Enabel

EDCL
ENERGY DEVELOPMENT CORPORATION LIMITED

Final Report (2014-2020)

Improving access to reliable on-grid electricity services for households and priority public institutions – Belgian contribution to EARP

BE1-EARP

RWA1208111

Belgian development agency

enabel.be

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Acronyms

AfDB	African Development Bank
CDEU	Capacity Development Energy Utility
DI	Director of Intervention
DP	Development Partner
EARP	Electricity Access Roll-Out Program
EDCL	Energy Development Corporation Limited
EDPRS	Economic Development Poverty Reduction Strategy
Enabel	The Belgian development agency
EPC	Engineering procurement construction
ESMAP	Energy Sector Management Assistance Program
ETR	End term review
EUCL	Electricity Utility Corporation Limited
EWSA	Energy Water and Sanitation Authority
GMO	Gender Monitoring Office
GOR	Government of Rwanda
HOC	Head of Cooperation
ICP	Indicative Cooperation Program (between Rwanda and Belgium)
ITA	International Technical Assistant
M&E	Monitoring and Evaluation
MD	Managing Director
MTF	Multi-Tier Framework
MTR	Mid-term review
PIM	Project Implementation Manual
PMU	Project Management Unit
RAF	Administrative and Financial Responsible
RAFI	International Financial and administrative Responsible
REF	Rural Electrification Strategy
TFF	Technical and Financial File
WB	World Bank

Intervention form

Intervention title	Improving access to reliable on-grid electricity services for households and priority public institutions – Belgian contribution to Electricity Access Roll-Out Programme (BE1-EARP)
Intervention code	RWA1208111
Location	Eastern Province, Rwanda
Total budget	€ 17.000.000 (BE1-EARP)
Partner Institution	Ministry of Infrastructure (MININFRA) Rwanda Energy Group (REG) Electricity Development Corporation Limited (EDCL)
Start date Specific Agreement	BE1-EARP: 14 February 2014
Date intervention start /Opening steering committee	BE1-EARP: 15 May 2014
Planned end date of execution period	BE1-EARP: 13 February 2020 (originally 48 months execution period, but extended until the end of the Specific Agreement)
End date Specific Agreement	BE1-EARP: 13 February 2020
Target groups	Households, priority public institutions and businesses in rural areas of Eastern Province
Impact[1]	The energy sector is able to provide sufficient, reliable and affordable energy to all Rwandans
Outcome	The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved
Outputs BE1-EARP	Rural electricity access is increased through national electricity grid extension
	Electricity grid reliability is increased through existing grid strengthening
	Electricity grid access affordability is improved through pilot activities in the intervention area (cancelled)
	Local capacity is strengthened within EARP and EUCL
Years Covered by the Intervention	February 2014 to February 2020

[1] Impact refers to global objective, Outcome refers to specific objective, output refers to expected result

Global appreciation

Describe your global appreciation of the intervention (max 200 words):
BE EARP comprises a 39 million euros grant envelop supporting Electricity Development Coorporation (EDCL), a subsidiary of Rwanda Energy Group in upgrading and expanding the electricity network in the country. Of which, B1 EARP constitutes 17 million euros of the overall BE EARP portfolio. And mostly contributed to extension of new power distribution lines as well the new on-grid connections. The number of electricity connections resulted from the BE EARP project has thus far exceeded over 17000 that included households, local businesses and social and public institutions primarily in the eastern province of Rwanda. This contributes towards the GoR's target of reaching 100% electrification by the year 2024, of which 69.1% will be connected to the grid while 30.9% will be using off-grid solutions. The project faced some design and implementation challenges in the early years of implementation. All major works/supply contract went through addendums, for scope increase and time extension , thereby consequentially pushing the completion date of the projects further. However, despite the delays in the completion of electrification lots within the initial implementation period, all the activities were completed by project specific agreement period, Feb, 2020. Major part of the BE1 project investments went to five districts of Eastern province region namely, Rwamagana, Kayonza, Kirehe and Ngoma in constructing almost 800 km of distribution networks connecting over 17000 residential and non-residential customers to the national electricity grid. These completed projects are expected to greatly contribute to the achievement of project's specific objectives and outcomes which also goes beyond the projects implementation period and also contributes to the objectives of new economic recovery plan set by Rwandan government in responding to mitigating economic impact of COVID-19 pandemic. The cumulative budget expenditures for BE1 EARP stood at 99.87% by the project closure. The project was highly relevant and critical to REG which was facing challenges to meet the Government of Rwanda energy target as well as upgrading the existing networks with limited financial, technical, and human resources. The smooth functioning of the steering committee gave strategic direction and worked together to overcome challenges to the achievement of project goals.

At the implementation level, there had been no differences among Enabel and the partner (REG/EDCL) in the program level understanding and activity prioritization. The flexibility offered by Enabel in accommodating evolving government energy priorities and utility needs has continuously received appreciations and acknowledgements. The project also acknowledges the great services and support provided by all the stakeholders including EPC contractors, suppliers, supervision firms involved in the project for its successful completion.

