



ANNUAL REPORT
For Rwanda Energy Group, of the Year 2020-2021

September 2021



FOREWORD

It is with great pleasure that the Rwanda Energy Group Ltd presents its Annual Report for the fiscal year 2020/2021. This report highlights the REG's key achievements in its strategic objectives including among others electricity generation, electricity transmission and distribution, electricity access, operations and maintenance and others. During the Fiscal Year 2020/2021, concerted efforts were directed towards developing and providing reliable and affordable energy to ensure adequate service delivery and sustainable development.

In view of this, REG Ltd continues to strategize on how to achieve the targets of 2024 for increasing electricity access to 100% of all Rwandan households, reduction of biomass energy uses to 42% as well as increasing Rwanda's electricity generation capacity to 556MW. As a result, households' connections to electricity reached 64.53% by the end June 2021 from 55.41% of June 2020, and the total installed power generation capacity reached 238.37 MW from 228.418MW achieved in June 2020.

The Annual Report of REG includes the performance of REG's subsidiaries companies, the Energy Utility Corporation Limited (EUCL) and the Energy Development Corporation Limited (EDCL). This report is part of the external dissemination of our commitment to transparency and open communication to all our stakeholders, as well as to the wider public interested in our activities.

Please, enjoy reading this report and get updates and richness of the energy sector. We also hope it is an opportunity for our valued stakeholders to know our leading-edge operations, services and values.

Ron Weiss
Chief Executive Officer

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EXECUTIVE SUMMARY

This report highlights the key achievements realized in the Fiscal Year 2020/21 by the Rwanda Energy Group Ltd, through its subsidiaries EDCL and EUCL, against targets that were agreed in alignment with national strategic documents such as Vision2020, NST1, REG Imihigo and other high-level decisions as well as the REG strategic plan.

- In power generation, the total installed capacity increased from 228.418MW to 238.37 MW. The additional capacity is from the upgrade of Nyirabuhombohombo micro hydropower plant from 0.5 MW to 0.65 MW (addition of 0.15 MW), and the commissioning of Giciye III (9.8 MW)
- The highest annual peak demand was 164.4MW observed in April 2021, compared to 151.00MW observed in February 2020. The demand growth this year was 8.8% while it was 2.8% for the fiscal year 2019/2020.
- By the end of June 2021, the total length of the transmission network, including 220kV and 110kV lines, was recorded at 944.39 km across the country. The 110kV transmission line Bugesera – Bugesera Industrial Park was commissioned in October 2020 and added 23.1km on the network. The reported network length reduced to 944.39km from 1,285.62km reported in June 2020 due to the correction of errors, especially of double counting found in the existing list of transmission lines and their length. On the other hand, 4 high voltage substations of Mamba, Rwabusoro, Bugesera and Rubavu temporary as well as 30/30kV Camp-Belge substation were commissioned, bringing the total number to 37 substations including 5 switchyards located at power plants.
- The distribution network increased with a total length of 677.76km of medium voltage lines and 1,225.35 km of low voltage lines, bringing the total distribution network from 25,314.7km to 27,217.9 km, of which 9,883.6 km of medium voltage and 17,334.3 km of low voltage.
- By the end of June 2021, a total of 178,884 customers were connected to the National grid of which the productive users were 1,110. In addition to this, a total of 72,202 households were connected to off-grid electricity. By the end of June 2021, the electricity access rate had increased from 55.41% as reported by the end June 2020 to 64.53%.
- In this reporting financial year, REG/EDCL once again gave focus on raising awareness among the citizens on the use of modern cooking technologies transitioning from traditional cooking fuels and 20,568 Improved Cook Stoves were distributed.
- On the side of operations, power system performance and reliability remained generally stable. the total network collapse reduced from 5 blackouts in 2019/20 to 1 blackout in 2020/201 and the transmission network availability has been improved from 99.37% of the fiscal year 2019/2020 to 99.41% of the fiscal year of 2020/2021.
- Countrywide, the distribution network performance is still stable though with slight increase as compared to last year. The System Average Interruption Duration Index (SAIDI) was 18.2 hours per year from 17.2 hours per year of the previous year and the average number of interruptions that a customer experienced (SAIFI) was 44 times per year from 37 times per year.
- The average total power losses for this financial year (technical and non-technical) increased to 19.17% from 19.12% of the previous year, but the recorded monetary loss reduced from 444,517,432 FRW of the previous year to 441,882,913 FRW.

- The total electricity billed for both prepayment and post payment customers, including exports to Uganda through Cyanika-Kisoro, increased to 766,606,204.22 kWh from 702,597,060.14kWh of last year and respectively the bill increased to Rwf 157.906 billion from Rwf 137.912 billion.
- The total collection on prepayment, post payment and works were Rwf 154,361,119,629 compared to Rwf 157,906,289,288 of total bills, and the recorded collection rate is 98%.

1. INTRODUCTION

The Rwanda Energy Group (REG) with its subsidiary companies, Energy Development Corporation Limited (EDCL) and Energy Utility Corporation Limited (EUCL), was incorporated in July 2014 as part of the wider Government reform programme for the energy and water sectors in Rwanda. The overarching objective of the reform was to ensure that the energy sector is expanding the electricity generation capacity efficiently to meet the growing demand in the country.

The REG Holding therefore has the corporate mandate to provide overall coordination of utility operations and energy investment and development plans without operational responsibilities, while EUCL is to ensure efficiency in utility operations and end-users service delivery and EDCL is to ensure timely implementation and cost-efficient development of energy projects.

REG's overall goal is to achieve fast electrification levels for industry and household usage based on a sustainable and affordable tariff. In its strategic plan (2019 – 2024), REG has articulated the following ten industry and institutional focused objectives to guide the day to day operations.

1. **Generation:** Build a balanced and cost optimized Generation mix sufficient to meet growing Demand.
2. **Transmission:** Plan and Build infrastructure to ensure timely alignment of current and future Generation with National Demand
3. **Distribution:** Develop and Operate an Optimized Distribution Network to enhance Utility efficiency and reliability of power supply.
4. **Electricity Access:** Achieve 100% National Access to Electricity in 5 years (by 2024). using Grid and Off-grid Solutions
5. **Tariff evolution:** Develop a clear tariff trajectory with clear milestones based on effective engagement with IPPs, financiers and other stakeholders to achieve affordable tariff.
6. **Operation & Maintenance:** Ensure optimized plant and network operations for excellent service reliability, with most economical plan.
7. **Corporate Governance:** Structure and equip REG to competently implement strategy;
8. **Communication Strategy:** Build an awareness of REG's products and services to enlist commitment of stakeholders to the vision and mission;
9. **Capacity Building:** Enhance staff's professional and technical capacity to support REG consistently deliver on its mission;
10. **Commercial strategy:** To serve our customers and ensure their satisfaction through our culture of excellence.

This report highlights key achievements registered in the period between July 2020 and June 2021 in alignment with key sector strategic objectives outlined above, set in line with the National strategic documents such as Vision 2020, NST1, REG Strategic Plan 2017 – 2024 (REGSP) and other sector priorities as adopted in different national fora such as National Leadership Retreat (NLR), National Umushyikirano Council (NUC), Cabinet decisions and other high level commitments. The purpose of this report is therefore to provide information that depicts Rwanda Energy Group performance to the public, development partners and other stakeholders.

More specifically, every year REG signs a performance contract, Imihigo, with MININFRA for the implementation of key projects geared towards meeting the short and medium term sector targets as set in the aforementioned strategic documents.

For the FY2020/2021, REG signed to deliver on 20 outputs as detailed in *annex 1* of this report. The outputs were grouped under 4 key outcomes which are:

1. Increased electricity generation installed capacity from 227.58 to 307.58MW by June 2021
2. Improved power transmission and distribution network for reliability of power supply
3. Increased access to electricity from 56% to 61% by end of June 2021
4. Improved transmission and distribution capabilities and availability of the network

By the end of June 2021, all 20 outputs were on track. In addition to this, REG signed for Joint Imihigo with 4 outputs grouped under 2 outcomes which are:

1. Increased Households access to electricity from 56 % to 61%
2. Reduced biomass usage for cooking

The four outputs for Joint Imihigo were already part of the overall Imihigo and they were all on track by the end of June 2021. Detailed implementation progress for Joint Imihigo is provided in *annex 1*.

2. THE ACHIEVEMENTS FOR THE FISCAL YEAR 2020/2021

Access to safe, reliable, affordable and cost-effective energy infrastructure is essential to achieve the levels of growth defined under the National Strategy for Transformation (NST1) and Vision 2020. It is planned that by 2024, universal access to electricity shall be attained at 100% (52% on-grid and 48% off-grid).

