

# Rwanda

## Introduction

This note was developed by GOGLA with the support of the World Bank Group technical team and Lighting Global Program, the Energy Sector Management Assistance Program (ESMAP), the Shell Foundation, USAID, Power Africa, the UK Foreign Commonwealth & Development Office (FCDO) and Sustainable Energy for All (SEforAll). It is part of a series of briefing notes that provide a high-level overview of the status of countries' off-grid solar markets, as well as relevant policies and programs<sup>1</sup>.

## Key statistics<sup>2&3</sup>

### Demographics

Total Population	12,626,950
Population Density per km <sup>2</sup>	499
GDP per Capita	USD 820
GDP Growth	6.6%

### Energy Access Deficit

National Electrification Rate	68% <sup>4</sup>
Urban Electrification Rate	93.1%
Rural Electrification Rate	26.2%
% of quality-verified <sup>5</sup> (QV) vs non-QV products in the market <sup>6&amp;7</sup> (H1, 2021)	QV: 99% Non-QV: 1%

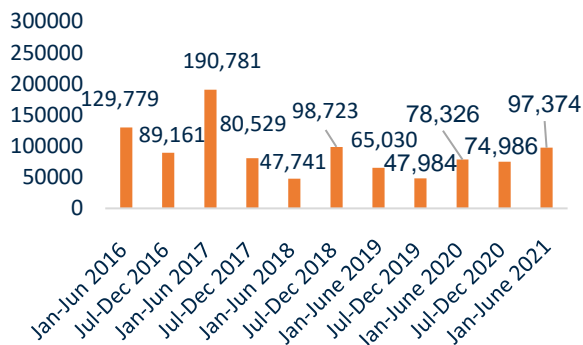
### Electrification Planning

Electrification Targets <sup>8</sup>	Universal access by 2024 (52% on-grid, 48% off-grid)
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## Impact<sup>9</sup>

620,000 people currently accessing Tier 1 energy services	410,000 people currently accessing Tier 2 energy services
1,000,000,000 additional light hours unlocked for study, productive tasks or leisure time	160 change in quality of light in lumens per household
2,000,000 people currently living with improved energy access	

## Sales<sup>11</sup>



Sales of Portable Lanterns, Multi-light Systems and Solar Home Systems

<sup>1</sup> The information and views expressed in this brief are GOGLA's alone and are based on our current understanding of the policy situation in this country. We welcome any updates, revisions or clarifications at [info@gogla.org](mailto:info@gogla.org).

<sup>2</sup> <https://data.worldbank.org/>

<sup>3</sup> <https://www.usaid.gov/powerafrica>

<sup>4</sup> National electrification rate as projected by the Rwanda government through the [Rwanda Energy Group](#) is 68% as of January 2022. The initial national electrification rate as projected by the [World Bank](#) in 2019 was 37.8%.

<sup>5</sup> Quality-verified products are tested according to the IEC TS 62257-9-8. For more information please see [the Verasol quality assurance programme](#).

<sup>6</sup> Share of quality-verified (QV) and non-QV products sold by GOGLA and Lighting Global affiliates.

<sup>7</sup> Data on a specific region, country or product category is only included when it has satisfied the three-data point rule, meaning that at least three separate product manufacturers have reported data for any single data point. When we have fewer than three responses for a region, country or product category, no results are

shown to protect the proprietary interests of the companies who have supplied data in support of this industry report.

<sup>8</sup> [Government of Rwanda, SREP Meeting, 2018](#)

<sup>9</sup> Impact numbers have been estimated on the basis of the [Standardized Impact Metrics for the Off-Grid Solar Energy Sector](#). The reported estimates differ from the previous edition of the country briefings due to a change in the calculation approach. Note that while the numbers shown represent the aggregate impact of key players in the off-grid solar sector, these estimates do not present the full country impact of off-grid solar lighting products sold.

<sup>10</sup> All sales data included in this briefing is derived from the "Global Off-Grid Solar Market Report Database", result of a joint primary data collection effort carried out by GOGLA in partnership with IFC Lighting Global and the Efficiency for Access Coalition. The public version of the resulting report of the effort is available [here](#).

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## Current Status

In the World Indicators for Sustainable Energy (RISE) framework, Rwanda is among the top performers in East Africa and has particularly high scores in indicators associated with renewable energy. According to Government of Rwanda statistics, off-grid energy access has more than doubled since 2016 and is estimated at 19.7% as of January 2022. Rwanda is placed 38th out of 190 in world economies in the World Bank's Doing Business ranking in 2020<sup>12</sup> which is second in Africa after Mauritius at 13.