Score your global appreciation of the intervention1:	**Score** your global appreciation of the intervention2:
	Very satisfactory
National execution official	**Enabel execution official**
Reuben Reuben Ahimbisibwe Director of Inverntion, BE EARP	Bibek Raj Kandel, Intervention Co-Manager, BE EARP

31.08.2022

[1] Very satisfactory - Satisfactory - Non satisfactory, in spite of some positive elements - Non satisfactory

[2] Very satisfactory - Satisfactory - Non satisfactory, in spite of some positive elements - Non satisfactory

PART 1 : Results achieved and lessons learned

1 Assessing the intervention strategy

1.1 Context

Rwanda's Electricity Access Roll-out Program (EARP) was designed to achieve the GoR stated targets set out in Economic Development and Poverty Reduction Strategy (EDPRS II) covering the period 2012-2017 EDPRS. The GoR was even projecting an average annual growth of 11.5% between1 2013 and 2018. According to the GoR's vision, economic growth would be, among other things, driven by the uninterrupted provision of energy at prices that are stable and regionally competitive. This ambition called for both number of electricity connections to increase and existing power infrastructures ungraded and strengthened significantly, with a special emphasis on connecting productive uses, social infrastructures-health facilities, schools and administrative offices. EARP is a nationwide program operating under the Rwanda Energy Group (REG) which has a program management department for this purpose.

This represented a considerable financial challenge that could only be met with massive Government funding and support from development partners. The total cost of required investments was initially estimated to be 690 million USD over the period 2013 - 2018. Thus far, the REG planning was more focused on grid extension and for high voltage line construction or upgradation. However, a national distribution grid was needed to be permanently adapted to increasing demands, especially in rural development contexts where initial demand was very low but could grow quickly due to increasing household and especially industrial/productive use. In 2014, the total number of electricity connections was around 568712 roughly 20% of the access rate then. EARP target had then called for a total number of electricity connection to increase from 335,000 at the end of 2012 to 1,000,000 by 2018, with a special emphasis on connecting social infrastructure health facilities, schools and administrative offices
The BE1 EARP, in this backdrop, was a pivotal contribution to GoR ambition of improving, expanding and strengthening electricity markets in Rwanda.

The project was hosted in EDCL and was implemented under co-management arrangement between EDCL and Enabel. As such the BE1 EARP intervention aspired not only to expanding and existing power networks abut also to improve the organization's performance and enhance Rwandan utility's ability to function and operation with enhanced capacity to respond to GoR's energy ambition within rapid changing environment.

The BE1 EARP was conceived as a part of the bilateral cooperation project between Belgium and Rwanda named "Improving access to reliable on-grid electricity services for households and priority public institutions – Belgian contribution to EARP (BE1 EARP)" which started in May 2014 for an initial duration of 4 years with a Belgian contribution of 17,000,000€. The general objective of BE1 was for the energy sector to be able to provide sufficient, reliable and affordable energy for all Rwandans

The project focused on increasing rural electricity access through national electricity grid extensions, improving grid electricity reliability and affordability and developing capacity within the utility.

1.2 Important changes in intervention strategy

Both the energy landscape and institutional context has evolved significantly since formulation of the project. During the initiation of the project, the government of Rwanda has a target of reaching 70% electricity access by 2018, which was later on revised to reach universal electricity access by 2024, with more emphasis on on-grid connections (48% off grid, 52% on-grid). In 2021, REG revised the target aiming for 70% of access to come from the extension of national grid, and that of 30% from off-grid connections. BE EARP programme was focused on grid infrastructure and was embedded within EDCL, but the some of the capacity building scope was extended to include the entire institution of REG.

The BE1 EARP project is well aligned with the Government of Rwanda overall policies and strategies, and the project maintained its relevance to EDCL in a changing context through a responsive and highly flexible approach adapting to the needs of the utility.

The project BE1-EARP started in May 2014. The first major contract signed was for the supervision of the construction lots[4]. After some delays, a contract with the supervision firm NIPSA was signed in August 2015. Right after signing the contract with NIPSA, a major tender for three construction lots was launched and the project signed three EPC contracts in October 2016 with NPD, STEG and NCC[5]. However, During the implementation of the EPC contracts, the project terminated the contract with NIPSA because this company did not invest enough resources to be able to correctly conduct the contractual tasks. The client itself, EDCL, through its planning department, then did the supervision. The project organized this supervision through a memo establishing the modalities and was approved through the steering committee. Nevertheless, after several months, the project noticed that the planning department couldn't fully carry out its obligations because of other overlapping EDCL responsibilities, mainly due to the fact that its own resources were constrained. Therefore, the project dropped the agreement with EDCL planning department and contracted a separate supervision firm, WAPCOS. This company was present until the end of the construction of the EPC contracts.

Another key adjustment that was made during the project was the decision contribute toward the addendum of EU financed project "Gahanga and Mount Kigali additional civil works" for a total of 799 k€. The project also cancelled the activity to test pilot solutions to support connection affordability for low-income customers in the intervention area as a similar activity was supposed to be carried out through the WB intervention. Also, an activity related to strengthening the existing networks were partly transferred to BE2 EARP.