In order to attain the desired development impact of the above programs and other strategic interventions, the REG implemented different projects in the 2020/2021 and key achievements are provided in the following paragraphs. The status below, therefore, provides an insight of how the energy sector performed towards its ambitious targets.

2.1. Power generation

By end of June 2021, the total installed capacity increased from 228.418 MW to 238.368 MW. The additional capacity is from the upgrade of Nyirabuhombohombu micro hydropower plant from 0.5 MW to 0.65 MW (addition of 0.15 MW), and the commissioning of Giciye III (9.8 MW).

The independent power producers now own 121.52MW of installed capacity, equivalent to 50.78% share of the total installed capacity, while the Government of Rwanda represented by REG Ltd has 99.216MW, equivalent to 41.62% share of total installed capacity and the importation is 18.1MW, equivalent to 7.59%.

The highest annual peak demand was 164.4MW, observed in April 2021 compared to 151.02 MW, observed in February 2020. The demand growth this year is 8.8% while it was unusually very low at 2.8% for the year of 2019/2020 as a result of COVID-19 pandemic outbreak and the resulting lockdowns that saw the economic activities slow down significantly.

Installed generation capacity by source

Hydropower and thermal power continue to dominate with the highest shares of the installed generation capacity of 104.628 MW equivalent to 44.00% and 58.8MW equivalent to 25.00% respectively, while solar power contributes the least (5%) as per the table and graph below:

Technology	Installed capacity (MW)	%
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 Fired PP	15	6
Total	238.368	100

Table 1: Installed capacity by Technology

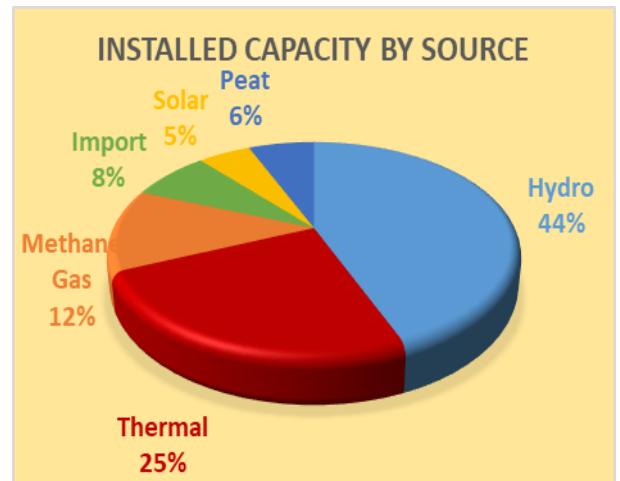


Figure 1: Installed capacity Contribution by source

Energy generated by source of energy (GWh)

The corresponding energy generated by hydropower increased from 387GWh to 494.4 GWh and it improved its share in the energy mix from 44.4% of last year to 51.8% this year. On the other hand, energy generated from thermal power plants reduced from 135.9GWh to 92.7 GWh and the corresponding share in the energy mix reduced from 15.6% to 9.7%. The contribution of methane gas, solar power and imports did not vary much whereby energy produced from methane gas moved from 213.6 GWh (24.5%) to 206.8 GWh (21.7%), solar moved from 17.7GWh (2%) to 18.1 GWh (1.9%) and imports from 31.95GWh (3.7%) to 29.7 GWh (3.1%) respectively. On the other hand, there was noticeable variation in the energy generated from peat to power and regional shared power plants whereby energy from peat increased from 19.0GWh (2.2%) to 30.6 GWh (3.2%), while energy from regional shared plants increased from 69.2GWh (7.9%) to 82.3 GWh (8.6%). The graph below illustrates the changes in the energy mix.

Details	Hydro	Methane	Thermal	Solar	Peat	Import	Shared	Total
2015-2016	271.9	114.5	174.5	13.9	1.4	56.9	18.9	652.1
2016-2017	277.2	197.6	129.6	14.5	14.3	22.9	56.0	712.1
2017-2018	333.8	195.0	138.7	16.9	15.3	31.5	50.2	781.4
2018-2019	337.5	213.1	158.7	18.1	31.0	32.0	63.9	854.2
2019-2020	387.0	213.6	135.9	17.7	19.0	31.95	69.2	872.6
2020-2021	494.4	206.8	92.7	18.1	30.6	29.7	82.3	954.7
Contribution to energy Mix (%)	51.8%	21.7%	9.7%	1.9%	3.2%	3.1%	8.6%	100.0%

Table 2: Energy generated by source of energy from 2015-2021 (in GWh)

Energy generated categorized by plants' owners

Based on ownership of power plant, IPPs power plants contribution was 493,755,909.12kWh (52%), while GoR. owned power plants' contribution was 348,826,411.31kWh (36%) and import & shared contribution was 112,071,628.3kWh (12%). The table below presents the generation by category of ownership:

Source of Generation	Generated Energy (kWh)		
	FY 2019/2020	FY 2020/2021	% (FY 2020/2021)
IPPs Power Plants	473,516,095.64	493,755,909.12	51.72%
GoR Power Plants	299,740,392.00	348,826,411.31	36.54%
Import + Shared	99,375,634.38	112,071,628.3	11.74%
Total Generation	872,632,122.02	954,653,948.70	100%

Table 3: Energy Generated by plants' owners

The Least Cost Power Development Plan

The least cost power development plan was revised and updated in December 2020 and June 2021. The purpose of the plan is to have a systematic development of the Rwanda Generation Resources prioritizing the least cost options, to ensure that the tariff affordability objectives are being optimized. The key updates this year were:

- Re-alignment of CODs of delayed projects.
- Biomass installed capacity review.
- Least-cost addition of KP1/Shema II Power Company

2.2. Electricity transmission

By the end of June 2021, the total length of the transmission network, including 220kV and 110kV lines, was recorded at 944.39 km across the country. The 110kV transmission line Bugesera – Bugesera Industrial Park was commissioned in October 2020 and added 23.1km on the network. The reported network length reduced to 944.39km from 1,285.62km reported in June 2020 due to the correction of errors, especially of double counting found in the existing list of transmission lines and their length. Details of all the corrections made are shown in *annex 2*, whereas significant corrections made are shown below:

As Reported in 2019/2020			As corrected in 2020/2021		
Transmission Line	Voltage rating (kV)	Length (km)	Transmission Line	Voltage rating (kV)	Length (km)
Ntaruka-Gifurwe	110	8.5	Duplication of Ntaruka - Gifurwe		0
Gifurwe-Ntaruka	110	18.4	Duplication of Gifurwe - Mukungwa		0
Mamba-Rwabusoro-Bugesera-Gahanga	220	119	Mamba-Rwabusoro	220	21.54
			Rwabusoro-Bugesera SS	220	40.64
			Bugesera SS - Gahanga	110	17.31
Mururu II-Burundi border	110	26.8	Not for Rwanda. For Burundi		0.00
Mururu II-DRC Border	110	3.2	Not for Rwanda. For DRC		0.00
Rulindo-Musha via Gabiro	110	109.8	Duplication of Gabiro - Musha & Rulindo - Gabiro		0.00
Shango-Kivu WATT-Rubavu & Kibuye	220	163.6	Duplication of Shango - Rubavu & Rubavu - Kibuye		0.00
Total km		449.30			79.49

Table 4: Key corrections made on the length of the transmission lines

By end June 2021, three (3) high voltage substations of Mamba, Rwabusoro and Bugesera along the transmission line Mamba-Rwabusoro-Bugesera-Gahanga as well as 30/30kV Camp-Belge substation and the temporary 110/30kV Rubavu substation along Mukungwa-Nyabihu transmission line were completed and commissioned, bringing the total number to 37 substations including 5 switchyards located at power plants of Gishoma, Jabana II, Mukungwa, Ntaruka and Nyabarongo I.

More progress was also made in the construction of the following high voltage transmission lines projects:

- ***Rwanda-Burundi Transmission line and associated substations*** registered overall progress of 93% for transmission line and 84% for the works at Gisagara and Kigoma substations.
- ***Birembo, Shango, Bwishyura, Rubavu and Kibuye Substations*** recorded an overall progress of 60% with works completed at Birembo and Shango and the supply of main equipment completed for the rest of the substations. The new contract for completion of remaining works that were left behind by former contractor ISOLUX was at contract stage.
- ***Rusumo-Bugesera-Shango transmission line*** project to evacuate power from Rusumo regional hydro power plant overall progress was recorded at 72% while that of associated substations of Bugesera and Shango was at 98.2% and 99.92% respectively.
- ***Bwishyura-Kigoma-Rwabusoro transmission line with extensions of associated substations*** registered an overall progress of 21%.
- ***Mukungwa-Nyabihu Transmission line with associated substations*** reported an overall progress of 83% with the commissioning of Mukungwa – Nyabihu line as well as Camp-belge substation and Rubavu temporary substation.



