



Off-Grid Solutions and Clean Cooking Market Sales Report

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Abbreviations and Acronym

REG	Rwanda Energy Group
MININFRA	Ministry of Infrastructure
RURA	Rwanda Utility Regulatory Authority
BRD	Development Bank of Rwanda
EDCL	Energy Development Corporation Limited
ESSP	Energy Sector Strategic plans
NEP	National Electrification Plan
RES	Rural Electrification Strategies
NISR	National Institute of Statistics of Rwanda
EICV	Enquête Intégrale sur les Conditions de Vie (Integrated Household Living Conditions Survey)
SHS	Solar Home System
HHs	Households
SACCOs	Savings and Credit Cooperatives
ET	Eligibility Tool
OSCs	Off-grid Solar Companies
RBF	Result Based Fund
E4I	ENERGY4IMPACT
LPG	Liquefied Petroleum Gas
CC-RBF	Clean Cooking Results-based Financing

Executive Summary

The purpose of this report is to provide insights into sales, investment, opportunities, and challenges associated with the off-grid and clean cooking market in Rwanda. Insights provided in this report will give investors, governments, and stakeholders a deeper understanding of the off-grid solutions and clean cooking market. This will support the implementation of off-grid solutions and clean cooking technologies.

The quantitative and qualitative analyses presented in this report are based on the data collected from EPD members and different institutions, including REG, EDCL, BRD, Mininfra, and Enviroserve on off-grid and clean cooking subsectors, electrification targets, government policies and regulations, and financing & support programs.

Private companies sold more than 60,187 solar home systems (SHSs) this year. Compared to the year 2020, SHS sales increased by 59%. From January to the end of August, the World Bank Renewable Energy Fund, through the development bank of Rwanda, invested \$ 4,877,391 in off-grid solutions.

Despite the health, environmental, and economic benefits, there is still a low percentage of households that use clean fuels and stoves. The slow adoption of clean and improved cooking technologies can be attributed to different factors, including socio-demographics, fuel availability, attitude toward technology, awareness of the risks of traditional cookstoves, and social & cultural influences. From 2012 to June 2021, Private companies distributed 902,040 improved Cookstoves across the country, and 302,000 of these stoves were distributed from July 2020 to June 2021.

1. INTRODUCTION

Every year, EPD conducts research on the off-grid and clean cooking market in Rwanda. This research aims to provide an assessment of off-grid solutions (solar home systems and mini-grids) and clean cooking market development in Rwanda, highlighting the achievements, opportunities, and challenges in these subsectors. The research insights give investors, governments, and stakeholders a deeper understanding of Rwanda's off-grid solutions and clean cooking market.

The mission of EPD is to achieve universal energy access in an environment in which the private sector can innovate, grow and thrive. EPD Collaborates with the government to formulate policies and practices that achieve universal energy access in the most economical way to accomplish this mission. EPD provides support to private energy companies through its services and makes the sector more attractive for investment.

The information drawn in this report is gathered from EPD members and different institutions, including REG, EDCL, MININFRA, BRD, and Enviroserve.

This report is organized into four sections: Section 2 provides an overview of the energy sector. Off-grid market analysis is given in Section 3, and the clean cooking subsector is discussed in section 4.

2. ENERGY SECTOR OVERVIEW

Over the past decade, the power sector has proliferated, from only six percent of the population having access to electricity in 2000 to 67.1 % in 2021(October). The electricity access kept on growing due to the government's proper plans, such as Energy Sector Strategic plans (ESSP) aligned it with annual National Electrification Plans (NEP) and Rural Electrification Strategies (RES). The RES outlines strategies through which Rwanda households far away from the planned national grid coverage could have access to electricity through the most cost-effective means by developing programs that will facilitate the end-users to access less costly technologies. One of the strategies of RES is to increase the participation of the private energy sector in providing off-grid solutions. As of October 2021, the cumulative connectivity rate is 67.1%¹ of Rwandan households (2,709,000 reported by the NISR (EICV, 5)). Figure 1 shows the electricity access as of October 2021.

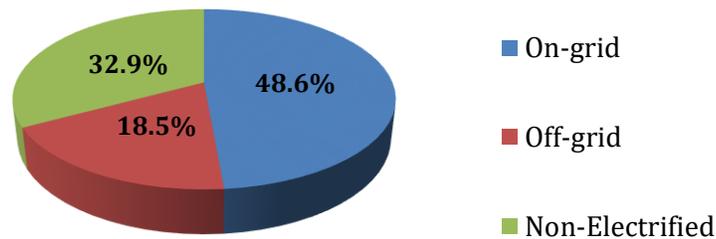


Figure 1: Electricity access status as of October 2021.

2.1. Grid Electrification

2.1.1. Grid Connection and Electrification Target

As of October 2021, 48.6% of Rwanda households are connected to the national grid. Figure 2 shows the district on-grid connections.