The COVID-19 pandemic and subsequent strict lockdown measures applied by the Rwandan government affected the off-grid sector and economy. A survey by the Energy Private Developers association (EPD) revealed the supply of off-grid electricity has been limited by the ability of low-income households to service payments. The mobilization of sector financing will be critical to market recovery. To address this, the government implemented an Economic Recovery Plan (ERP). This includes a focus on electrification investments to accelerate the digitization of the economy and integrate rural households into the modern economy.

Sales of off-grid solar lighting products in Rwanda totalled approximately 97,000 units between January and June 2021. This represents Rwanda's highest recorded sales volume of off-grid lighting products since the second half of 2018. The growth was primarily driven by PAYGo sales, which had been steadily growing since the second half of 2019. The vast majority of sales were multi-light systems and solar home systems (SHS). In particular, 72% of units sold were in the 3-10 Wp category.<sup>13</sup>

## Policy, Regulation and Sector Planning

The 2015 Rwanda Energy Policy is a policy document that is geared towards facilitating access to modern, affordable and reliable energy services in Rwanda. The policy advocates for the use of off-grid energy solutions to facilitate energy access in remote parts of Rwanda or in regions where grid connection is uneconomical.<sup>14</sup>

The government of Rwanda's seven-year National Strategy for Transformation (NST1) 2017-2024 has set an ambitious target to achieve universal energy access by 2024 through a combination of energy

sources including off-grid solar. The government has laid out a roadmap for off-grid electrification in the form of the 2016 Rural Electrification Strategy (RES) and the National Electrification Plan (NEP).

As of January 2022, the national electricity access rate in Rwanda stood at 68% with approximately 48.8% of the population connected to the national grid while 19.7% are accessing electricity through off-grid solar.<sup>15</sup> The RES recognizes off-grid solutions as the most cost-effective means of increasing electricity access to households in remote and rural parts of the country.<sup>16</sup> The NEP is currently being revised and preliminary results indicate that 30% of Rwandan households will be connected through off-grid solar.

## Promoting Quality & E-Waste Management

Rwanda has adopted IEC/TS 62257-9-5, i.e., Lighting Global Pico Solar Quality Standards and Lighting Global Solar Home System Kit Quality Standards that detail quality requirements for standalone renewable energy products with less than 350W. To ensure compliance with standards, products are accompanied by a proof of conformity from any accredited body and recognized under IEC conformity assessment and / or Lighting Global.

In August 2018, the Ministerial Guidelines on Minimum Standard Requirements for Solar Home Systems were first published. As there were some concerns from the private sector and development partners on the impact of the standards on rural electrification, after extensive discussions a revised version was published in June 2019. The revised standards require systems sold for the purpose of rural electrification to provide a certain minimum service level.<sup>17</sup>

Rwanda published a draft e-waste policy in 2015, which was subsequently incorporated into the National Sanitation Policy. The Rwandan government approved the Sanitation Policy and its related implementation strategy in December 2016. This was followed by the approval of the Regulation Governing E-waste in Rwanda in April 2018. The policy highlights responsibility of manufacturers and distributors of electronic and electrical products to ensure the collection, transportation and proper treatment of any e-waste caused by their activities. This is implemented through a Public Private Partnership (PPP) arrangement between the Rwandan government and Enviroserve Rwanda Green Park, with the latter operating a dismantling and recycling facility located in Bugesera district. The facility has a capacity to recycle 3,000

<sup>12</sup> World Bank (2020), Doing Business 2020, Washington, DC: World Bank. DOI:10.1596/978-1-4648-1440-2. License: Creative Commons Attribution CC BY 3.0 IGO

<sup>13</sup> Global Off-Grid Solar Market Report H1 2021, GOGLA

<sup>14</sup> Rwanda Energy Policy, Government of Rwanda, 2015

<sup>15</sup> Visit the [Rwanda Energy Group](#) for more information.

<sup>16</sup> [Rural Electrification Strategy, Republic of Rwanda, 2016.](#)

<sup>17</sup> [Ministerial Guidelines on Minimum Standards Requirements for Solar Home Systems, Ministry of Infrastructure of Republic of Rwanda, 2018](#)

tons per annum out of which 300 tons are Stand Alone Solar components. The E-Waste Policy is complimented by regulation published in 2018 that outlines enforcement of this extended producer responsibility.