Figure 2: Bugesera substation



Figure 3: Nyabihu substation

The Transmission Plan

The transmission network development plan was revised and updated in February and June 2021 and the key updates incorporated are the following:

- Modeling of the transmission system with updated infrastructure parameters
- Contingency Analysis (N- 1), using DigSilent Power Factory, on the national electricity transmission system to ensure that this condition is met.
- Updates on the commissioning of different projects
- The roadmap for the development plan of Industrial Parks Supply
- Musanze, Bugesera, Muhanga, Huye and Rusizi Industrial Parks and Nyabihu SS plots
- Updated Transformer movement (Mt. Kigali to Rubavu S/S).
- Project Cost Update (inclusion of additional costs (VAT, feasibility study costs, expropriation costs)).

2.3. Electricity distribution

About 13 years ago, the Government of Rwanda established the Electricity Access Rollout Program (EARP) to distribute power from the transmission nodes to the end-users, whilst bridging the rural-urban electricity access divide. This year, the distribution network was extended with a total of 738.5 km of medium voltage lines and 1,280.7 km of low voltage lines, bringing the total distribution network to 27,333 km up from 25,314 km reported last year at the end of June 2020. The respective total lengths for medium and low voltage networks are now 9,944.3 km and 17,389.6 km.

The Distribution Plan

In December 2020 and June 2021, the distribution network development plan was revised and updated mainly to include the following:

Major Updates made in the Distribution Plan (December 2020 revision)

- Anticipated load growth on Distribution Network from 2021-2023 and proposing network strengthening initiatives to cope with increase in load demand.
- Improvement of distribution network zoning and identification of all areas of the network with critical voltage drop issues
- Assessment of all distribution transformers loading profile countrywide to identify their status as well as accounting for losses
- Consideration of all planned grid access projects countrywide
- The entire Medium Voltage network was modelled
- Micro power plants feeding into the MV network were also considered.
- New feeder lines from substations which are under construction such as Gisagara and Nyabihu in order to reduce the length of Butare, Rukarara and Gisenyi feeders.
- Network modelling and assessment of existing Medium Voltage distribution network

2.4. Electricity access

The Government has committed to meet universal access to electricity, with an estimated 3.7 million households to be connected by the year 2024. By the end of June 2021, the electricity access rate countrywide had increased from 55.41% to 64.53%.

A total of 178,884 new customers were connected to the National grid of which the productive users were 1,110. This brought the cumulative number of customers connected to the grid from 1,092,081 to 1,270,965 (1,267,702 on prepaid and 3,263 on post-paid) which is equivalent to 46.92% access rate computed on a total of 2,709,000 households reported by the NISR (EICV, 5). The performance of REG in implementing its Imihigo signed with MININFRA for grid access was achieved at 150.76%, as the target was connection of 118,657 new customers to the grid.

In addition to this, a total of 72,202 households were connected to off-grid electricity bringing the cumulative total to 477,184 households from 404,982, equivalent to access rate of 17.61% from 15.1%. These off-grid connections are mainly rooftop solar panels and they are installed by the independent private companies on a willing-buyer-willing-seller basis.

The Access Plan

In December 2020 and June 2021, the access plan was revised and updated mainly to include the following:

- The impact of available funds from development patterns on universal access by 2024
- Final approved report of NEP (2018) from the consultant TATA/ MIT
- Updated mapping (2021) of villages to be electrified through grid or off-grid solutions.

2.5. Operations and maintenance

On the side of operations, power system performance and reliability is continuously improving, and the number of system blackouts reduced from 5 to 1 blackout during the reporting period. The chart below illustrates the trend of blackouts occurrence over the last 6 years:

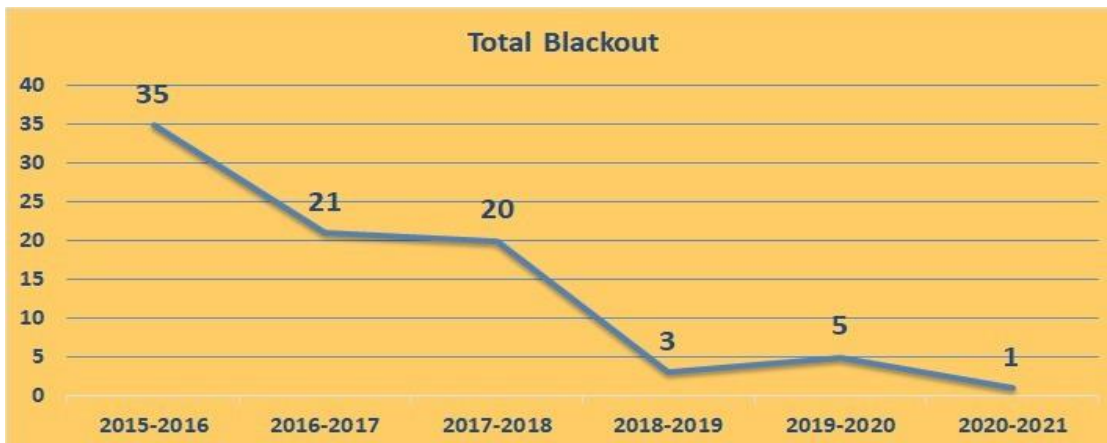


Figure 4: Total blackouts trend

The recorded transmission network availability in the year of 2020/2021 improved from 99.37% to 99.41% as shown in the table below:

TRANSMISSION LINE AVAILABILTY 2020-2021					
		Outage duration min		1,108	
Q1		Days	Hours	Difference	Availability in %
	Period duration	92	132480	131,372	99.164%

		Outage duration min		1,009	
Q2		Days	Minutes	Difference	Availability in %
	Period duration	92	132480	131,471	99.238%
		Outage duration min		850	
Q3		Days	Minutes	Difference	Availability in %
	Period duration	90	129600	128,750	99.344%
		Outage duration min		104	
Q4		Days	Minutes	Difference	Availability in %
	Period duration	91	131040	130,936	99.921%
		Outage duration min		3071	
Annual		Days	Minutes	Difference	Availability in %
	Period duration	365	525600	522,529	99.416%

Table 5: Transmission line availability in 2020-2021

The average total power losses for this year (technical and non-technical) increased from 19.12% of the previous year to 19.26 % as per the graph below:

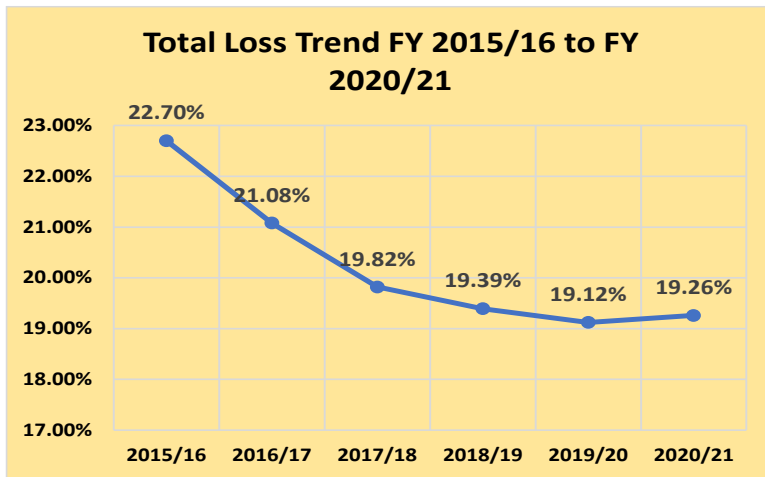


Figure 5: Trend of total energy losses

Countrywide, the distribution network performance did not improve compared to the previous year given that the System Average Interruption Duration Index (SAIDI) increased from 17.2 hours per year to 18.2 hours per year and the average number of interruptions that a customer experienced (SAIFI) increased from 37 times per year to 44 times per year.

DESCRIPTION	UNITS	BASELINE (July 19- June 20)	SMART	STRETCH	ACH' July 20 - June 21
Distribution Department key performance indicators					
SAIDI	Hours/year	17.2	22.7	20.4	18.2
SAIFI	TIMES/year	37	44.3	39.8	44

Table 6: Brief performance on distribution SAIDI and SAIFI

During this financial year, a total number of recorded outages is **12,049** from **10,756** and almost all were caused by earth faults, overcurrent and under frequency as shown by the table below and the corresponding monetary loss reduced from Rwf 444,517,432 of last year to Rwf 441,882,913.