¹ <https://www.reg.rw/what-we-do/access/>

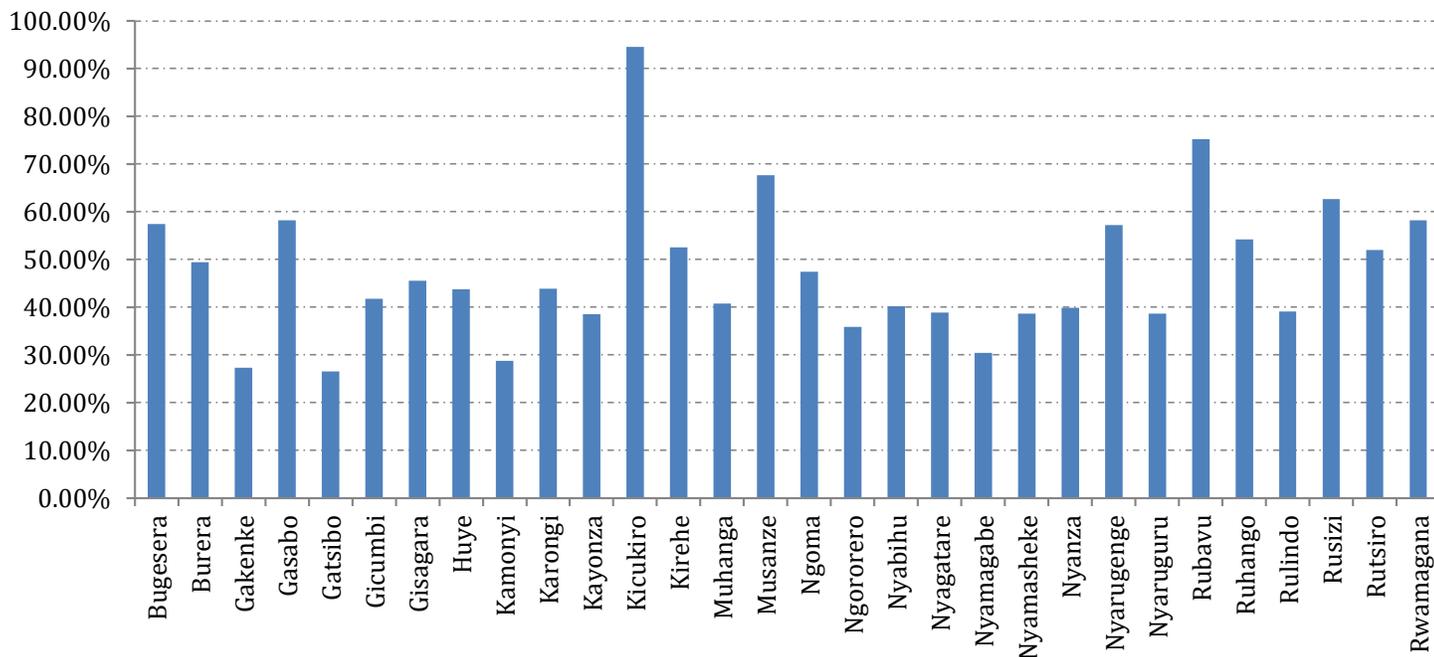


Figure 2: Districts on-grid connections as of October 2021.

The Government has committed to meet universal access by the year 2024. The current access targets stipulate a 100% household’s access to electricity by 2024, where 70% of households will be connected to the national grid and 30% will access electricity through off-grid solutions².

2.1.2. Electricity Tariff

Tables 1 and 2 presents Electricity tariffs, as reviewed by the RURA Board of Directors in its decision N°01/BD/ER-EWS/RURA/2020³.

Table 1: Electricity Tariffs for Non-Industrial Customers.

Category	Consumption (kWh) Block/Month	RWF/kWh (VAT Exclusive)
Residential	[0-15]	89
	[>15 - 50]	212
	>50	249
Non-Residential	[0 - 100]	227
	>100	255

² Publication of Updated National Electrification Plan (NEP 2021): <https://www.reg.rw/public-information/strategies-plans/>

³ Electricity Tariffs: <https://www.reg.rw/public-information/policies-regulations>

Telecom Towers	All	201
Water Treatment plants and Water pumping stations	All	126
Hotels	All	157
Health Facilities	All	186
Broadcasters	All	192
Commercial Data Centers	All	179

Table 2: Electricity tariff for Industrial Customers.

Category	Maximum Demand Charge(RWF/kVA/month)			Energy Charge(RWF /kWh	Customer Service Charge(RWF/ month
	Peak (06:00 PM-10:59PM)	Shoulder (08:00AM-05:59PM)	Off-Peak (11:00PM-07:59AM)		
Small	11,017	4,008	1,691	134	10,000
Medium	10,514	3,588	1,292	103	10,000
Large	7,184	2,004	886	94	10,000

2.1.3. Power Generation

By the end of June 2021, the total installed capacity is 238.368 MW from Hydropower, Thermal Power, Solar Power, Methane Gas, Import & Shared, and Peat. Table 3 presents the installed capacity by source. Independent power producer owns 50.78 %⁴ of the total installed capacity.

Table 3: Installed Capacity by source by the end of June 2021.

Source	Installed capacity (MW)	Share %
Hydropower	104.628	44
Thermal Power	58.8	25
Solar Power	12.05	5
Methane gas	29.79	12
Import & Shared	18.1	8
Peat	15	6
Total	238.368	100

⁴ REG Annual Report for 2020-2021: <https://www.reg.rw/public-information/reports/>

Table 4: Energy generated by source 2020 – 2021.

