TECHNICAL & FINANCIAL FILE

ENERGY SECTOR:

IMPROVING ACCESS TO RELIABLE ON-GRID ELECTRICITY SERVICES FOR HOUSEHOLDS AND PRIORITY PUBLIC INSTITUTIONS

BELGIAN CONTRIBUTION TO EARP – COMPONENT 2 - BE2EARP

RWANDA

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THE BELGIAN DEVELOPMENT COOPERATION .be

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ABBREVIATIONS

AFD	Agence Française de Développement
AfDB	African Development Bank
BADEA	Arab Bank for Economic Development in Africa
BE	Kingdom of Belgium
BE1EARP	Belgian Contribution to the Electricity Access Roll Out Program – Component 1
BE2EARP	Belgian Contribution to the Electricity Access Roll Out Program – Component 2
BE3EARP	Belgian Contribution to the Electricity Access Roll Out Program – Component 3
BTC	Belgian Technical Cooperation
CB	Capacity Building
CBF	Capacity Building Fund
CDEU	Institutional Strengthening and Capacity Development of the Electricity Utility
CNA	Capacity Need Assessment
DGD	Directorate General for Development Cooperation and Humanitarian Aid
DI	Director of Intervention
DP	Development Partners
EA	Environmental Assessment
EC	European Commission
EAPP	East African Power Pool
EARP	Electricity Access Roll-out Program
EDCL	Energy Development Corporation Limited
EDPRS	Economic Development and Poverty Reduction Strategy
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
ESMF	Environmental and Social Management Framework
ESSP	Energy Sector Strategic Plan
eSWAp	Energy Sector Wide Approach
eSWG	Energy Sector Working Group
EUCL	Energy Utility Corporation Limited
FDI	Foreign Direct Investment
GDP	Gross Domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GIS	Geographic Information System
GoR	Government of Rwanda
GTF	Global Tracking Framework
HDI	Human Development Index
HH	Household
HIV	Human Immunodeficiency Virus
HR	Human Resources
HV	High Voltage
ICP	Indicative Cooperation Program

ICT	Information and Communication Technology
IMF	International Monetary Fund
IT	Information Technology
ITA	International Technical Assistance
JICA	Japan International Cooperation Agency
KIKI	Kigali-Kiyumba
KIST	Kigali Institute of Science and Technologies
kWh	Kilo Watt Hour (unit of energy)
LV	Low Voltage
MDG	Millennium Development Goals
M&E	Monitoring and Evaluation
MINAFFET	Ministry of Foreign Affairs and Cooperation
MINALOC	Ministry of Local Government
MINECOFIN	Ministry of Economic Planning and Finance
MINEDUC	Ministry of Education
MININFRA	Ministry of Infrastructure
MINIRENA	Ministry of Environment and Lands
MIS	Management Information System
MOH	Ministry of Health
MoM	Minutes of Meeting
MoU	Memorandum of Understanding
MTR	Mid Term Review
MV	Medium Voltage
NCBS	National Capacity Building Secretariat
NCST	National Commission for Science and Technology
NGO	Non-Governmental Organization
NIRDA	National Industrial Research and Development Agency
NL	The Netherlands
OECD	Organisation for Economic Co-operation and Development
OFID	OPEC Fund For International Development
O&M	Operation & Maintenance
OP	Operational Policy
OPEC	Organization of the Petroleum Exporting Countries
PAPs	Project Affected People
PIN	Project Identification Note
PIU	Project Implementation Unit
PM	Project Manager
PMO	Prime Minister’s Office
PMU	Project Management Unit
PSC	Project Steering Committee
PSI	Policy Support Instrument
PV	Photovoltaic

QCC	Quality Control Committee
RAF	Responsible for Administration and Finance
RAP	Resettlement Action Plan
RBS	Rwanda Bureau of Standards
RDB	Rwanda Development Board
REG	Rwanda Energy Group
REMA	Rwanda Environment Management Authority
RURA	Rwanda Utilities Regulatory Agency
RPF	Resettlement Policy Framework
RPPA	Rwanda Public Procurement Authority
RoW	Right Of Way
SCBI	Strategic Capacity Building Initiative
SE4ALL	Sustainable Energy For All
SEA	Strategic Environmental Assessment
SEDP	Sustainable Energy Development Project
SME	Small and Medium Enterprise
SoV	Source of Verification
SPIU	Single Project Implementation Unit
SWAp	Sector Wide Approach
SWG	Sector Working Group
SWH	Solar Water Heater
SWOT	Strengths, Weaknesses, Opportunities, Threats
TA	Technical Assistance
TFF	Technical and Financial File
ToR	Terms of Reference
TWG	Technical Working Group
UN	United Nations
WB	World Bank

EXECUTIVE SUMMARY

The Indicative Cooperation Program (ICP 2011-2014) between Belgium and Rwanda allocates a total grant envelope of 55 million euro to the energy sector in Rwanda. The present document covers the scaling-up of the grid access to energy component that has a Belgian contribution of 12 million EUR and a duration of 4 years.

The general objective of this intervention is the provision of sufficient, reliable and affordable energy for all Rwandans. Its specific objective is to improve the access and use of reliable on-grid electricity services for households and priority public institutions in rural Rwanda.

It should be regarded as the second component of the Belgian contribution to the nationwide Electricity Access Roll-out Program (BE2EARP), the focus remaining on increasing the number of electricity connections through the national grid extension with the construction of new distribution lines connected to the national transmission network.

In addition, the present intervention will be involved in sensitization campaigns around electricity consumption targeting beneficiaries. The target groups of beneficiaries are households, enterprises and public infrastructures (health facilities, schools and administrative offices) that will be connected to the electricity grid. Activities will also support vulnerable households to afford the connection.

Modern energy access is not only about being connected to the grid. In line with SE4All agenda, the Global Tracking Framework, the multi-tier electricity access definition, will be introduced into EARP M&E framework in order to capture electricity essential attributes such as its availability, reliability, quality, affordability, legality, & health & safety. The use of this new framework will help both grid roll-out planning and the definition of future strategies around on-grid and off-grid access.

The intervention will also support overall coordination of the sector by the energy Sector Wide Approach (eSWAP) secretariat and support Belgium with its new responsibilities of co-chair of the Energy Sector Working Group.

The intervention will be executed in joint responsibility between the Energy Development Corporation Limited (EDCL), part of Rwanda Energy Group (REG) and the Belgian Technical Cooperation (BTC). The project team in place for the first component of the Belgian contribution to Electricity Access Roll-out Program (BE1EARP) will be complemented to implement both components simultaneously. Additional technical assistance is foreseen to support overall sector coordination and to improve coherence and synergies between the various BTC energy projects.

ANALYTICAL RECORD OF THE INTERVENTION

Title of the l'intervention	Improving Access to Reliable On-Grid Electricity Services for Households and Priority Public Institutions
Intervention number	NN 3017499
Navision Code BTC	RWA1509411
Partner Institution	Ministry of Infrastructure - MININFRA Rwanda Energy Group - REG
Length of the intervention	48 Months
Duration of specific agreement	60 Months
Estimated date of start from the intervention	2015
Rwandan Contribution	Estimated to € 1,650,000
Belgian Contribution	€ 12,000,000
Sector (CAD codes)	Main sector : 23040 Energy – Electricity transmission and distribution Sub-sector : 23010 Energy – Energy policy and management
Brief description of the intervention	Improving access to reliable on-grid electricity services for households and priority public institutions in Rwanda
Global Objective	The energy sector is able to provide sufficient, reliable and affordable energy for all Rwandans
Specific Objective	The access to reliable on-grid electricity services for households, enterprises and priority public institutions in rural areas is improved
Results	1) Rural electricity connectivity is increased through national electricity grid extension 2) Beneficiaries (households, productive and community uses) are supported in improving their tier access level 3) Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector

1 SITUATION ANALYSIS

1.1 The ICP between Belgium and Rwanda

The Indicative Cooperation Program (ICP 2011-2014) between Belgium and Rwanda, approved on May 18th 2011, allocates a total grant envelope of 55 million euro to the energy sector in Rwanda, split over 4 interventions:

1. Improving access to reliable and cost effective electricity services for households and priority public institutions – Belgian contribution to Electricity Access Roll-Out Program EARP (€17M)
2. Institutional Strengthening and Capacity Building (€5M)
3. Increasing electricity supply through development of geothermal energy (€27M)
4. Encouraging private sector participation in the generation of electricity from renewable sources, through the establishment of adequate Feed-in-Tariffs (€6M)

Both intervention (1) and (2) were formulated in 2013 and started in 2014.

Following a joint decision taken by Rwanda and Belgium to reallocate the funds of the geothermal component (3), the CPPR meeting of December 17th 2014 agreed to split the € 27M in three smaller interventions. One intervention of € 5M focuses on the forestry sector. Two other interventions for a total of € 22M are allocated to energy roll-out within EARP.

Following the CPPR, the total envelope is split over 6 interventions:

i. Improving access to reliable on grid electricity services for households and priority public institutions – Component 1 – BE1EARP (€ 17M)

ii. Improving access to reliable on grid electricity services for households and priority public institutions – Component 2 – BE2EARP (€ 12M)

iii. Improving access to reliable on grid electricity services for households and priority public institutions - Component 3 – BE3EARP (€ 10M)

iv. Institutional strengthening and capacity development of electricity utility – CDEU (€ 5M)

v. Forest Management and Support to woody Biomass Energy – FMSBE (€ 5M)

vi. Private sector participation in the generation of electricity from renewable sources - PSPE (€ 6M)

The present document formulates the second access to energy component (ii).

1.2 The general policy context for the Energy Sector

1.2.1 The macroeconomic policy context

Rwanda successfully completed the third review under the second generation of the non-financial program with the International Monetary Fund (IMF), the Policy Support Instrument (PSI). Through the PSI the Government of Rwanda is committing to maintaining macroeconomic stability and sustaining rapid and inclusive growth over the medium term. With Rwanda's risk of debt distress having improved from "moderate risk" to "low risk", the IMF's PSI provided for flexibility to issue US$250m in non-concessional debt, to finance exports and growth enhancing strategic investments. The PSI confirms the prudent macroeconomic stance of the government and focuses on key policy priorities aiming at

maintaining a sustainable fiscal position, modernizing the monetary policy to curb inflationary pressures, and preserving external stability.

In 2014 Rwanda's economy appeared to have recovered from the 2013 economic slowdown (linked to suspension of donor aid in 2012). In 2014 the country achieved an annual gross domestic product (GDP) growth rate of 7%. Economic expansion was largely driven by the service sector, which grew 9% year-on-year and by the agricultural sector (Rwanda's largest employer) which grew by 5% year on year. The medium-term outlook is favourable, with the IMF forecasting 7-7.5% annual real GDP growth in the period 2015-2018, driven by increased public and foreign investment. Growth prospects in Rwanda will also depend on an improved power supply. Despite exploitation of domestic and regional resources, this supply would be predominantly achieved through imports from Kenya (geothermal), for which a 30 MW agreement has been signed and Ethiopia (hydro), which is currently under negotiation.

1.2.2 Vision 2020 and the importance of the energy sector

Rwanda has made remarkable progress since the 1994 genocide and civil war. Peace and political stability have been re-established, reconciliation efforts are continuing, and democratic institutions and processes are being strengthened. Poverty and social indicators have also improved.

In its Vision 2020 document, written in 2000, the GoR described what Rwandan society and economy should look like in 2020. The major aspiration was to transform the country into a middle income country. The accomplishment of this ambition would require an annual economic growth rate of at least 7%. In order to bring about the necessary rise in the standard of living of the population, growth would also have to be Pro-Poor, giving all Rwandan's the chance to gain from the new economic opportunities.

Vision 2020 has been converted into action by a series of medium-term strategic plans. The first was the Poverty Reduction Strategy (PRSP) finalized in 2001. This was the Government of Rwanda (GoR)'s first systematic assessment of the actions needed to reduce poverty and generate pro-poor economic growth. It was followed by the Poverty Reduction Strategy Paper (PRSP) which covered 2002-2006, and subsequently the Economic Development and Poverty Reduction Strategy (EDPRS I) covering the period 2008-2012.

EDPRS I (2008-2012) marked a distinct change in the approach to development. A key conclusion of the PRSP experience was that the social sectors (particularly health and education) had been well addressed through the previous programs, while the real economy i.e. the sectors dealing with the production of goods and services, had not. Priority was, therefore, given to accelerating growth, creating employment and generating exports. These were to be catalysed through public investment in infrastructure, and through regulatory reform. These strategies were intended to reduce the costs and risks of doing business and to create an attractive environment for private sector investment and activity.

During the last few years, Rwanda's economy has been growing at an annual average rate of 8.3%. In its new Economic Development and Poverty Reduction Strategy (EDPRS II 2012-2017), the GoR was even projecting an average annual growth of 11.5% between[1] 2013 and 2018. According to the GoR's vision, economic growth will be, among other things, driven by the uninterrupted provision of energy at prices that are stable and regionally competitive. Therefore, access to modern sources of energy (petroleum and electricity) at affordable prices will be essential if the country is to achieve this objective. These energy sources are crucial when it comes to developing the services sector and the

[1] The International Monetary Fund (IMF) also considers the medium-term outlook as favourable, forecasting 7-7.5% annual real GDP growth in the period 2015-2018, driven by increased public and foreign investment.

industry in Rwanda.

On the other hand, the provision of cost effective and appropriate energy solutions to the poor must also contribute to poverty alleviation, particularly in rural areas where energy services are currently scarce or expensive.

1.2.3 The evolution of the Energy sector

Given the GoR's ambition, no single energy source on its own will be able to meet the energy needs of the country in the coming years. Each energy source has its own unique characteristics and the choice of the most appropriate source of energy depends on its foreseen use. The figure below, taken from the Energy Sector Strategic Plan 2013-2018, illustrates the proportion of energy the GoR expects to obtain from bio-products, petroleum products and electricity for different uses in the future. The red arrows illustrate where significant increases in the use of particular energy sources are expected in order to drive the economic growth or the poverty reduction targeted under the EDPRS II.

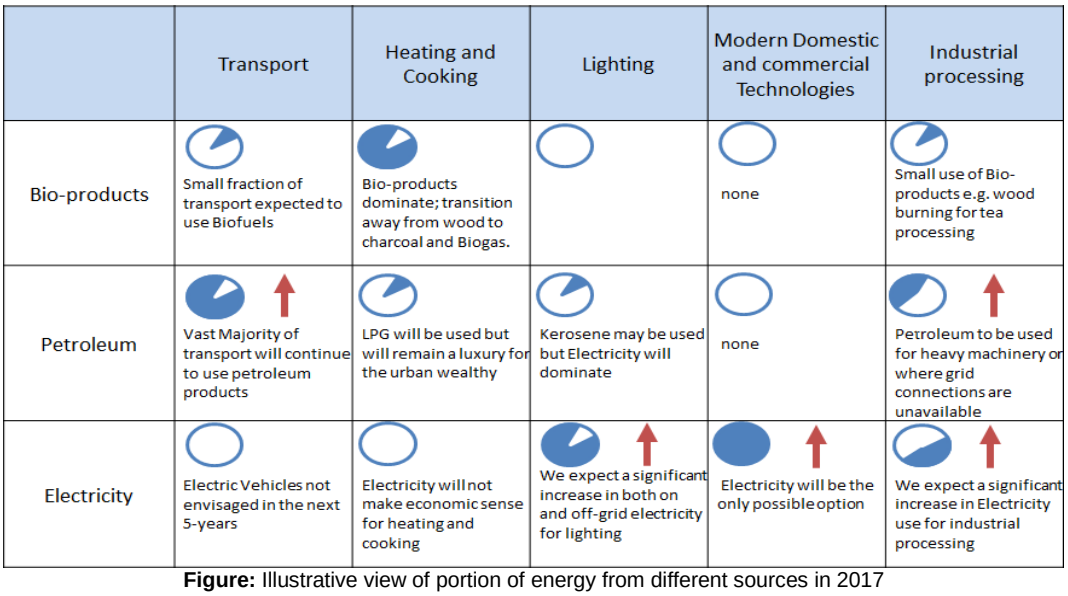


Figure: Illustrative view of portion of energy from different sources in 2017

From the figure above, it is clear that bio-products will remain the most appropriate and cost-effective source of energy for heating and cooking. The 5-year strategy of the GoR for the period 2013-2018 is to encourage cleaner, more efficient and sustainable uses of bio-products by transitioning away from wood to more advanced technologies such as biogas and by making the production and use of charcoal more efficient.

As far as petroleum is concerned, it is clear that the demand for this source of energy will continue to rise. The envisaged eradication of the need to burn diesel for electricity production will be more than off-set by the increased need for petroleum products in transportation, particularly aviation, and heavy industry.

Finally, though it currently represents a small portion of Rwanda's Energy mix, electricity will become very important in the future since it is necessary for modern sectors such as manufacturing and ICT. Therefore, increasing levels of both access and generation capacity is vital if the country is to achieve the levels of economic growth and poverty reduction that are targeted.

1.3 EDPRS II and the electricity sub-sector

1.3.1 Objectives and strategies for the electricity sub-sector

In order to make sure that the energy sector effectively contributes to economic growth and poverty alleviation, the GoR has set specific objectives and targets in the EDPRS II for the energy sector:

1. Increase Rwanda's electricity generation capacity to 563 MW, leveraging large-scale private sector investment by 2018;
2. 70% of the Rwandan urban and rural households have access to electricity, by 2018
3. Electricity in Rwanda needs to be provided at a regionally competitive tariff

In the Energy Sector Strategic Plan 2013-2018, these objectives are represented as follows:

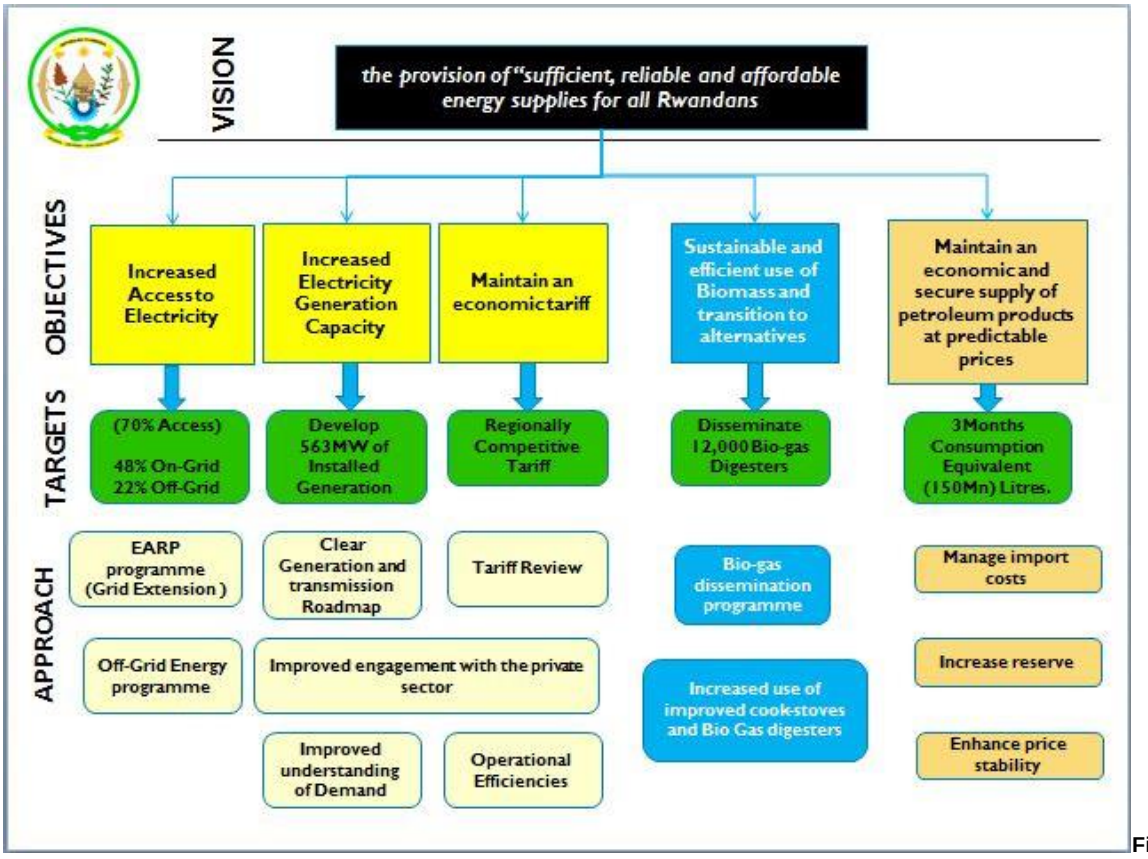


Figure: Summary of Energy sector Vision, Objectives, Targets and strategic approaches

The strategic approaches for all three objectives are discussed in more detail below.

