan (IP), developed and presented by GoR, with an allocation of US$50 million.** The objective of Rwanda’s SREP IP is to accelerate growth of off-grid electricity access through standalone solar systems and renewable energy-based mini-grids. The SREP IP aims to catalyze private investments in provision of off-grid electricity services through the establishment of a Renewable Energy Fund (REF), particularly targeting stand-alone solar systems and mini-grids. The priorities identified in the SREP IP were the result of extensive consultations with energy sector stakeholders.\(^\text{16}\) Commitments were also

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\(^\text{14}\) One Acre Fund is a non-profit organization supplying smallholder farmers in East Africa with financing and training to reduce hunger and poverty, https://www.oneacrefund.org/.

\(^\text{15}\) SREP is a multi-donor trust fund under the framework of the Climate Investment Funds.

\(^\text{16}\) Consultations were conducted with relevant stakeholders, including Government and regulatory institutions, development partners and donors, financial services providers, the private sector and civil society. The first consultation, held in December...
made to collaborate with the Africa Renewable Energy and Access Program (AFREA) Gender and Energy program to identify key gender issues, risks, constraints, and opportunities associated with the proposed SREP support in order to maximize gender and other socio-economic benefits. The World Bank is the leading institution in managing SREP funds in Rwanda.

19. The proposed SREP-funded Renewable Energy Fund (REF) Project will directly support the implementation of RES Program 2 (risk-mitigation facility to incentivize private sector participation in off-grid solar space) and Program 3 (development of mini-grids by private sector). The REF is expected to increase off-grid energy access in Rwanda through effectively addressing consumer affordability and access to finance challenges, thus facilitating achievement of GoR’s off-grid access targets. GoR envisions the proposed project as a pilot that could be scaled-up as a primary mechanism for directing funds and technical assistance to the off-grid electricity sector, eventually attracting additional financing for rural electrification from other development partners and the private sector.

C. Proposed Development Objective(s)

Note to Task Teams: The PDO has been pre-populated from the datasheet for the first time for your convenience. Please keep it up to date whenever it is changed in the datasheet.

Development Objective(s) (From PAD)

20. The Project Development Objective is to increase electricity access in Rwanda through off-grid technologies and facilitate private-sector participation in renewable off-grid electrification.

Key Results

21. The objective will be achieved through assisting GoR in establishing a Renewable Energy Fund (REF), which will help overcome financial barriers and accelerate growth of the off-grid electrification market in Rwanda. Off-grid electricity services supported by the proposed project will comprise a variety of technologies and business models, including standalone solar systems and renewable energy-based mini-grids.

22. The achievement of the PDO will be measured using the following indicators:

- People provided with new or improved electricity service (number) (Corporate Results Indicator);
- Enterprises provided with access to electricity as a result of project interventions (number);
- Increased private sector investment in renewable energy electrification (US$); and
  - Annual electricity output from project renewable energy interventions (MWh per year).
D. Project Description

23. Increasing off-grid energy access in Rwanda requires addressing customer affordability and access to finance constraints. The REF project, funded by the SREP Trust Fund, is designed as a financial intermediary loan (FIL) to address these constraints. The project uses existing country systems and promotes private sector investments to ensure sustainability of the approach. The GoR as the borrower will take the currency risk and on-lend (for the line of credit and direct financing component) and transfer (for the technical assistance component) the project funds in local currency (RWF) to the Development Bank of Rwanda (BRD), which will administer the REF. The project is structured around two components—(1) Line of Credit and Direct Financing for Off-grid Electrification, and (2) Technical Assistance, Capacity Building and Project Implementation Support—which are summarized below.

Component 1: Line of Credit and Direct Financing for Off-grid Electrification (US$44.00 million SREP funds)

24. This component will set up and operationalize a REF, a local-currency line of credit and direct financing facility that will help address access to finance and affordability constraints to accelerate growth of the off-grid electrification market in Rwanda. The REF will provide lines of credit to local financial institutions for sub-loans to households and micro, small and medium enterprises, as well as direct loans to private companies engaged in off-grid electrification (mini-grid developers and potentially locally-registered off-grid solar companies). The REF will use existing country systems to facilitate access to finance for households and businesses, improve affordability of solar electricity services, and maximize geographic coverage.