Source	Installed capacity (GWh)	Contribution to Energy mix (%)
Hydropower	494.4	51.8
Thermal Power	92.7	9.7
Solar Power	18.1	1.9
Methane gas	206.8	21.7
Import	29.7	3.1
Shared	82.3	8.6
Peat	30.6	3.2
Total	954.7	100

3. OFF-GRID SECTOR

The off-grid sector plays a significant role in achieving universal access in Rwanda. Rwanda's off-grid energy access has more than doubled since 2016. As of October 2021, the off-grid electrification rate is 18.5%, of which 18.27 % is provided through the solar home systems and 0.23% accessed through mini-grids. The current electricity access targets stipulate that 30% of Rwandan households will have electricity through off-grid solutions by 2024. Table 5 presents the off-grid connection.

Table 5: Off-grid Connections as of October 2021.

Off-grid Technology	HHs connections	Connectivity rate (%)
SHS	507,389	18.27
Mini-grids	6,482	0.23
Total	513,871	18.5

3.1. Solar Home System

Solar Home Systems play a significant role in achieving universal access. As of the end of October 2021, 513,871 households (HHs) access electricity through off-grid Solutions, and 98.7 % of these HHs use SHSs. The private sector mainly makes these connections. Up to date, thirty-eight members of EPD are engaged in SHS connections.

3.1.1. Policies and Regulations

i. National Electrification Plan

Based on the electricity demand and cost of electrification, the government of Rwanda developed a map to guide grid extension to reach universal access by 2024. In the National Electrification Plan (NEP 2018), 52% of households were designated for grid extension, while 48% were set for off-grid solutions; solar home systems, and Mini-grid. However, the off-grid allocation was subjected to change if the connections were slower than anticipated. After checking the status of electricity connection and considering the factors/criteria set to meet universal access, this year the Government of Rwanda, represented by REG Ltd, revised the NEP 2018 as follow:

- ◆ 89.9% of all villages fall in the on-grid zone, i.e., 13,314 villages out of 14,816 villages;
- ◆ 10.1% of all villages fall in off-grid zone (SHS & Micro-grid), i.e., 1,502 villages; and
- ◆ 8.9% of all villages that fall in the off-grid zone are proposed for SHS.

Figure 3 compares the NEP 2018 and NEP 2021 villages to be connected through SHS.

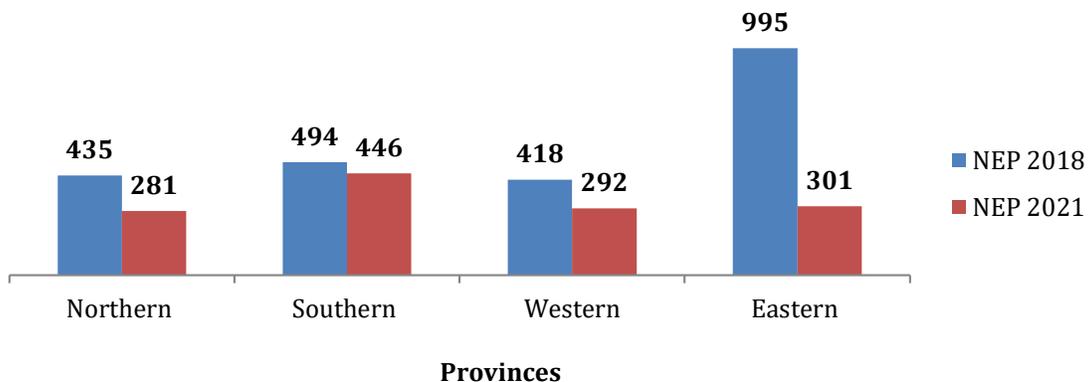


Figure 3: NEP 2018 Vs. NEP 2021 in terms of villages to be connected through SHSs.

ii. Ministerial Guidelines on SHS Standards

The minimum services level requirements for SHS are⁵ :

- ❖ Three lamps of at least 120 lumens each, operating at least four hours per day.
- ❖ A mobile phone charge supply for at least two hours per day.
- ❖ A radio charge supply for at least five hours per night.
- ❖ Supply for the above loads for at least one day without input from the solar module/when there is no sunshine.
- ❖ Product labeling for system parts is mandatory. The following information should be included on each of the following component types. The information should be included on the body of the product (or on an attached label or sticker):
 - ✓ Lights: voltage, power, luminous flux.
 - ✓ Other appliances included with the system: voltage, power.
 - ✓ Solar modules: open circuit voltage, short circuit current, maximum power at standard test conditions of 1000W/m² and 25°C.
 - ✓ Batteries: voltage, storage capacity (in mAh, Ah, or Wh), battery chemistry (e.g., lead-acid, lithium iron phosphate, lithium-ion, etc.), dismantlable system parts (e.g., lamp and battery), and system compatibility is recommended to allow for spare parts replacement.