Cause	Frequency	Duration (h)	Energy not served (MWh)	Total Cost	Freq %
Earth Fault	4281	584.0	856.2	159,254,895	36%
Overcurrent	3695	491.2	651.9	121,247,268	31%
Under Frequency	3555	329.2	418.5	77,847,070	30%
Emergency Works	360	169.3	214.9	39,964,797	3%
Planned Works	113	164.1	213.6	39,727,541	1%
Overload	38	1.3	15.6	2,908,428	0%
Overvoltage	7	0.9	5.0	932,914	0%
Grand Total	12049	1739.9	2375.7	441,882,913	100%

Table 7: Summary of annual outages

The outages frequency is presented as follow:

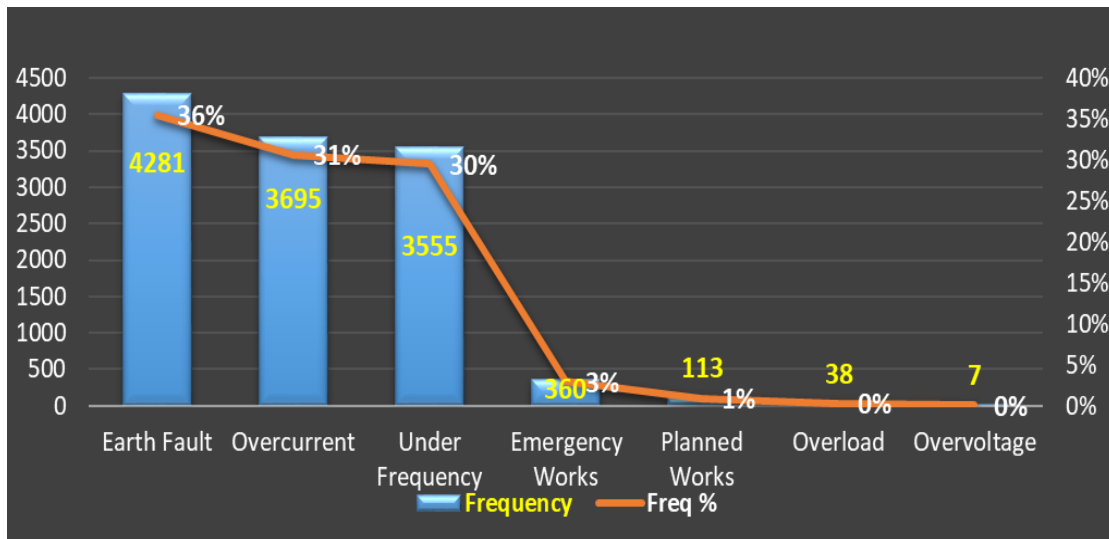


Figure 6: Representation of annual outages frequency

2.6. Corporate governance

The functional strategies identified in REG strategic plan can only be realized by putting in place structures, systems policies and procedures that support efficient implementation and the need to attract, develop and retain staff with the requisite skills for effective implementation. It is in that regard that out of the minimum four required meetings of the Board of Directors were held successfully. Legal opinions were delivered to the Management and to the Board on regular basis.

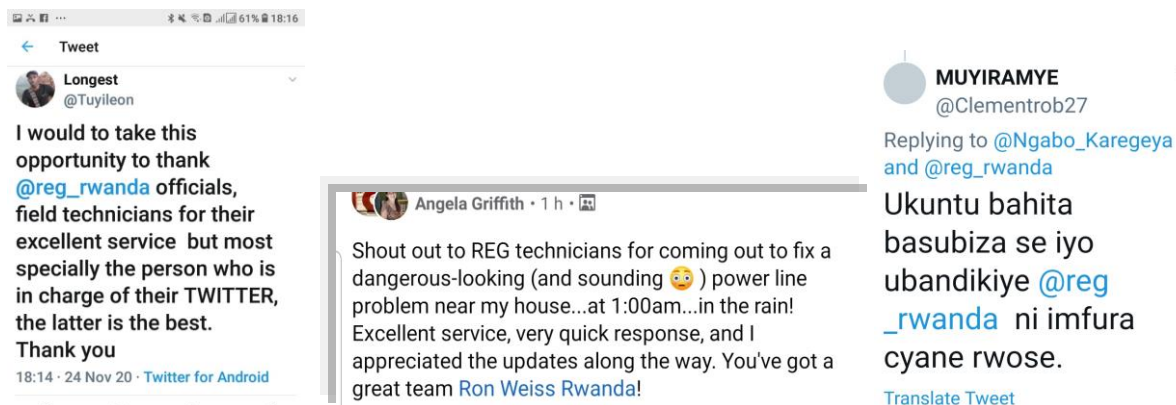
The REG/EUCL/EDCL organizational structure review has been approved to best fit organization mandate and include lessons learnt in in the organization while enhancing efficient & effective operations and coordination, as well as monitoring and evaluation.

2.7. Communication and public relations

During the fiscal year 2020/2021, different communication activities were implemented aiming at enhancing the corporate positive image and raising public awareness as well as ensuring customers' satisfaction by timely responding to their queries. The following activities were achieved:

- **Ensuring positive appearance in local media publications:** With an aim to publish at least 1 success story on a weekly basis in local media to ensure positive perception among the public, a total of 151 positive news stories related to REG achievements and projects were published in local media during the year 2020/2021. These stories were published as paid supplements and also as bonus stories thanks to various media relations initiatives. Most of the published stories were related to electrification projects, off-grid and clean cooking programs as well as the fight against theft of electricity and electrical materials. Daily monitoring of media publications was also done to ensure that all negative issues reported in media are handled
- **Awareness raising activities:** REG used talk-shows and advertorial spots on Radios and TVs, to ensure education and awareness on the use of off-grid solutions, clean cooking technologies and safety among others. A total of 8 talk shows were held on local radios and TVs while 8 publicity audiovisual spots were produced and broadcasted on different community radios.
- **Using social media to ensure customers satisfaction:** A close follow up on customer’s queries submitted via social media and immediate response to these queries was key among the communication team work during the year 2020/2021. The aim is to ensure satisfaction of customers seeking support and information on electricity services.

Feedbacks submitted by the customers on the same social media indicate that REG is much appreciated when it comes to caring for customers’ issues. Below are some examples of the feedback screenshots:



- **Using company’s platform for visibility and hub of REG information:** REG website and its various social media platforms including Twitter, Facebook, Flickr, Instagram, LinkedIn and YouTube accounts were used to share with the public various information regarding projects, achievements, energy statistics, power outages and other useful documents containing information to be shared with the public. A quarterly newsletter was also regularly published on REG website and social media.
- **Corporate Social Responsibility: Different activities and events were sponsored** to promote REG’s image and visibility. These include Miss Rwanda 2021, Service excellence Awards as well as the Connection of a village of survivors of the Genocide against the Tutsi in Muhanga District (Murambi). Under CSR, REG also supports Imbutu Foundation in the facilitation of girls to pursue technical and vocational education. Every year, REG contributes to Ibuka activities to commemorate the Genocide against Tutsi and also provides monthly electricity tokens to Kigali Genocide Memorial Site.

REG also has 2 professional sports team which increase the company's visibility (REG Basketball Club & REG Volleyball Club).

- **Branches serving as one stop center for all REG and subsidiaries information:** In order to strengthen REG branding and ease access to services provided by REG and its subsidiary companies, REG currently has 33 branches including 1 branch in every District and 6 branches in Kigali City. These branches represent REG, EUCL and EDCL in all matters related to their respective Districts/location. Managers of branches serve also as spokesperson of REG and they can interact with media on all issues related to REG, EDCL and EUCL concerning their respective Districts.

2.8. Capacity building

Human capacity development has been at the forefront of interventions within the energy sector. REG continues to ensure adequate skillsets among its staff to ensure that all Rwandans are served with electricity by end of 2024.

We cannot talk of the capacity building without considering the recruitment of staff to be trained and their compensations on services rendered. The following were accomplished in the sphere of human resources management:

- i. Staff recruitment: 19 new EDCL staff, 22 New EUCL Staff and 1 new REG Holding Staff were recruited (on contract and permanent basis), to fill in 37 vacant positions within EDCL, 43 Vacant posts within EUCL, and 18 Vacant posts within REG Holding.
- ii. Capacity building: 71 EUCL staff, 24 EDCL staff and 1 REG Holding staff were trained in various fields including Operations and maintenance of power infrastructure, Health & Safety, Public Financial Management, Project Management, Public Procurement...
- iii. Payment of salary arrears: REG received Two Billion (2,000,000,000 Frw) from MINECOFIN to pay arrears of former EWSA staff. The received budget was used to pay 420 employees at 75% of the total due.