1. Increasing electricity generation capacity

For this objective, the focus is on the exploration and use of alternative and renewable sources of energy such as geothermal energy. The GoR is well aware that the investments needed to increase the production of electricity can not only be provided by the government. Therefore, a lot of effort will have to go into attracting private sector investors through Public Private Partnerships (PPPs). One of the ideas in the Energy Sector Strategic Plan is to create an Energy Development Fund that will finance technical and commercial feasibility studies for specific projects in which a private investment is required. Moreover, the GoR will continue to streamline the process of obtaining licenses and permits for private companies.

The current sub-sector plan aims for power capacity to increase from a current level of 156 MW installed to up to 563 MW of electric power installed capacity by the end of the ESSP period, taking into account an increased reserve margin and imports. This installed capacity would significantly exceed likely demand scenario forecasting 377 MW peak demand at the end of ESSP period (2018).

2. Increasing access to electricity

As far as the "Access to Electricity" is concerned, the strategic approach of the GoR, proposed in the Energy Sector Strategic Plan 2013-2018 is twofold:

- On-Grid access (48%): On the one hand, the GoR wants to continue its efforts, under the EARP programme, to connect rural households to the national electricity grid. Priority will be given to productive end-users and households consuming sufficient electricity to make connections financially sustainable.
- Off-grid access (22%): the GoR also emphasises the need for off-grid solutions, especially in remote geographical areas where levels of consumption are too low to justify a grid extension and connections to the national grid. In such cases, the GoR is envisaging to implement market transformation initiatives and PPPs to increase household access to off-grid solutions such as solar PV.

3. Assuring and maintain a regionally competitive tariff

The current electricity tariff is heavily subsidized, with part of REG's revenue coming through government subsidies. The GoR is committed to make power increasingly affordable and phase out indiscriminate subsidies to the electricity tariff by 2017/2018:

- Specific strategic industries and vulnerable population groups will be targeted for "smart" subsidies as matter of policy and to achieve cost transparency.
- The power generation mix will be diversified to gradually reduce petroleum-based power generation.
- The tariff methodology will be revised to disaggregate tariffs based on end-user categories, and to reduce barriers to new customers by removing fixed meter charges.
- Regional imports from East African Power Pool countries at cheaper tariff levels are expected.
- REG is under restructuring to yield operational efficiencies and reduced non-technical losses that contribute to high cost of power.

1.4 Sustainable Energy for All

The Sustainable Energy for All (SE4All) Initiative was launched in 2011 by the UN Secretary General, with three 2030 objectives of

1) **achieving universal energy access**
2) doubling the global rate of improvement in energy efficiency
3) doubling the share of renewable energy in the global energy mix.

Implementation of SE4All is country-led. The purpose of the SE4All Action Agenda for Rwanda is to identify country specific goals that are aligned with these global objectives, but taking into account Rwanda's energy and economic resources as well as its development and poverty-reduction priorities.

The Action Agenda estimates the costs of achieving these goals for 2030 and identifies actions that need be taken, acting as a long term strategic roadmap for the country's energy sector.

Rwanda's SE4All Action Agenda has been integrated into the work plan of the country's Sector Working Group, the main coordination and advisory body bringing together stakeholders in the sector including the key ministries, government agencies, development partners, private sector representatives, civil society and NGOs. The Action Agenda reflects inputs from all these groups.

1.4.1 SE4All Actions additional to ESSP

In the longer term compared to ESSP, SE4All Action Plan for Rwanda recommends additional actions in the field of electricity access:

- Identify long-term saturation levels of grid access in Grid roll-out
- Develop an O&M and grid replacement strategy
- Calculate cost-reflective tariffs
- Support new business models for off-grid electrification
- Educate customers
- Consider costs and benefits of fiscal policy options

SE4All Action Agenda also introduces a new **multi-tier access monitoring approach** in line with the Global Tracking Framework. It is further defined in chapter 2. This approach shall provide essential information for the sector to be able to effectively implement the actions here above.

1.5 EARP

Rwanda's Electricity Access Roll-out Program (EARP) is designed to achieve the GoR stated targets set out in EDPRS. These targets call for the total number of electricity connection to increase 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.

1.5.1 History

The first phase of EARP was launched by the GoR in March 2009 to support increase of electricity access from 6% in 2009 to 16% by 2013. In a joint effort with the electricity Utility, the GoR began planning work identifying the most sensible way forward for electricity to be extended over the next 20 years – with a particular focus on the next five years. This planning exercise was set to connect 16% of all households and at least 50% of identified public institutions by 2013 with the contribution of several donors (WB, NL, BADEA, OFID, Saudi Fund, JICA) and of the GoR.

By the end of 2013, EARP had raised the total number of electricity connections in the nation from around 110,000 in 2008 to 384,676 by the end of September 2013, raising the national electrification rate to close to 17%.

The success and momentum built under EARP phase I prompted GoR to raise its sights higher for phase II in the EDPRS II. The period 2013 – 2018 is known as the EARP II. GoR is determined to build on the success of the first phase and learn lessons that can help to deliver the challenging 48% electrification target over the 5 years. These targets call for the total number of electricity connections to increase from 335,000 at the end of 2012 to 1,100,000 by 2018. Mid-2015, total number of on-grid connections was over 500,000, i.e. 23% of the population.

1.5.2 Organizational setup

EARP is now anchored within REG's development subsidiary Energy Development Corporation Limited (EDCL). The program organizational setup is designed as presented in the figure hereunder. Some functions still have to be filled in when the program grows with additional GoR and development partners (DP) contributions.

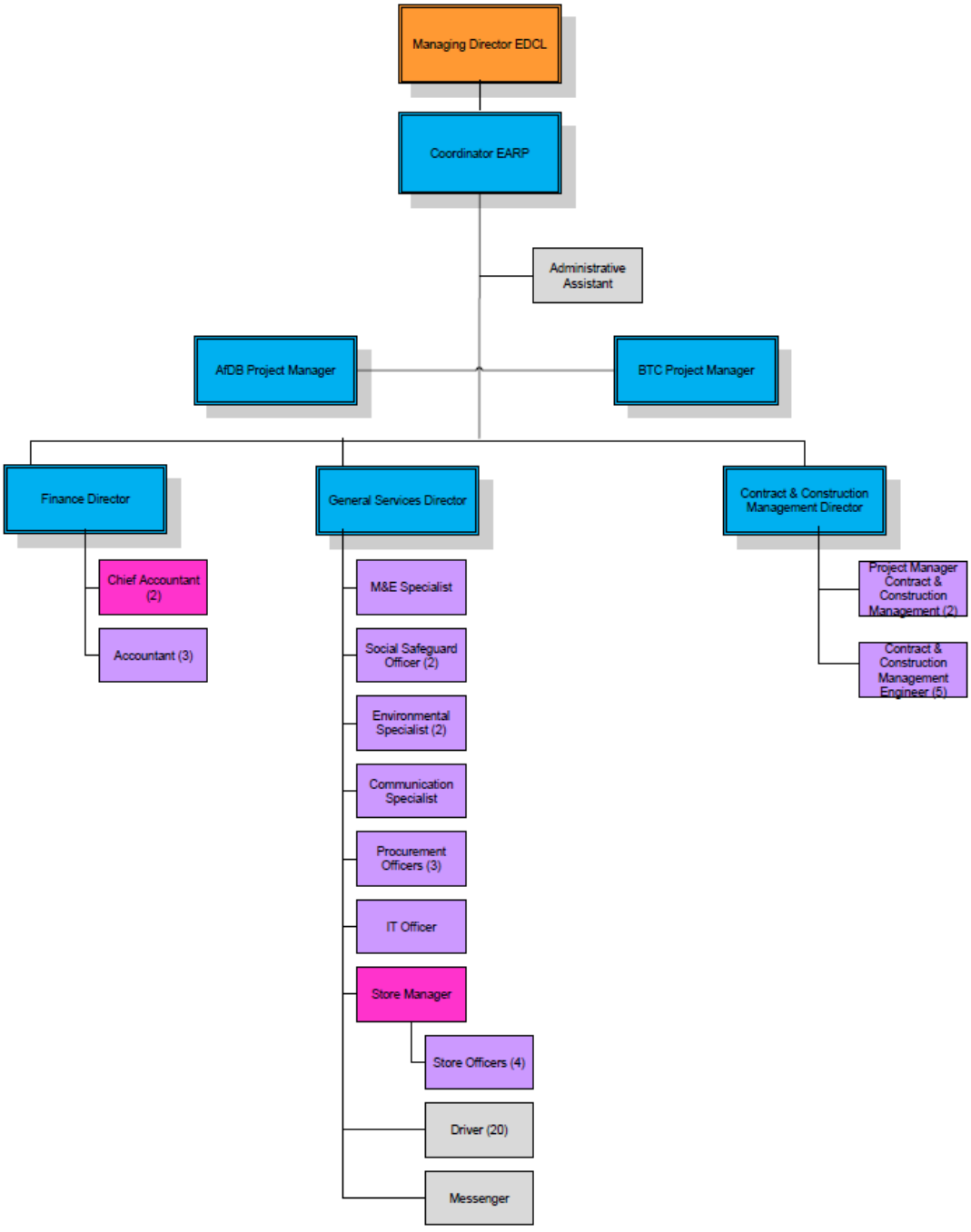


Figure: EARP organizational setup within EDCL

1.5.3 Planning

In 2012-2013, the EARP appointed the company SOFRECO to assist the Planning and Design Unit to

carry out the planning, design and costing of a capital investment program to achieve the targets. This planning work captures all potential consumers in GIS and estimates the cost of the needed installations. The zones to be electrified have been divided in several lots with the bigger lots grouped for EPC[2] contracts and smaller lots to be dedicated for local contractors and EDCL in house construction. The lots are prioritized according to their average connection costs and their interdependence.

Based on the latest customer survey data, it will be necessary to connect 650,270 additional customers between July 2014 and the end of 2017/18 to reach a target of 48% on-grid connections.

EARP will continue to bulk buy equipment, encourage local and regional companies to participate, and use Engineering, Procurement and Construction (EPC) contractors for a large share of delivery responsibilities. The program consists of two categories of electricity connection:

- Direct connections: A significant amount of connections are directly provided to new customers in the distribution area.
- Relocation and Fill-ins: Once the network has been extended to an area, a significant number of additional network connection requests are anticipated to come from this category. Given that the network will already exist, the cost of these connections will likely be less than for the direct connections. Achieving this target, however, will depend to a significant degree on the timely availability of all necessary funds to cover the investments, and on the success of urbanisation policies.

This represents a considerable financial challenge that can only be met with massive Government funding and support from development partners. The total cost of required investments is estimated to 690 million USD over the period 2013 - 2018.

1.5.4 Stakeholders

The following table shows how partners are currently contributing - or intending to contribute to EARP II:

DP's and funders	Amount in million	Date of agreement (tentative)	Effectiveness date (tentative)	Date of closure	Comments
AfDB	42 M USD	Jun 2013	May 2014	Aug 2018	18 Grant + 23 Loan
AFD	4.6 M EUR + 20 M EUR	Sep 2010 (Nov 2015)	Sep 2010 (Jan 2016)	Dec 2014	Concessional loan Grant
BADEA	11 M USD	May 2014	Dec 2014	Aug 2016	Loan
Belgium	17 M EUR + 12 M EUR + 10 M EUR	Feb 2014 (Dec 2015) (Jan 2016)	Feb 2014 (Dec 2015) (Jan 2016)	Jul 2018 (Dec 2019) (Dec 2019)	Grant
EU	140 M EUR	(Dec 2015)	(Dec 2015)	(2021)	Budget Support
Gov of Rwanda	73 M USD				Total commitment to date
Netherlands	30 M EUR + 4 M EUR + 5 M EUR	Jun 2009 Nov 2013 Nov 2014	Jun 2009 Nov 2013 Nov 2014	Jun 2014 Jun 2014 Apr 2015	Grant

[2] EPC is an acronym that stands for engineering, procurement and construction. This type of contract is a common form of contracting in the construction industry. It reduces stress and risk for the owner since the whole project is performed under one contractor responsibility.

OFID	10 M USD +12 M USD	Oct 2009 Jan 2013	Jun 2010 Jun 2013	Dec 2013 Dec 2015	Loan
Saudi Fund	12 M USD	Jun 2011	Jun 2011		Loan
WB	70 M USD + 60 M USD + 35 M USD	Feb 2010 Mar 2013 (Sept 2015)	Jun 2010 May 2013 (Nov 2015)	Jun 2016 Jun 2016	Credit
Total needs	**690 M USD**				To reach 48% target

Figure: EARP contributors

The figure of USD 690 million for total needs points out the high ambition of the GoR for EARP II.

1.5.5 Challenges

The roll-out of the grid has been successful to date in terms of the rapid increase in numbers of households connected. However, some gaps have been identified by recent evaluations and studies[3]. They highlight the challenges that will need to be tackled by the sector in the next phases:

Financial sustainability of network investments: The cost per on-grid new connection is relatively high, at roughly 1000 USD; but donor support has increased and to an extent the socio-economic long-term aspects justify the cost. Extending the grid more widely into rural areas where consumption levels of individual households are low is creating economic pressures for the utility EUCL. The average annual cost of each connected consumer is around 50 USD (around 45 USD in financing the loan required for the connection and a provision of 5 USD to contribute towards operations and maintenance (O&M), for which full cost estimates are not yet established). Under the current tariff structure, a consumer would need to use approximately 130kWh per month in order to fund the cost of their own connection. Currently around half of consumers are using less than 20KWh per month. Additional data on consumption levels and O&M costs are needed to assess the challenge.

Data and analytics: Monitoring and evaluation frameworks can be linked to global efforts and definitions such as those provided by the Global Tracking Framework (GTF) and the multi-tier access framework. Local data collection on actual usage of electricity (i.e. going beyond just number of connections) needs to be incorporated into future planning and cost-effectiveness evaluations.

Electricity grid operation and maintenance: On completion of construction of the network extension, the infrastructure will be handed over to the Utility organization, EUCL, who will be responsible for its long-term operation and maintenance that have been identified as areas in need of strengthening. Distribution losses are in excess of 20% and lengthy outages are widespread. The rapid expansion of the network in recent years combined with aging and often neglected existing infrastructure has further exacerbated the situation.

Affordability of connection and electricity: Currently, customers wishing to be connected pay an amount towards the capital cost of the connection that is dependent on their income. Those well off pay 100%, or 56,000 RWF, while middle income earners pay 50%, and the poor pay a 10% deposit which is paid over 12 months. The remaining cost can be publicly funded through a combination of grants by development partners and government contributions (90%).

Coordination between the distribution plans and the generation plans: Though difficult due to the different determining factors of the two plans, there is urgent need to harmonize the distribution planning and coordination with the changing generation plans to ensure that they go hand-in-hand to

[3]See. Bibliography in annex 7.7

meet the set targets.

Coordination between distribution plans and the provision of off-grid solutions: Given the uncertainty over the rate of roll-out of the grid to rural areas, it is hard particularly for private sector companies to plan off-grid investments. The sector currently has many different players and no clear strategy. MININFRA / REG involvement is in danger of crowding out private investment. Other Ministries (e.g. Health) need to coordinate with MININFRA / REG, especially in relation to coordination with roll-out of the grid. One way forward should be the donor/government-led identification of business cases in the off-grid area (e.g. updating the hydro power atlas) to reduce the burden on investors.

2 STRATEGIC ORIENTATIONS

2.1 Guiding principles

The focus for the present intervention is based on the following guiding principles:

- The commitment to the **achievement of the Strategic objectives** for the Energy Sector in Rwanda (EDPRS II)
- To remain **coherent** within the Belgian-Rwandan portfolio
- The need to assure a **tangible impact** for the intervention by avoiding the scattering of available resources.
- The need to **complement** existing and planned interventions and initiatives in the Energy Sector

These principles lead to focus this intervention on the following orientations:

i. The choice to **focus on the national grid extension**: contribute to the transmission and distribution of electricity within the EARP national master plan through the construction of MV- and LV lines and the provision of other electrical equipment.

ii. The need to put emphases in **increasing sustainability, efficiency and effectiveness** of electricity access efforts in line with SE4ALL action plan for Rwanda by:

   - Scaling-up **affordability efforts and customers education** in order to support beneficiaries, especially vulnerable ones, in benefiting from electricity access
   - Monitor & Evaluate holistic electricity access using the multi-tier access tools provided in the **Global Tracking Framework (GTF)** and incorporate relevant data analyses into sector planning and decision making.
   - Support GoR in **energy sector coordination** in order to increase coherence between the grid roll-out and other electrification efforts (off-grid access, generation plan, private sector participation,…)

Concrete activities to shape those principles are provided in the intervention framework in chapter 3. Additional explanation on GTF and multi-tier access definition is provided in the following paragraph.

Electricity grid O&M and losses reduction program are not directly part of this BE2EARP intervention. Those topics remain central for the sustainability of EARP but other interventions have planned extensive support in the field[4].

2.1.1 The Global Tracking Framework and multi-tier access

The Global Tracking Framework (GTF) is a new framework for tracking progress toward the goal of SE4All. It provides an initial system for regular global reporting based on indicators that are both technically rigorous and feasible to compute from current global energy databases, and that offer scope for progressive improvement over time.

Although the identification of suitable indicators required for the framework posed significant

[4] O&M is a central theme for the BTC CDEU project. The loss reduction program will be supported by EU (€23M) and WB (€16M). BE3EARP could possibly complement (to be explored during formulation in Q3-Q4 2015)

methodological challenges, those challenges were no more complex than those faced when attempting to measure other aspects of development—such as poverty, human health, or access to clean water and sanitation —where global progress has long been tracked. In all these aspects of development, a sustained effort of building analytical capability and data capacity has been required across most countries.

2.1.1.1 Measuring energy access with a multi-tier approach

For energy access, the usual definitions and measurements of access to electricity, although convenient, fail to capture several important aspects of the problem. The new definition moves beyond the electricity connection, using more indicators to get closer to underlying electricity usage: measuring energy access with a multi-tier approach.

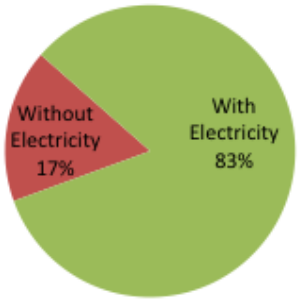
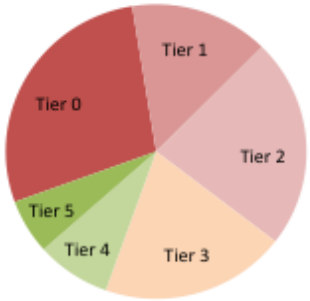
	Electricity Access	**Figure**
Usual definition (applied by EARP)	Having electricity or not having electricity	
New definition (to be introduced)	Ability to avail energy that is **Adequate, Available when needed, Reliable, of good Quality, Convenient, Affordable, Legal, Healthy & Safe**, for all required energy services across Household, Productive and Community uses	

Figure: Usual- and new definition for electricity access (GTF)

Several tools as set of indicators and questionnaires are made available by SE4All to track electricity access progress. Multi-tier levels are defined for households, productive use and community services. The following tables provide the example for household electricity access :

			Tier-0	Tier-1	Tier-2	Tier-3	Tier-4	Tier-5
Attributes	1. Peak capacity	Power	No Electricity	V. Low Power Min 1 W	Low Power Min 50 W	Medium Power Min 200 W	High Power Min 2 kW	
		Daily capacity		Min 4 Wh	Min 200 Wh	Min 1.6 KWh	Min 4 KWh	
	2. Duration	Hours per day	< 4 hrs	Min 4 hrs		Min 8 hrs	Min 16 hrs	Min 23 hrs
		Hours per evening	< 2 hrs	Min 2 hrs		Min 2 hrs	Min 4 hrs	Min 4 hrs
	3. Reliability					Max 3 disruptions **per day**	Max 7 disruptions per week	Max 3 disruptions **per week** of total duration < 2 hours
	4. Quality					Voltage problems do not prevent the use of desired appliances		
	5. Affordability				Cost of a standard consumption package of 365 kWh per annum is less than 10% of household income			
	6. Legality					Bill is paid to the utility / pre-paid card seller / authorized representative		
	7. Health and Safety					Absence of past accidents and perception of high risk in the future		

Figure: Multi-tier matrix for household electricity supply

		Tier-0	Tier-1	Tier-2	Tier-3	Tier-4	Tier-5
	Annual Consumption levels (KWh)	< 7	≥ 7	≥ 100	≥ 365	≥ 1250	≥ 3000
	Daily Consumption levels (kWh)	< 0.020	≥ 0.020	≥ 0.274	≥ 1	≥ 3.425	≥ 8.219

Figure: Multi-tier matrix for household electricity consumption

For this intervention, indicator levels may need to be adapted to rural Rwanda socio-economical specific characteristics but this universal approach shall provide essential data, currently lacking to support decision making and to convince investors to participate to electricity access.