3.1.2. Sales

Private companies play a significant role in off-grid connections. From January to the end of November, private companies sold 60,187 SHSs. Figure 3 shows the monthly sales from January to the end of November. To date, the SHSs of less than 10 Watt-peak make up the majority of sales. Figure 4 presents the sales volume from 2017 to the end of November 2021. Compared to 2020, SHS sales increased by 59% in 2021.

⁵ Ministerial Guidelines on Minimum Standard Requirements for Solar Home Systems: <https://www.reg.rw/public-information/policies-regulations/>



Figure 4: SHS Sales from January to the end November 2021.

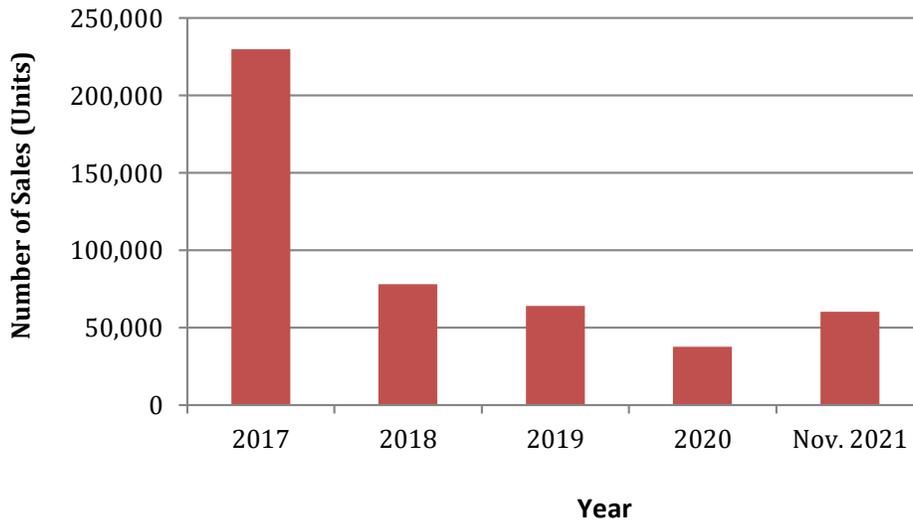


Figure 5: SHS Sales Per year from 2017 to November 2021.

3.1.3. Market Size

As reported by the NISR in EICV 5, Rwanda has about 2,709,000 HHs, estimated to be around 3,700,000 HHs in 2024. As of October 2021, 32.9 % of the total households do not have access to electricity. The revised NEP (NEP 2021) stipulates that 30 % of Rwandan households will access electricity through off-grid solutions (mainly SHS).

3.1.4. SHS Financing Programs

i. World Bank REF

In 2017, the Government of Rwanda signed a \$ 48.94 Million funding agreement with the World Bank to be used in off-grid electrification. The fund was channeled through the Development Bank of Rwanda (BRD) under the REF. The primary purpose of this fund is to address the challenge of affordability by facilitating access to finance to households and facilitating the private companies to invest in off-grid systems. REF is deployed into five windows:

- ◆ **Window 1:** On-lending through SACCOs to households and micro-enterprises.
- ◆ **Window 2:** On-lending through banks (commercial and microfinance) to households and SMEs.
- ◆ **Window 3:** Direct lending to off-grid Mini-grid.
- ◆ **Window 4:** Direct financing of off-grid Solar Companies (OSCs).
- ◆ **Window 5:** Subsidy to eligible off-grid households through eligible solar companies.

Table 6: On-lending through SACCOs – Window 1 as of September 2021.

No. of SACCOs approved	No. of Contract Signed	Value of loan Contract (FRW)	No. of SACCOs with funds	Amount disbursed from BRD to SACCOs (FRW)	Amount disbursed from SACCOs to HHs (FRW)	No. of potential HHs for appraisal by SACCOs
68	56	1,560,000,000	50	1,322,370,000	245, 223,180	11,598

Table 7: On-lending through Banks – Window 2 as of September 2021.

No. of banks participating agreements	No. of Banks in the process of signing Participating agreements	No. of Banks that have signed loan contract	Amount of value of loan contracts Signed (FRW)	No. of Banks that have received funds	Amount of funds disbursed to Banks (FRW)	Amount of potential loans for appraisal in Banks (FRW)
7	2	3	4,100,000,000	3	2,450,000,000	2,670,000,000

Table 8: Window 4 progress as of September 2021.

No. of loans approved	Fund approved (FRW)	Value of signed agreement (FRW)	Fund disbursed (FRW)	Amount for potential loans (FRW)
2	7,228,977,200	5,525,494,200	3,294,883,790	1,638,960,000

Table 9: Window 5 progress as of September 2021.

No of OSCs approved to receive the subsidy	Amount approved (FRW)	No of OSCs that have signed agreements	Amount signed (FRW)	No of OSCs that received disbursements	Amount disbursed (FRW)	Subsidy committed (FRW)	HHs connected
22	7,144,200,000	18	6,344,000,000	4	598,754,800	2,659,985,145	28,328

From 2018 to the end of August 2021, REF component 1 (line of credit, direct loan financing, and partial grants for off-grid electrification) invested \$ 7,794,412.50 in off-grid electrification. Figure 7 presents the REF investment from 2018 to the end of August.