25. The REF will provide access to local-currency financing through the four financing windows described below. This will allow the facilitation of off-grid market development through mobilization of all the key market enablers at the same time: SACCOs, banks (commercial and microfinance), and private companies (mini-grid developers and potentially locally-registered off-grid solar companies).

a. **Window 1 – On-lending through SACCOs to households and micro-enterprises:** This window will provide a wholesale line of credit to BRD for on-lending to SACCOs that comply with established eligibility criteria. SACCOs will on-lend the funds to eligible households and micro enterprises for purchasing of at least Tier 1 solar systems.

b. **Window 2 – On-lending through banks (commercial and microfinance) to households and small and medium enterprises (SMEs):** This window will provide a wholesale line of credit to BRD for on-lending to eligible commercial and microfinance banks, which will extend sub-loans to households and SMEs for the purchase (and possibly, in the case of SMEs, distribution) of solar systems of at least Tier 1 access level. Eligible SMEs will have to make a contribution equivalent to 20-25 percent of the total cost toward the purchase of the system.

c. **Window 3 – Direct financing of mini-grid developers:** This window will provide direct financing to eligible mini-grid developers to finance up to 75 percent of construction of renewable-energy based mini-grid systems. REF will provide “bridge loan” financing until grant funding from existing results-based financing (RBF) programs (e.g., EnDev) becomes available, as well as long-term financing beyond commissioning. REF loans will be used to bring a mini-grid project to commissioning, when
RBF becomes available from other donor-funded programs. Selection of projects will adopt a technology neutral approach. Hybrid systems, including diesel back-up, will be eligible for support under the condition that the diesel component is financed from sources other than SREP.

d. **Window 4 – Direct financing of locally-registered off-grid solar companies supporting Tier 1 or higher solar systems:** This window will provide direct financing to eligible, locally-registered off-grid solar companies offering at least Tier 1 solar-home systems and ongoing maintenance services to its clients through delayed payment options. Eligible companies will have to leverage REF financing 2:1.

26. Implementation of Component 1 will commence with Windows 1, 2, and 3 (SACCOs, banks, and mini-grid developers), whereas the activation of the Window 4 (locally-registered off-grid solar companies) will be postponed until one year after project effectiveness. Window 4 will be considered for activation after a detailed assessment of experience under Windows 1, 2, and 3 is conducted, which is consistent with GoR’s approach of attracting investments from locally-registered solar companies by incentivizing demand for off-grid services as described above. The detailed performance assessment would look at, among others, the following indicators: (i) total number of off-grid systems supported by the project to date; (ii) number of off-grid systems supported by each window to date; (iii) number of SACCOs, banks, and mini-grid developers participating in the project; (iv) amount of project funds disbursed through each window; (v) amount of funds on-lent by SACCOs and the banks; and (vii) performance of project-related loan portfolios of SACCOs and banks. The project Operations Manual (OM) will describe the process for activation of Window 4 in detail.

27. Access to financing for all four windows will be on a first-come, first-served basis to allow for flexibility during project implementation. All SACCOs, banks, mini-grid developers, and locally-registered off-grid solar companies interested to receive REF financing will be required to comply with eligibility criteria agreed with the World Bank. For Window 1, participating SACCOs will be required to enter into service agreements with solar companies to ensure that solar systems supported by the window are appropriately serviced during sub-loans’ tenor; participating SACCOs will extend sub-loans to households and enterprises for solar systems purchases only from companies with whom they have active service agreements. All supported systems will be required to meet the Lighting Global Quality Standards. The OM will describe the eligibility criteria and on-lending process for each window.

**Component 2: Technical Assistance, Capacity Building and Project Implementation Support (US$4.94 million SREP funds)**

28. This component will provide necessary technical assistance and capacity building to BRD and participating entities (SACCOs, banks, and private companies engaged in off-grid electrification) as well as provide project implementation support to BRD as host of the REF. Technical assistance and capacity building will include, among others: (i) capacity building and awareness workshops for SACCOs, banks, and private companies engaged in off-grid electrification to facilitate partnerships between SACCOs, banks, and the private sector; (ii) technical assistance and capacity building for participating SACCOs and banks to ensure their successful partnerships with the private sector; (iii) capacity building of participating SACCOs and banks to manage energy credit lines (including management, operational, and monitoring and evaluation capacities, as well as citizen/consumer orientation to build demand for these new products); (iv) capacity building of the Energy Division of BRD to manage direct energy lending; (v) technical assistance to BRD to develop a pipeline of mini-grids projects; (vi) technical assistance and
capacity building for BRD and participating entities on quality assurance and enforcement of technical standards for off-grid solar systems, etc.; and (vii) public awareness campaigns to educate consumers on the benefits and opportunities of off-grid electrification.