### Taxation

Equipment used in the generation of solar energy such as solar PV modules and batteries are exempted from import duty in Rwanda. However, some components of solar home systems and appliances are subject to both VAT and import duty.<sup>18</sup>

### Investments

Rwanda has attracted significant investment given its ease of doing business and relatively high population density. Larger companies have been raising debt and equity financing primarily through Development Financial Institutions (DFI's) and impact investors. International credit is the key source of financing for larger multinational companies. Smaller and local companies rely primarily on grants as well as equity funding. Access to local credit remains a challenge.<sup>19</sup>

In 2021, the Multilateral Investment Guarantee Agency (MIGA) a member of the World Bank Group, issued guarantees of up to US\$37.1 million to a fund managed by the African Infrastructures Investment Managers (AIIM). The guarantees cover the fund's equity and quasi-equity/shareholder loan investments in Bboxx Rwanda, Kenya, and the Democratic Republic of the Congo (DRC) for up to 10 years. MIGA's guarantees are geared towards strengthening Bboxx's operations as the company expands its provision of clean off-grid energy in Rwanda and other countries.<sup>20</sup>

### Sector Support Programs

The main sector support program in Rwanda is the US\$48.94 million Renewable Energy Fund (REF). The REF is a local currency line of credit and direct financing facility funded by the Scaling Up Renewable Energy Program (SREP) and administered by the Development Bank of Rwanda (BRD) with oversight by the World Bank. REF was launched with the aim of enabling 1.8 million Rwandans to access off-grid solar energy and is scheduled to be closed in September

2023.<sup>21</sup> The REF provides direct financing to qualify- ing locally registered off-grid solar companies and financing by on-lending through local commercial banks and savings and credit cooperatives (SACCOs). Enabel has supported SACCOs under the REF by hiring deal origination agents that help locate customers interested in taking out loans for solar home systems.<sup>22</sup>

In a bid to boost rural electrification efforts, the REF and Rwanda Energy Access and Quality Improvement Project (EAQIP) have launched a Results-based Financing (RBF) subsidy window called "REF Window 5". The subsidy window is designed to make Solar Home Systems more affordable, with the aim of reaching low-income households in Rwanda. The subsidy window will be offered to eligible households living in off-grid areas, which will get a subsidy of between 45% to 90% depending on the socioeconomic status of the household. The US\$ 30 million subsidy window is expected to trigger at least 370,000 off-grid connections.<sup>23</sup> The REF Window 5 scales up the Pro Poor RBF subsidy pilot project funded by USAID Power Africa and the UK Foreign, Commonwealth and Development Office and implemented by EnDev.<sup>24</sup>

In 2018, the Swedish International Development Cooperation Agency (SIDA) and the Development Bank of Rwanda (BRD) signed an eight-year US\$ 20 million portfolio guarantee facility for energy loans, including those under REF. The SIDA guarantee is 50% but, for female borrowers, SIDA will cover up to 70% of potential losses. The guarantee facility is expected to support the development of, and access to, affordable and clean energy solutions in off-grid areas not covered by Rwanda's national Energy Access Roll-Out Programme (EARP) for grid expansion. The guarantee facility is expected to be active till 2026.<sup>25</sup>

The USAID-funded Power Africa Off-grid Project (PAOP) provides technical assistance and targeted grant funding to support the development of Africa's off-grid SHS and mini-grid sectors in Rwanda and other African countries. Through a team of resident technical advisors, PAOP works with companies, investors, and governments to advance the role of the

<sup>18</sup> [Strengthening the Off-Grid Solar Electrification Market through Improved Policy and Advocacy in East Africa. National Renewable Energy Associations In East Africa, 2021.](#)

<sup>19</sup> [Rwanda: Off-Grid Sector Status Report, EnDev, 2018](#)

<sup>20</sup> <https://www.miga.org/press-release/miga-support-helps-bboxx-deliver-clean-grid-solar-energy-central-and-east-africa>

<sup>21</sup> <https://documents1.worldbank.org/curated/en/296721587718009003/pdf/Disclosable-Restructuring-Paper-Renewable-Energy-Fund-P160699.pdf>

<sup>22</sup> [https://www.diplomatie.be/oda/58832\\_ENABEL\\_ANN\\_REPORT\\_NN3017545\\_RWA1509611\\_PSPE\\_RWANDA\\_JAARVERSLAG.pdf](https://www.diplomatie.be/oda/58832_ENABEL_ANN_REPORT_NN3017545_RWA1509611_PSPE_RWANDA_JAARVERSLAG.pdf)