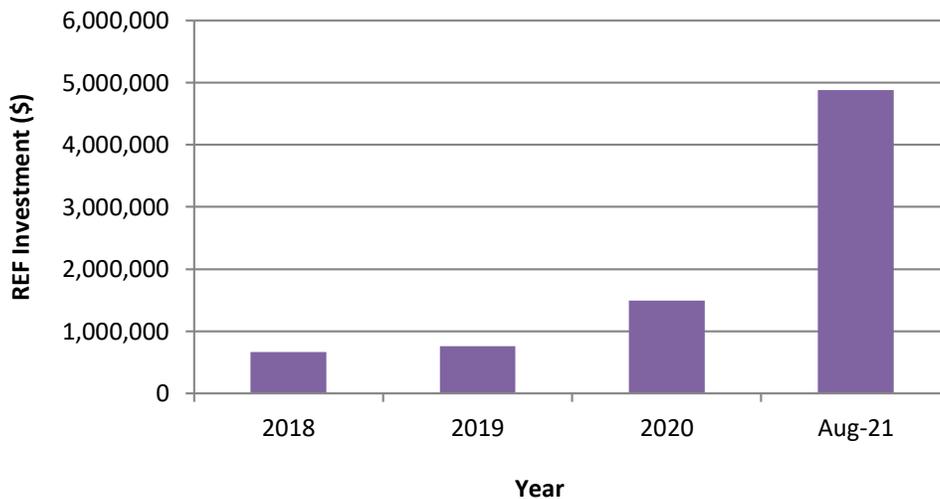


Figure 6: REF Investment from 2018 to end August 2021.

3.1.5. Sales and Distribution

The potential customers of off-grid technologies are households located far from the national grid. To reach them, companies generally employ sales agents. Customers buy SHS through the ubudehe subsidy category. The lower the Ubudehe category, the higher the subsidy. Table 9 presents subsidy levels per ubudehe, under REF, Window 5.

Companies use the Eligibility tool (ET) to sell SHSs. This tool helps sales agents to get information on eligibility status, national IDs, household IDs, and Ubudehe categories. Customers buy SHS products through two main payment options: PAYGo, and Cash.

Table 10: Subsidy levels per ubudehe, under Renewable Energy Fund (REF), Window 5.

Category	Percentage coverage (of final price)	Maximum subsidy (in FRW)
Ubudehe 1	90	100,000
Ubudehe 2	70	80,000
Ubudehe 3	45	50,000

3.1.6. End of Life Disposal

In 2017, the government of Rwanda launched the National E-Waste recycling facility, EnviroServe Rwanda. This facility can process 10,000 tons of E-waste annually. EnviroServe Rwanda accepts all electrical and electronic waste types, including small and large household appliances, IT and telecommunications equipment, consumer equipment, solar energy products, and lighting equipment. Currently, this facility has collection centers in 14 districts. Solar companies have claimed that the cost of disposal hinders efforts to collect and deliver waste to the E-waste facility. In this regard, in October 2020, EPD signed a partnership agreement with Enviroserve Rwanda to form a framework that will alleviate the pinch of waste disposal costs of solar companies. This year, 84.2 tons of solar energy products were disposed of. Table 10 presents the number of solar energy products disposed of this year.

Table 11: Number of solar energy products disposed of in 2021.

Product	Quantity (kg)
Lead Acid Battery	71,189.4
Lithium Battery	387
Solar Panel	1,851.5
Mixed E-Waste	10,773.1
Total	84,201

3.1.7. Key Challenges in SHS Subsector

The major challenges to accelerating the deployment of SHS are:

- **Access to finance:** Local lenders still perceive the off-grid sector as risky due to limited understanding of the sector. As a result, they continue to offer stringent lending conditions and high-interest rates, which most companies are either unable or unwilling to meet. This results in the lack of access to financing for the entrepreneurs and a lack of renewable technologies for the end-users.
- **Inadequate capacity of local key actors:** Capacity gaps of local off-grid OSCs exist in various ways, including technological level, supply chain, deal negotiation, knowledge acquisition, and networking levels.
- **Supply shortage of off-grid products:** Most local OSCs have a challenge of providing solar components stock when they get customers in need. This is due to the lack of capital on the side of local solar companies and the unavailability of solar equipment suppliers in the local market.
- **Local OSCs struggle when it comes to sales and marketing.** Common issues across the companies include lack of adequate training for sales, little market research and positioning, and inability to sustain a competitive advantage.

3.2. Mini-grids

The SHS subsector covers the most significant market share of off-grid. The contribution of the mini-grid subsector in off-grid electrification is lower as this subsector is at the early stage of development. Mini-grid counts 1.7% of the HHs connected from January to the end of November

2021 and 1% of the total Rwandan HHs (equivalent to 6,482 HHs) connected to off-grid. Table 12 presents the list of existing operational Mini-grids, their capacity, and connections as of November 2021.

Table 12: List of Operational Mini-grids and their connections.