EARP grid roll-out allows for tier 4 & 5 access in terms of electricity supply (> 2 kW peak capacity). However, large parts of the target group reveal demand patterns that only qualify for Tier 1 or 2 (< 50 W peak capacity). This categorization is more than a technical question. It rather leads to the political question of whether the high investment costs are justified compared to lower cost (and of course lower quality) off-grid solutions.

2.2 Implementation principles

For the project implementation, the current TFF is embedded in following key principles:

- Intervention flexibility in order that the Project Steering Committee (PSC) can adapt the activities and their budget to the priorities at the time of the intervention.
- From planning until operation, the intervention will collaborate with the district authorities and local EUCL branches on all the activities that are performed in their areas
- The intervention will align as much as possible with the Rwandan vision on Technical Assistance. The profile of the ITA has been defined together with EDCL/EARP, its recruitment and evaluation shall be jointly managed by BTC and EDCL/EARP.
- Project Human Resources Strategy will be aligned as much as possible with the EDCL/EARP HR and outsourcing strategy.
- As planned in the SOFRECO design and planning, most construction works will be contracted to private companies. Some lots will be implemented on a turnkey basis (EPC), excluding household connections that will be implemented by EDCL. Smaller lots can be allocated to local companies or EDCL/EARP to build the installation.

2.3 Beneficiaries

The target groups of the intervention are households, enterprises and public institutions (health facilities, schools and administrative offices) that will be connected to the electricity grid.

EARP overall target calls for a total number of electricity connection to increase from 480,000 at the beginning of 2015 to 1,100,000 by 2018, with a special emphasis on connecting productive use of electricity centres.

The beneficiaries are further described in chapter 3.

2.3.1 Positive impact of electricity for the beneficiaries

The positive impacts of electricity are numerous and wide-ranging. The benefits of the project for domestic supply and use in small-scale businesses and in access to electric power for schools and public services can be significant.

In the construction phase there are temporary employment opportunities for local contractors or supply services. Within the respective intervention areas there will be opportunities for petty trading and small business service provision along the power line routes and where there are sub-station rehabilitation components.

Significant social benefit will come through employment generation and more efficient operation of key services through provision of electricity access to the villages along the transmission and distribution lines served by the project. Potential beneficiary enterprises affected by and contributing to regional socio-economic transformation will be small industries like saw mills and joineries, grain mills and other agricultural processing businesses which need electricity.

The long-term direct positive impact is therefore in access to reliable electricity supplies, which will lead to better provision and easier management of goods and services, and enable new facilities for processing and storage. There will be better availability and supply of safe and clean water (which needs pumping); data management with computers will be possible and communication facilities like internet can be made available, as charging for mobile phones; also, electric lighting adds to security at night and enables extended opportunities for work and study.

As a consequence the quality of life and extent of economic opportunity will be changed for the better. Social and environmental costs, not least in noise, air pollution and carbon emission[5] associated with existing generator usage will be reduced and there will be less requirement for fuel for lighting.

2.4 Partners and synergies

2.4.1 MININFRA

The Ministry of Infrastructure (MININFRA) is the lead Ministry responsible for developing energy policies and strategies, and for monitoring and evaluating projects and program implementation. It is in charge of setting an enabling policy and legal framework for the sector, including a suggested general approach to the optimal use of state subsidies in the sector, budget preparation, resource mobilization (together with MINECOFIN), and political oversight over government programs designed to expand energy access and service provision.

MININFRA chairs the Sector Working Group (SWG) and the Sector Wide Approach (SWAp)

[5] The 2013 electricity grid emission factor for Rwanda was 0.53 $tCO_{2\,eq}$/MWh compared to 1,70 $tCO_{2\,eq}$/MWh with small diesel generators that is presumably the default off-grid electricity generation option. The assumed baseline technology is an inefficient diesel generator with a low energy conversion coefficient and a Load Factor of 25% or even lower.

Secretariat, to better coordinate activities in the sector between the various stakeholders.

In this context, Technical Working Groups (TWG) have also been established to support and advise the eSWG in the overall implementation of the SWAP: (i) Access, (ii) Generation and (iii) Biomass.

The eSWAP secretariat

The Energy Sector Wide Approach (eSWAp) secretariat is a designated office located within the MININFRA mandated to ensure cross government and donor coordination in matters to do with energy sector.

The adoption of energy SWAp was driven by the following ambitions:

- To increase aid effectiveness in the energy sector by reducing fragmentation of donor aid flows in the sector.
- To serve as information hub and ease flow of information to and from the energy sector stakeholders.
- To create a forum for information and knowledge exchange.

The staff of the secretariat includes the coordinator, an energy policy and economics specialist, a M&E specialist and an external link and donor coordination officer.

The eSWAP secretariat is currently financed by the World Bank through its support to the EARP. The role of the Secretariat is to assist the chair (MININFRA) and the co-chair (Belgium) of the eSWG to bring stakeholders together to contribute to policy and strategy, facilitate eSWG meetings, help to coordinate development partners (DPs), and to invite eSWG members for dialogue to harmonize needs and address sectorial issues.

As new co-chair of the eSWG, Belgium will also support eSWAP through this intervention (see chapter 3.3.3).

2.4.2 Other ministries

2.4.2.1 MINECOFIN

The Ministry of Finance and Economic Planning (MINECOFIN) leads on resource mobilization to support energy investment and related financing requirements. MINECOFIN ensures the fiduciary framework to manage grants, loans, and other concessional finance from development partners into the sector.

2.4.2.2 MINALOC

The Ministry of Local Government (MINALOC) is the lead ministry in promotion of decentralized services delivery. MINALOC helps in promotion of improved rural based energy technologies and other energy initiatives targeting rural areas. Further, MINALOC speeds up the implementation of the National settlement program (“umudugudu” settlement schemes) that is targeted to reduce the cost of electrification per household.

Local governments have the authority and mandate to coordinate the implementation of discrete enabling policies to drive local economic transformation. Districts are responsible for maintaining the District’s infrastructure. Specifically, they have direct responsibility for all decentralized service delivery, including those that may be related to energy at the grassroots. This includes national programs to scale up sustainable energy consumption currently being implemented by the electricity utility targeting communities.

2.4.2.3 MINEDUC

The Ministry of Education (MINEDUC) and its affiliated research agencies (NIRDA and NCST), plays a

role in the energy sector by building the competency and human resources base for sector development and by helping to link sector policies and strategies to research, technology development, and innovation. MINEDUC ensures that TVETs address skill shortages in the sector, including jobs related to electrical engineering and renewable energy technology installation and maintenance.

2.4.2.4 MOH

The Ministry of Health (MOH) is involved in health facilities electrification.

2.4.2.5 MINIRENA

The Ministry of Natural resources (MINIRENA) is responsible for ensuring the sustainability of natural resources exploitation and for developing and managing compliance to the national environment policy and law.

2.4.2.6 MINICOM

The Ministry of Trade and Industry is engaged to facilitate Rwanda's economic transformation through enabling a competitive private sector integrated into regional and global markets, while ensuring a level playing field and the protection of consumers. EARP collaborates with MINICOM regarding the industrial zones electrification.

2.4.3 REG

Rwanda Energy Group Ltd. (REG) is a state owned entity that has the legal mandate to translate energy sector policies and programs into the implementation of tangible projects to achieve government's vision in the sector and to efficiently operate and maintain the country's power transmission system.

The REG is organized in two subsidiaries:

Energy Utility Corporation Limited (EUCL): The EUCL is in charge of day-to-day operations of power generation, transmission, distribution and sales to final customers. The EUCL will take charge of planning the transmission and distribution grid in areas already reached by electrification and promoting energy efficiency and demand side management programmes. New management contracts will strengthen incentives for the company to achieve aims such as cost reductions, technical and non-technical loss reductions, and improving customer satisfaction.

Energy Development Corporation Limited (EDCL): The EDCL is responsible for developing both generation and transmission projects, exploiting new energy resources, and executing a least cost power development plant. Its core objective is to facilitate the development and exploitation of domestic energy resources and investments. In pursuing this objective, it will have autonomy in managing its affairs, but will regularly report to MININFRA on progress towards set targets. Specifically, the EDCL will:

- Collaborate with MININFRA in conducting all activities necessary to explore and assess the country's indigenous resource base;
- Collaborate with MININFRA and RDB to reduce the risk profile of energy projects to a level acceptable to the private sector;
- Execute generation and transmission and distribution projects necessary to expand on-grid assets to new areas. These will be handed over to EUCL once commissioned;
- Define and update the overall power system master plan, and a least cost power development plan;
- Negotiate along with MININFRA long-term electricity import agreements with neighbouring

countries.

The EARP is implemented under EDCL. This intervention will be implemented in co-management between EDCL and BTC (see chapter 5 on implementation modalities).

2.4.4 REMA

Rwanda Environment Management Authority (REMA) is responsible for the protection of the environment. REMA is involved in supervision and monitoring of environmental aspects.

EARP needs to engage REMA in site selection at an early stage during design phase of the projects. REMA will play the leading oversight role of environmental monitoring of the activities of this intervention. The REMA will carry out this role by ensuring that the environmental management plans (EMPs) contained in the cleared design package are implemented as specified therein. REMA will monitor the reports on a quarterly basis. REMA will also make regular site visits to inspect and verify for themselves the nature and extent of the impacts and the success or failure, of the mitigation measures.

2.4.5 RDB

Rwanda Development Board (RDB) plays the lead role in investment mobilization and promotion for the energy sector, acting as a gateway and facilitator. It actively promotes private investor participation in the energy sector, including local financial institutions. It leads on facilitation of foreign direct investment (FDI) into strategic energy generation projects, as well as other programs and activities involving cleaner, more energy-efficient technologies. RDB also issues Environmental Impact Assessments for all energy projects for which one is required. It is expected to also host a centralized authority or advisory agency for PPPs across government.

2.4.6 RURA

Rwanda Utilities Regulatory Agency (RURA) is a national institution established for the Regulation of Public Utilities (Energy, Telecommunications, Water and Sanitation, and Transport). The scope of its mandate extends to public utilities involved in renewable and non-renewable energy, electricity, industrial gases, pipelines and storage facilities, and conventional gas extraction and distribution. As the regulator, RURA's principal mandate is to ensure consumer protection from uncompetitive practices while ensuring that such utilities operate in an efficient, sustainable, and reliable manner. RURA also has the important role of updating the electric grid code, ensuring quality of service standards for power, assessing and reviewing energy tariff structures, licensing all power generation, transmission, and distribution companies as well as retail petroleum filling stations and related storage facilities.

2.4.7 RSB

Rwanda Standards Board (RSB) develops national technical regulations including national technology and performance standards. RSB plays an increasingly important role in establishing, publishing, and disseminating national standards for energy technologies such as biogas digesters and solar appliances.

2.4.8 Other development partners

Many development partners are involved in different activities of electrification through EARP. Since the WB has been the lead donor in the past, most donors have aligned with its strategy. WB, OFID, BADEA, NL, Saudi Fund, JICA and AFD have contributed to the first phase of EARP. The second phase is involving WB, OFID,BADEA, Saudi Fund, NL, AfDB, Belgium, AFD and EU.

The energy SWAp has been created in order to reduce the fragmentation of donor aid flows and to create synergy between all involved parties.

2.4.9 BTC Capacity building intervention

The CD EU intervention of the current Belgian-Rwandan ICP is working on the three levels of capacity building (individual & equipment, organizational, and institutional). Methodological and practical coherences shall be developed with the EARP CB component. Regular joint meetings between BTC interventions within REG will be held to foster dialogue and synergies.

Through its objectives, the CDEU shall increase the sustainability of the EARP investments by strengthening EUCL in the O&M of the power network.

2.5 Location

The location of the BE2EARP activities is specified in chapter 3 according to the last version of the roll-out master plan (updated SOFRECO study).

A map showing the status of implementation over the whole country is provided in Annex 7.3.

The location of the intervention shall be confirmed or adapted by the Steering Committee according to the updated situation and priorities at the time of the start of the intervention.

The PSC shall decide the area of the intervention based on the following criteria's:

- The lots to be implemented by the intervention shall be high in the priority list i.e. no more than 1000 USD/potential connection (lot average)
- The choice of the intervention area shall be harmonized with other DP's intervention
- The intervention area shall be as close as possible to other BTC interventions
- The intervention area shall present evidences of potential electric demand justifying a grid extension (specific industries, better access to transport network,…)
- Areas with high environmental and/or social risk shall be avoided: for example, any natural reserve and their defined buffer zones will be avoided
- The choice of the lot shall be in line with the most updated version of the electrification roadmap
- The content of the lot can be adapted depending on the context
- If possible, the lots to be implemented (by either BE1EARP, BE2EARP, BE3EARP) shall be concentrated in the same eastern region to avoid scattering of resources and ease activities implementation.

3 INTERVENTION FRAMEWORK

3.1 General objective

The energy sector is able to provide sufficient, reliable and affordable energy for all Rwandans

The general objective is shared with other BTC interventions in the energy sector. It is fully aligned with ESSP long term vision.

3.2 Specific objective

The access - including use of - reliable on-grid electricity services for households, enterprises and priority public institutions in peri-urban and rural areas is improved

The specific objective is more ambitious than the original specific objective of BE1EARP:

- The **use** of electricity is explicitly stated in the objective in order to highlight the importance of actual usage of electricity (i.e. going beyond just number of connections) for both beneficiaries and utility. This electricity usage is actually part of new access definition and GTF.
- **Enterprises** are included as beneficiaries, together with households and priority public institutions since this kind of customer (businesses, small industries,…) plays a central role in the socio-economic development of the electrified area. Enterprises shall also be the main contributor to demand increase in the short term.
- **Peri-urban** areas are also targeted since the electricity grid still have to be extended in some areas adjoining urban areas, not defined as urban areas by GoR.

3.3 Expected results and activities

On one side, the connection Result 1 is very similar within the three interventions of the Belgian contribution to EARP (BE1EARP, BE2EARP, BE3EARP): it reflects the GoR priority and will bring new connections over the interventions distinct locations.

On the other side, the BE2EARP specific objective is slightly more ambitious than for BE1EARP and some new orientations are introduced in order to adapt to newly identified challenges and gaps. Those are reflected in Result 2 and 3.

3.3.1 Result 1: Rural electricity connectivity is increased through national electricity grid extension

Compared to BE1EARP, the term “access” is replaced by “connectivity” to avoid confusion between the connection and the new definition of access as provided in the GTF.

3.3.1.1 Activity 1.1: Build electricity network extension on targeted areas

The intervention will finance extension of the existing national grid to unconnected areas. Investments mainly include medium-voltage (MV) transmission lines and low-voltage (LV) distribution lines construction i.e. poles, conductors, transformers, and other needed hardware as well as installation services.

With the technical assistance of SOFRECO, EARP planning and design Unit has divided the areas to be electrified in several lots budgeted between 1 and 10 million USD. The lots are prioritized according

to their interdependence and their average per household connection cost (cheapest first). SOFRECO technical assistance has already compiled the studies for the design of the works; for each lot, project description and detailed bill of quantities is available to prepare the tender documents for the installation within EARP.

The choice for the type of contractor depends on the size of the lot:

- For big lots, EPC contractor will implement the activity on turn-key basis. The EPC contractor shall be able to handle the increasing delivery challenge compared to smaller lots. It will be recruited via international public tenders according to Rwandan public procurement law. African and regional suppliers shall be encouraged to participate. EPC contractors will be responsible for acquiring all components required with the exception of the meters.
- For smaller lots in green field area or grid intensification in already-connected areas. EARP can purchase the required poles, conductors, transformers, meters, and other connection hardware. The implementation of the activity will build on the on-going outsourcing initiative already begun by EARP, using local contractors or EDCL/EARP in-house capacity to implement the works.

With the available budget (**€ 8,250,000**), the intervention can contribute to the electrification of lot 6 and lot MV_LV11 in the Eastern province and to the improvement of the transforming capacity of Shango substation.

The location of these investments is indicated on the map in annex 7.3

Depending on priorities at the beginning of the implementation period, the choice of the lot can be updated and adapted after analyses by the project team and decision by the PSC as described in paragraph 2.5.

<u>Eastern province, EPC Lot 6:</u>

This lot is located in Kirehe and Ngoma districts. Its location close to lots 2, 4 & 10 implemented by BE1EARP is easing supervision for BTC/EARP staff.

According to the SOFRECO planning and design, this budget should provide the expected outputs of about 5619 direct connections (85 km of MV lines and 139 km of LV lines).

In annex 0 the SOFRECO planning and design estimates are further detailed for lot 6.

<u>Eastern province, lot MV_LV 11:</u>

This lot is located in Kirehe district. Its location close to lots 2, 4 & 10 implemented by BE1EARP is easing supervision for BTC/EARP staff.

According to the SOFRECO planning and design, this budget should provide the expected outputs of about 1254 direct connections (12 km of MV lines and 29 km of LV lines).

The EPC approach will not be used for this smaller lot. Material will be purchased under BE2EARP and installation (labor) will be performed by the EDCL in-house installation team.

In annex 0 the SOFRECO planning and design estimates are further detailed for lot 6.

<u>Shango power transformer:</u>

Under this activity, the scope of works will include the supply and installation of an additional transformer in Shango substation including the complete transformer bay, civil/foundation works for equipment and integration of this new bay into existing control system.

The power transformer will be used for 220 / 110 / 11kV transformation and shall have a power capacity of 75 / 93.8 MVA. It will increase the capacity to distribute imported power to the local

distribution grid reaching final customers.

Shango main substation is already under construction north of Kigali area with four incoming/outgoing transmission lines below:

- 220 kV Rwanda-DRC interconnection
- 220 kV Rwanda-Uganda interconnection
- 220kV Rusumo-Bugesera- Kigali
- 110 kV connection between Shango and Birembo substations

3.3.1.2 Activity 1.2: Supervise the grid extension construction works

The infrastructure provided by the contractor(s) needs to be controlled by a supervision team during implementation of activities 1.1.

The supervision team will also be in charge of controlling the implementation of the EMP and the RAP as well as the respect of technical specifications and standards.

This supervision will be performed by a specialized company that will be hired via public tender according to Rwandan public procurement law.

The budget allocated to this activity are estimated to 7%[6] of the construction budget: **€ 577,500**

3.3.1.3 Activity 1.3: Develop and implement adequate Environmental Management Plan (EMP) and Resettlement Action Plan (RAP) for the network extension activity

In line with national policy and international standards, an Environmental and Social Policy Framework (ESMF) and a Resettlement Policy Framework (RPF) have been developed to provide guidelines on how EARP will avoid, manage or mitigate potential environmental and social risks (see chapter 6.1). Once the exact location and scope of individual subprojects is confirmed, the preparation of one EMP and one RAP can start. Both plans will identify the agency responsible for planning and implementation as well as supervision and monitoring, for each phase of the intervention.

3.3.1.3.1 Environment Management Plan (EMP):

Adverse impacts of network extension on the environment are not expected to be severe. The intervention will not pose major or important risks to biodiversity, natural habitats, and wetlands as it will not fund activities in protected areas. All the potential adverse impacts of the network extension activity have already been identified and discussed in the ESMF and are shortly described in chapter 6.1.

The EMP defines measures needed to prevent, minimize, mitigate, or compensate for adverse impacts, and to improve environmental performance while ensuring compliance with applicable environmental standards during the planning and design phase, construction and operation and possible decommissioning of the project. The EMP also defines who is responsible for the implementation of each actions.

The EMP shall be developed and implemented for construction activity (3.3.1.1) as followed:

- EMP design by the EARP environmental safeguards;
- Approval of the EMP by the relevant GoR agencies (MININFRA, REMA, RDB) and by BTC will

[6] BE2EARP supervision fee estimation (7%) has been increased compared to BE1EARP (5%) according to recent experience

be a pre-condition to allow the construction activity to be implemented;

- Implementation by REG, by other relevant implementing agencies (MININFRA, REMA, RDB and RURA) and/or by the contractor of the construction activity 1.1;
- Supervision, monitoring and reporting by EARP environmental safeguards and by the supervising company contracted for supervision of the construction.

A budget of **€ 76,000** is foreseen for contracting specific studies or mitigation activities[7] if the local situation requires resources that are not available in-house. This budget shall mitigate all the adverse impacts identified in the EMP as listed in chapter 6.1.

3.3.1.3.2 Resettlement Action Plan (RAP):

Network extension activities will carry some risks of adverse social impacts resulting into acquisition of land and disturbing the people's economics and social aspect of life[8]. The RPF provides guidelines on how the activity will avoid, manage or mitigate all the project related expropriation risks.

The RAP defines measures needed to ensure adequate compensation of the Project Affected people (PAP) for the property or the loss of crops and trees in the sites that were cleared in the process of construction activities.