<sup>23</sup> <https://www.reg.rw/media-center/news-details/news/rbf-window-5-a-new-subsidy-to-enable-370000-households-get-solar-home-systems/>

<sup>24</sup> <https://www.usaid.gov/documents/pro-poor-results-based-financing-increasing-grid-access-electricity-rwanda>

<sup>25</sup> <https://cdn.sida.se/publications/files/sida62295en-guarantee-portfolio.pdf>

private sector in extending energy access while integrating gender considerations into all its work streams.<sup>26</sup> In 2020, PAOP also awarded grants to support off-grid electrification of six healthcare facilities located in rural areas across Rwanda.<sup>27</sup>

The African Development Bank Scaling Up Electricity Access Program (SEAP II) is a three-year Results-Based Financing (RBF) program in Rwanda to increase off-grid and grid energy access, improve power reliability and enhance institutional capacity for the government's electrification program.<sup>28</sup>

The KawiSafi Ventures Technical Assistance Facility (KSV TAF) is a 5-year program officially launched in April 2020. The KSV TAF has been seeded with US\$5 million from the Green Climate Fund (GCF) and aims to address targeted market failures or externalities in the off-grid energy ecosystem in Rwanda and Kenya. KSV TAF is designed to provide both firm level and sector level support that falls outside the typical investment activities but would support positive impacts for communities in Rwanda and Kenya. Such support includes consumer protection, promoting gender inclusion and knowledge creation.<sup>29</sup>

## Industry Association

Energy Private Developers association (EPD) is an industry association comprising of all private companies operating in the energy sector in Rwanda. EPD is an energy association under the Private Sector Federation (PSF) of Rwanda. The Private Sector Federation is an organization, dedicated to promoting and representing the interests of the Rwandan business community. EPD focuses on advocacy for its members, encouraging collaboration and partnership among members and attracting foreign companies and investors to work with local companies.<sup>30</sup>

## Opportunities and Barriers

There are several barriers impacting the Rwanda off-grid solar market despite the existence of an encouraging legal and regulatory framework. Inconsistent interpretation of 2019 Ministerial Guidelines is a barrier, with some industry players having varied interpretation of labelling, test reports and warranty requirements for approval of imported products.

Access to finance and affordability constraints remain central challenges, with involvement of local banks remaining limited within the sector especially for

smaller and local companies relying primarily on grant and equity funding.

Limited analytical market data for off-grid sector is another constraint. There is no recent detailed market research on opportunities and challenges facing off-grid solar technologies. An EnDev program had been publishing annual Rwanda Off-Grid status reports detailing market trends, but this was discontinued in 2018.

Foreign exchange fluctuations and other market operating risks remain high. Moreover, the varied tax regime, in which VAT and import duty is being levied on some critical solar accessories such as batteries and cables, is raising the cost of solar products.<sup>31</sup>

As the Rwandan government continues to explore mechanisms to accelerate access to electricity through off-grid products, challenges related to access to finance, increased competition, and affordability will be at the forefront of the market, potentially further crowding out SME's and local entrepreneurs who face high costs of capital and lack grant/seed financing.

## Further Information

- [Global Off-Grid Solar Market Report H1 2021, GOGLA](#)
- [Global Off-Grid Solar Market Report H2 2020, GOGLA](#)
- [Stand Alone Solar Market Update: Rwanda, Africa Clean Energy Technical Assistance Facility, 2021.](#)
- [Strengthening the Off-Grid Solar electrification market through improved policy and advocacy in East Africa, National Renewable Energy Associations in East Africa, 2021.](#)
- [The East African regional handbook on solar taxation, USEA, UNREEEA and KEREAA, 2020.](#)
- [Rwanda Fact Sheet](#), USAID Power Africa.
- [Rural Electrification Strategy](#), Ministry of Infrastructure, 2016
- [Lighting Africa Country Page - Rwanda](#)

<sup>26</sup> Visit the [Power Africa Off-grid Project](#) for more information.

<sup>27</sup> <https://powerafrica.medium.com/usaaid-power-africa-announces-2-6-c003fa75f004>

<sup>28</sup> Visit the [African Development Bank](#) for more information.

<sup>29</sup> <https://www.kawisafi.com/taf.html>

<sup>30</sup> <https://epdrwanda.com/>

<sup>31</sup> [Strengthening the Off-Grid Solar Electrification Market through Improved Policy and Advocacy n East Africa, National Renewable Energy Associations In East Africa, 2021.](#)