29. Technical assistance activities will also cover gender aspects, including: (i) monitoring window one and window two for the appearance of gender gaps in access to financial services for male and female applicants and enterprises for purchase and retailing of off-grid technologies to enhance development outcomes and economic opportunities; (ii) identification of data sources and information to further understand the issues and barriers to financial services for off-grid technologies by gender, income level (with a focus on low-income households), rural or urban location, household headship, and other social dimensions; (iii) implementation of approaches and methods that off-grid market enablers (e.g., BRD, SACCOs, banks) could adopt and integrate in order to close gender gaps related to access to financial services for the purchase of energy technologies in household or enterprise activities.

30. Project implementation support will include, among others: (i) establishment of the Project Implementation Unit (PIU) and provision of operational support to the PIU in the areas of project management, supervision, and monitoring; (ii) outreach to off-grid market enablers and final project beneficiaries; (iii) knowledge-sharing events between participating project entities; (iv) sector-wide knowledge-sharing and project results dissemination workshops; (v) preparation of required studies related to the project, including impact assessment and annual citizen/consumer feedback analysis through Focus Group Discussions to better understand the market; (vi) preparation of consolidated annual project audits; and (vii) financing of incremental operating costs.

31. The US$48.94 million project will be financed by the SREP Trust Fund. The SREP funding for the project\(^\text{17}\) consists of a US$21.44 million grant and a US$27.50 million loan extended with a service charge of 0.1 percent per annum on the disbursed and outstanding loan balance and 40-year maturity, including a 10-year grace period, with principal repayments at two percent for years 11-20 and four percent for years 21-40. Principal and service charge payments will be due semi-annually. These resources will be transferred to BRD under terms and conditions to be agreed between MINECOFIN and BRD; MINECOFIN will charge an appropriate spread to cover for FOREX risk.

32. GoR has indicated that it would like to commit US$7 million of its IDA 18 allocation to further scale-up rural electrification investments once the initial learning phase of the REF has been completed. It is expected that the IDA funding will be added to the REF project during implementation in the form of additional financing.

\(^{17}\) The SREP envelope also included a US$0.26 million grant for preparation of the SREP IP and US$0.8 million for preparation of the REF project.
### Project Components

<table>
<thead>
<tr>
<th>Project Components</th>
<th>Project cost</th>
<th>IBRD or IDA Financing</th>
<th>Trust Funds</th>
<th>Counterpart Funding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component 1: Line of Credit and Direct Financing for Off-grid Electrification</td>
<td>44.0</td>
<td>0.0</td>
<td>44.0</td>
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<tr>
<td>Component 2: Technical Assistance, Capacity Building and Project Implementation Support</td>
<td>4.94</td>
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<tr>
<td><strong>Total Costs</strong></td>
<td><strong>48.94</strong></td>
<td><strong>0.0</strong></td>
<td><strong>48.94</strong></td>
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### E. Implementation

**Institutional and Implementation Arrangements**

33. The Development Bank of Rwanda (BRD) will be the project implementing agency. For Component 1, BRD will function as a wholesale institution for Windows 1 and 2, as well as lend directly to mini-grid developers under Window 3 and locally-registered off-grid solar companies under Window 4, if/when the latter is activated. BRD was assessed against the criteria put forward in World Bank Operational Policy (OP) 10.00\(^{18}\) and qualifies to be an intermediary for the credit line as well as a direct lending institution. BRD will also be in charge of implementation of Component 2.

34. BRD will host the PIU and will be responsible for monitoring indicators, supervising the credit lines and direct loans, and implementation of the necessary technical assistance to the beneficiaries. This includes collecting necessary information from project beneficiaries, assessing and monitoring SACCOs’ and banks’ compliance with the respective eligibility criteria, supervision of withdrawal applications and loan books, and reporting on progress during implementation. BRD will also review annual audited financial statements of the intermediaries and conduct periodic on-site supervision to assess compliance and progress. SACCOs and banks will report to BRD on their sub-loan portfolio on quarterly basis. To do so, the PIU will have personnel with experience in off-grid energy, project management, procurement, accounting, and environmental and social management. The core staff (risk management officer, energy investment officer, safeguards officer) will be BRD staff; other necessary skills will be brought in as necessary. Additionally, the PIU will undertake technical due diligence of proposals for mini-grid financing and, if necessary, direct lending to off-grid solar companies with support from specialized technical consultants, institutions with experience in the off-grid energy sector (e.g., EDCL), and donor programs (e.g., EnDev). BRD will receive capacity building and technical assistance to enhance its performance and project implementation capacity.