For construction activities, the RAP shall be developed and implemented in line with the WB policy[9] as followed:

- RAP design by the EARP social safeguards
- Approval of the RAP by the relevant GoR agencies and by BTC will be a pre-condition to allow the construction activity to be implemented;
- Compensation payment for properties and crops by MINECOFIN through the District
- Follow-up that all the payment to ensure that all PAPs receive their cash through their personal bank account by the District
- Monitoring and reporting by the EARP social safeguards together with the districts

The GoR is committed to provide the budget for the compensations of EARP PAPs. According to past experience, the needed budget for this intervention is estimated to **€ 108,000**

3.3.2 Result 2: Beneficiaries (households, productive- and community uses) are supported in improving their access level.

While result 1 focuses on electricity connection supply, the result 2 works on electricity demand challenges by supporting beneficiaries in improving their access level.

3.3.2.1 Activity 2.1: Sensitize and educate beneficiaries around electricity usage

The beneficiary communities shall be sensitized on electrical hazards and electricity consumption control through information, education and communication campaigns. The approach is to provide a "social marketing" to new customers that are not familiar with electricity usage.

The activity shall target the whole population to be connected under the three components of BE

[7] For example, a mitigation measure for the removal of forest cover is the planting of planting low growing vegetation in the right of way

[8] Experience shows that population displacement seldom happens with construction of MV and LV lines. The Project will mostly deal with loss of crops and trees compensation.

[9] World Bank Operational Policy on Involuntary Resettlement: OP 4.12

EARP (around 30,000 customers).

Those education campaigns shall include beneficiaries' education around:

(i) Health & Safety around electricity access and electrical hazards

(ii) Electricity productive use

(iii) Energy efficiency around electricity consumption

Promoting productive use and energy efficiency (including energy savings) may look paradoxical but this approach is essential to trigger sustainable economic benefits from electricity access.

This activity can be implemented by a specialized NGO or private organization specialized in communication campaigns for beneficiaries, in close collaboration with EUCL marketing department.

This organization will be hired via public tender according to Rwandan public procurement law.

The budget allocated for this activity is **€ 300,000**

3.3.2.2 Activity 2.2: Scale-up financial support to improve connection affordability for vulnerable customers in the intervention area

Building on the recommendations of the BE1EARP baseline survey, this activity will support electricity connection affordability in the intervention area.

This activity shall also take into account the recommendations of the recent studies on tariff impact and low income solutions in Rwanda.

Depending on the identified needs, the solutions can be (but should not be limited to):

- Micro-credit system to support low-income beneficiaries
- Subsidies for the poorest beneficiaries, for example through support to EUCL local branches and districts authorities in financing (part of) the connection fee for low income households

A budget of **€ 200,000** is foreseen for implementing this activity through a grant agreement with district authorities or EUCL local branches.

3.3.3 Result 3: Coherence and coordination are improved between EARP and other energy access initiatives

Activity 3.1 is directly supporting eSWAP and its staff in energy sector coordination activities.

Activities 3.2 to 3.5 are aiming to test, adapt, use and capitalize the energy access Global Tracking Framework in order to improve electrification efforts effectiveness and coherence between EARP and other energy access initiatives. Those 4 activities can be supported by a NGO or organization that will be hired via public tender according to Rwandan public procurement law.

The framework contract between BTC HQ and an electricity services specialized company is also an option to ease procurement process.

3.3.3.1 Activity 3.1: Support eSWAP in overall energy sector coordination

As co-chair of the energy sector working group, Belgium will support the eSWAP through the financing of key staff based at MININFRA: the SWAP coordinator and the External link and donor coordinator officer.

They are responsible for the good overall coordination of the energy sector and for the quality of the sector policy dialogue, under the leadership of the chair and the co-chair:

- To increase aid effectiveness in the energy sector by reducing fragmentation of donor aid flows in the sector.
- To serve as information hub and ease flow of information to and from the energy sector stakeholders.
- To create a forum for information and knowledge exchange.

Their terms of references are further detailed in Annex 7.4.

The budget for this activity is estimated to **€ 550,000,** including staff salaries and operation budget to finance the organization of eSWG and related coordination events.

3.3.3.2 Activity 3.2: Perform multi-tier energy access sample surveys using the Global Tracking Framework

Sample surveys on beneficiaries' access profile will be performed in the intervention areas of EARP that are supported by Belgium. The surveys will be performed before grid connections (baseline status) and after grid connection (progress status) on both grid connected beneficiaries and off-grid populations.

Questionnaires provided by the Global Tracking Framework shall be adapted and used to collect detailed data on beneficiaries' energy profiles.

Since those questionnaires include a significant amount of details, a global survey on all the beneficiaries is not feasible and the survey should cover a representative sample of the beneficiaries' population, including households, businesses and community uses.

The survey will be performed and analysed by a specialized consultant or NGO under the supervision of the ITA in sector coordination.

A budget to survey a sample of about one thousands customers is foreseen for this activity, estimated to **€ 100,000.**

3.3.3.3 Activity 3.3: Support EUCL in organizing multi-tier access data monitoring for its customers

Sample surveys performed trough activity 3.2 will provide two detailed pictures of the energy access at given moments but the EUCL and its commercial arm shall be able to monitor part of this detailed access data for all its customers on a regular basis.

A thorough analysis of the type of data to be collected and the collection frequency is needed. A data collection system will be developed together with EUCL local branches that will be trained to collect and share the data. It will be integrated in EUCL management information system[10]

The activity will be led by EUCL socio-economist with the support of external consultancy, under supervision of the coordination ITA.

The budget for this activity is estimated to **€ 80,000**

3.3.3.4 Activity 3.4: Support REG/MININFRA to use collected data for decision making and coordination

Under this activity, REG management and MININFRA will be trained to use monitored data for decision making purpose and coordination.

The data analyses will be used to make recommendations on next sector actions plans and strategies.

[10] EUCL management information system (MIS) strengthening is a central output for next WB contribution to Rwandan Energy Sector. The intervention starting date is expected to be simultaneous with BE2EARP

This activity will be led by the coordination ITA with the support of external consultancy.

The budget for this activity is estimated to **€ 80,000**

3.3.3.5 Activity 3.5: Capitalize and communicate on lessons learned

Lessons learned and analyses on the GTF usage shall be capitalized in order to serve the whole sector and other regional electrification initiatives.

Communication on the approach and the results can happen through publication.

This activity will be led by the coordination ITA with the support of external consultancy, or scientific support.

The budget for this activity is estimated to **€ 40,000**

3.4 Additional hypotheses

Some results and activities are expected from other interventions involving BTC or other DPs. They remain a condition for the success of EARP but no activity was foreseen within BE2EARP in order to avoid resources scattering: those areas are out of the sphere of control of BE2EARP but remain in the sphere of high interest of the intervention since they are conditions to achieve the objectives. This is true for results regarding:

- Grid strengthening and losses reduction program, covered by BE1EARP (result 2) and planned interventions by EUCL under EU and WB funding.
- Capacity building in the field of grid O&M, covered by CDEU and by BE1EARP (result 4).

BE3EARP formulation will further analyse eventual gaps to be filled in those fields.

3.5 Monitoring and evaluation

EARP has already developed an M&E process of systematic collection, analysis and use of data to improve project performance. The program has adopted a common set of result-based indicators that are reflected in the Results Framework for the project. All indicators are in line with EDPRS and sector strategies.

The intervention will use the already existing BE1EARP M&E framework and complete it in line with the Global tracking Framework.

If possible, Mid Term Review (MTR) and End Term Review (ETR) will take place simultaneously for both BE1EARP, BE2EARP and BE3EARP (shared exercises).

Given the cyclic nature of M&E, the intervention will go through different M&E processes during the intervention. These processes will include a number of key moments for strategic reflection and reporting. Before entering into detail on the indicators for this intervention, the global M&E process is described in the following paragraphs.

3.5.1 Different components of Monitoring

The different monitoring processes are summarized in the figure underneath.

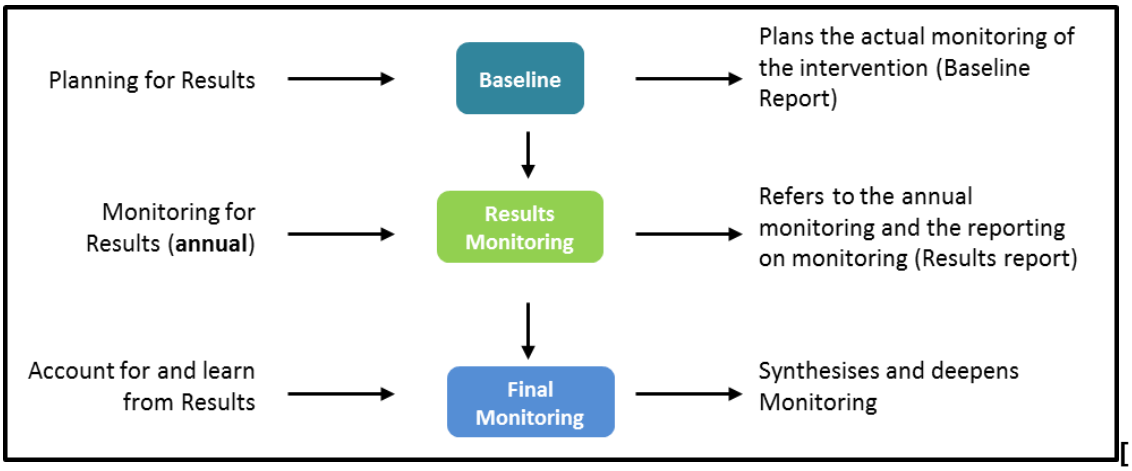


Figure 1 – Monitoring processes

Baseline

The Baseline is the first component of the Monitoring process. The baseline is about preparing the monitoring of the intervention and is also an opportunity to make sure:

- That stakeholders are on a **same level of understanding** of the change process (the intervention) that is supposed to take place
- That everybody knows how **progress towards this change** (compared to the starting situation) will be measured
- That risks are identified and taken into account in the implementation strategy.

By providing the intervention with a finalized and realistic monitoring framework, the baseline is the link between formulation and implementation. The **Baseline report** is the final output of the baseline process which contains:

- *the monitoring matrix:* updated results framework with indicators – including (to the extent possible) the relevant findings of the Capacity Needs Assessment (CNA), the baseline, target and intermediate values, sources of verification, frequency of data collection and responsible for data collection and analysis (i.e. indicators protocols).
- the *risks management plan*: a listing of major risks, their analysis and **the response measures that will be taken**

The intervention team can use the generic ToR for the Baseline Work Plan in Annex 7.

Results Monitoring

Results Monitoring is the centrepiece of monitoring as it is a recurring, **annual** process that is crucial for **learning, strategic steering and accountability**. It is a participative exercise during which the members of the PMU, together with key stakeholders, analyse how the intervention is doing in terms of results. The intervention team – on the basis of information collected through the monitoring of indicators - tries to find answers on questions such as:

- Where are we in terms of results? On track?
- What is working and what isn't? What can we learn?
- Are we still doing things right and doing the right things?
- What are important risks and how should they be managed?

- What should we do differently ? What recommendations to make to the steering committee?
- What progress markers/milestones can we see for the next year?
- Etc.

During Results Monitoring, the intervention will analyse the indicators that are intended to monitor the change processes. After a review (based on the questions above), the intervention team will set out a **number of new indicators** (progress markers/milestones/performance indicators) that will allow to **track the change processes in the next 12 months**. Furthermore, based on the strategic reflection mentioned above, some changes to the intervention strategy will be formulated as recommendations for the PSC in the annual Results Report. The PSC has the mandate to approve or reject the propositions of the PMU.

Final monitoring

Final monitoring is the final piece of the Monitoring process through which:

- results achieved at the end of the implementation of an intervention are summarized
- lessons learned are documented after a final reflection on the development process supported by the intervention

In this final monitoring process, the intervention team will do analyses similar to the ones in Results Monitoring, but with a view on the whole of the intervention's implementation process. It will give a final update on results achieved and will focus on what lessons EDCL, the steering committee, MININFRA, BTC and other stakeholders can learn from the intervention. On the basis of this information, a Final Report for the intervention is produced.

3.5.2 Different components of Evaluation

In this context, the term 'review' is used for external evaluations at project level. The main function of a review is to offer an external perspective on the intervention's performance as well as to analyse in-depth the on-going or completed development process. In doing so, reviews are used to:

- analyse if interventions have to be re-oriented in order to achieve the development outcome
- inform strategic decisions
- identify and reflect upon lessons learned

Performed by an independent external actor, reviews play an important role in the **accountability** of the intervention's performance.

Reviews are organized twice during the lifetime of the intervention:

A **Mid-Term Review (MTR)** will be organized after two years of implementation. In the MTR the focus is on **strategic decision making** for the intervention. Therefore, special attention will be given to the validity of and functioning of the intervention's Theory of Change by using a theory-based evaluation methodology (e.g. realist evaluation)

An **End-of-Term Review (ETR)** will be organized at the end of the intervention. In the ETR, the focus is on **learning**. Therefore, special attention will be given to expected and unexpected change at the level of beneficiaries by using a Most Significant Change (MSC) methodology.

3.5.3 Indicators and means of verification

3.5.3.1 Global objective

For the global objective "*The energy sector is able to provide sufficient, reliable and affordable energy for all Rwandans."*

The proposed indicators are:

- Electricity price per kWh (RwF/kWh)
- Levelised cost of electricity generation (RwF/kWh)
- Per capita monthly power consumption (kWh/inhabitant/month)

Those indicators appear to be out of the sphere of influence of the intervention but they are in its sphere of interest.

The verification source is the EDPRS M&E report and EUCL statistics

3.5.3.2 Specific objective

For the specific objective: "*The access - including use of - reliable on-grid electricity services for households, enterprises and priority public institutions in peri-urban and rural areas is improved*"

The proposed indicators – and targets are:

- The national electricity connection rate (%) – 48%
- An **aggregated index of Access to Energy** (global tracking framework) can be calculated across geographies (Village, district, province, country or region) and tracked over time: ∑(Pi x K) where

  Pi = Proportion of households at the k^{th} tier

  K = Tier number {0,1,2,3,4,5}

The verification sources are EUCL MIS and EARP quarterly and annually monitoring progress reports.

3.5.3.3 Result 1: Electricity connection

The proposed indicators are:

- Customers connected to grid electricity by the project (number of households, number of schools, number of health centres, number of productive use) - 6873
- MV lines constructed by the project (km) – 97 km
- LV lines constructed by the project (km) – 168 km
- Total transformer power capacity installed (MVA)
- EMP properly developed and implemented for all grid extension activities

The verification sources are the intervention's M&E, EARP quarterly and annually monitoring progress reports and EUCL statistics.

3.5.3.4 Result 2: Beneficiaries support

The proposed indicators are:

- Number of beneficiaries able to afford the connection in the intervention area
- Contribution of the beneficiary to the connection (RwF)
- Share of electricity expenses in households income

- Number of beneficiaries educated to electricity related issues

The verification sources are the M&E reports and EUCL branches statistics.

3.5.3.5 Result 3: Coherence and coordination

The proposed indicators are:

- Number of energy Sector Working Group (eSWG) per year
- Number of Technical Working Group per (TWG) year
- Number of TWG recommendations discussed at SWG level
- Number of SWG recommendations integrated in national strategies
- Access data, including consumption levels are integrated in MIS

The verification sources are the M&E reports and EUCL Management Information System (MIS)

3.5.4 Measuring the long term socio-economic impact of electricity access

Connecting households does improve welfare immediately but generally does not raise rural income quickly and directly; it often takes 10 years to properly measure the impacts of electrification.

BE1EARP is preparing the milestones for a long term socio-economic monitoring of the electrification beneficiaries in the years following the closure of the intervention:

- A detailed plan shall be established for a long term socio-economic monitoring in the intervention area. The plan shall be prepared by the project team with the support of consultancy hired through the Study & Consultancy Fund
- During the implementation phase, a baseline socio-economic survey is foreseen and budgeted as activity 3.1. This survey is part of the intervention activity because it is necessary to the pilot activity 3.2.
- Beyond the implementation phase, a continuous socio-economic monitoring shall take place during at least 5 years after the electricity connection. This scientific monitoring could be financed through the Study & Consultancy Fund. The project team will contribute to the elaboration of the ToR for this monitoring.

3.6 Description of beneficiaries

3.6.1 Direct beneficiaries

The direct beneficiaries are all the new electricity users connected by the intervention and the direct beneficiaries of the capacity building component:

- Rural households: according to the SOFRECO study, EPC Lot 6 and lot MV_LV11 may provide 6873 direct connections. At an average of 5 people per households, the number of persons connected to the electricity grid may reach 34,365.
- Social facilities: health centres, schools and local administration offices
- Businesses and small industries benefiting from productive use of electricity

3.6.2 Indirect beneficiaries

The indirect beneficiaries are:

- The rural populations using the social facilities where the service is improved by the electricity access.

3.7 Risk Analysis

3.7.1 Implementation risks

Risks	Risk Level	Alleviation measure
Delays in project implementation, especially during procurement processes	Medium	Clearly follow the procedure for project resources approval process from the procedures manuals Use the project procurement officer for public tenders Dedicated Project manager to speed-up BTC and EUCL processes
Compensation for resettlement issues causing delays in the implementation	Low	Follow the RPF in full compliance with the WB policy on involuntary resettlement (OP4.12), from the inception phase of each sub-project Dedicated Rwandan contribution will be available
Perception risk: Staff working for the Belgian contribution perceived as independent PMU separated from EARP	Low	Project staff under REG payroll management Project staff part of EARP structure Use EARP harmonized salaries for staff

3.7.2 Management risks

Risks	Risk Level	Alleviation measure
High staff turnover within EARP	Low	Use EARP harmonized salaries for staff

3.7.3 Effectiveness risks

Risks	Risk Level	Alleviation measure
Priority shift on off-grid solutions	Low	Rwanda's policy is really to connect the most of its population to the grid, except if solid simulation data shows this is not the right way (but this data will not be available in the near future)

3.7.4 Sustainability risks

Risks	Risk Level	Alleviation measure
EUCL economic viability threatened by too low income (low electricity demand from new customers and low[11] prices)	High	Grants from donors reduce the risk in the short term Activities 3.1 and 3.2 work on the electricity demand side Put on the agenda of ESWG
Knowledge transfer from ITA to local	Medium	Attach local counterparts to ITA ITA ToR include the provision of guidance and training to the EARP technical staff in order to strengthen the local capacity
Lack of O&M to sustain the investments	High	Increase coordination with the CB component of the Rwandan-Belgian ICP in Energy sector Keep O&M as a central theme in coordination of eSWG and TWG
Adverse impact on the environment	Low	ESMF strictly followed through EMP development and implementation
Policy and structural reforms affecting the intervention negatively	Medium	Take part to policy discussion during ESWG

3.7.5 Fiduciary risks

Risks	Risk Level	Alleviation measure
Use of funds for unintended purpose	Low	Financial controlling measures, internal and external audits are already in place. Project activities are continuously under M&E Steering Committee add quality assurance
Weak funds recording and accounting	Low	BTC financial management system, procedures and country guidelines Regular accounting controls Co-management modality and presence of dedicated staff in charge of Administration, Finance and Procurement
Low Value-for-money for objectives achievements	Low	Translate recommendations from the lessons learned in appropriate measures on a permanent basis

[11] Given that electricity is subsided to cover production-, transmission- and distribution costs, electricity prices are considered to be too low compared the cost to deliver electricity. However, electricity prices in Rwanda are higher than in neighbours countries.

4 RESOURCES

Rwandan and Belgian resources will be available for the project to implement the proposed activities.

4.1 Financial resources

4.1.1 Rwandan contribution

The Rwandan contribution consists in the following elements:

- Secondment of a part-time Director of Intervention and a full-time Project Manager for the whole duration of the intervention (salary and expenses) – estimated to **€ 56,000** over the intervention period
- Full commitment of the entire EARP staff to the success of the intervention, regardless of the source of funding for the staff (GoR, other donor or project funds) – not quantified
- Possibility to request support from the CBF, SCBI, CS Training Budget and other Rwandan appropriate instruments and actors as a complement to the intervention – not quantified
- Financial contribution to compensate expropriation (loss of land and loss of crops) of PAP's – estimated to **€ 108,000** over the intervention period.
- Provision of sufficient office space for the intervention – not quantified. Office premises (with Internet connection, water and electricity services, parking and security) will be provided by the Rwandan partner institutions to the project team in order for them to perform all project activities in close collaboration with EARP. The offices shall be located in the same facilities as EARP.
- Advance to purchase and install electricity meters for each new connection before the new customer has paid its connection fee: REG shall pay for the meter upfront to be able to purchase the meter before it has been reimbursed by the new customers.
- Taxes on the supplies, equipment, and works is covered by the Government of Rwanda as agreed upon in the General Development Cooperation convention between both governments – estimated to **€ 1,485,000**.