2.9. Commercial services

Electricity billing and revenue collections

During the fiscal year 2020/2021, the total electricity billed by EUCL for both prepayment and post payment customers, including exports to Uganda through Cyanika-Kisoro, increased to 766,606,204.22 kwh from 702,597,060.14kWh of last year and respectively the bill increased to Rwf 157,906,289,288 from Rwf 137,912,290,995.

The total collection on prepayment, post payment and works were Rwf 154,361,119,629 compared to Rwf 157,906,289,288 of total bills, the collection rate was 98%. The following tables provide details on total revenue collections of FY2020/21.

Total Revenue collections for both Prepaid & Postpaid

	Jul-20	Aug-20	Sep-20	Oct-20	Nov-20	Dec-20	Jan-21
Prepaid	5,394,091,987	5,519,806,780	5,373,945,989	5,664,706,043	5,538,362,405	5,935,997,631	5,415,893,226
Postpaid	6,389,824,804	6,702,003,950	6,415,423,998	7,024,389,137	6,759,248,701	6,460,913,697	5,365,091,854
Total	11,783,916,791	12,221,810,730	11,789,369,987	12,689,095,180	12,297,611,106	12,396,911,328	10,780,985,080

	Feb-21	Mar-21	Apr-21	May-21	Jun-21	Total	%
Prepaid	5,149,165,666	6,140,592,675	6,020,185,293	6,162,407,989	6,115,964,997	68,431,120,681	47%
Postpaid	5,233,949,281	6,839,300,875	5,985,370,031	6,069,569,918	6,635,322,548	75,880,408,794	53%
Total	10,383,114,947	12,979,893,550	12,005,555,324	12,231,977,907	12,751,287,545	144,311,529,475	100%

Table 8: Total Revenue collections for both Prepaid & Postpaid

Billing vs Collections for the first Financial Year 2020/2021								
Billing								
	Post Paid	Pre-paid	Works	Dark Fiber	UETCL	OWN CONSUMPTION	PUBLIC LIGHTING	Total Amount Billed
Jul-20	6,825,511,548	5,394,091,987	68,770,261	-	27,774,417	93,664,943	349,040,199	12,316,148,214
Aug-20	6,667,380,528	5,519,806,780	164,734,262	-	29,235,248	91,139,741	342,967,738	12,381,156,816
Sep-20	6,681,181,607	5,373,945,989	103,256,145	-	27,831,546	101,171,964	334,035,285	12,186,215,287
Oct-20	6,970,968,689	5,664,706,043	135,227,961	-	32,505,009	114,147,943	326,907,276	12,803,407,702
Nov-20	7,228,409,554	5,538,362,405	27,783,053	113,423,861	34,937,434	109,156,220	350,491,392	12,942,916,307
Dec-20	7,212,150,411	5,935,997,631	1,696,328,983	110,995,068	34,239,104	121,311,295	358,144,977	14,989,711,197
Jan-21	6,959,983,052	5,415,893,226	183,657,432	-	33,213,782	110,649,875	342,487,560	12,592,747,492
Feb-21	6,769,424,327	5,149,165,666	661,793,835	-	29,884,044	95,346,730	352,410,659	12,610,267,872
Mar-21	7,010,210,701	6,140,592,675	410,534,942	-	34,724,123	104,314,799	331,125,781	13,596,062,441
Apr-21	7,340,394,389	6,020,185,293	311,627,873	117,127,251	36,182,075	99,146,960	337,550,638	13,825,516,880
May-21	7,051,238,848	6,162,407,989	133,312,468	-	40,537,123	97,429,147	332,556,077	13,387,496,428
Jun-21	7,855,055,716	6,115,964,997	264,425,247	-	39,196,690	102,261,976	351,501,458	14,274,642,650
Total	84,571,909,370	68,431,120,681	4,161,452,463	341,546,180	400,260,594	1,239,741,593	4,109,219,039	157,906,289,288
Collection								
	Post Paid	Pre-paid	Works	Dark Fiber	UETCL	OWN CONSUMPTION	PUBLIC LIGHTING	Total Cash Collections
Jul-20	6,361,142,306	5,394,091,987	68,770,261	-	28,682,498	93,664,943	349,040,199	11,852,687,052
Aug-20	6,672,053,228	5,519,806,780	164,734,262	-	29,950,722	91,139,741	342,967,738	12,386,544,992
Sep-20	6,386,951,841	5,373,945,989	103,256,145	-	28,472,157	101,171,964	334,035,285	11,892,626,132
Oct-20	6,993,879,009	5,664,706,043	135,227,961	-	30,510,128	114,147,943	326,907,276	12,824,323,141
Nov-20	6,724,311,267	5,538,362,405	27,783,053	-	34,937,434	109,156,220	350,491,392	12,325,394,159
Dec-20	6,426,061,022	5,935,997,631	1,691,769,984	224,119,931	34,852,675	121,311,295	358,144,977	14,312,801,243
Jan-21	5,331,748,766	5,415,893,226	183,657,432	-	33,343,089	110,649,875	342,487,560	10,964,642,512
Feb-21	5,203,434,345	5,149,165,666	661,793,835	-	30,514,936	95,346,730	352,410,659	11,044,908,782
Mar-21	6,804,570,900	6,140,592,675	396,923,713	-	34,729,975	104,314,799	331,125,781	13,376,817,263
Apr-21	5,948,590,512	6,020,185,293	311,627,873	333,227,355	36,779,520	99,146,960	337,550,638	12,650,410,552
May-21	6,069,569,918	6,162,407,989	133,312,468	-	97,429,147	97,429,147	332,556,077	12,365,290,375
Jun-21	6,635,322,548	6,115,964,997	264,425,247	-	-	102,261,976	351,501,458	13,015,712,792
Total	75,557,635,661	68,431,120,681	4,143,282,235	557,347,286	322,773,133	1,239,741,593	4,109,219,039	149,012,158,996
	5,348,960,633	Money on Public lighting & Own Consumption						5,348,960,633
Percentage	96%	100%	100%		81%	100%	100%	98%

Note: Postpaid Collection rate including Money on Public lighting of (4,109,219,039), EUCL own Consumption (1,239,741,593) & VAT exclude on some Public Institutions that pay us less VAT

Table 9: Billing Vs Collections

Revenue Protection Program (RPP)

The Revenue Protection Program (RPP) Funded by the World Bank has been implemented and 2000 smart meters have been installed at the premises of Postpaid Customers. An additional 1000 smart meters has been acquired from the World Bank to cover the remaining customers. Currently the automated Metering System (MDM) is now linked to the billing system (CMS) and results yielded will enable data from customers' meters to be pushed into Customer Management System.

2.10. Energy Efficiency

About 83% of Rwandan Households use traditional biomass fuels for cooking and heating. However, the NST1 targets to reduce the use of these fuels from 79.9% to 42% by 2024. REG/EDCL had opted to continuing focus on awareness campaigns on the use of alternative cooking technologies and dissemination of Improved Cook Stoves (ICS). In this year, 26 awareness campaigns were carried out across all Districts and 302,614 Improved Cook Stoves were distributed.

2.11. Financial performance

Income Statement (EUCL)

Details	ACTUAL (Accrual's concept)	Budget	Variance
	2020/2021	2020/2021	2020/2021
	Rwf bil	Rwf bil	%
Revenue	127.95	132.90	-4%
Cost of power	94.68	113.19	-16%
Gross profit	33.27	19.72	
Gross profit Margin	26%	15%	
Subsidies	9.96	10.50	-5%
Other income	8.28	5.23	58%
	18.24	15.73	
Operating expenses			
Employment costs	10.16	9.77	4%
Network maint & Repair	4.37	4.49	-3%
Support to EDCL	2.61	0.98	167%
Support to REG	2.70	1.15	134%
Selling and running costs	3.69	2.54	45%
Public lighting	3.48	4.87	-28%
Administrative expenses	5.39	4.65	16%
Total Operating Cost	32.41	28.44	
Operating profit/(loss)	19.11	7.01	
EBIT Margin	15%	5%	
Financing costs	5.51	6.56	-16%
Realization of grants	15.64	8.20	91%
Depreciation and amortization	21.12	10.08	110%
Profit before tax	8.11	1.44	

Table 10: EUCL Income Statements

Revenues

Revenue achieved in the year was Frw 127.95 billion compared to Frw 132.90 billion for budget planned, with the variance of -4%. The revenues below the budget by 4% is explained by not achieving the planned energy consumption due to reduction in demand because of COVID-19.