[4] The supervision also included two smaller construction lots financed by BE2-EARP.

[5] For more information on each contract, please refer to the table describing each single contract.

2 Results achieved

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Comments
22SO	The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved	National electricity access rate (%) – 48% Households connected to grid electricity by the project (number of households) – 14,500 Number of social facilities with access to electricity (Health centres, Schools, Sector offices)	22% 0 0	48% 14500 0	55.8% by June 2020 73% (as of June 2022)) 17,349 479	REG Reports Project monitoring reports	Project significantly contributed to on-grid connections.
R1	Rural electricity is increased through national electricity grid extension (mixed with output 1 of project BE2-EARP)	Kilometres of MV lines constructed and energized	0	160	222.97	Contractor Project completion report	Target exceeded against TFF values
		Kilometres of LV lines constructed and energized	0	270	554.84	Contractor Project completion report	Target exceed against the TFF values
		Number of distribution transformers and energized	0		153		

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Comments
		Number of connections	0	14000	17855	Projects results report	Achieved
		Environmental Management Plan (EMP) developed	No	Yes	Yes	Projects results report	Complied
		Resettlement Action Plan (RAP) developed	No	Yes	Yes	Project reports	Complied
R2	Electricity grid reliability is increased through existing grid strengthening	This activity was partly shifted to BE2-EARP and completed together with the implementation of BE2 EARP. The consulting company called DECUBE Consult prepared a network harmonization standards and procedure for REG.					
R3	Electricity grid access affordability is improved through pilot activities in the area of intervention	Activity cancelled					
R4	Local capacity is strengthened within EARP and EWSA utility	Activity cancelled withing BE1 EARP. Achieved through BE2 EARP and BE2 EARP					

2.1 Analysis of results

2.1.1 To what extent will the intervention contribute to the impact [6] (potential impact)?

BE1 EARP through its three major EPC contracts together with electrification lots of BE2 EARP contributed to electricity network extension on targeted areas resulted to 17855 new connections in the five districts of Eastern Province regions.
Generally speaking, on average electrification interventions have positive effects on a range of education, socioeconomic welfare, health, and environmental outcomes. These effects were associated with considerable heterogeneity across the studies, which highlights the need to have more specific impact evaluation studies of electricity projects after couple of years of electrification projects.
These completed projects are expected to greatly contribute to the achievement of project's specific objectives and outcomes which also goes beyond the projects' implementation period and also contributes to the objectives of new economic recovery plan set by Rwandan government in responding to mitigating economic impact of COVID-19 pandemic. Major components of such on-grid electricity infrastructure normally have a lifespan of over 20 years. The electricity networks laid down by this project will, therefore, continue to contribute to economic growth, employment generation and improvements in health and education facilities in the region over many years to come.

2.1.2 To what extent have outputs been achieved? Explain

Out of 4 key outputs provided on TFF, output 1 has been achieved to a greater extent. Output 2 is achieved together with BE2 EARP. For instance, through the construction of electrification networks in selected districts of Eastern province, the project contributed approximately 17000 new connections. Key outputs are provided below. Further, capacity building support in the selected utility domains contributed to the narrowing of the skills and knowledge gap across all result areas. Some adjustments were made during the project period in the selection of support areas.

<table>
<tr><th>Outputs</th><th>Key achievements</th></tr>
<tr><td>OUTPUT1: Result 1: Rural electricity access is increased through national electricity grid extension</td><td>
<table>
<tr><th>Contractor</th><th>Scope</th><th>Areas covered</th></tr>
<tr><td>STEG International Services (BE1)</td><td>Connections: 8077
Transformers: 40
MV lines: 64km
LV Lines: 200km</td><td>Rwamagana District

Kayonza District</td></tr>
<tr><td>National Contracting Company (NCC) (BE1)</td><td>Connections: 7130
Transformers: 52
MV lines: 76.9km
LV Lines: 174.71km</td><td>Kayonza District
Ngoma District
Kirehe District</td></tr>
<tr><td>JV NPD & Ferdsult (BE1)</td><td>Connections: 2,440
Transformers: 61
MV lines: 82.03km
LV Line: 179.82km</td><td>Ngoma District

Kirehe District</td></tr>
</table>
</td></tr>
</table>

[6] Terminology : Impact = General Objective ; Outcome = Specific Objective; Outputs = Expected Result

OUTPUT2: Electricity grid reliability is increased through grid strengthening and harmonized standards.	This activity was partly shifted to BE2-EARP and completed together with the implementation of BE2 EARP. The consulting company called DECUBE Consult prepared a network harmonization standards and procedure for REG.
OUTPUT 3: Electricity grid access affordability is improved through pilot activities in the intervention area	**Cancelled** It was decided not to do a specific survey for the intervention area, as World Bank was planning to do an extensive survey at country level on energy access.
OUTPUT 4 Local capacity is strengthened within EARP and the EWSA utility.	Cancelled in BE1 EARP as the project was focused solely on grid extension activities through 3 EPCs. However, the output was achieved through BE2 and BE3