No	Technology	District	Capacity (kW)	Connections
1	Solar PV	Kirehe	30	103
2	Hydropower	Kirehe	13	143
3	Solar PV	Nyamasheke	30	132
4	Hydropower	Muhanga	11	266
5	Hydropower	Nyaruguru	34	265
6	Hydropower	Muhanga	60	415
7	Solar PV	Gastibo	50	500
8	Hydropower	Karongi	21	80
9	Solar PV	Bugesera	34	1,187
10	Solar PV	Bugesera & Ngoma	60	2,384
11	Solar PV	Nyagatare	120	1,007
Total			463	6,482

3.2.1. Policies and Regulations

i. National Electrification plan

In the NEP 2021, out of 1,502 off-grid villages, a share of 182 villages (equivalent to 1.2%) is proposed for mini-grid and Micro-grid development. Figure 8 compares the NEP 2018 and NEP 2021 villages to be connected through Mini-grids/micro-grids. The villages allocated for mini-grids/micro-grids connection were reduced by 87.2%.

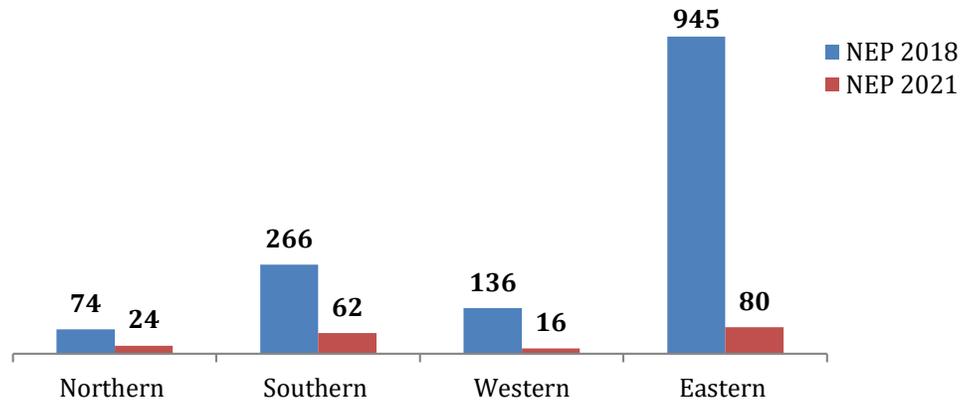


Figure 7: NEP 2018 Vs. NEP 2021 in terms of villages to be connected through micro-grid/ mini-grids.

ii. **Minimum Technical Requirements for mini-grids**

In 2015, RURA published regulations that specify licensing requirements, tariff guidelines, and procedures upon grid arrival. The purpose of these guidelines is to describe the minimum technical specifications that must be followed in the development of mini-grid plants in Rwanda. The general requirements in designing and implementing mini-grid projects are⁶:

- ✓ All mini-grids must generate at least 50% of consumed energy on an annual kWh basis from renewable energy.
- ✓ The mini-grid project developer is responsible for on-site warranty, ensuring that failed components are repaired or replaced if such a claim is required.
- ✓ The installation must include a complete toolbox with all tools necessary for routine maintenance and with a collection of commonly replaced spare parts replacement.
- ✓ Any mini-grid that connects or intends to be connected to the National Grid shall be in compliance with the Main Grid Standards and the Rwanda Grid Code.
- ✓ The developers of isolated grids can charge cost-reflective tariffs with a reasonable margin.
- ✓ In the case of grid arrival, licensees have three options: (i) relocate assets, (ii) sell assets to the main grid (REG), or (iii) become a small power producer and/or a distributor of electricity purchased from the main grid. If a licensee takes the second option, the main grid may buy generation assets without buying distribution assets. In the case of a dispute about the purchase price, RURA will act as the arbitrator and make the final determination.

⁶ Technical Requirements for Mini-grids in Rwanda

3.2.2. Mini-grid Financing Programs

The World Bank under REF finances mini-grid projects through window 3. This window provides direct financing to eligible mini-grid developers to finance up to 70 % of the construction of renewable energy mini-grid systems⁷. As of June 2021, three mini-grid companies submitted proposals, and only one project was approved. The table below summarizes the status of REF Window 3 as of June 2021.

Table 13: The status of REF Window 3 as of September 2021.

Proposal Received	No of Potential Mini-grids clients	Value of Potential loans (FRW)	Fund Approved (FRW)	Value of Agreement signed
3	1	4,000,000,000	0	0

3.2.3. Key Challenges in Mini-grid Subsector

The main barriers to the deployment of mini-grid are:

- ❖ **High Cost of investment:** The high initial and maintenance costs of mini-grids are a barrier to the deployment of mini-grids.
- ❖ **Inadequate funding:** Mini-grids require substantial support until they are viable, so subsidies should be needed in short to medium term.
- ❖ **Uncertainty in off-grid zones identified in the NEP:** “There are purported instances where mini-grid developers submitted plans to the EDCL and then subsequently REG extended the grid to those locations”⁸.