Cost of power

Cost of power was RWF 94.68 billion compared to RWF113.19 billion for the planned budget, with the variance of -16%. The cost was below the budget mainly due to delay of commission of Hakan peat to power plant that was expected to come on grid in April 2020 and supply electricity until the end of the financial year.

Subsidies

Of the committed subsidies of Frw.10.5 billion, Frw.9.5 billion was received during the year. And the balance of 1 billion is still outstanding.

Other incomes

The amount was higher than the budget amount due increase in customer projects that were executed during the year.

Operating costs

Overall operating expenditure was increased by 3.18 billion Compared to the budget due to management fees paid to REG of 1.55 billion and network materials given to EDCL from RESSP (EUCL project) of 1.63 billion.

Gross Profit Margin and EBITDA

The company's gross profit has positively improved from Frw 16.51 billion (15%) in 2019/20 to 33.27 (26%) billion in 2020/2021 of the total revenue. There has been also an improvement in EBITDA from 14% in 2019/20 to 27% in 2020/2021.

Investing cash flows

Highlighting on movement of cash flows of EDCL, there were investments of RWF147.344 billion against Frw 138.132 billion for the revised budget FY 2020/2021, all financed by grants and loans (from GoR and Development partners). The following is the summary of budget execution report

Description	Approved Budget	Revised Budget	Execution Budget	Execution Rate
I. EDCL GoR Budget	62,816,577,819	66,396,152,859	94,611,012,626	142%
I.1 Administrative and Support Services	16,808,463,612	16,808,463,612	16,759,785,306	100%
I.2 GoR Development Budget	46,008,114,207	49,587,689,247	77,851,227,320	157%
I.2.1 Electricity Generation	3,060,788,872	2,759,205,581	2,530,104,926	92%
I.2.2 Electricity Transmission And Distribution	30,030,606,066	34,378,391,122	60,645,172,294	176%
I.2.3 Energy Efficiency And Supply Security	12,916,719,269	12,450,092,544	14,675,950,100	118%
II. External Resources	77,694,418,840	58,919,950,675	45,131,084,711	77%
II.1 External Grants	36,529,746,838	31,042,424,798	18,324,139,557	59%
II.2 External Loans	41,164,672,002	27,877,525,877	26,806,945,154	96%
III. Other Revenues	12,332,177,622	12,816,201,622	7,602,094,906	59%
Grand Total	152,843,174,281	138,132,305,156	147,344,192,243	107%

Table 11: EDCL budget Execution Report

The overspending observed on the GoR budget in general and as well as development budget was due to the additional allocation granted after the budget revision to compensate the gap observed on key& critical transmission projects.

Expropriation

During 2020/21 fiscal year, REG/EDCL received 15,199 files worth Frw 6,838,876,508, among them 12,134 files have been compensated for Frw 5,775,267,092 while 3,065 files worth Frw 1,063,609,416 were under process.

2.12. Gender mainstreaming

In terms of promoting gender within the company, REG a full time gender advisor who is in charge of ensuring gender equality is considered at work place and all REG activities are gender sensitive. The following are the key activities done during fiscal year 2020/21:

- Through REG affirmative action plan, the company has completed a 6months training for 31 women with technical background who have completed their studies in IPRCs. The intention of this training was to increase a number of women with technical background who have potential and skills that the company needs and are able to compete for available vacant positions within the company.
- REG HR manual was revised and gender equality was integrated. This was aligned with the affirmative action plan to ensure gender equality and equity promotion will be implemented without much hindrances.
- REG participated in Gender Seal program, where GMO, Private sector and UNDP conducted gender diagnosis within REG. This was conducted by a consultant that was hired by those institutions. The outcomes were positive and REG was awarded among best companies that have worked hard to promote gender equality, the CEO of REG received this award.
- There has been much emphasis in recruiting women mainly in leadership and technical positions, here most position advertised were revised and ensure positions criteria do not act as hindrances to either men or women and as a result of that of all positions recruited in REG and its subsidiaries 43% were given to women.
- REG participated in engendering utilities program and 3 staff who have been participating have complete this one-year program. These employees will work together with the management to continue promoting gender within the company. Again, this team that was under this program is working on the company succession plan which will be gender sensitive, business case as well as change management to ensure gender equality program is strengthened within REG.
- REG celebrated the International women’s day virtually due to pandemic of Covid-19. This event involved company staff and other partners. The Chief Gender Monitor (GMO) explained the importance of gender accountability in energy sector. Through this event, REG awarded 18 women from REG and its subsidiaries who performed well in previous year.
- REG in partnership with Engendering Utilities program, trained men managers on male engagement and these will act as catalysts to other men within REG to ensure gender mainstreaming is perceived well.
- REG is collaboration with WIRE are working on training 25 women with technical background in the whole power system to prepare them to work in REG training center.
- REG/EUCL and EDCL managers were given sessions on unconscious biases at workplace and how to avoid them. This helps to promote gender equity by considering people the same and give them equal opportunities with knowledge to understand who are behind and give them extra support without bias.
- There is continuous following of company compliance on gender policy, sexual harassment policy and affirmative action plan.
- As part of talent attraction and outreach REG worked with GMO to meet and inspired women in technical schools to work in energy sector, REG female engineers spoke to these women and inspired them. This is a continuous process and we are planning more meetings and visits once Covid-19 restrictions are over.

3. CONCLUSION

This report highlights the key achievements realized in the Rwanda Energy Group over the course of fiscal year 2020/21. Though the performance of this year was generally good, REG and its subsidiaries continue to face the following challenges that negatively impact on the delivery of medium and long term goals of the energy sector as stipulated in such strategic documents as the NST1 and REG strategic plan:

1. Insufficient budget for development projects
2. The issue of mismatching demand and power supply
3. End user tariffs that are not cost reflective

As was the case in FY 2019/20, the COVID19 pandemic negatively affected the implementation of some projects in FY2020/21 though not as much as in the previous year.

Despite the above-mentioned challenges, REG is committed to continue engaging its shareholders as well as other stakeholders to find appropriate solutions. REG will also continue to build on the achievements realized and continue to implement policies, programs and strategies to achieve NST1 targets in close collaboration with all stakeholders involved, encouraging teamwork among its employees, as well as strengthening coordination, monitoring and evaluation.

ANNEXES

Annex 1: Implementation progress of REG Imihigo FY2020/21

#	Project name	Project scope	Annual target	Implementation Status as of End June 2021
1	Construction of Nyabarongo II (43.5 MW) HPP	Property valuation for Phase I of Nyabarongo II	90%	Asset valuation completed at 92%. Payment of Frw 631.9 million for 433 PAPs In addition, the contract for supervision firm (Owner's engineer) was signed on 18 th January 2021
2	Construction of Hakan Peat to Power (80 MW)	Construction and commissioning of Peat Power Plant of 80MW at Mamba sector-Gisagara District	100%	The power plant construction is completed at 100%. Testing and commissioning ongoing.
3	Construction of Rusumo HPP (80 MW)	Construction of Hydropower Plant at Rusumo	75%	Overall project progress is at 78% with civil works component recorded at 82% and electro-mechanical works at 74%.
4	Construction of 220kV Mamba-Rwabusoro-Bugesera/110kV Bugesera-Gahanga Transmission Line and associated SS	Construction of: - 220kV TL from Mamba to Bugesera; - 110kV TL from Bugesera to Gahanga; - Underground cable from Bugesera Substation to Bugesera Airport - 110kV from Bugesera substation to Bugesera Industrial Park; - Substations of Mamba, Rwabusoro and Bugesera	100%	The project was completed at 100% and commissioned.
5	Construction of 23.3 km of 110kV single circuit Mukungwa-Nyabihu Transmission line and associated substations	1) 23.3 km of 110kV single circuit Transmission line, 2) Five substations at Mukungwa (Line Bay), Nyabihu, Camp belge (upgrade), Musha and Rubavu (Temporally).	55%	Six key components of the project are at different stage as follows: 1) Nyabihu substation: 92.93% 2) Rubavu substation: 100% 3) Camp-belge substation: 100% 4) Mukungwa substation: 98% 5) Musha Substation: 50% 6) Transmission line: 78% The overall project progress is recorded at 83%