2.1.3 To what extent did outputs contribute to the achievement of the outcome

Outputs contributed to achievement of the outcome to a very good extent. The contributing factors included an significant increase in the electricity connection rate electricity from 2014 (20%) to 55.8% in 2020, of which BE1 project contributed close to 18,000 connections. Various other indicators illustrated above holds a greater improvement of customer satisfaction. More details surveys and studies can be carried out by the utility or Enabel in coming years to gather a better picture of the project contribution both at the outcome and impact level. In general, construction of over 1000 km of power networks, over 250 km of network upgradation works as part of the BE EARP activities have provided a greater boost to the GoR universal electricity access target by 2024. Also, the practical and priority driver approach in the capacity building support to the utility across various domains is greatly appreciated by the partner.

2.1.4 Assess the most important influencing factors. What were major issues encountered? How were they addressed by the intervention?[7]

Some contractors and Consultants performed poorly and consequently two contracts went through significant delays with an average of as much as 9 months beyond the planned implementation period. However, it is important to note that the scope of work for each contract was increased by 20% without any additional time.

It is also important to note that one of the electrification projects under BE1 felt the impact of the pandemic as the supply chain was disrupted since the beginning of February, 2020 which further got exacerbated during the lockdown period owing to periodic movement restrictions and social distancing measures imposed to slow-down the COVID-19 pandemic.

[7] Only mention elements that aren't included 1.1 (Context), if any.

2.1.5 Assess the unexpected results, both negative and positive ones

One of the unique approaches adopted by BE EARP project was to encourage local contractors and supplier to participate in the construction of electric lines. Typically, one of the barriers for local bidders to participate in bigger contracts had been their limited financing. Even though project employed international contractors and suppliers for bigger tender, some of the larger works were broken down to multiple smaller activities (rather than one EPC contract) by separating supplies and works. This encouraged local contractors to participate in the construction works by not having to deliver the supplies that require huge upfront finances. out of over 1000km of power networks built, approx. 270km of networks has been built by employing Rwandan contractor. this approach has substantially improved the capacity building and know-how of local contractors and engineers in the process.

- Also, some of the supervision roles were internalized to utility departments (by supporting utility through TA/Capacity building activities). this approach can typically reduce 5-10% of construction cost.
- Quality assurance and technical support related to execution of the project have been continuously provided by engineers employed by Enabel and also by hiring external supervision engineers.

2.1.6 Assess the Integration of Transversal Themes in the intervention strategy

The project didn't have a gender specific activity in its implementation design. Most of our activities are gender blind, like construction of power networks, supplies and so on. BE EARP's general philosophy on gender is that women tend to benefit more from improved electricity access than their male counterparts. Nevertheless, the project collected disaggregated data on those indicators during project surveys.

This also to note the project contributed to the preparation of gender profile on the energy sector that was finalized through the Study and Expertise Fund (SEF) and in close collaboration with the Gender Monitoring Office (GMO) in mid-2018.

Enabel has also expressed its solidarity to Women in Rwandan Energy (WIRE) initiative pledging to contribute its resources that aligns with the objectives and priorities of its energy programs in the country. The project took three women apprentices for 3 months in collaboration with WIRE programme.

2.1.7 To what extent have M&E, backstopping activities and/or audits contributed to the attainment of results? How were recommendations dealt with?

M&E, backstopping and audit activities contributed to a very good extent, by ensuring that the project team kept in alignment with expected results, though in highly dynamic project environment. In the absence of a dedicated project M&E expert, the project developed process monitoring tools to ensure quality assurance, congruence with project objectives and partner country expectations. Furthermore, the project implemented recommendations of the Mid-term review (MTR), on the supervision of short-term project experts embedded withing utility departments.

3 Sustainability

3.1.1 What is the economic and financial viability of the results of the intervention? What are potential risks? What measures were taken?

The links between infrastructure and development are well established. They include the impact of infrastructure on poverty alleviation, equity, growth and specific development outcomes such as job creation, market access, health and education.
Intervention areas of BE EARP primarily include the border districts like, Rubavu, Rusumo, Nyagatare, Ngoma as well as districts of economic prospects like Rwamagana, Kayonza that are geographically peripheral and economically pivotal where the increased electricity access and supply of reliability electricity holds a tremendous potential for economic boost.

This project has improved and established essential infrastructure that contribute to the reduction of technical losses, improvement of grid reliability and improvement of the security and quality of supply. Some potential risks include the quality of wooden poles that need to be continuously assessed and maintained by the utility. Besides REG should focus a particular attention to the stimulate the demand as well as to improve the income base of its customers to ensure a timely return on its investment. The project was highly relevant and critical to REG which was facing enormous challenges to meet the Government of Rwanda energy target as well as upgrading the existing networks with limited financial, technical, and human resources.

3.1.2 What is the level of ownership of the intervention by target groups and will it continue after the end of external support? What are potential risks? What measures were taken?