\(^{18}\) OP10.00 requires an assurance that all financial intermediaries in a World Bank financed credit line are viable financial institutions determined by: (a) adequate profitability, capital, and portfolio quality as confirmed by audited financial statements; (b) acceptable level of loan collections; (c) appropriate capacity, including staffing, for carrying out subproject appraisal (including environmental assessment) and for supervising subproject implementation; (d) capacity to mobilize domestic resources; (e) adequate managerial autonomy and commercially oriented governance; and (f) appropriate prudential policies, administrative structure, and business procedures.
F. Project location and Salient physical characteristics relevant to the safeguard analysis (if known)

Rwanda

G. Environmental and Social Safeguards Specialists on the Team

Gibwa A. Kajubi, Edward Felix Dwumfour

<table>
<thead>
<tr>
<th>SAFEGUARD POLICIES THAT MIGHT APPLY</th>
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<tbody>
<tr>
<td>Safeguard Policies</td>
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<tr>
<td>-------------------------------------</td>
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<tr>
<td>Environmental Assessment OP/BP 4.01</td>
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<tr>
<td>Natural Habitats OP/BP 4.04</td>
</tr>
<tr>
<td>Forests OP/BP 4.36</td>
</tr>
<tr>
<td>Pest Management OP 4.09</td>
</tr>
<tr>
<td>Physical Cultural Resources OP/BP 4.11</td>
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</tbody>
</table>
KEY SAFEGUARD POLICY ISSUES AND THEIR MANAGEMENT

A. Summary of Key Safeguard Issues

1. Describe any safeguard issues and impacts associated with the proposed project. Identify and describe any potential large scale, significant and/or irreversible impacts:

The project will deliver positive social impacts since promoting off-grid solar systems and mini-grids will bring diverse social benefits for current underserved rural communities in Rwanda. The installation of solar systems under the project will not lead to land acquisition given that the installation will take place within existing households and public facilities. However, the construction of mini-grid systems may lead to little or no acquisition of land. The project will deliver positive environmental impacts since off-grid solar systems and mini-grids would replace lighting systems that are either fossil fuel-based such as diesel generators and kerosene lamps or woody biomass, which are detrimental to the biophysical environment. The main environmental, health and safety concerns are likely to be associated with recycle and disposal of spent batteries at the end of their useful lives, which is usually 3-5 years after deployment.

2. Describe any potential indirect and/or long term impacts due to anticipated future activities in the project area:

Positive social benefits include provision of cheaper and cleaner sources of energy for charging phones and other gadgets, electrifying businesses, helping to create employment and village-level jobs/businesses, increasing shelf-life of pharmaceuticals and vaccines, improving socialization, etc. There will be no greenhouse gases (GHGs) or air pollutants emitted into the atmosphere during installation and operation of solar PV systems. Water use is limited to upstream manufacturing and will not be a problem during operation. There are practically no risks to landscapes and ecology during operation.

3. Describe any project alternatives (if relevant) considered to help avoid or minimize adverse impacts.

n/a

4. Describe measures taken by the borrower to address safeguard policy issues. Provide an assessment of borrower capacity to plan and implement the measures described.

A Resettlement Policy Framework (RPF) has been prepared by BRD and was disclosed by BRD and the Bank on April 13, 2017. Based on the RPF guidance, each subproject will be screened, and if RAPs are found to be necessary, these will be prepared, cleared, disclosed and implemented prior to the commencement of civil works, in accordance with World Bank OP 4.12. The Environmental and Social Safeguard Framework (ESMF) has been prepared by BRD, was consulted upon and disclosed in-country and at the World Bank. BRD has established a robust social and
environmental policy prepared in 2013 and an E&S Management System which is compliant with Rwandan regulatory framework that pertains to the environment, land use, labor health and safety issues, vulnerable and marginalized groups and cultural artifacts. BRD is well equipped with professionals who over the years have received training in environmental and social risk management and therefore should be up to the task under the proposed Project. BRD will strengthen PIU with additional staff before project commences; further capacity strengthening needs have been incorporated into implementation support plan.