#	Project name	Project scope	Annual target	Implementation Status as of End June 2021
6	Improvement of Substations and Distribution network (JICA-III), Upgrade of Gasogi substation	<ol style="list-style-type: none"> 1) Construction of 15kV transmission line from Gasogi Substtion to Nyagasambu and 15kV Gasogi-Masaka 2) Extension of Gasogi Substation 	10%	<p>The first phase of land acquisition for tower location and Gasogi substation extension completed at 84%. Contract for construction works was signed on 1st December 2020. Site mobilization completed and levelling at Gasogi Substation started. Detailed designs ongoing.</p> <p>The overall project progress was recorded at 14%</p>
7	Construction of 63.5km of 220kV Rwanda-Burundi Transmission Line and associated SS	<ol style="list-style-type: none"> 1. Construction of 63.5 Km of 220kV Kigoma-Gisagara; 2. Extension of Kigoma substation and 3. Construction of a new substation of Gisagara 	90%	<ul style="list-style-type: none"> - Construction works progress on transmission line is 93% - Overall substations progress at 84% <p>Overall project progress at 90.03%</p>
8	Construction of 119km of 220kV Single circuit Rusumo-Bugesera-Shango Transmission Line and associated SS	<ol style="list-style-type: none"> 1. Construction of 117.8 Km of 220kV TL; 2. Extension of Bugesera and Shango Substations 	90%	<ul style="list-style-type: none"> - Transmission Line at 72% - Bugesera substation at 98.2% - Shango substation: 99.92% <p>Overall Substations progress at 99%</p> <p>Overall project progress at 90.06%</p>
9	Construction of five 220 kV Substations (Birembo, Shango Rubavu, Bwishyura and Kibuye).	<p>Complete the remaining works from ISOLUX contract related to:</p> <ul style="list-style-type: none"> - Completion of extension works at Birembo, Shango and Kibuye - Construction of Rubavu and Bwishyura substations 	50%	<p>Civil works and electromechanical installation completed at Birembo and Shango substations, All material and equipment supplied</p> <p>New contract for construction of remaining substations under advanced procurement stage. Overall project progress is at 60%</p>

#	Project name	Project scope	Annual target	Implementation Status as of End June 2021
10	Construction of 75km Bwishyura - Kigoma-Rwabusoro 220KV Transmission Line and Shema (Symbion) substation	<ol style="list-style-type: none"> 1. Construction of 75km of 220kV transmission lines Bwishyura-Rwabusoro via Kigoma as well as 4 Km TL connecting Shema Plant to the national grid, 2. Extension of of Bwishyura, Kigoma, and Rwabusoro substations 	20%	<p>TL: (4 Km Azouri Section): 29%</p> <ul style="list-style-type: none"> - Excavation of all 19-tower location completed. - Construction materials for civil works supplied. <p>Main line : 0.9%</p> <ul style="list-style-type: none"> - Line route completed - Topographic survey completed <p>Shema 11/110kV SS: 53%</p> <ul style="list-style-type: none"> - Foundation for transformer installation completed. - Foundation for equipment is ongoing - Transformer and its accessories available on site. <p>Kigoma 220/110kV SS: 0.24%</p> <ul style="list-style-type: none"> -Topographic survey completed, <p>Overall project progress is at 21%</p>
11	Construction of 631.85km of streetlights along the National roads	<ol style="list-style-type: none"> 1. Construction of 241.4 Km of LV 2. Service connection to enlighten 724.687 Km along old and new roads countrywide 	30%	<ul style="list-style-type: none"> - Overall project designs: 80% - Procurement of materials: 40% - 31.8 Km of Maranyundo-Mayange- Gako Nemba section has been completed. - 5.8 Km Nyarutarama golf club perimeter completed. - Poles erection at 34 Km Kigali -Kayonza section completed. - 65 Km Kigali-Gatuna on going. - 13.6 Km Musanze-Kinigi ongoing. <p>Overall project is at 32%</p>
12	Construction of 48.06 km of 30kV line from Gabiro SS to Gabiro Commercial Farm	Construction of 30kV distribution line connecting Gabiro Substation to Gabiro Agrobusiness Hub (AGH) in Gatsibo district.	50%	<p>Poles erection completed and stringing ongoing.</p> <p>Overall project progress is at 86%</p>
13	Grid strengthening in Rwamagana, Kayonza & Ngoma districts (8.4km of MV and 42km of LV)	Upgrade the MV line network, installation of new transformers and reconnecting households in targeted Districts	100%	Project was completed at 100% in Q2
14	Upgrade Rubavu distribution network from 6.6 to 30kv	Upgrade the MV line network, installation of new transformers as well as new cabins in Rubavu city	100%	Project was completed at 100% in Q2

#	Project name	Project scope	Annual target	Implementation Status as of End June 2021
15	Upgrade of the Eastern Province network from single phase to three phase	Upgrade the MV line network from single phase to three phase, installation of new transformers and new cabins in targeted Districts	50%	- About 46Kms have been upgraded from single phase to three phase by both contractor and in house teams. - Material supply is at 34.5% - Installation is also at 9.34% - Design approvals currently at 13.51% Overall progress is at 57.37%
16	Grid service connection of 118, 657 New households	<ul style="list-style-type: none"> - Monitor the implementation of EPC contracts - Supply Material and Monitor the implementation of Line Construction Contracts - Supply Material and deploy inhouse teams in specific sites - Implements Districts contract - Manage Fill in connection of new customers 	118 657HHs connected	178,884 households were connected
17	Grid connection of 260 new productive use areas	Idem as above	260	1,110 PUAs were connected
18	Ensure 26,002 New households are connected to off-grid	<ul style="list-style-type: none"> - Outreach campaign on use of off grid systems - Partnership with private companies in installation of off grid systems 	26,002 households connected to off-grid electricity	72,202 households were connected
19	Reinforcement of Kigali distribution network (8 cabins)	<ul style="list-style-type: none"> - Construction of 8 cabins 	Overall Progress: 40%	Overall Progress: 64.86% <ul style="list-style-type: none"> • Manufacturing & materials supply: 83.29% • FAT Done for all electrical equipments • Cabins Construction, Civil works: .79.69% * Installation of Electrical equipment: 7%
20	Construction of MV distribution lines (Agg. 37Km) associated with the Reinforcement of Kigali distribution network (8 cabins)	<ul style="list-style-type: none"> - Construction of MV line 	Overall Progress: 55%	Overall Progress: 57.76% <ul style="list-style-type: none"> • Mobilization to site: 80% • FAT: 60% • Manufacturing & Material supply: 44%

Annex2: Details of all the corrections made in the stock of transmission lines

Transmission Lines Reported in 2019/2020			Transmission Lines Reported in 2020/2021					
Transmission Line	Kilovoltage (kV)	Length (Km)			Kilovoltage (kV)	Length (Km)	Negative Changes	Positive Changes
Birembo-Gasogi	110	8.6		Birembo-Gasogi	110	8.67		0.07
Birembo-Shango	110	9.5		Birembo-Shango	110	9.59		0.09
Bugarama-Gishoma	110	12.2		Bugarama-Gishoma	110	12.27		0.07
Gasogi-Musha	110	17.4		Gasogi-Musha	110	17.48		0.08
		0		Ndera cut-In cut-out	110	2.14		2.14
Mukungwa-Ntaruka via Gifurwe	110	26.9		Gifurwe-Mukungwa (Double Circuit)	110	18.46		0.07
				Ntaruka-Gifurwe	110	8.51		
Ntaruka-Gifurwe	110	8.5		Duplication of the above lines		0	-8.50	
Gifurwe-Ntaruka	110	18.4		Duplication of the above lines		0	-18.40	
Gikondo-Jabana I	110	8.3		Gikondo - Jabana I	110	8.36		0.06
Jabana I-Birembo	110	6.9		Jabana I-Birembo	110	6.97		0.07
Jabana II-Jabana I	110	1.3		Jabana I-Jabana II	110	1.29	-0.01	
Jabana I-Rulindo	110	25.7		Jabana I-Rulindo	110	25.73		0.03
Jabana-Mt.Kigali-Gahanga	110	27		MontKigali-Gahanga	110	9.64	-0.11	
				MontKigali-Jabana	110	17.25		
Kabarondo-Rwinkwavu	110	7.2		Kabarondo-Rwinkwavu	110	7.25		0.05
Karongi-Kilinda	110	25.1		Kilinda-Karongi	110	25.11		0.01
Karongi-Ruganda	110	12.4		Karongi-Kibuye(Ruganda)	110	12.41		0.01
Kibogora-Karongi	110	39.2		Karongi -Kibogora	110	39.20		
Kigoma-Mont Kigali	110	40.3		MontKigali-Kigoma	110	40.33		0.03
Kilinda-Kigoma	110	27.45		Kigoma-Kilinda	110	27.45		
Mamba-Rwabusoro-Bugesera-Gahanga	220	119		Mamba-Rwabusoro	220	21.54	-39.51	
				Rwabusoro-Bugesera SS	220	40.64		
				Bugesera SS - Gahanga	110	17.31		