Access to affordable and reliable energy remains a high priority for Rwanda. While the BE EARP has contributed towards the extension of grid as well as strengthening of on-grid electrification targets, it will be necessary to further enhance the performance of the grid now an in the future. Operation of the distribution grid and ensuring reliability is a real time occupation. Apparently, the provision of electricity and affordability should be accompanied by broader measures to stimulate growth and revenue, which serves the real purpose of improving resilience and stability of the grid.

Coordination among the interdepending sectors- REG, state government, local government agencies and their lessons learned understanding and addressing the consumers' real requirements will continue to become vital in improving sustainability aspects of the grid. Lack of investment in capacity building in the short to medium term, low uptake of energy demand in the short to medium term and budgetary constrained at the utility level to invest in enhancing the operation and maintenance of the network can be considered as some of the potential risks.

Rwanda government and its regulatory agencies' continual efforts in collaboration with sector stakeholders exploring the available fiscal and policy measures in coordination with interdepending stakeholders sets a positive discourse on the matter.

3.1.3 What was the level of policy support provided and the degree of interaction between intervention and policy level? What are potential risks? What measures were taken?

Rwanda's National Strategy for Transformation (NST1) aims for the country to achieve middle-income status by 2035 and high-income status by 2050. As one of its core objectives, the strategy targets universal electricity access by 2024. On grid electricity access continued to become the priority of the Rwandan government since the inception of the BE EARP project. As of May 2022, the cumulative connectivity rate is 71.92% of Rwandan households including 50.61% connected to the national grid and 21.31% accessing through off-grid systems.

During the elaboration of the EDPRS II, the Government of Rwanda took a clear policy decision to diversify the sources of electricity from traditional dominant grid to include even off-grid connections. Subsequently, households far away from the planned national grid coverage have been encouraged to use alternatively cheaper connections such as Mini-grids and Solar Photovoltaics (PVs) to reduce the cost of access to electricity whilst relieving constraints on historical government subsidies (REG, 2022).

3.1.4 How well has the intervention contributed to institutional and management capacity? What are potential risks? What measures were taken?

At the institutional level, MININFRA/REG played a central role on the strategic project decision of all three phases of BE EARP activities.

There had been increased focus by REG in the coordination between EDCL and EUCL by integrating some of the key functions like Planning under one umbrella. The BE EARP project also financed several experts support to some of the key areas of expertise lik,e Planning, generation, as experts support to energy sector coordination at MININFRA during the project period. These supports have been appreciated by MININFRA/REG to have contributed to the capacity building of these institutions and to enhance the efficiency, effectiveness and productivity of these institutions.

PART 2: Synthesis of (operational) monitoring

1 Expenses

An overview of expenses from FIT. The project expenditure stood 100 %

BUDGET CODE	DESCRIPTION	Budget	Management Mode	SPENT 2014-2018	2018 to Q2 2019	2019 to Q2 2020	SPENT Q3 2020 to Q2 2021	2021 to Q2 2022	TOTAL SPENT	% EXECUTION
A01	**Rural electricity access is increased through national electricity grid extension**	**14,243,895**		**9,592,227**	**3,088,528**	**981,207.66**	**536,181.53**	**5,329.76**	**14,175,457**	**100%**
A01-01	Bakl electricity network extension on targeted areas	12,869,570	Cogestion	9,278,891	2,083,482	727,733	536,182	5,330	10,051,458	78%
A01-01-00	*Migration UBW - No New Input*	*9,279,317*							*0*	*0%*
A01-01-01	*STEG*	*27,219*		*4,283,647*	*27,130*				*4,310,777*	*15837%*
A01-01-02	*NCC*	*1,690,591*		*3,305,022*	*172*		*184,038*		*3,489,230*	*206%*
A01-01-03	*NPD*	*1,411,443*		*1,664,664*	*4,487*	*152,858.00*			*1,821,987*	*129%*
A01-01-04	*Other costs*			*25,558*	*0*				*25,558*	*#DIV/0!*
A01-01-05	*MV/LV*	*461,000*		*0*		*44,341*	*352,145.54*	*5,329.76*	*403,906*	*88%*
A01-02	Supervise the grid extension construction works linked to Activity 1 (Co-Management)	313,677	Cogestion	308,738	4,940				313,677	100%
A01-02-00	*Migration UBW- No New Input*	*308,738*		*308,737*	*0*				*308,737*	*100%*
A01-02-03	*Mission for Supervision of powerlines construction works: WAPCOS*	*16,782*		*0*	*3,071*				*3,071*	*30%*
A01-04	Supervise the grid extension construction works (Direct Management)	256,825	Regie	0	200,810	55,968			256,825	100%
A01-04-00	*Supervise the grid extension construction works (Direct*	*377,000*		*0*	109,983				109,983	*29%*
A01-03	Develop & implement adequate Environmental Management Plan (EMP) & Resettlement Action Plan (RAP) for network extension activity	4,662	Cogestion	4,598	0				4,662	100%
A01-05	Support to Gahanga and Mount K	799,434			799,496				799,496	
A02	**Electricity grid reliability is increased through grid strengthening and harmonized**	**670,450**		**594,610**	**78,391**	**-2,550**			**670,450**	**100%**
A02-04	Prepare harmonized technical specifications and standards for the power network infrastructure	87,783	Cogestion	90,333					87,783	100%
A02-04-00	Prepare harmonized technical specifications and standards for the power network infrastructure	90,000		90,333					90,333	100%
A02-02	Upgrade identified installations in targeted areas to strengthen existing grid	582,810	Cogestion	503,919	78,391				582,810	100%
A02-02-00	*UBW Migration*			*0*					*0*	*#DIV/0!*
A02-02-01	*Chint --Meters*	*707,458*		*500,609*	*78,391*				*578,999*	*82%*
A02-02-02	*RSB testing*			*3,311*	*0*				*3,311*	*#DIV/0!*
A02-03	Design and supervise grid strengthening works	357	Cogestion	357	0				357	100%
A03	**Electricity grid access affordability is improved through pilot activities in the**	**0**		**0**					**0**	
A04	**Local capacity is strengthened within EARP and EWSA utility**	**210,918**		**22,801**	**16,285**	**176,473**			**210,928**	**100%**