4. CLEAN COOKING SECTOR

As in many other countries in Africa, most Rwandan households depend on biomass for cooking and heating. In Rwanda, the dependence on biomass fuel remains high, with firewood used by

⁷ Operations Manual Direct lending to Mini-grid developers: <https://www.brd.rw/brd/energy-investments/>

⁸ Impact Assessment of Fiscal Incentives on Rwanda Off Grid Sector

79.9% (in 2020)⁹ of the national households. Despite the health, environmental, and economic benefits, there is still a low percentage of households that use clean fuels and stoves. The slow adoption of clean and improved cooking products and technologies can be attributed to different factors, including socio-demographics, fuel availability, attitude toward technology, awareness of the risks of traditional cookstoves, and social & cultural influences. In line with these issues, the government of Rwanda, through Rwanda Energy Group (REG) and its stakeholders, is carrying out countrywide awareness campaigns on the use of safe, effective, and clean cooking technologies. Figure 9 presents the forecast for firewood reduction.

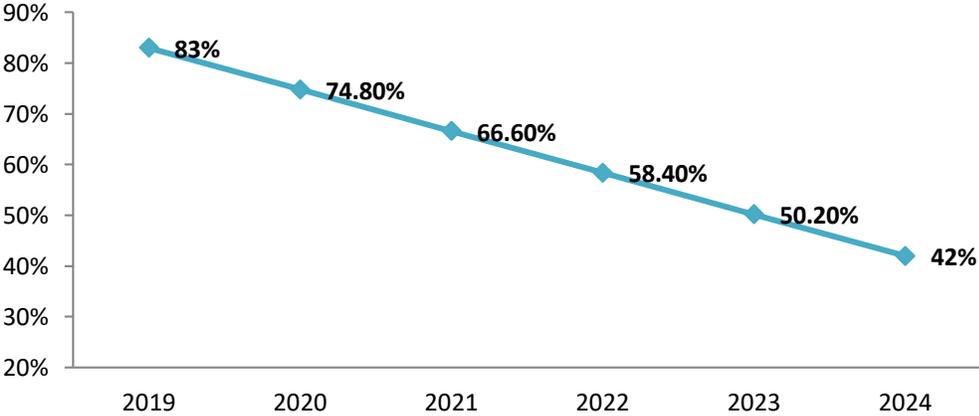


Figure 8: Forecast for Firewood Reduction.

4.1. Cookstove Technologies

There are five main types of cookstoves used in Rwanda; three-stone stoves (which use firewood as fuel), charcoal stoves (referred to as the first generation of improved cookstoves (ICs)), solid biomass stoves (referred to as the second generation of ICs), and gas & electric stoves (referred to high-efficiency stoves). The figure below shows the main technologies used for cooking in Rwanda.

⁹ <https://www.mininfra.gov.rw/digital-transformation-1-1>



Figure 9: Main technologies used for cooking in Rwanda.

From 2012 to June 2021, private companies distributed 902,040 improved Cookstove across the country, and 302,000 of these stoves were distributed from July 2020 to June 2021.

4.2. Clean Cooking Fuels

i. Liquefied Petroleum Gas

The transition from cooking with charcoal to LPG can be highlighted by increasing LPG importation and use. LPG importation in Rwanda increased from 4,240.08 tons in 2016 to 28,265.53 tons in 2020 (country-wide). The use of LPG for cooking increased from 0.9% in 2018 to 5% in 2020. Figure 11 presents the trend of imported LPG from July 2020 to June 2021, while Figure 12 presents LPG importation for home consumption from 2014 to June 20221.

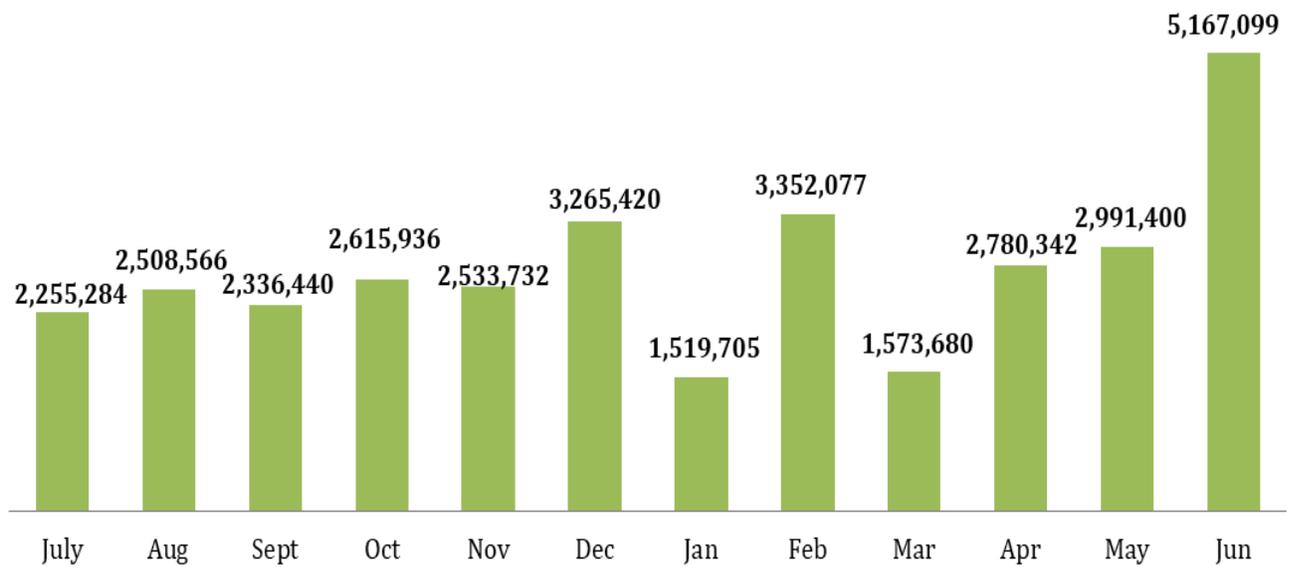


Figure 10: Trend of imported LPG (in kg) from July 2020 to June 2021.