The total Rwandan contribution is estimated to **€ 1.65 million.** This estimation is not a ceiling and GoR commits to the responsibility to ensure the above listed contributions, regardless of the exact amount.

Over the complete lifetime of BE2EARP investments, Government of Rwanda will finance the operation and maintenance costs– estimated to 1% of investment per year over 20 years lifetime i.e. **€ 1,650,000**

4.1.2 Belgian contribution

The Belgian contribution for the EARP program is **€ 12 million**. The detailed budget per year is presented in the table below. The "modality" mentioned in the table refers to the selected modality for fund disbursement process, see 5.6.3.1

Budget Table (1/2):

				Management Mode		%	YEAR 1	YEAR 2	YEAR 3	YEAR 4
A			**The access to reliable on-grid electricity services for households and priority public institutions in peri-urban and rural areas is improved**		**10,253,500**	**85%**	**352,500**	**5,754,250**	**3,886,862**	**259,888**
A	*01*		*Rural electricity connectivity is increased through national electricity grid extension*		*8,903,500*	*74%*	*0*	*5,451,750*	*3,451,750*	*0*
A	01	01	Build electricity transmission and distribution lines and connections services in targeted areas	co-management	8,250,000		0	5,125,000	3,125,000	0
A	01	02	Supervise the grid extension construction works	co-management	577,500		0	288,750	288,750	0
A	01	03	Develop and implement EMP and RAP for network extension activity in compliance with ESMF and RPF	co-management	76,000		0	38,000	38,000	0
A	*02*		*Beneficiaries (households, productive and community uses) are supported in improving their tier access level*		*500,000*	*4%*	*125,000*	*125,000*	*125,000*	*125,000*
A	02	01	Sensitize and educate beneficiaries around (i) Electricity Health and Safety, (ii) Electricity productive use, (iii) Energy efficiency	BTC management	300,000		75,000	75,000	75,000	75,000
A	02	02	Scale-up pilot solutions to support connection affordability for low income – and vulnerable - customers in the intervention area	BTC management	200,000		50,000	50,000	50,000	50,000
A	*03*		*Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector*		*850,000*	*7%*	*227,500*	*177,500*	*310,112*	*134,888*
A	03	01	Support eSWAP in energy sector coordination	co-management	550,000		137,500	137,500	270,112	4,888
A	03	02	Perform multi-tier access sample surveys using Global Tracking Framework	BTC management	100,000		50,000	0	0	50,000
A	03	03	Support EUCL in organizing multi-tier access data monitoring for its customers	BTC management	80,000		40,000	40,000	0	0
A	03	04	Support REG/MININFRA to use monitored data for decision making and coordination	BTC management	80,000		0	0	40,000	40,000
A	03	05	Capitalize and communicate on lessons learned	BTC management	40,000		0	0	0	40,000
X			**Contingencies**		**57,004**	**0%**	**14,251**	**14,251**	**14,251**	**14,251**
X	*01*		*Contingencies*		*57,004*	*0%*	*14,251*	*14,251*	*14,251*	*14,251*
X	01	01	Contingencies co-management	co-management	37,004		9,251	9,251	9,251	9,251
X	01	02	Contingencies direct management	BTC management	20,000		5,000	5,000	5,000	5,000

Budget Table (2/2):

				Management Mode		%	YEAR 1	YEAR 2	YEAR 3	YEAR 4
Z			**General Means**		**1,689,496**	**14%**	**466874**	**436874**	**328874**	**456874**
Z	*01*		*Salaries*		*1,430,496*	*12%*	*384,624*	*384,624*	*276,624*	*384,624*
Z	01	01	ITA in sector coordination	BTC management	432,000		180,000	180,000	72,000	0
Z	01	02	Project Co-manager	BTC management	180,000		0	0	0	180,000
Z	01	03	Technical staff	co-management	529,056		132,264	132,264	132,264	132,264
Z	01	04	Responsible Administration and Finance International	BTC management	180,000		45,000	45,000	45,000	45,000
Z	01	05	Administration and Finance local staff	co-management	80,640		20,160	20,160	20,160	20,160
Z	01	06	Drivers	co-management	28,800		7,200	7,200	7,200	7,200
Z	*02*		*Investments*		*30,000*	*0%*	*30,000*	*0*	*0*	*0*
Z	02	01	Vehicles	BTC management	20,000		20,000	0	0	0
Z	02	02	ICT and office equipment	BTC management	10,000		10,000	0	0	0
Z	*03*		*Running Costs*		*121,000*	*1%*	*30,250*	*30,250*	*30,250*	*30,250*
Z	03	01	Vehicle Operating Costs	BTC management	36,000		9,000	9,000	9,000	9,000
Z	03	02	Communication costs	BTC management	36,000		9,000	9,000	9,000	9,000
Z	03	03	Field Missions	BTC management	24,000		6,000	6,000	6,000	6,000
Z	03	04	External Communication costs	BTC management	10,000		2,500	2,500	2,500	2,500
Z	03	05	Training	BTC management	10,000		2,500	2,500	2,500	2,500
Z	03	06	Financial costs	BTC management	5,000		1,250	1,250	1,250	1,250
Z	03	07	VAT costs	BTC management	0		0	0	0	0
Z	*04*		*Audit, Monitoring and Evaluation*		*108,000*	*1%*	*22,000*	*22,000*	*22,000*	*42,000*
Z	04	01	Monitoring and evaluation: baseline, MTR, ETR	BTC management	60,000		20,000	0	20,000	20,000
Z	04	02	Audits	BTC management	40,000		0	20,000	0	20,000
Z	04	03	Backstopping	BTC management	8,000		2,000	2,000	2,000	2,000
TOTAL					**12,000,000**		**833,625**	**6,205,375**	**4,229,987**	**731,013**

BTC management	**1,871,000**	**527,250**	**447,250**	**339,250**	**557,250**
COGESTION	**10,129,000**	**306,375**	**5,758,125**	**3,890,737**	**173,763**

4.2 Human resources

4.2.1 Principles

- Preference for long-term embedded coaching and mentoring rather than “fly in – fly out” TA
- TA should be technically proficient and also have clear capacity building skills
- Possibility to share international resources between different interventions within the Energy sector
- EDCL/EARP staff financed by the intervention according to SPIU principles: staff financing is shared among DP’s and GoR

4.2.2 Conditions for local REG HR financing

- HR payroll management will be performed by REG
- Differences between salaries financed by different DPs will be avoided: all the salaries will be harmonized and aligned with approved REG salary Framework.

4.2.3 Project staff

The list of the **project staff** is indicated in the following table (see also organizational structure in chapter 5), part of this staff is already part of BE1EARP but shall be available until the end of the BE2EARP intervention, expected to close 12 months later than BE1EARP. The figure in the third column is additional to the figure in the second column.

Within EARP organizational structure, a total of 12 positions of 60 will be financed by the Belgian contributions to EARP, i.e. 20% of total EARP staff.

Position	BE1EARP	BE2EARP	Remarks	
Director of Intervention (DI)	10% x 48 months	10% x 12 months	**Assigned and financed by EDCL/EARP** Direct counterpart of the BTC funded project co-Manager,	**BE EARP** **Project Management**
Project Manager	1 x 48 months	1 x 12 months	**Assigned and financed by EDCL/EARP** Deputy to EARP Director of Intervention for day to day management	
Project Co-Manager	1 x 48 months	1 x 12 months	BTC International Technical Assistant (ITA) Direct counterpart of the EARP Director of Intervention Funded by the Belgian contribution	

General Services director	-	1 x 24 months	Funded by the Belgian contribution	**EARP Support Functions**
Contract Manager		1 x 24 months	Funded by the Belgian contribution (24 additional months Be3EARP)	
Contract & Construction Director	-	1 x 24 months	Funded by the Belgian contribution	
Electrical Engineer (Planning and design)	1 x 12 months	1 x 12 months	**Assigned and financed by EDCL**	
Project Engineer (Construction site)	1 x 36 months	1 x 24 months	Funded by the Belgian contribution	
Environmental Safeguard	30% x 48 months	25% x 12 months	**Assigned and financed by EDCL** The rest of the workload is dedicated to other interventions under EARP	
Social Safeguard	30% x 48 months	25% x 12 months	**Assigned and financed by EDCL** The rest of the workload is dedicated to other interventions under EARP	
M&E Specialist	20% x 48 months	1 x 48 months	Existing M&E specialist will dedicate about 20% of its workload to Belgian contributions An additional M&E specialist will be hired full-time over 48 months to strengthen EAPR M&E system including GTF Funded by the Belgian contribution	
Access specialist	-	1 x 48 months	Funded by the Belgian contribution Based at EDCL, collaborating closely EUCL	
GIS specialist	-	1 x 24 months	Funded by the Belgian contribution (24 additional months Be3EARP)	
Communication specialist	-	1 x 24 months	Funded by the Belgian contribution (24 additional months Be3EARP)	
Procurement Specialist	1 x 48 months	1 x 12 months	Funded by the Belgian contribution	
RAFI: Responsible for Administration,	1 x 48 months	1 x 12 months	BTC international Technical Assistant (shared ITA)	

Finance and procurement			Part of the Project Management Unit Funded by the Belgian contribution	
Project Accountant	1 x 48 months	1 x 12 months	Funded by the Belgian contribution	
Administrative Assistant	-	1 x 48 months	Funded by the Belgian contribution	
Drivers	2 x 48 months	1 x 48 months + 2 x 12 months	Funded by the Belgian contribution 1 additional driver to be hired on BE2EARP 2 exiting drivers financing extended until the end of the project period	
ITA Coordination (MININFRA)	-	60% x 48 months	BTC International Technical Assistant (ITA) Funded by BE2EARP (60%) and by other BTC energy project to come: PSPE & FMSBE (40%)	**BTC program coordination**
eSWAP coordinator	-	1 x 48 months	Funded by the Belgian contribution	**Sector coordination** [12]
Junior Assistant (MININFRA)	1 x 24 months	1 x 24 months	Funded by BTC Junior Programme	
M&E specialist		1 x 48 months	Funded by the Belgian contribution	
Energy policy and economics specialist		1 x 48 months	Funded by the Belgian contribution	
eSWAP external link and donor coordination	-	1 x 48 months	Funded by the Belgian contribution	

The ToR (job description and profile) of the project staff is defined in Annex 7.4

[12] Belgium will fund the positions of the eSWAP secretariat as from January 2016. If the MININFRA functional review shows that more positions are needed, the funding can be considered through other intervention budget (for example BE3EARP)

4.3 Other resources

4.3.1 Services

- Targeted consultancies and Advisory services
- Cars maintenance, including fuel and insurance

4.3.2 Furniture and equipment

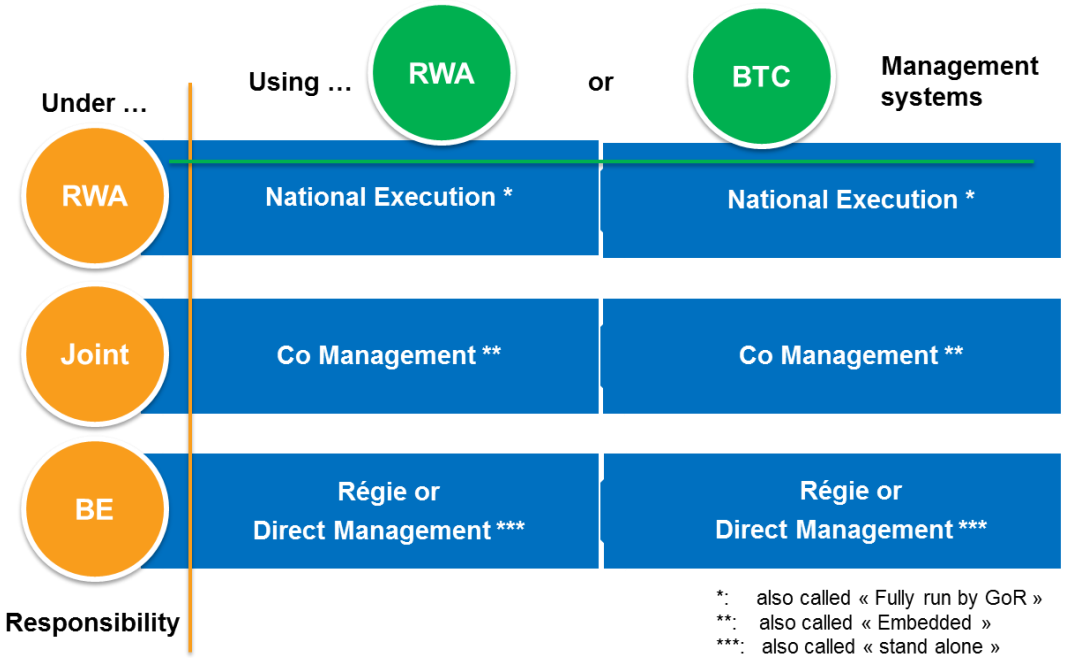
- Limited ICT investments will cover software and consumables.
- Purchase of 1 car + running costs
- Tools and equipment for maintenance premises
- Communications

5 IMPLEMENTATION MODALITIES

5.1 Introduction

This chapter describes how the project will be managed, from start-up until closure, in all its management areas (strategic steering, technical content management (scope), procurement management, financial management, human resources management, quality management and audit) and is intended to enable stakeholders directly involved in the project to:

- Understand which **management system** applies to which project management area. There are two possibilities:
    - Use of the Rwandan system (or of an harmonized donor system recognized by Rwanda as its system),
    - Use of the BTC system.
- Be aware of their **responsibilities** and of those of the other stakeholders in the various project management areas. There are three modes:
    - **Rwandan responsibility**: the Rwandan partner is responsible. For the finance and procurement management areas, the term "national execution" is used.
    - **Joint responsibility**: both the Rwandan partner and BTC are responsible. For the finance and procurement management areas, the term "co-management" is used.
    - **BTC responsibility**: BTC is responsible. For the finance and procurement management areas, the term "régie or BTC management" is used.



(Rwanda Aid Policy Manual)

These possibilities in terms of system and responsibility mode can be related to the three modus operandi for the project support as introduced in the Rwanda Aid Policy Manual of Procedures:

- A "**Fully run by GoR**" project is a project where the Rwandan system is used under Rwandan responsibility (this situation is called "**national execution**" in Belgian terminology).

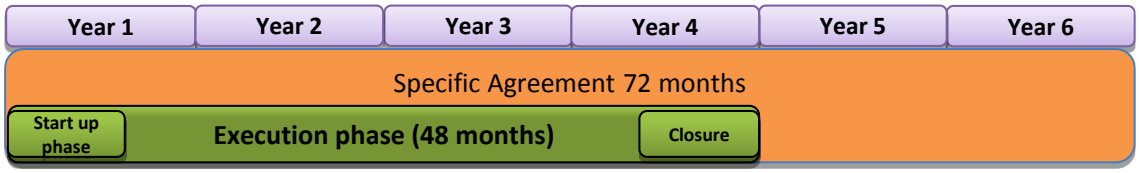
- An "**embedded**" project is a project where there is a **joint responsibility**, regardless of the system used (from Rwanda or from BTC).
- A "**stand-alone**" project is a project run under **BTC responsibility**, usually using the BTC system.

The selected responsibility mode for this intervention is "**joint responsibility"** for all management areas. Some specific processes like technical backstopping, audits, MTR, ETR, capitalization services, general means etc. will remain under Belgian responsibility.

No matter the choices made in terms of systems and responsibility modes, partnership, collaboration, transparency and mutual information will apply in managing the project.

5.2 Project duration and lifecycle

The duration of the Specific Agreement (SA) is 5 years (60 months) while the actual implementation phase of the intervention is 4 years (48 months). The implementation phase starts when the SA is signed. All project activities must be terminated at the end of the 48 months implementation period.



The effective start date of the project is the date of signature of the specific agreement.

After the signature of the specific agreement, the project enters its effective **start-up phase**, of about 6 months, during which project human resources will be hired, bank accounts will be opened, first cash call will be made, baseline activities and first year planning will be done, culminating in the production of the start-up project report.

The implementation ends with a **closure phase** of about 6 months to ensure proper technical and administrative closing and hand-over. Project final report is produced after the end of the implementation period.

Consolidation activities are planned at various moments during the project life cycle and during the closure phase.

5.3 Project organization and anchorage

5.3.1 Program Steering Committee (PSC)

A joint Program Steering Committee will combine project Steering Committees for BE1EARP, BE2EARP and BE3EAPR. It will be combined with overall EARP steering committee to improve coordination & dialogue with other DP's.

5.3.1.1 Role

The PSC is the highest level of decision in the project. It is in charge of the strategic steering of the intervention. The main responsibilities of the PSC are:

- Defining the project strategy and ensuring its alignment on the overall EARP strategy (strategic planning, annual planning and budgeting), in relation to EDPRSII Goals
- Assessing the development results obtained by the project (strategic quality assurance and control), its sustainability and approve project reports and planning, including the Rwandan contribution to the intervention,

- Managing strategic changes like budget line and intermediate results changes, changes on implementation modalities as well as the adaptation of the project organization and anchorage to the new structure of EDCL,
- Solving problems that cannot be solved at the operational level in the PMU,
- Enhancing harmonization among donors.

5.3.1.2 Composition

For the Belgian contributions, the **voting members** of the PSC are:

- The EDCL Managing Director, or his delegate, is the chair of the PSC
- The BTC Resident Representative, or his delegate, is the co-chair of the PSC
- The EUCL Managing Director, or his delegate
- A representative of the MININFRA,
- A representative of the MINECOFIN,

Non-voting members of the PSC are:

- A representative of the NCBS
- The coordination ITA and other representatives of the other Belgian financed bilateral projects in the Energy sector
- Other Development Partners representatives (WB, AfDB, …)

The members of the Project Management Unit participate as regular observers and informants. The Project co-manager and the director of intervention act as the secretary of the PSC.

5.3.1.3 Operating rules of the PSC

The PSC meets at least every three months by invitation of the chairperson and at any other time deemed necessary. The invitation must be received by the members at least 7 days before the meeting. The invitation includes an agenda, suggested decisions and supporting documents.

A PSC meeting will be postponed if less than 3/5 of its members are present.

Decisions are taken by consensus. Observers and informants have no voting power.

Decisions of each meeting of the PSC are recorded in minutes signed by the present voting members.

The PSC may invite external experts or stakeholders as resource people for a particular meeting.

The full operating rules will be acted during the first PSC meeting.

5.3.2 Project Management Unit (PMU)

5.3.2.1 Role

The PMU is the operational level in the project. It takes operational decisions and actions on a day to day basis in order that the project strategy is fully implemented, in time and within budget, as approved by the PSC. The main responsibilities of the PMU are to:

- Develop and implement the project strategy and operational plans
- Prepare quarterly and annual reports for the stakeholders,
- Coordinate and provide quality assurance and quality control in the processes of procuring the capacity building services and any other services, goods or works requested by the project (content management), as well as proper monitoring and evaluation of the intervention.

- Ensure proper management and apply stringent accountability arrangements for the management of the financial resources allocated to the project,
- Ensure that procurement processes and procedures used by the project conform to the applicable procurement guidelines,
- Ensure proper human resources management practices conforming to the applicable guidelines,

The responsibilities of the PMU are further developed in the following paragraphs.

5.3.2.2 Composition

The members of the PMU are:

- A REG appointed **Director of Intervention (DI)**, acting as a sponsor and as an authorizing officer for the Rwandan side for all scope and technical matters, executed in joint responsibility.
- A REG appointed **Project Manager (PM)**, acting as a day-to-day project manager and project focal person. Given the DI regular tasks and responsibilities, it is anticipated that this intervention will need a full time manager accountable for REG, acting as a deputy Director of Intervention.
- A BTC appointed **Project Co-Manager**, acting as contract manager and authorizing officer for the Belgian side for all administrative, procurement and financial matters.
- A BTC appointed **Responsible for Administration and Finance and Procurement (RAFI)**, delegate for all administrative, procurement and financial matters.

5.3.2.3 Operating rules of the PMU

The PMU meets at least once a month and at any other time deemed necessary. Meetings of the PMU are prepared, organized, follow-up, and chaired by the project co-manager, by default. Other clear arrangements can be decided by the PMU, however.

For matters executed in joint responsibility, decisions are taken by consensus between the DI and the project Co-Manager.

Decisions of each meeting of PMU are recorded in minutes.

5.3.3 Organizational structure and institutional anchorage

The intervention is willing to integrate its management and support functions into EARP:

- The ITA in coordination will be located in the MININFRA/eSWAP premises. He is a coordinator for all the BTC interventions in the energy sector.
- The PMU will be located in the EDCL/EARP premises.
- Both project co-manager and coordination ITA shall take part to institutional discussion within EARP/REG and DP coordination meetings in their domain.

The support staff will be anchored in EDCL/EARP structure.