A04-01	Train local interns through industrial attachment to contractors	8,491	Cogestion	8,491	0				8,491	100%
A04-02	Support EWSA grid maintenance activities through new equipment and staff training	28,932	Cogestion	14,109	16,285	2,578			28,542	100%
A04-03	EDCL EUCI/REG technical team (Experts team support)	173,495	Cogestion	0	0	173,495			173,495	100%

X01	**Contingency**	0		6					6	#DIV/0!
X01-01	01 Co-management	0	Cogestion	6					6	
X01-02	02 Direct-management Budgetary reserve STATE MANAGEMENT	5,508	Regie	0					0	0%
	General means	**1,874,937**		**1,573,359**	**5,882**	**272,440**	**21,353**	**2,244**	**1,907,738**	**102%**
Z01	**01 Staff expenses**	**1,518,244**		**951,576**	**0**	**232,944**			**1,516,273**	**100%**
Z01-01	Project Co-Management	804,731		0					0	
	Project Co-manager	*555,692*	*Regie*	*544,676*					*544,676*	
Z01-05	Power network ITA	180,000	Regie	179,073					179,073	99%
Z01-06	Construction Engineer	61,732	Cogestion	59,719					59,719	97%
Z02	**02 INVESTMENTS**	**189,155**		**151,895**	**4,995**	**11,524**	**218**	**83**	**169,773**	**244,295**
Z02-01	01 Vehicles	54,500	Regie	54,319	0				54,319	100%
Z02-02	02 IT and office equipment	10,000	Regie	10,315	0				10,315	103%
Z02-03	03 Operational budget (incl. Stationary, fuel, communications,)	80,263	Regie	83,427	196				83,623	104%
Z02-06	06 Other expenses REGIE	2,000	Regie	3,145	69				3,214	161%
Z02-07	07 Other expenses Cogestion	4,000	Cogestion	1,148	2				1,150	29%
Z02-04	04 VAT direct management		Regie	2,835	0				2,835	
Z02-05	05 VAT Co management		Cogestion	913	0				913	
Z03	**03 Audit and Monitoring & Evaluation**	**188,584**		**150,822**	**0**	**21,665**			**188,584**	**100%**
Z03-01	01 Monitoring and Evaluation	47,000	Regie	43,901					43,901	93%
Z03-02	02 Capitalization and communications	20,000	Regie	542					542	3%
Z03-03	03 Technical backstopping REC	75,000	Regie	50,535					50,535	202%
Z03-04	04 Audits	70,000	Regie	55,844					55,844	80%
Z04	**99 Conversion rate adjustment**	**954**		**-245**	**887**	**8,307**	**21,135**	**2,161**	**34,047**	**3569%**
Z04-01	98 Conversion rate adjustment		Regie	-166					-166	
Z04-02	99 Conversion rate adjustment		Cogestion	-79					-79	
	TOTAL	17,000,000	0	11,735,596	3,240,405	1,421,000	557,535	7,574	16,964,580	100%

2 Disbursement rate of the intervention

Source of financing	Cumulated budget	Real cumulated expenses	Cumulated disbursement rate	Comments and remarks
Direct Belgian Contribution	€1700000	€ 16,964,552	99.8%	
Contribution of the Partner Country	€ 448,252	€ 1,087,198	242.5%	
Other source	NA	NA	NA	

3 Personnel of the intervention

The flowing individuals were directly involved in the project execution.