5. Identify the key stakeholders and describe the mechanisms for consultation and disclosure on safeguard policies, with an emphasis on potentially affected people.

As a Project Implementing Agency, BRD will work closely with the Rwanda Environmental Management Authority (REMA) to ensure full compliance with environmental and social sustainability concerns throughout the life of the Project. BRD will also seek to inform discussion and build awareness of all stakeholders, including rural community members, vendors/suppliers of products and service providers, around safe management of used batteries.

B. Disclosure Requirements

<table>
<thead>
<tr>
<th>Environmental Assessment/Audit/Management Plan/Other</th>
<th>Date of receipt by the Bank</th>
<th>Date of submission to InfoShop</th>
<th>For category A projects, date of distributing the Executive Summary of the EA to the Executive Directors</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>30-Mar-2017</td>
<td>13-Apr-2017</td>
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</table>

"In country" Disclosure

Resettlement Action Plan/Framework/Policy Process

<table>
<thead>
<tr>
<th>Date of receipt by the Bank</th>
<th>Date of submission to InfoShop</th>
<th>Rwanda</th>
</tr>
</thead>
</table>

"In country" Disclosure

C. Compliance Monitoring Indicators at the Corporate Level (to be filled in when the ISDS is finalized by the project decision meeting)
OP/BP/GP 4.01 - Environment Assessment

Does the project require a stand-alone EA (including EMP) report?
No

OP/BP 4.04 - Natural Habitats

Would the project result in any significant conversion or degradation of critical natural habitats?
No

If the project would result in significant conversion or degradation of other (non-critical) natural habitats, does the project include mitigation measures acceptable to the Bank?
NA

OP/BP 4.11 - Physical Cultural Resources

Does the EA include adequate measures related to cultural property?
NA

Does the credit/loan incorporate mechanisms to mitigate the potential adverse impacts on cultural property?
NA

OP/BP 4.12 - Involuntary Resettlement

Has a resettlement plan/abbreviated plan/policy framework/process framework (as appropriate) been prepared?
Yes

If yes, then did the Regional unit responsible for safeguards or Practice Manager review the plan?
Yes

The World Bank Policy on Disclosure of Information

Have relevant safeguard policies documents been sent to the World Bank's Infoshop?
Yes

Have relevant documents been disclosed in-country in a public place in a form and language that are understandable and accessible to project-affected groups and local NGOs?
Yes
All Safeguard Policies

Have satisfactory calendar, budget and clear institutional responsibilities been prepared for the implementation of measures related to safeguard policies?
Yes

Have costs related to safeguard policy measures been included in the project cost?
Yes

Does the Monitoring and Evaluation system of the project include the monitoring of safeguard impacts and measures related to safeguard policies?
Yes

Have satisfactory implementation arrangements been agreed with the borrower and the same been adequately reflected in the project legal documents?
Yes

CONTACT POINT

World Bank
Yadviga Viktorivna Semikolenova
Senior Energy Economist

Borrower/Client/Recipient
Government of Rwanda
Ronald Nkusi
Director - External Finance Unit
ronald.nkuzi@minecofin.gov.rw

Implementing Agencies
Development Bank of Rwanda (BRD)
Hector Mutijima
Senior Manager, Energy
brd@brd.rw
FOR MORE INFORMATION CONTACT

The World Bank
1818 H Street, NW
Washington, D.C. 20433
Telephone: (202) 473-1000
Web: http://www.worldbank.org/projects

APPROVAL

<table>
<thead>
<tr>
<th>Task Team Leader(s):</th>
<th>Yadigia Viktorivna Semikolenova</th>
</tr>
</thead>
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Approved By

<table>
<thead>
<tr>
<th>Safeguards Advisor:</th>
<th>Nathalie S. Munzberg</th>
<th>26-Apr-2017</th>
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<tbody>
<tr>
<td>Practice Manager/Manager:</td>
<td>Lucio Monari</td>
<td>26-Apr-2017</td>
</tr>
<tr>
<td>Country Director:</td>
<td>Yasser Aabdel-Aleem Awny El-Gammal</td>
<td>26-Apr-2017</td>
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Note to Task Teams: End of system generated content, document is editable from here.