5.4 Technical content management

Technical content management (or scope management) encompasses the processes that transform the project strategy into activities that must be properly defined, planned, executed and monitored. It also includes the regular result-oriented reporting on project operations as well as possible backstopping by BTC HQ.

5.4.1 Operations definition, implementation and monitoring

System:	Not defined, as these processes are not really formalized
Responsibility:	Joint responsibility

The definition and writing of the technical specifications (ToR) and the technical follow-up (including provisional and final technical acceptance) for all services, goods or works to be procured by the project and the definition, implementation and follow-up of the activities lead by the project team itself, are a joint responsibility of the PM and the co-manager, except if expressly stated otherwise here under.

The PM and the co-manager are supported by the other members of the project team, by other EARP and REG staff and by other institutions, depending on the activity.

5.4.2 Operations coordination

System:	Not defined, as these processes are not formalized
Responsibility:	Joint responsibility

The PMU meets formally at least once a month, in order to review project progress, identify issues and risks and proactively take actions.

Regular joint meetings with BTC 'Institutional Strengthening and Capacity Development of REG – Electricity Utility' are also held to improve synergies.

5.4.3 Technical backstopping

System:	BTC system
Responsibility:	BTC responsibility or joint responsibility

Technical backstopping is the possibility for the project or the PSC to ask the support of experts at the level of BTC HQ.

A backstopping mission can also be decided by BTC representation or BTC HQ.

Backstopping findings and recommendations are presented to the PSC.

5.5 Procurement management

Procurement processes shall be implemented according to the Rwandan Law on Public Procurement and the REG Manual of Procedures. In addition, specific BTC requirements apply, as described in BTC project implementation Guidelines for Rwanda.

5.5.1 Procurement planning

System:	RWA system and BTC system
Responsibility:	Rwandan responsibility for the RWA system Joint responsibility for the BTC system

BTC requires a quarterly procurement plan for all project procurement processes.

Procurement planning is performed by the BTC project Co-Manager and the EARP DI, with the support of the procurement services of EARP including the Procurement officer financed by the project.

The EARP DI and the BTC project Co-manager both approve the quarterly procurement plan in joint responsibility.

5.5.2 Procurement implementation

System:	RWA system by default, BTC system for some clearly defined activities (see below)
Responsibility:	Joint responsibility when the RWA system is used BTC responsibility when the BTC system is used

In addition to the Rwandan system, “no objection” by BTC is required at 3 key moments during the tendering process: before launching, before awarding and before contracting. The contract must be signed by Rwanda with the BTC visum for non-objection.

Table: The authorizing power, depending on thresholds, for launching, awarding and contract signing, is distributed as indicated here under.

RWA	**BTC**	**Threshold (X Equivalent EUR):**
“Chief budget officer”	For commitments: Project Co-Manager For payment: RAF	X ≤ 25,000
“Chief budget officer”	Resident Representative	25,000 < X ≤ 85,000
“Chief budget officer”	Resident representative, after review by local independent lawyer appointed by BTC	85,000 < X ≤ 200,000
“Chief budget officer”	Resident representative, after review by local independent lawyer and by BTC HQ	X > 200,000

X is the amount of the tender, VAT included, in EUR or converted from FRW in EUR on the day of publication, using the EUR buying rate of exchange on the National Bank of Rwanda website.

Use of the BTC procurement system:

The tendering processes that will use the BTC procurement system under BTC responsibility are:

- Consulting services for supporting BTC backstopping, if required
- Audit services for project audit on behalf of BTC
- Consulting services for the mid-term review
- Consulting services for the end-term review
- Capitalization services (BTC framework contract)
- Other procurements validated by the PSC

5.5.3 Management of Grant Agreements

In accordance with Article 8 of the BTC Law, BTC can provide financing to one or more third-party partners for the achievement of part of the activities of the TFF or for an action of the third-party partner that contributes to the achievement of the objectives of the intervention. Grants will be awarded in accordance with the modalities described in the *BTC guide for the elaboration and follow-up of Grant Agreements.* Public or private entities that are awarded grants are called "beneficiary parties". The beneficiaries of the actions funded by the grant are called "final beneficiaries".

5.5.3.1 Grants identified in this TFF

The Grant Agreements identified under the framework of the intervention are listed in the table below:

For each grant considered, a dedicated budget line is clearly identified in the budget (see 4.1.2), as well as the granting modality, the beneficiary party, its status and the number of final beneficiaries concerned.

N°	N° budget line	Name of the activity	Budget (€)	Granting modality	Beneficiary party	Status (public/private)	Number of final beneficiaries
1	*A0202*	*Connection affordability*	*200,000*	*BTC Management*	*EUCL local branches*	*Public*	*10,000*

Nevertheless, the opportunity of signing this type of agreement will have to be confirmed by the intervention team at the time of implementation, following an in-depth analysis (see Guide Grant Agreements), justifying, for this case, why public procurement regulations do not apply, stating that the choice of partner is still relevant (institutional continuity, competences maintained, sufficient capacities, etc.).

Grants will be established following negotiations with the public or private partners listed above.

Also:

1.) For each Grant Agreement amounting to less than or equal to 500,000 EUR, BTC will inform the Belgian. For the purpose, the ResRep will regularly transfer to the Belgian Embassy the list of the beneficiary parties of Grant Agreements including the object and amount of the Agreements.

2.) Grant Agreements of a budget in excess of 500,000 EUR with a beneficiary party that is not listed in the TFF will be submitted for approval by the Inspection of the Belgian Administration.

5.5.3.2 Case where a grant is not identified in the TFF

If the use of a Grant Agreement is not provided for in this TFF but originates with the management of an ongoing intervention, it is necessary to obtain approval of the PSC, which is laid down in a report, on the basis of a clearly reasoned justification why, for this case, the public procurement regulations do not apply. The above modalities concerning notification to the Belgian State on the beneficiary parties of the grants respectively the approval of the beneficiary parties by the Minister of Development Cooperation obviously apply.

5.6 Finance management

All finance management processes must use at least the BTC system, as described in the global and Rwandan BTC guidelines on project implementation (administration and finance), most of them in joint responsibility.

5.6.1 Budget management

5.6.1.1 Budget planning

System:	BTC system and RWA system
Responsibility:	Joint responsibility for the BTC system Rwandan responsibility for the RWA system

The budget attached to the TFF sets out the budgetary limits within which the intervention must be executed. It also indicates expected disbursements per (BTC financial) year.

Budget planning processes have to be implemented both in the BTC system and in the Rwandan system; in order for Rwanda to be able to track project progress in its own financial system and this must be executed under its own responsibility.

5.6.1.2 Budget follow-up and review

System:	BTC system and RWA system
Responsibility:	Joint responsibility for the BTC system Rwandan responsibility for the RWA system

The project expenses cannot exceed the total budget of the intervention and the budget per responsibility mode may not be exceeded.

Any change to the budget must be approved by the PSC on the basis of a proposal that is drawn up by the PMU, according to the BTC rules in this respect.

The use of the budgetary reserve requires a budget change proposal to be validated by the PSC.

Quarterly reports on budget implementation are produced by the RAFi as part of the financial reporting.

5.6.2 Accounting, financial planning and reporting

5.6.2.1 Accounting

System:	BTC system
Responsibility:	Joint responsibility

Accounting is done on a monthly basis according to BTC rules and regulations and its own financial system.

Accounting tasks are performed by the Accounting officer. The EARP DI and the RAFi both approve the monthly accounting in joint responsibility. After approval, the monthly accounting must be transmitted to the BTC representation every month.

5.6.2.2 Financial planning

System:	BTC system
Responsibility:	Joint responsibility

The PMU elaborates quarterly a financial plan, according to BTC rules and regulations and its own financial system, to inform the PSC. Financial planning is based on the quarterly action and procurement plans.

Financial planning tasks are performed by the RAFi, based on the operations planning. The EARP DI and the BTC project co-manager both approve the quarterly financial plan in joint responsibility. This plan must be forwarded to the BTC representation.

5.6.2.3 Financial reporting

System:	BTC system and RWA system
Responsibility:	Joint responsibility for the BTC system Rwandan responsibility for the Rwandan system

Financial reporting processes have to be implemented using the BTC system and could additionally be adapted to the Rwandan system, in order for Rwanda to be able to track project progress in its own financial reporting system.

5.6.3 Cash management

5.6.3.1 Managing intervention accounts and payments

System:	BTC system
Responsibility:	Joint responsibility or BTC responsibility

Supporting documents for all payments must be kept in the project office.

Accounts in joint responsibility:

As soon as the specific agreement has been signed, an account in EUR (main account) and one operational account in Rwandan Franc will be opened at the National Bank of Rwanda (NBR). Payments from these accounts require a double authorization (BTC and RWA), according to the following specifications:

Authorizing officer for RWA:	Authorizing officer for BTC:	Threshold (EUR):	Type of account
DI	RAFi	< 25,000	Operational
Chief budget officer	RAFi Resident Representative *following BTC mandates*	> 25,000[13]	Main

For logistical reasons, other accounts in joint responsibility may be opened with the approval of the "chief budget officer" and the resident representative.

[13] According to BTC systems

Account in BTC responsibility:

For local expenses under BTC responsibility, a project account in EUR and RWF will be opened at a local bank, with double BTC authorization.

5.6.3.2 Managing cash and transfers

System:	BTC system
Responsibility:	Joint responsibility or BTC responsibility

First transfer on the main account:

Once the signed specific agreement has been notified to BTC, a first cash call can be sent by the PMU to the BTC representation, per responsibility mode. The requested amount must correspond to the needs for the first three months of implementation.

Following transfers on the main account:

The main account is replenished quarterly according to BTC rules and regulations and its own financial system. The project must submit a cash call per responsibility mode to the BTC representation at the beginning of the month preceding the following quarter.

Cash management tasks are performed by the project accountant. The DI and the RAFi both sign the quarterly cash calls in joint responsibility. The first cash call can be signed by the BTC Program Officer if the project co-manager has not been appointed yet.

5.6.4 Assets and inventory management

System:	BTC system for PMU's assets Rwandan system for assets officially transferred
Responsibility:	BTC responsibility for PMU's assets Rwandan responsibility for assets officially transferred

Assets acquired by the PMU for its own use must be registered in an inventory updated on a quarterly basis according to BTC rules and regulations and its own administrative system. Their use is strictly limited to the activities of the project. At the end of the project, PMU's assets can be transferred to a partner institution after decision by the PSC. It must be formalized by an official transfer statement signed by all parties.

According to the project's objectives, the PMU can acquire infrastructure, equipment and goods to support a partner organization. The official transfer of property has to be validated by the PSC and formalized by an official transfer statement signed by all parties.

Transfer of equipment, infrastructure and goods to a partner institution has to follow rules and procedures from Rwanda in terms of inventory management.

5.6.5 Expenses before the signature of the implementation agreement (DGD-BTC)

The following expenses can be incurred by BTC after the signature of the specific agreement, in order to speed up the start of the project:

- Investment costs: IT equipment and vehicles;

- Costs for the recruitment of the international and national staff for:
    - project management
    - technical staff
    - administrative and financial management
    - support functions

Table: Expenses before the signature of the implementation agreement

Activity	**Amount in Euros**	Period and Comments
Recruitment costs	10,000	National & International staff
Capital Investment	20,000	Vehicles
	10,000	ICT equipment
Total	**40,000**	

5.6.6 Financial closure

5.6.6.1 Financial balance

From six months before the end of the project implementation phase, the PMU must elaborate each month a financial balance forecast according to BTC procedures.

5.6.6.2 Destination of balances at the end of project operations

According to the modalities of the Specific Agreement, balance allocation is decided by mutual agreement between Rwanda and Belgium during the last PSC.

5.6.6.3 Expenses beyond the end date of the specific agreement

No commitment can be made in the last six months of validity of the Specific Agreement without prior approval of the PSC and on exclusive condition that activities close before the end of the Specific Agreement. After the end date of the Specific Agreement, no expenditure will be authorised except if it is related to commitments signed before the end of the Specific Agreement and mentioned in the minutes of a PSC. Operational expenditures after the end of the Specific Agreement will not be accepted.

5.7 Human resources management

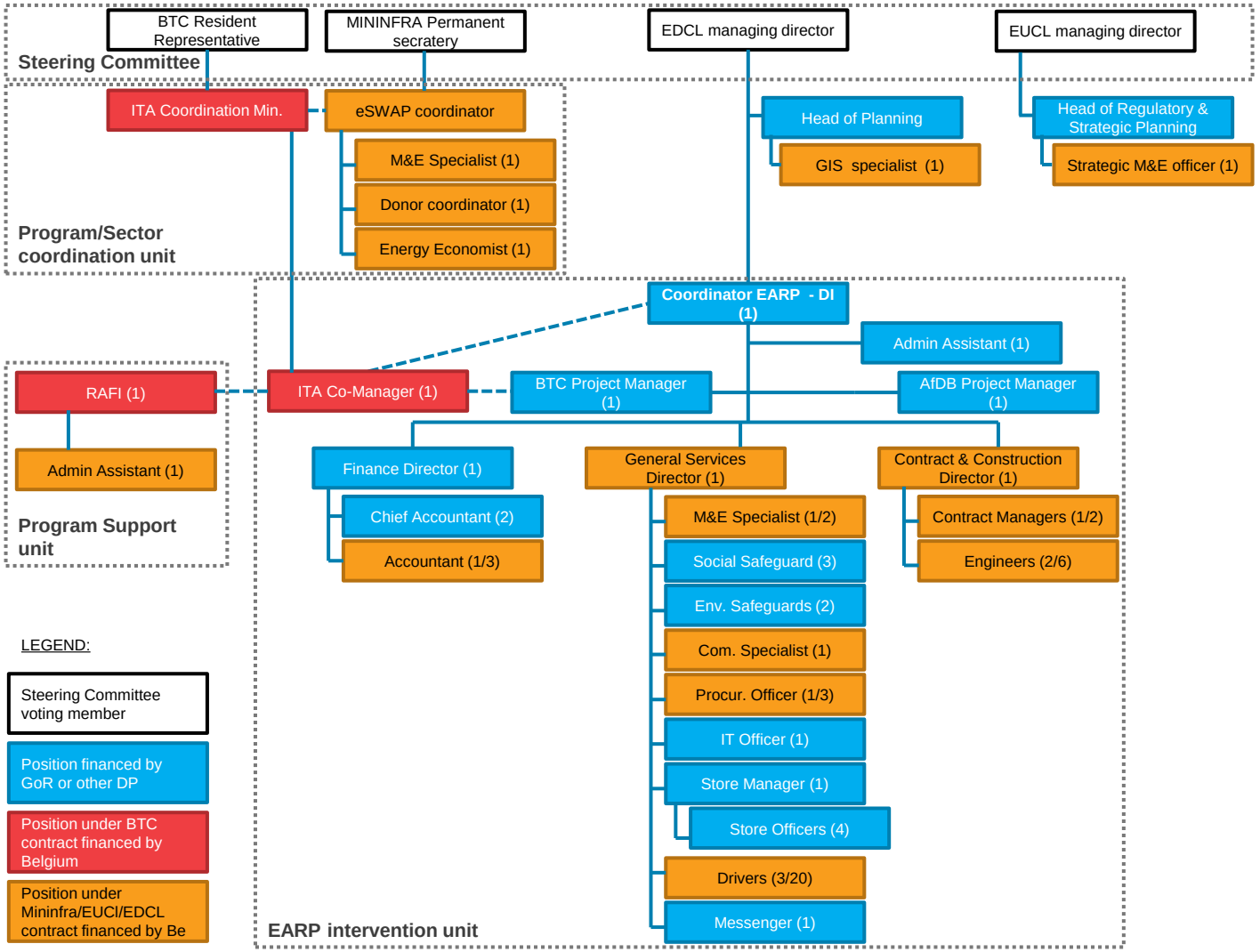
The project funds the following employee positions for one additional year following the end of BE1EARP:

- Project co-manager
- Project Site engineer
- Responsible for Administration and Finance (RAFi)
- Project Accountant
- Procurement Officer
- Drivers (x2)

The project funds the following employee positions during the project:

- Coordination ITA
- eSWAP coordinator
- eSWAP M&E Specialist
- eSWAP Energy Economist
- eSWAP external link and donor coordination officer
- GIS specialist
- Socio-Economist / Access specialist
- Administrative Assistant
- General Services director
- M&E Specialist
- Communication specialist
- Driver
- Contract & Construction director
- Contract Manager
- Project Site engineer

The following **organizational chart** provides the structure including hierarchical lines and key counterparts (dotted lines) to ITAs:



The DI and the EARP Project Manager and other support staff are not funded by the project as they are provided by REG. These positions are crucial for the success of the project.

The following modalities apply:

System:	BTC system for BTC operations employees RWA system for REG employees and BTC support staff
Responsibility:	Rwandan responsibility for REG employees and BTC responsibility for BTC employees, with some aspects of joint responsibility as detailed below.

The following table shows the primary responsibility mode per HR management process, by position:

Positions **HR processes**	EARP Staff	eSWAP staff	BTC International Staff	BTC Support Staff
ToR (job description and profile)	EDCL	MININFRA	BTC HQ	BTC RWA
Short listing	EDCL	MININFRA	Joint	BTC RWA
Assessment	EDCL	MININFRA	Joint	BTC RWA
Contracting	EDCL	MININFRA	BTC HQ	BTC RWA
Probation and performance appraisal	EDCL	MININFRA	BTC RWA	BTC RWA
Training	EDCL	MININFRA	BTC RWA	BTC RWA
Missions/Leave	EDCL	MININFRA	BTC RWA	BTC RWA
Payroll	EDCL	MININFRA	BTC HQ	Intervention
Salary scale and staff regulations	EDCL	MININFRA	BTC HQ	BTC RWA
Early termination of contract	EDCL	MININFRA	BTC RWA	BTC RWA

Additional remarks:

All positions are open for men and women. Female candidates will be encouraged to apply.

If the ToR defined in this TFF must be revised before advertisement, the revised ToR need to be approved by the PSC.

New recruitment procedure is not requested for existing EARP staff that is already working under EDCL contract.

The Accountant/Secretary will be trained by BTC as they will use many aspects of the BTC management system, in addition to their duties in the Rwandan management system. No training other than on the use of the BTC systems is foreseen for the project co-manager, except on explicit request from the partner.

Project objectives are included in the performance contracts of both the EARP DI and the EARP project manager.

5.8 Quality management (monitoring and review)

Monitoring and Evaluation (M&E) is to support accountability requirements, continuous learning and strategic steering.

5.8.1 Monitoring

The different processes are briefly explained below. For every Monitoring process, both the co-manager and the DI (with the support of the PMU team) are responsible for the delivery and quality of monitoring.

5.8.1.1 Baseline

System:	Rwandan EARP system & Global Tracking Framework
Responsibility:	Joint responsibility

Establishing the baseline in the beginning of the project is a BTC system requirement. The EARP project M&E framework is used with the support of EARP M&E specialist.

The Baseline Report needs to be established at the beginning of the project (ideally within the 9 months after the first project steering committee (start-up PSC) and with the involvement of the ITA's). In case of late arrival of the ITA's, the baseline report will be produced no later than 6 months after their arrival.

The Baseline Report will be approved in joint responsibility by the DI and the project co-manager. The Baseline Report will be presented to the Project Steering Committee (PSC). The PSC takes note of the Baseline Report and validates the way the intervention will be monitored.

5.8.1.2 Operational monitoring (including planning)

System:	BTC system, RWA system if possible
Responsibility:	Joint responsibility

Operational monitoring refers to both planning and follow-up of the intervention's management information (inputs, activities, outputs). It is an internal management process of the intervention team and is done every 3 months.

5.8.1.3 Results Monitoring

System:	EARP system
Responsibility:	Joint responsibility

Results Monitoring refers to an annual participatory reflection process in which intervention team reflects about the achievements, challenges, etc. of the past year, and looks for ways forward in the year(s) to come. The PSC approves or disapproves recommendations made by the intervention team (see chapter 3) .

Rwanda EARP result monitoring system is functionnal but shall be improved on access definition and criterias (cf. 2.1.1 and Activities 3.2 to 3.5).

5.8.1.4 Final Monitoring

System:	BTC system
Responsibility:	Joint responsibility

The purpose of final monitoring is to ensure that the key-elements on the intervention's performance and on the development process are transferred to the partner organisation, the donor and BTC and captured in their "institutional memory". This enables the closure of the intervention (legal obligation for back-donor of BTC), the hand-over to the partner organisation and the capitalisation of lessons learned. It can be considered as a summary of what different stakeholders might want to know at closure or some years after closure of the intervention.

5.8.2 Evaluation: Mid-Term Review and End-Term Review[14]

System:	BTC system
Responsibility:	BTC responsibility

Reviews are organised twice in a lifetime of an intervention: at mid and end of term. BTC-HQ is responsible for organising the reviews. The ToR of the reviews and their implementation are managed by BTC Brussels, with strong involvement of all stakeholders (see chapter 3). The role of the PSC is to approve or disapprove the recommendations made in the reviews.