Previously not counted

Figures from initial designs were previously used instead of as-built length

				Bugesera-Bugesera IP	110	23.10		23.10
Mirama-Shango	220	92		Shango -Mirama(Up to Uganda Border)	220	92.01		0.01
Mont Kigali-Gikondo	110	5.2		Gikondo-MountKigali	110	5.22		0.02
Mururu II-Burundi border	110	26.8		Not for Rwanda		0.00	-26.80	
Mururu II-DRC Border	110	3.2		Not for Rwanda		0.00	-3.20	
Mururu I-Kibogora	110	39.3		Kibogora-Ntendezi	110	18.46		0.05
				Ntendezi-Mururu II	110	20.89		
				Kibuye-KivuWatt	110	1.21		
Mururu I-Mururu II	110	0.37		Mururu II-Mururu I	110	0.37		
Musha-Kabarondo	110	23.3		Musha-Kabarondo	110	23.35		0.05
Ntendezi-Bugarama	110	17.6		Ntendezi-Bugarama	110	17.62		0.02
Nyabarongo-Kilinda	110	27.8		Kilinda-Nyabarongo	110	27.85		0.05
Rubavu-DRC Border	220	5.9		Rubavu-Goma Border	220	7.01		1.11
Rukarara-Kilinda	110	31.2		Kilinda-Rukarara	110	31.29		0.09
Rulindo-Gifurwe	110	24.9		Rulindo-Gifurwe	110	24.93		0.03
Gabiro-Musha	110	45.9		Gabiro-Musha	110	45.96		0.06
Rulindo-Gabiro	110	63.8		Rulindo-Gabiro	110	63.86		0.06
Rulindo-Musha via Gabiro	110	109.8		Duplication of Gabiro Musha & Rulindo Gabiro		0.00	-109.80	
Rubavu-Kibuye/ Kivu Watt	220	57.5		Rubavu - Bwishyura/Kibuye	220	57.54		0.04
Shango-Rubavu	220	106.1		Shango - Rubavu	220	106.11		0.01
Shango-Kivu WATT-Rubavu& Kibuye	220	163.6		Duplication of Shango-Rubavu & Rubavu-Kibuye		0.00	-163.60	
Total Km		1,285.62				944.38	-369.93	28.69

Commissioned in October 2020

Previously not counted

Annex 3: Generation installed Capacity by end of FY2020/21

N°	Name	On/Off Grid	Installed capacity (MW)
1	Nyabarongo	Grid	28
2	Kivuwatt (Kibuye Gaz methane)	Grid	26.19
3	Jabana 2	Grid	21
4	Gishoma	Grid	15
5	Mukungwa 1	Grid	12
6	Mururu II (Rusizi II)	Grid	12
7	Ntaruka	Grid	11.25
8	SO Energy Birembo	Grid	10
9	SoEnergy Masoro	Grid	10
10	SoEnergy Mukungwa	Grid	10
11	Rukarara 1	Grid	9
12	Gigawatt	Grid	8.5
13	Jabana 1	Grid	7.8
14	Mururu I (Rusizi I)	Grid	4.1
15	Giciye 1	Grid	4
16	Giciye 2	Grid	4
17	KP1 (Methane gaz)	Grid	3.6
18	Mukungwa 2	Grid	3.6
19	Nasho Solar	Grid	3.3
20	Rugezi	Grid	2.6
21	Rwaza	Grid	2.6
22	Rukarara V- Mushishito	Grid	2.3
23	Keya	Grid	2.2
24	Rukarara 2	Grid	2.2
25	Gatuna	Grid	2
26	Nyirantaruko Hpp	Grid	1.84
27	Gihira	Grid	1.8
28	Gisenyi	Grid	1.7
29	Nkora	Grid	0.68
30	Gaseke	Grid	0.5
31	Mazimeru	Grid	0.5
32	Nyirabuhombohombo	Off-grid	0.65
33	Rubagabaga	Grid	0.45
34	Musarara	Grid	0.4
35	Nshili 1	Grid	0.4
36	Agatobwe	Grid	0.39
37	Cyimbili	Grid	0.3
38	Gashashi	Grid	0.28
39	Kigasa MHPP	Grid	0.272

40	Jali Solar	Grid	0.25
41	Janja	Grid	0.2
42	Mutobo	Grid	0.2
43	Nyabahanga	Grid	0.2
44	Murunda	Grid	0.1
45	Nyamyotsi 1 (Nyamisi I)	Off-grid	0.1
46	Nyamyotsi 2	Off-grid	0.1
47	Mukungu PHPP	Off-grid	0.016
48	Giciye III	Grid	9.8
Total			238.368

Annex 4: Stock of Power transmission lines as of June 2021

No	Line voltage rating (kV)	Description	Length (km)
1	110	Birembo-Gasogi	8.67
2	110	Birembo-Shango	9.59
3	110	Bugarama-Gishoma	12.27
4	110	Bugesera-Bugesera IP	23.10
5	110	Gabiro-Musha	45.96
6	110	Gahanga-Bugesera	17.31
7	110	Gasogi-Musha	17.48
8	110	Gifurwe-Mukungwa (Double Circuit)	18.46
9	110	Gikondo-MountKigali	5.22
10	110	Gikondo - Jabana I	8.36
11	110	Jabana I-Birembo	6.97
12	110	Jabana I-Jabana II	1.29
13	110	JabanaI-Rulindo	25.73
14	110	Kabarondo-Rwinkwavu	7.25
15	110	Karongi-Kibuye	12.41
16	110	Karongi -Kibogora	39.20
17	110	Kibogora-Ntendezi	18.46
18	110	Kibuye-KivuWatt	1.21
19	110	Kigoma-Kilinda	27.45
20	110	Kilinda-Karongi	25.11
21	110	Kilinda-Nyabarongo	27.85
22	110	Kilinda-Rukarara	31.29
23	220	Mamba-Rwabusoro	21.54
24	110	MontKigai-Kigoma	40.33
25	110	MontKigali-Gahanga	9.64
26	110	MontKigali-Jabana	17.25
27	110	Mururu II-Mururu I	0.37
28	110	Musha-Kabarondo	23.35
29	110	Ndera cut-In cut-out	2.14
30	110	Ntaruka-Gifurwe	8.51
31	110	Ntendezi-Bugarama	17.62
32	110	Ntendezi-Mururu II	20.89
33	220	Rubavu-Goma Border	7.01
34	220	Rubavu - Bwishyura/Kibuye	57.54
35	110	Rulindo-Gabiro	63.86
36	110	Rulindo-Gifurwe	24.93
37	220	Rwabusoro-Bugesera SS	40.64
38	220	Shango - Rubavu	106.11
39	220	Shango -Mirama(Up to Uganda Border)	92.01
TOTAL			944.39

Source: EDCL annual report 2020/2021

Annex 5: A list of Substations as of June 2021

S/N	Substation	Location
1	Birembo	Gasabo District
2	Bugarama	Rusizi District
3	Bugesera	Bugesera District
4	Gabiro	Gatsibo District
5	Gahanga	Kicukiro District
6	Gasogi	Gasabo District
7	Gifurwe	Burera District
8	Gikondo	Kicukiro District
9	Gishoma	Rusizi District
10	Jabana	Gasabo District
11	Jabana II	Gasabo District
12	Kabarondo	Kayonza District
13	Karongi	Karongi District
14	Kibogora	Nyamasheke District
15	Kigoma	Ruhango District
16	Kilinda	Karongi District
17	Mamba	Gisagara District
18	Mashyuza	Rusizi District
19	Mont Kigali	Nyarugenge District
20	Mukungwa	Musanze District
21	Mururu I	Rusizi District
22	Musha	Rwamagana District
23	Ndera	Gasabo District
24	Ntaruka	Burera District
25	Ntendezi	Rusizi District
26	Nyabarongo	Muhanga District
27	Nzove	Nyarugenge District
28	Rubavu temporary	Rubavu District
29	Kibuye	Kibuye District
30	Rukarara	Nyamagabe District
31	Rulindo	Rulindo District
32	Rwabusoro	Gisagara District
33	Rwinkwavu	Kayonza District
34	Shango	Gasabo District
35	Poids Lourd	Rubavu District
36	Camp Belge	Musanze District
37	Gatuna	Gicumbi District

Source: EUCL Transmission Department