Name	Function	Organization	Years
Christine Uwajeneza	Procurement Specialist	EDCL	2015 to 2020
Harriet MULISA	Contract Manager	EDCL	2017 till project end
Jean Paul Rutembesa	Project manager	EDCL	2014 till project end
Carine Vanommeslaeghe	Project RAFI	Enabel	2014 to 2016
Marie Vandenabeele	Project RAFI	Enabel	2018 till project end
Ntare Adabert	Project driver	EDCL	2014 to 2019
Abimana Lauben	Project driver	EDCL	2014 till project end
Bataringaya Simon	Project Site Engineer	EDCL	2015 till project end
Nyirahabyarimana Jeanne d'Arc	Project accountant	EDCL	2015 till project end
Harindintwari Uzziel	Project driver	EDCL	2020 till project end
Bibek Kandel	Project co-manager	Enabel	2017 till project end
Ahmad Parsa	Project co-manager	Enabel	2014 to 2018
Julien Jomaux	Technical Assistant	Enabel	2016 to 2020
Héloise Dubois	Junior Assistant	Enabel	2019 to 2020
Samuel Sonck	Junior Assistant	Enabel	2017 to 2018
Butera Michael	M&E speciliast	EDCL	2017 till project end
Tuyishime Pascal	Environmental Safeguards Specialist	EDCL	2017 till project end
Nyinawamwiza Muganga Petronille	EARP Social Safeguards Specialist	EDCL	2019 till project end
Nirere Marie Solange	Project Engineer	EDCL	2020 till project end
Nkurunziza Silas	Project Engineer	EDCL	2020 till project end
Munezero Yvette	Project Administrative Assistant	EDCL	2018 till project end
Munyambabazi Elias	Project Driver	EDCL	2015 till project end
Nkusi Innocent	Project Engineer	EDCL	2019 till 2020

4 Public procurement

Tender Title	Estimated cost in Euros	Publication Date	Contract Signing date	Amount of the contract	Successful bidder	Other information remarks	Status
Design, Supply and Installation of MV/LV and Service Connections in Ngoma/Kihere Districts, EP of Rwnda Lot 1	13,520,899 Euros	17/02/2016	21/10/2016	3,436,750.85 Euros	NPD	International Open Competitive	Completed
Design Supply and Installation of MV/LV and Service Connections in Rwamagana and Kayonza Districts, EP of Rwnda Lot 2		17/02/2016	19/10/2016	4,592,419.62 Euros	STEG	International Open Competitive	Completed
Design Supply and Installation of MV/LV and Service Connections in Kayonza, Ngoma and Kirehe Districts, EP of Rwanda lot 3		17/02/2016	21/10/2016	5,021,747.12 Euros	NCC	International Open Competitive	Completed
Supply of electricity prepayment meters and accessories	720,000 Euros	2/12/2016	1/3/2018	583,252.94 Euros	Zheijiang Instrument &Meters co. Ltd	International Open Competitive	Completed
Supervision of rural electrification projects in Rwamagana, Kayonza, Ngoma and Kirehe Districts	650,000 Euros	14/11/2014	1/09/2015	764,682 Euros	NIPSA	International Open Competitive/QCBS	Terminated

5 Equipment

Below are the list of equipment owned by the BE EARP (shared among all three interventions, BE1 , BE2 and BE3). On Feb 2022, the project steering committee decided to hand over all the project equipment an asset to EDCL.

Equipment type	Cost in Euro	Delivery date	Status/Remarks
1. Vehicles			
TOYOTA Land Cruser IT539RE	26,358.99	10/31/2014	Good condition
TOYOTA Land Cruser IT453RE	26,358.99	10/31/2014	Good condition
SUZUKI Grant Vitara IT 378 RG	18,974.80	04/18/2017	Good condition
Total	**71,692.78**		
2. IT equipment			
Laptop Dell	1,033.92	9/30/2014	Out of usage
Laptop Dell	1,033.92	9/30/2014	Out of usage
Dell Screen Computer	123.3	3/18/2015	Good condition
Dell Screen Computer	123.3	3/18/2015	Good condition
French Keyboard	6.16	3/18/2015	Good condition
French Keyboard	6.16	3/18/2015	Good condition
Alcatel Router (4G)	79.99	4/2/2015	Out of usage
HP Flash 16 GB	24.31	11/14/2015	Out of usage
Laptop Dell	1,750.65	12/28/2015	Out of usage
Laptop Dell		12/28/2015	
Accessories to the laptop	522.38	12/28/2015	Good condition
1X synology disk station DS716	679.00	1/26/2017	Good condition
Lenovo laptop with accessories	1,832.66	4/14/2017	Good condition
Tablets Samsung	1,372.09	12/4/2017	Good condition
HP M130NW **Printer**	417.60	1/12/2019	Good condition
HP 250 Core I5/4GB/1TB Laptop	1,157.36	28/02/2019	Good condition
Logiciel comptable TOMPRO	3,700.00	23/06/2017	Good condition
Printer	452.47	28/12/2017	Good condition

Laptop	1,261.19	31/12/2017	Good condition
Keyboard USB Querty	21.16	29/01/2018	Good condition
1 HP Odyssey Backpack	32.13	29/01/2018	Good condition
Printer	1,181.36	27/05/2019	Good condition
Laptop	581.08	03/12/2019	Good condition
Laptop	581.08	15/05/2019	Good condition
Laptop	581.08	15/05/2019	Good condition
3 Screen Dell	841.22	15/05/2019	Good condition
Accessories to the laptop			
Total	**19,935.57**		