5.8.3 Capitalization

System:	BTC system
Responsibility:	Joint responsibility

A specific budget line is introduced to allow for capitalization and communication activities during the lifecycle of the project.

[14] In BTC terminology, the term 'review' is used for evaluations at project level.

5.9 Audits

5.9.1 Project audits by BTC

System:	BTC system
Responsibility:	BTC responsibility

Audits will be organised by BTC in the first and third year of the project implementation. A qualified external financial auditor selected and contracted by BTC, will execute the audit. BTC will elaborate the Terms of Reference and select the audit firm. The audit will include the following items:

- verification of the existence and the respect of procedures;
- verification if the accounts of the project reflect reality

The auditor's reports will be presented to the PSC. If necessary, the project team will elaborate an action plan in order to improve the project procedures and to prove that corrective measures have been taken.

Terms of Reference of BTC audits are a BTC responsibility and will be shared with EARP for information.

5.9.2 Project Audits by External Control Bodies

System:	BTC system or RWA system
Responsibility:	BTC responsibility or RWA responsibility or Joint responsibility

Each year, BTC accounts are audited by the Belgian government auditors, who have the right to audit any project implemented by BTC. BTC internal audit chief officer is also free to decide to audit any project implemented by BTC.

The Rwandan authorities, either REG or its parent ministry MININFRA or the Office of the Auditor General for State Finances of Rwanda can also decide to audit the project. In this instance, the Director of Intervention is the primary respondent to the auditor's requests.

Project audits reports are mutually shared and presented to the PSC.

In case the project is audited by the Auditor General Office of Rwanda, it will be clear at the beginning of the audit which systems are to be used. It should be avoided to audit the project compliance to the Rwandan system where the TFF clearly states that the BTC system must be used.

Moreover the scope of control will focus on the co-management budget whereas the BTC management budget will remain under full responsibility of BTC and therefore governed by the jurisdiction of its external control bodies (Belgian Government auditors). If necessary, information on amounts spent in "BTC management" can be provided.

5.10 Modification of the TFF

The present TFF may be amended by mutual consent of the parties.

It is essential to install an attitude of expecting and encouraging a practice of regular modifications based on the insights gained during the implementation. The task of the project management unit and the PSC is to assess the quality of the argumentation for the suggested changes and to request further explanation if necessary.

Careful consideration must be given not to change the present TFF in a way that would unnecessarily

change the outcome of the intervention as originally agreed between the parties. A formal agreement by the Belgian government is needed for the following changes:

- Modification of the duration of the Specific Agreement;
- Modification of the total Belgian financial contribution;
- Modification of the Overall and Specific Objective of the project.

The request of the above modifications has to be approved and motivated by the Steering Committee. The exchange of letters requesting these modifications shall be initiated by the Rwandese party and shall be addressed to the Belgian Embassy. The following changes to the TFF will have to be approved by the Steering Committee:

- The project results and activities and their respective budgets
- The implementation modalities
- Competences, attributions, composition and tasks of the SC
- The indicators at the level of the specific objective and the results
- The mechanism to change the TFF
- The financial modalities to implement the contribution of the Parties.

All other changes to the TFF should be approved by the chairman of the PSC and the BTC resident representative. The adapted version of the TFF shall be communicated to the BTC headquarters and to the Attaché for International Cooperation (DGD) in Kigali.

6 CROSS CUTTING THEMES

6.1 Environment

6.1.1 Energy Sector level

A Strategic Environmental Assessment (SEA) has been carried out in 2014, which assessed the environmental impacts of the Energy Sector Strategic Plan (ESSP). This identifies impacts in areas such as greenhouse gas emissions, watersheds and wetland ecosystems, forests and protected areas, and biodiversity. Human activities are assessed in agriculture and farming systems, land management practices, exploitation of energy resources, as well as taking account of trends in urbanisation, demography and water and sanitation usage.

The report proposes a number of actions to minimise these impacts which have been incorporated into the SE4All Action Agenda and MININFRA is currently assessing to what extend they can be gradually integrated in the strategy and policy framework of the energy sector.

6.1.2 EARP Intervention level

The intervention is likely to have some positive impact on the environment in Rwanda:

- Environmental negative impact, in noise and air pollution, associated with existing generator usage will be reduced.
- Compared to the original situation – people are using kerosene, candles, or dry-cell batteries to meet their energy demands, households throw used batteries into their pit latrines, into their garbage or directly into nature – electrification is decreasing environmental costs since majority of electricity in Rwanda is produced by renewable sources.
- EARP also promotes energy saving appliances thereby contributing to a higher efficiency in Rwanda's energy sector.

Adverse impacts on the environment are not expected to be severe. The project will not pose major or important risks to biodiversity, natural habitats, and wetlands as it will not fund activities in protected areas, national parks, or wetlands.

EARP has been rated Category B[15] by the WB Policy on Environmental Assessment (EA - OP4.01), requiring a partial EA. The project involves civil works related to construction of towers and substations, clearing of land and vegetation, use of oil lubricants for the transformers all which will trigger the EA (OP4.01, BP 4.01, GP 4.01) policy.

The policies require ESMF which establishes a mechanism to determine and assess potential environmental impacts of EARP. The ESMF sets out screening, mitigation, monitoring and institutional measures to be taken during design, implementation and operation of the activities to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

The project design team will comply to the ESMF and insure mitigation measures through a EMP as described in Activity 1.2. To implement the EMP in this intervention, a budget is foreseen and can be increased by the PSC if deemed necessary.

[15] The World Bank system assigns a project to one of three project categories (A,B,C). For Category B, although an EIA is not always required, some environmental analysis is necessary. Category B projects have impacts that are 'less significant, not as sensitive, numerous, major or diverse. Few, if any, impacts are irreversible, and remedial measures can be more easily designed.' Typical projects include rehabilitation, maintenance, or upgrades, rather than new construction.

The ESMF seeks to address the following adverse impacts that have been identified as likely to arise from the implementation of the project:

- Environmental Impacts:
    - Localised land degradation and soil erosion related to clearing the project areas for construction related works towards installation of towers, cabins, Right of Way (ROW), etc.
    - Localised vegetation in the project area due to clearing to create distribution path, construct substations, install towers or create ROW.
    - Ecological issues should the network cut across sensitive ecosystems
    - Impact on fauna, e.g. birds (Bird strikes on T-lines)
    - Impacts on soil and water from machinery fuel and lubricants contamination from accidental spills or unsound disposal or handling
    - Borrow pit related impacts including becoming breeding grounds for disease vector, hazards that could drown animals and people, and ecological destruction if borrow pits are located in sensitive environments
    - Effect of electro-magnetic fields on human health
- Social Impacts:
    - Loss of land or property/buildings to provide path for ROW, distribution line or for construction of LV sub stations.
    - Localised crop destruction in the project area due to clearing to create distribution path, construct substations, install towers or create ROW.
    - There may also be minor effects on agriculture, if there would be a restriction on land use in the ROW to the areas where transmission lines pass, and, in any involuntary resettlement requirement.
    - Localised dust related impacts during construction
    - Aesthetics and visual related impacts
    - Workers Health and Safety related impacts due to construction accidents
    - Social and cultural interaction impacts between the contractor's workers and local populations.
    - Noise impacts during construction from the machinery and from the sub stations during operation phase
    - Dust impacts, vegetation destruction, loss of crops in areas where access roads will be built for the project.
    - Establishment of construction camps for the workers likely to cause vegetation and crop destruction as well as camp construction relate impacts …

The negative impacts are considered to be localised to the specific project areas, minimal and minor in scale and in terms of magnitude and should be easily mitigated through the preparation of adequate EMP[16]'s and RAP[17]'s.

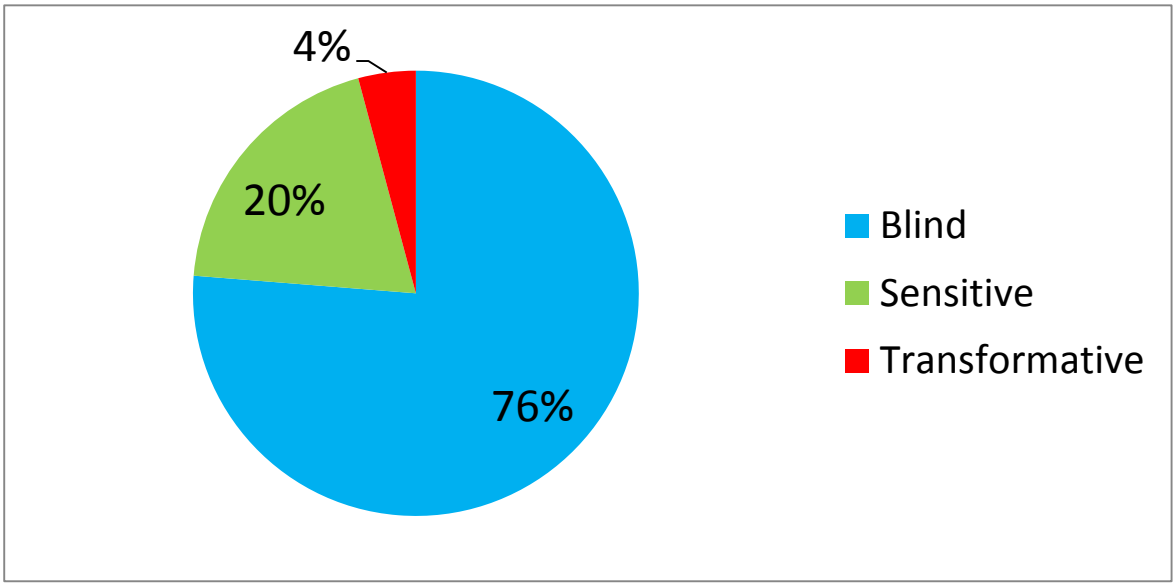
[16] Environment Management Plan

[17] Resettlement Action Plan

6.2 Gender

EARP is a program with no particular gender policy in its implementation. Various indications show that women tend to benefit more from electrification than men, especially in rural areas. Although it is hard to quantify these differences, common sense as well as insight by external studies can bring some of these dynamics in which women's advantages are higher to the foreground. Obviously, women benefit from the intervention, but there is no particular policy to target women in this intervention.

The graph of the gender budget scan below indicates how much of the budget lines related to the activities are gender blind (76%), gender sensitive (20%) or gender transformative (4%).



* An example of a gender transformative activity is A.2.1. Through its education campaign around electricity access, the activity will address gender equality by promoting productive uses of electricity targeting women.

* An example of gender sensitive activity is A.3.2. As such the activity is initially coded 'green', meaning that it will be done on the basis of a gender analysis.

The recruitment activities are also coded 'green', meaning that legislation and procedures of Human Resources management will be respected with regard to gender (equal treatment equal opportunities and where appropriate positive discrimination.

* Activities coded 'blue' are for example construction activities. Investment and equipment activities are also coded 'gender blind'.

The details can be found in the detailed gender budget scan in annex 0.

6.3 Children's rights

The project itself will not contribute to children's rights directly. Indirectly, the general impact of access to (electric) energy on development and more specifically on children's rights is widely known. Impacts are :

- improved education opportunities (computer literacy, lighting, educational tools (videos, software, …), better teaching administration)
- improved health : vaccine cold chain, lighting of health centres, …

- access to media (radio, television)
- general country development, creating jobs and welfare

6.4 HIV / AIDS

The Ministry of Health broadcasts all her health related programs on radios and Television alongside other social media like twitter, face book and YouTube. All these facilities require constant power supply without which communication will be delayed and or derailed. HIV awareness campaigns to be broadcast over the same media will help reduce on infection and transmission rates as well and treatment provided by health centres. The energy sector Strategic Plan targets to electrify 100% of health administration centres to promote health services provision and facilitate campaigns to combat killer diseases such as Malaria and HIV/AIDs.

7 ANNEXES

7.1 Logical framework

	Logical of the intervention	Indicators – Tentative target	Sources of verification	Hypotheses
GO	The energy sector is able to provide sufficient, reliable and affordable energy for all Rwandans	Electricity price per kWh (RwF/kWh) Levelised cost of electricity generation (RwF/kWh) Per capita monthly power consumption (kWh/inhabitant/month)	EDPRS M&E reports EUCL statistics	On-Grid electricity is competitive to off-grid solutions. Generation capacity is increasing at least as fast as electricity demand.
SO	The access to reliable on-grid electricity services for households and priority public institutions in peri-urban and rural areas is improved	National electricity access rate on-grid (%) – 48% Aggregated index of Access to Energy (global tracking framework)	EUCL statistics EDCL/EARP annual performance report EDCL/EARP quarterly monitoring progress report	Fill-in connections are complementing direct connection shortly after the construction of the grid Grid strengthening activities are properly performed under EU/WB
R1	Rural electricity connectivity is increased through national electricity grid extension	Customers connected to grid electricity by the project (number of households, number of schools, number of health centres, number of productive use) - 6875 MV lines constructed by the project (km) – 97 km LV lines constructed by the project (km) – 168 km Total transformer power capacity installed (MVA) - EMP properly developed and implemented for grid extension activities	EARP annual performance report EARP quarterly monitoring progress report	The O&M of the existing and new installations are properly performed by EUCL
R2	Beneficiaries (households, productive and community uses) are supported in improving their tier access level	Number of beneficiaries able to afford the connection in the intervention area Contribution of the beneficiary to the connection (RwF) Share of electricity expenses in households income Number of beneficiaries educated to electricity related issues	Baseline study for the intervention area M&E reports	Lessons learned from the pilot activities are utilized.
R3	Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector	Number of eSWG/year Number of TWG/year SWG recommendations are integrated in national strategies Access data, including consumption levels are integrated in MIS	eSWAP reports eSWG mOM MIS	EUCL MIS is developed with WB support

	Activities to reach Result 1	**Means**	**Belgian Contribution**	**Rwandan contribution**
R1	Rural electricity connectivity is increased through national electricity grid extension		Costs in Euros	Costs in Euros
A1.1	Build electricity transmission and distribution lines and connections services in targeted areas	EPC contractor Local contractor REG utility	8,250,000	1,485,000
A1.2	Supervise the grid extension construction works	Consultancy Technical Assistance	577,500	0
A1.3	Develop and implement EMP and RAP for network extension activity in compliance with ESMF and RPF	EARP Environment and social safeguards EARP project team REMA, RDB Contractor	76,000	108,000
	Total		8,903,500	1,593,000

	Activities to reach Result 2	**Means**	**Belgian Contribution**	**Rwandan contribution**
R2	Beneficiaries (households, productive and community uses) are supported in improving their tier access level		Costs in Euros	Costs in Euros
A2.1	Sensitize and educate beneficiaries around (i) Electricity Health and Safety, (ii) Electricity productive use, (iii) Energy efficiency	EARP social safeguards REG local branch NGO or Company Junior Assistant	300,000	
A2.2	Scale-up pilot solutions to support connection affordability for low income – and vulnerable - customers in the intervention area	EARP social safeguards REG local branch NGO or Company Junior Assistant	200,000	
	Total		500,000	

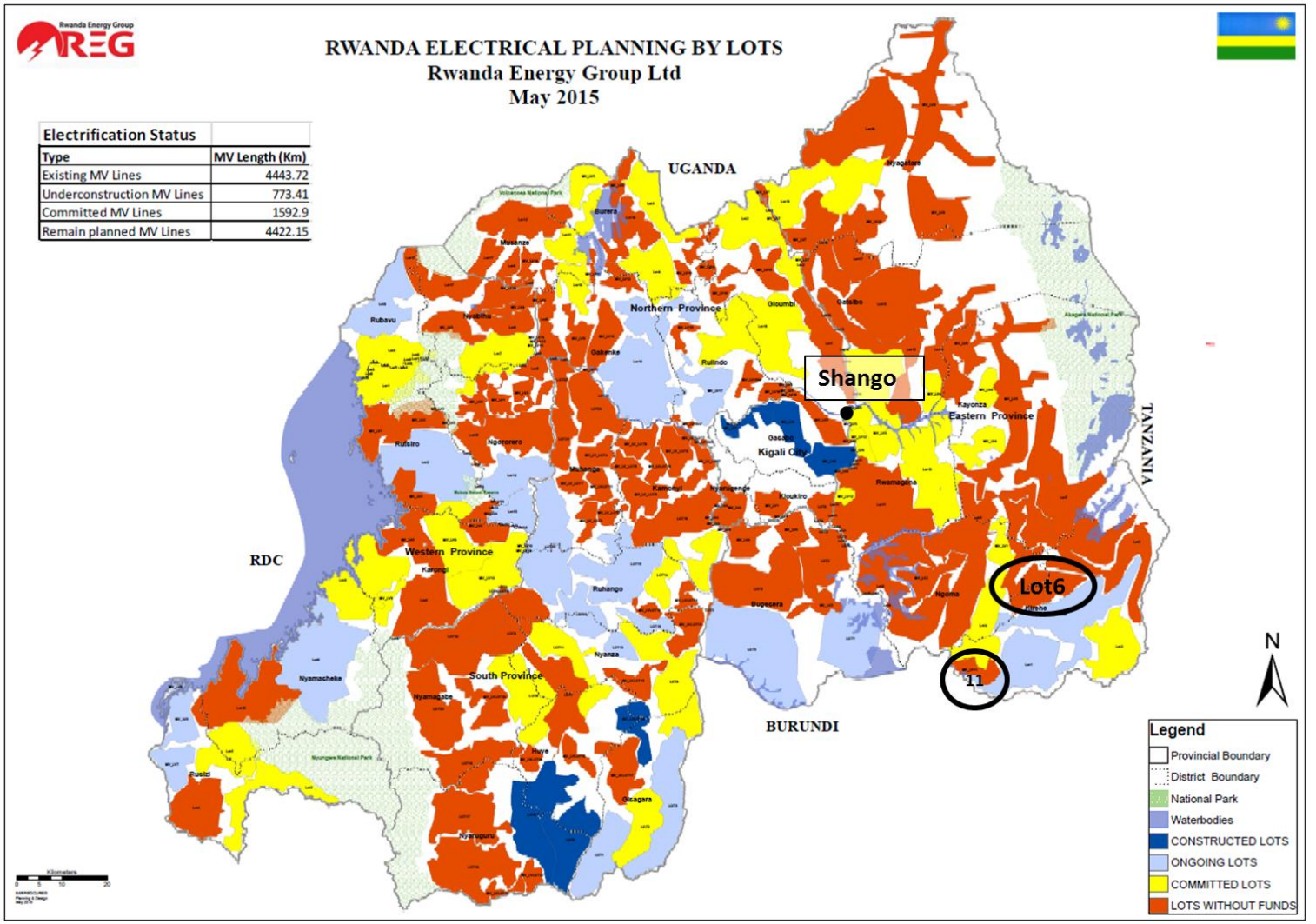
	Activities to reach Result 3	**Means**	**Belgian Contribution**	**Rwandan contribution**
R3	Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector		Costs in Euros	Costs in Euros
A3.1	Support eSWAP in energy sector coordination	Technical Assistance eSWAP eSWG TWG	550,000	
A3.2	Perform multi-tier access sample surveys using Global Tracking Framework	EUCL socio-economist NGO Consultant	100,000	
A3.3	Support EUCL in organizing multi-tier access data monitoring for its customers	EUCL socio-economist NGO Consultant EUCL local branches and MIS	80,000	
A3.4	Support REG/MININFRA to use monitored data for decision making and coordination	Consultant ITA coordination	80,000	
A3.5	Capitalize and communicate on lessons learned	Consultant ITA coordination	40,000	
	Total		850,000	

	General Means	**Means**	**Belgian Contribution**	**Rwandan contribution**
Z01	Salaries	Local and international staff	1,430,496	56,000
Z02	Investments	Vehicles, equipment,…	30,000	5,400
Z03	Running Costs	Operating budget	121,000	0
Z04	Audit, Monitoring and Evaluation	Consultant, auditor, EST	108,000	0
	Total		1,689,496	61,400
	GRAND TOTAL		12,000,000	1,650,000

7.2 Implementation calendar

				CHRONOGRAMME						
				YEAR 1				YEAR 2	YEAR 3	YEAR 4
A				**Q1**	**Q2**	**Q3**	**Q4**			
A	*01*		*Rural electricity connectivity is increased through national electricity grid extension*							
A	01	01	Build electricity transmission and distribution lines and connections services in targeted areas							
A	01	02	Supervise the grid extension construction works							
A	01	03	Develop and implement EMP and RAP for network extension activity in compliance with ESMF and RPF							
A	*02*		*Beneficiaries (households, productive and community uses) are supported in improving their tier access level*							
A	02	01	Sensitize and educate beneficiaries around (i) Electricity Health and Safety, (ii) Electricity productive use, (iii) Energy efficiency							
A	02	02	Scale-up pilot solutions to support connection affordability for low income – and vulnerable - customers in the intervention area							
A	*03*		*Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector*							
A	03	01	Support eSWAP in energy sector coordination							
A	03	02	Perform multi-tier access sample surveys using Global Tracking Framework							
A	03	03	Support EUCL in organizing multi-tier access data monitoring for its customers							
A	03	04	Support REG/MININFRA to use monitored data for decision making and coordination							
A	03	05	Capitalize and communicate on lessons learned							

7.3 Map of grid roll-out status (May 2015)



7.4 ToR long-term personnel

7.4.1 ITA energy sector –Coordination[18]

7.4.1.1 Post

The overall coordination of the program will be provided by an International Technical Advisor (ITA) specialized in Energy with a solid experience in program & sector coordination.