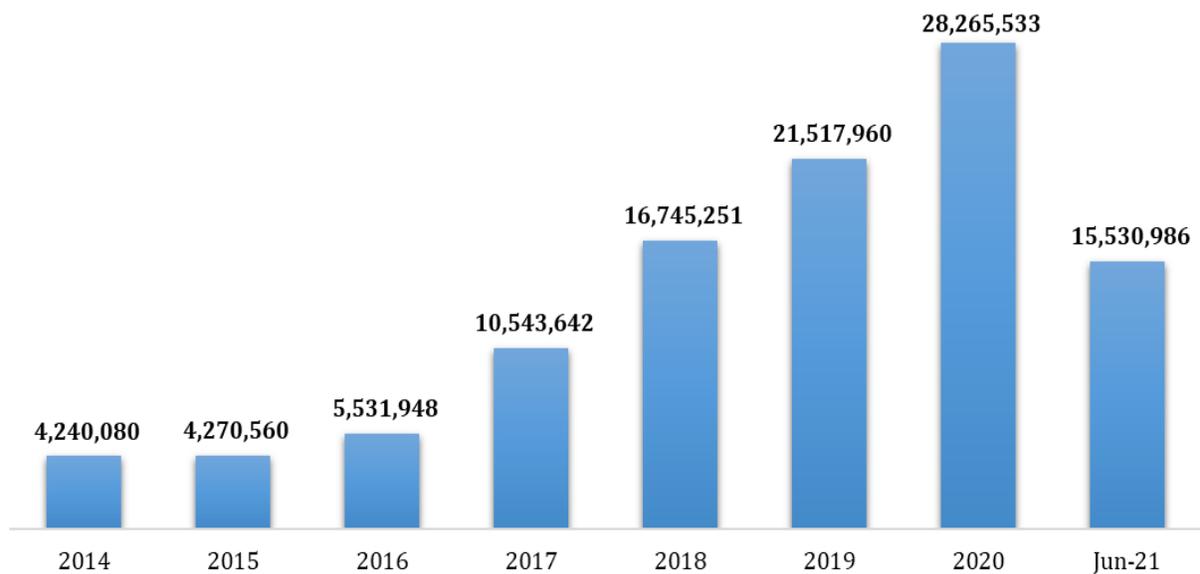


Figure 11: LPG importation per year (in kg) for home consumption from 2014 to June 2021.

4.3. Clean Cooking Financing and Support Programs

To support the government target of reducing firewood usage, BRD has launched a Clean Cooking Results-based Financing (CC-RBF) subsidy scheme to increase access to clean cooking solutions.

BRD and EDCL will implement the CC-RBF. The subsidy is designed to address the affordability of clean cooking technologies by reducing system prices at varying amounts allocated for Ubudehe 1, 2, and 3 categories. The CC-RBF program targets 500,000 households, of which 25% are supposed to be female-headed. Table 12 presents the CC-RBF Subsidy levels per Ubudehe and tier¹⁰.

Table 14: CC-RBF Subsidy levels per Ubudehe and tier.

Tier Rating	Stove cost Reference (RWF)	Ubudehe Category	Maximum Percentage Coverage of Cost (%)
Tier 5	50,000 – 100,000	1	90
		2	70
		3	45
Tier 4	40,000 – 70,000	1	90
		2	70
		3	45
Tier 3	20,000 – 40,000	1	90
		2	70
Tier 2	10,000 – 20,000	1	90
		2	70

4.4. Key Challenges in clean cooking subsector

- ◆ Lack of awareness of existing efficient cooking stoves and alternative fuels.
- ◆ Inefficient technologies are used to produce biomass cooking fuels such as charcoal, pellets, and briquettes.
- ◆ High investment costs and lack of financial support to cover the initial investment resulting in limited production of equipment and components.
- ◆ Inadequate financing and monitoring mechanisms, resulting in low uptake of efficient technologies, and insufficient scaling up of production capacity and development of clean cooking markets.
- ◆ Inadequate coordination of efforts among stakeholders' institutions in biomass subsector.

¹⁰ Rwanda Energy Access and Quality Improvement Project: Component 3b Increasing Access to Clean Cooking Solutions Operations Manual

- ◆ Switching from a mostly no-cost energy source (firewood) to a cost-related energy source requires that the household has sufficient disposable income to produce the fuel needed.
- ◆ Manufacturers and distributors of clean cooking products are subject to unfair treatment and competition due to a series of external constraints such as substandard equipment and irregularly produced fuels (mostly charcoal) in the informal markets.
- ◆ Data collection and processing is generally flawed, with incomplete inputs, insufficient disaggregation of data by customer categories, and lack of centralized and consistent database owned by a clearly identified institution.