3. Others Equipments

2 licenses MS Office 2016	509.45	3/22/2016	Obsolete
Safe Godrej 40L	338.95	6/30/2016	In good condition
2 cupboards Libuyu	439.85	7/28/2016	In good condition
Malles métalliques	102.04	8/22/2016	In good condition
High Closed Cabinet	486.91	11/3/2017	In good condition
High Closed Cabinet	453.4	12/19/2017	In good condition
White Board	105.74	3/15/2018	In good condition
2 High Closed Cabinet	296.61	9/27/2019	In good condition
High Closed Cabinet	148.31	11/7/2019	In good condition
Computer Stand and drawers	202.43	11/7/2018	In good condition
Total	**3,083.69**		
Cumulative total	**95,340.39**		

6 Original Logical Framework from TFF :

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Hypothesis
SO	The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved	National electricity access rate (%) – 48% Households connected to grid electricity by the project (number of households) – 14,500 Number of social facilities with access to electricity (Health centres, Schools, Sector offices)	22%	48% 14500 0	55% June 2020 17,349 479	EARP Annual performance reports REG reports	Grid extension results in a higher electricity access rate for households and social facilities close to the grid. By strengthening existing facilities, the technical losses will diminish.
R1	Rural electricity is increased through national electricity grid extension (mixed with output 1 of project BE2-EARP)	Kilometres of MV lines constructed and energized	0	160	222.97	Contractor Project completion report	The O&M of the existing and new installations are properly performed by EUCL
		Kilometres of LV lines constructed and energized	0	270	554.84		
		Number of distribution transformers and energized	0		153		
		Number of connections	0	14000	17,828	Projects results report	
		Environmental Management Plan (EMP) developed	No	Yes	Yes	Projects results report	

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Hypothesis
		Resettlement Action Plan (RAP) developed	No	Yes	Yes	Project reports	
R2	Electricity grid reliability is increased through existing grid strengthening	Number of upgraded installations (Substations, Transformers, Line capacity) Monthly number of technical breakdowns per km of MV line in the target area 0.07 interruption/km/month				EARP Annual Performance Reports	The O&M of the existing and new installations are properly performed by EUCL
R3	Electricity grid access affordability is improved through pilot activities in the area of intervention	Number of beneficiaries able to afford the connection) Type of disbursement schemes used by the beneficiaries to afford the electricity connection	N/A N/A	N/A N/A	17,828 affording due connection policy	Baseline study for the intervention area M&E reports	Lessons learned from the pilot activities are utilized
R4	Local capacity is strengthened within EARP and EWSA utility	Number of trainees – 30 trainees Number of staff trained Percentage of staff who report that the capacity building plan is appropriately targeted to needs of their organization	N/A	N/A	13 interns successfully completed the training	EARP Annual performance reports Surveys	Trained staff retention

7 Complete Monitoring Matrix

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Comments
SO	The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved	National electricity access rate (%) – 48% Households connected to grid electricity by the project (number of households) – 14,500 Number of social facilities with access to electricity (Health centres, Schools, Sector offices)	22%-	48% 14500 0	55.8% by June 2020 73% (as of June 2022) 17,349 479	REG Reports EARP Annual reports M& E reports	Project significantly contributed to on-grid connections' targets of GoR
R1	Rural electricity is increased through national electricity grid extension (mixed with output 1 of project BE2-EARP)	Kilometres of MV lines constructed and energized	0	160	222.97	Contractor Project completion report	Target exceeded against TFF values
		Kilometres of LV lines constructed and energized	0	270	554.84	Contractor Project completion report	Target exceed against the TFF values
		Number of distribution transformers and energized	0		153		

	Logical of the intervention	Indicators – Tentative target	Baseline Value	Target Value	Actual Value	Sources of verification	Comments
		Number of connections	0	14000	17855	Projects results report	Achieved
		Environmental Management Plan (EMP) developed	No	Yes	Yes	Projects results report	Complied
		Resettlement Action Plan (RAP) developed	No	Yes	Yes	Project reports	Complied
R2	Electricity grid reliability is increased through existing grid strengthening	This activity was partly shifted to BE2-EARP and completed together with the implementation of BE2 EARP. The consulting company called DECUBE Consult prepared a network harmonization standards and procedure for REG.					
R3	Electricity grid access affordability is improved through pilot activities in the area of intervention	Activity cancelled					
R4	Local capacity is strengthened within EARP and EWSA utility	Activity cancelled withing BE1 EARP. Achieved through BE2 EARP and BE2 EARP					

8 Tools and products

Following are the communication materials produced and disseminated during the BE EARP project period.

- Switching to Lights: Stories of Change 2021

  web link: https://www.enabel.be/publication/switching-light-electricity-access-stories-change#:~:text=Rwanda%20has%20a%20target%20of,the%20Eastern%20Province%20of%20Rwanda

- Audio-visual material

  Audio video documentary capturing the stories change in BE EARP electrification project areas;

  https://www.youtube.com/watch?v=IgxGnt07ZF8&list=PLgnfcBtveF5PK27GZKBl3WvbXsUEXMfe6