7.4.1.2 Location and institutional framework

The expert will be based in Kigali with frequent visits at the operational level country wide. The position will be embedded in the Energy Sector Wide Approach (eSWAP) secretariat of the Ministry of Infrastructure of Rwanda (MININFRA). She/he will work with several departments of MININFRA and Rwanda Energy Group (REG) in order to ensure the link between central and all the relevant operational levels of the energy sector. In close collaboration with his counterpart, she/he will provide technical support in the overall coordination and management of the sector. The candidate will also ensure that coherence and synergies are maintained between the BTC energy projects. He/she will provide a particular technical support to the global tracking framework access monitoring within BE2EARP.

The ITA will work under the leadership of the BTC Resident Representative (ResRep) and in collaboration with other International Technical Assistants, and the Embassy of Belgium in order to ensure the overall coherence of the Belgian energy portfolio.

He is a direct supervisor for the energy RAF (Responsible for Administration, Finance and Procurement)

7.4.1.3 Duration

The position will be funded for four years.

7.4.1.4 Responsibilities

1/ Technical Support component (estimated at a third-time)

The ITA is will be responsible for the implementation of energy access Global Tracking Framework activities, i.e. organizing the multi-tier electricity access data monitoring, and supporting REG & MININFRA in using monitored data for decision making. She/he will work closely with the EDCL/EARP and EUCL to ensure that multi-tier access monitoring system is integrated in the sector M&E system.

2/ Sector coordination and coaching component (estimated at a third-time)

The ITA together with the eSWAP secretariat is responsible for improving the overall coordination and implementation of the sector. She/he will coach the eSWAP secretariat national staff in sector coordination.

3/ BTC energy portfolio coordination (estimated at a third-time)

The ITA will ensure that coherence and synergies are maintained between the BTC energy projects and other sector initiatives. He will supersize the ITA working on BTC energy interventions and provide recommendations to the PSC's on strategic orientations.

[18] The TOR of the ITA coordination will be fine-tuned according to the results of the functionnal review of MININFRA Its exact position within the Ministry (energy division, planning department or eSWAP) will also be defined according to the results of this exercice.

7.4.1.5 Tasks

Technical Support

- Coordinate the elaboration of the baseline
- Provide coaching to the eSWAP secretariat staff
- Ensure the implementation of energy access Global Tracking Framework activities, i.e. organizing the multi-tier electricity access data monitoring, and supporting REG & MININFRA in using monitored data for decision making

Program Management and Coordination

- Ensure smooth implementation of the program during its different phases especially in planning, monitoring, documentation/capitalization and evaluation.
- Ensure synergy and complementarity between all the BTC energy projects in Rwanda.
- Ensure team work, other DPs working in similar areas of the energy sector and contribute to the technical dialogue through active participation in relevant TWGs
- Ensure a better flow of information in the sector, within the intervention and the other components of the energy sector supported by the Belgian Cooperation, and with the BTC representation and the Embassy of Belgium.
- Build staff capacity within the eSWAP secretariat and other stakeholders involved in program coordination and strategic M&E.
- Ensure consolidation of narrative and financial quarterly, annual and final reports.
- Ensure the development circles of ITAs
- Establish and maintain good working relationships with program stakeholders and suppliers.
- Draft the terms- of- reference of studies, consultancies, mi and external evaluations.
- Organize initial briefing and restitution of consultant's missions and other ITAs.
- Represent the Belgian Energy Interventions in relevant forum and share information with other DPs.
- Pilot and coordinate all activities in relation to the cross-cutting issues (environment, gender) and assure their visibility.
- Promote capitalization and dissemination of experiences that are relevant to other expected results of the Program and take initiative for research and studies in Energy Access and accompany them.
- Organize coordination meetings in collaboration with BTC representation, other ITAs, BTC experts and Capacity Development pooled Fund and the Embassy of Belgium.

7.4.1.6 Profile

Education level

Engineer or economist with a Masters in Energy and/or related field

Proven experience*:*

- Professional experience of minimum 10 years, including a minimum of four years in an international context especially in developing countries.
- Experience in energy access related programs or strategy
- Experience in Project cycle management within the framework of the international cooperation
- A previous experience of coordination in a similar context within an International Organization is an

asset

- A proven experience in project/program monitoring & evaluation (M&E), ideally in energy access projects/programs

Skills

- Strong interpersonal, leadership and coaching skills
- Familiar with participatory approaches
- Capacity to work in a multicultural and multidisciplinary context
- Good capacity to conceptualize and conduct action research and surveys
- Good report and scientific articles writing skills for publishing
- Good understanding of mainstreaming cross-cutting issues
- Excellent command of English and good knowledge of French
- Good knowledge of ICT (Word, Excel, Power Point and Database)

7.4.1.7 Mode of recruitment

The recruitment procedure will be launched by the Belgian Technical Cooperation (BTC) in Brussels. The candidate will be selected by the BTC and his Curriculum Vitae will be presented to the Rwandan Partner for approval.

7.4.1.8 Management of the contract

The contract is managed by Belgian Technical Cooperation (BTC) under Belgian Law.

7.4.1.9 Development circles:

Development circles will be carried out by BTC Resident Representative in Rwanda

7.4.2 Energy SWAP coordinator

7.4.2.1 Duty and Responsibility

He/she will be responsible for the good overall coordination of the energy sector and for the quality of the sector policy dialogue, under the leadership of the chair and the co-chair.

He/she shall coordinate the work of an M&E expert, an energy economist, and an expert in external links and donor coordination.

Anchoring of the Secretariat and of its coordinator will be précised more after the functional review of MININFRA that will take place in Q2 and Q3 of 2015.

Main tasks shall include but will not be limited to:

- assist in reporting of energy sector progress in different contexts such as the National Leadership retreat, national and regional conferences, investment forum, etc.
- liaise regularly with members of the Sector Working Group, and counterparts from the electricity utility, the regulator, relevant staff in other infrastructure sub-sectors to facilitate planning and implementation of activities, other ministries and government institutions.
- participate in coordination and planning meetings and prepare reports and presentations for these, as well as for conferences and other government meetings.
- prepare and circulate in advance appropriate documents and materials for SWG and TWG

meetings relevant to the agenda; ensure that minutes and action lists are timely drafted, updated and approved for each meeting of the eSWG and of TWG

- Prepare ToR as well as contracts, mobilize, and manage consultants as necessary.
- Ensure the design and implementation of a MIS that will facilitate eSWG coordination and information sharing
- Organize regular meetings between the Minister in charge of energy and the core DPs in the sector
- Ensure that the architecture of the sector coordination and dialogue is implemented as planned (TWG, Task Forces under the TWG if needed) and that the whole system work efficiently, in coordination with the chair and co-chair of each TWG.
- Ensure that a database is established and maintained of all projects and programmes in the energy sector, both domestic and externally funded.
- Ensure that there is a systematic approach to the issue of capacity building in the energy sector, in close collaboration with the designated cluster specialist at NCBS,
- Elaborate a plan for the meetings of the eSWG and TWG and coordinate participation, by ensuring designation of core members for each group, from GoR and from the other stakeholders.
- Organize a systematic, strategic and proactive flow of information between energy stakeholders, ensuring that eSWG are sufficiently prepared and strategic in content.
- Propose a clear strategy and action plan for resource mobilization for the energy sector in Rwanda
- support other energy sector activities when necessary, on behalf of the chair or the co-chair

7.4.2.2 Qualifications and experience

- Master's degree level in a relevant field (Engineering, Economics, MBA, Energy management, Energy Economics, Energy related studies, Masters in Science,)
- Strong skills in coordination and management of complex programmes and processes
- Strong interpersonal skills and ability to motivate the exchange of relevant information between stakeholders
- Minimum of 5 years of relevant work experience.
- Work experience with in the Energy sector and for development partners is an added advantage,
- Prior experience with sector-wide approach (SWAp) frameworks and processes, highly desirable.
- Working language is English, French language skills are an advantage

7.4.2.3 Reporting

The eSWAP coordinator will report to the chair and the co-chair of the eSWG, who will jointly assess his/her performance.

7.4.3 Energy SWAP external links and donor coordination officer

7.4.3.1 Main Duties and Responsibilities

The expert in external links and donor coordination shall fulfil the following tasks:

- To participate in the elaboration of policies, strategies and programs in the Ministry
- To follow up all projects and programs financed by external financing institutions
- To ensure that all donor activities in the Energy Sector are monitored and coordinated and as much as possible aligned to priorities of GoR and therefore liaise with all relevant parties (government, agencies, donors, private Sector, civil society and other stakeholders)
- To keep good relationship and cooperation with development partners in all sectors.
- To assist in drafting agreements between the ministry and external organisations
- To participate in the preparation of new project proposals, involving external parties and to ensure that all new proposals are submitted to the relevant stakeholders.
- To participate in seminars and conferences between the ministry and representatives of international organisations
- To analyse reports from bilateral and multilateral donors and provide them with feedback
- To actively assist the Ministry in raising more funds
- To coordinate activities involving External Parties (Investors, NGO, and Public Institutions)
- To carry out any other relevant activities as may be deemed appropriate and necessary.

7.4.3.2 Qualifications

- A university degree (preferably master's degree) in International Relations, International Diplomacy or any other relevant university degree;
- At least 5 years professional experience in international affairs and working with international development partners or related works
- Fluency in English and French and ability to write reports and project reports in English and French
- Computer Literacy

7.4.3.3 Reporting

He (she) will report to the to the chair and the co-chair of the eSWG, who will jointly assess his/her performance.

7.4.3.4 Contract Duration

The initial duration of the assignment is for about two years. The selected candidate will sign a one year contract, renewable subject to performance.

7.5 Choice of activities in EARP project (A1.1 – network extension)

Introduction

Concerning network extension (Activity 1.1 – 8,25 M€), the intervention estimations are based on the study of SOFRECO, appointed by EARP under WB financing.

The complete scope of the SOFRECO study can be summarized as follows:

The study digitally captured all potential consumers in the country and designed the network to provide grid access to 70% of the population by 2017 at minimum cost, considering available information, GoR relocation plans, growing demand, on-going projects, recently completed projects and the overall state of network development.

Each zone (South, North, Western, Eastern and Central) is divided into lots, each lot consisting of a group of transformer zones with MV and LV lines to be constructed. The bigger lots are grouped into Engineering, Procurement and Construction (EPC) contracts while the smaller lots are dedicated for local contractors an EDCL in house construction. The lots are prioritized for construction between 2013 and 2017. Factors such as distance from the line and importance of number of infrastructure are taken into consideration. The average connection cost plays a role in the prioritizing of electrification.

The following table provides the lots division for the Eastern region. It has been updated in 2014 with last productive use customers data and with new material cost estimation according to recent public tenders experiences.

	SUM MV LINES (km)	SUM LV LINES (km)	SUM TRANS FORMERS	SUM MV SWITCHGEAR	POTENTIAL CONN's	COST (USD)	COST/ CONN 75%
Lot1	103.34	161.6	67	4	9360	6,726,547	958
Lot10	74.27	126.2	53	5	7032	5,308,593	1007
Lot11	113.22	145.2	78	2	3918	5,613,922	1910
Lot12	74.36	87.8	55	4	4134	3,861,790	1246
Lot13	44.18	66.4	42	0	2263	2,178,219	1283
Lot14	62.19	115.4	55	4	4375	4,093,074	1247
Lot15	74.92	87.5	49	2	2950	3,458,191	1563
Lot16	54.74	122.4	46	3	5744	4,463,703	1036
Lot17	88.97	125.7	54	2	5682	5,125,205	1203
Lot18	75.53	128.8	82	0	6133	4,493,976	977
Lot19	96.13	122.7	60	4	5375	4,866,180	1207
Lot2	61.17	85.4	45	0	5268	3,440,693	871
Lot3	87.88	137.1	50	2	7431	5,672,525	1018
Lot4	78.15	122.0	59	4	6566	4,934,139	1002
Lot5	133.08	177.0	79	4	8886	8,117,727	1218
Lot6	85.44	139.7	54	7	7492	5,760,165	1025
Lot7	100.24	182.4	87	3	8530	7,769,038	1214
Lot8	118.37	222.5	81	6	11368	8,778,277	1030
Lot9	107.67	142.9	83	0	8021	5,913,772	983
SUM EPC	**1633.87**	**2498.7**	**1179**	**56**	**120528**	**100,575,738**	**1113**

	SUM MV LINES (km)	SUM LV LINES (km)	SUM TRANS FORMERS	SUM MV SWITCHGEAR	POTENTIAL CONN's	COST (USD)	COST/ CONN 75%
MV_LV1	13.95	23.7	11	0	1489	1,102,751	987
MV_LV10	16.27	22.61	15	0	1253	906,038	964
MV_LV11	12.11	28.8	15	0	1672	1,055,872	842
MV_LV12	14.14	22.5	15	0	576	853,008	1975
MV_LV2	23.34	57.66	20	1	3178	2,255,509	946
MV_LV3	25.00	37.2	23	1	1312	1,380,365	1403
MV_LV4	46.31	64.8	38	2	2694	2,499,571	1237
MV_LV5	97.07	37.6	52	1	1480	2,552,106	2299
MV_LV6	27.45	26.8	25	0	923	1,065,008	1538
MV_LV7	27.80	32.2	16	0	974	1,248,110	1709
MV_LV8	69.58	53.0	34	0	2426	2,773,335	1524
MV_LV9	25.80	33.2	17.0	1	938	1,222,960	1738
SUM MV/LV	**398.83**	**439.81**	**281**	**6**	**18915**	**18,914,634**	**1333**

The SOFRECO services compiled the following deliverables for each lot:

- Scope of works, including project description
- GIS map of the project area and proposed network

- Detailed bill of quantities to be used in tender documents
- A list of materials to be used to order material from EDCL stores

For all the regions, the deliverables also include the following:

- Study reports
- Load flow analysis
- Single line diagrams of the existing network
- Compiled GIS Database containing all network spatial information as well as electrical attributes for the existing and proposed network.

Prioritization of lots

The 19 LOTS have been prioritized for construction until 2018. Factors such as distance from the line and importance of number of infrastructure were taken into consideration.

The average connection cost plays a role in the prioritizing of electrification. It is though not always possible to plan according to cost priority, as zones closest to the existing network needs to be connected firs before the zones further from network.

The table below shows the priorities for the eastern province Although there is correlation, it cannot be exactly as per the cost priority.

	SUM MV LINES (km)	SUM LV LINES (km)	SUM TRANS FORMERS	SUM MV SWITCHGR	POTENTIAL CONN's	COST (USD)	COST/ CONN 75%	Cost Priority	Prior Year	Status
Lot2	61.17	85.39	45	0	5268	3,440,693	871	1	1	BE1EARP
Lot1	103.34	161.64	67	4	9360	6,726,547	958	2	1	Done
Lot3	87.88	137.05	50	2	7431	5,672,525	1018	7	1	Done
Lot11	113.22	145.22	78	2	3918	5,613,922	1910	19	1	
Lot4	78.15	122.01	59	4	6566	4,934,139	1002	5	2	BE1EARP
Lot10	74.27	126.17	53	5	7032	5,308,593	1007	6	2	BE1EARP
Lot8	118.37	222.45	81	6	11368	8,778,277	1030	9	2	
Lot16	54.74	122.39	46	3	5744	4,463,703	1036	10	2	
Lot14	62.19	115.40	55	4	4375	4,093,074	1247	16	2	Commited
Lot15	74.92	87.46	49	2	2950	3,458,191	1563	18	2	
Lot6	85.44	139.73	54	7	7492	5,760,165	1025	8	3	BE2EARP
Lot17	88.97	125.72	54	2	5682	5,125,205	1203	11	3	
Lot19	96.13	122.71	60	4	5375	4,866,180	1207	12	3	
Lot5	133.08	177.02	79	4	8886	8,117,727	1218	14	3	
Lot12	74.36	87.80	55	4	4134	3,861,790	1246	15	3	
Lot18	75.53	128.79	82	0	6133	4,493,976	977	3	4	Commited
Lot9	107.67	142.95	83	0	8021	5,913,772	983	4	4	
Lot7	100.24	182.40	87	3	8530	7,769,038	1214	13	4	
Lot13	44.18	66.37	42	0	2263	2,178,219	1283	17	4	
SUM EPC	**1633.87**	**2498.7**	**1179**	**56**	**120528**	**100,575,738**	**1113**			

BE2EARP: lot 6 and MV_LV11 in the eastern province

Assumptions for the choice of the lots:

- The Shango power transformer cost is estimated to € 2 Million all included[19]. Remaining budget for extension lots is € 6.25 Million.
- Current exchange rate is 1 EUR = 1.14 USD. Available budget for extensions lots is consequently close to 7.1 MUSD.
- In May 2015, Lots 1, 2, 3, 4, 10, 14 & 18 and MV_LV1, MV_LV3, MV_LV4, MV_LV12 have already been assigned for the Eastern region.
- Within one lot, no shared financing from other partner of government of Rwanda is foreseen
- Lots cannot be split
- Material or installation prices have not increased since last cost estimation update (2014)

Lot 11 is the first lot in the list of priority but it is quite poor in terms of number of beneficiaries (high price per connection far above 1000 USD/connection).

Lots 8 is too costly for the available budget and cannot be split.

Lot 6 cost fits within the budget with lower cost per potential connection (1025 USD/direct connection i.e. 768 USD/potential connection.

The summarized bill of quantity for lot 6 is provided in the following table.

SUMMARY		TENDER TOTAL
A	PRELIMINARY AND GENERAL	$87,149.70
B	PEGGING OUT WORKS and BUSH CLEARING	$237,688.40
C	COST FOR EXCAVATION AND BACKFILLING	$158,873.53
D	POLES	$1,214,706.00
E	LV STRUCTURE ASSEMBLIES including all bolts, nuts, washers and crimp joints	$254,010.29
F	MV STRUCTURE ASSEMBLIES including all bolts, nus, washers and crimp joints	$117,805.45
G	STAYS AND STRUT POLES	$204,581.27
H	OVERHEAD CONDUCTOR INSTALLATION	$941,400.40
I	TRANSFORMER STATIONS	$607,633.00
J	SERVICE CONNECTIONS	$1,412,665.48
K	ADDITIONAL ITEMS REQUIRED FOR COMPLETION OF WORKS NOT LISTED ABOVE	$0.00
	TOTAL AMOUNT	$5,236,513.51
	Contingency Amount (10%)	$523,651.35
	TOTAL AMOUNT	$5,760,164.87

The remaining budget does not allow for another EPC lot but it is enough for a smaller MV_LV lot as lot MV_LV11 located directly next to lot 4 in Kirehe district.

The summarized bill of quantity for lot MV_LV11 is provided in the following table.

[19] The 2 million euros budget has been calculated by EDCL engineers and compared to regional benchmark. If this budget is exceeded during execution, the additional funding that is needed will be provided by the Rwandan national budget (Rwandan contribution)

SUMMARY		TENDER TOTAL
A	PRELIMINARY AND GENERAL	$39,159.40
B	PEGGING OUT WORKS and BUSH CLEARING	$59,193.00
C	COST FOR EXCAVATION AND BACKFILLING	$22,467.51
D	POLES	$213,019.00
E	LV STRUCTURE ASSEMBLIES including all bolts, nuts, washers and crimp joints	$52,263.09
F	MV STRUCTURE ASSEMBLIES including all bolts, nus, washers and crimp joints	$9,772.88
G	STAYS AND STRUT POLES	$37,942.47
H	OVERHEAD CONDUCTOR INSTALLATION	$96,677.09
I	TRANSFORMER STATIONS	$126,968.00
J	SERVICE CONNECTIONS	$302,421.10
K	ADDITIONAL ITEMS REQUIRED FOR COMPLETION OF WORKS NOT LISTED ABOVE	$0.00
	TOTAL AMOUNT	$959,883.54
	Contingency Amount (10%)	$95,988.35
	TOTAL AMOUNT	$1,055,871.89

Summary:

Figure	Lot 6	MV_LV11	Total BE2EARP
Estimated cost (USD)	5,760,165	1,055,872	6,816,037
MV lines (km)	85	12	97
LV lines (km)	139	29	168
Potential connections	7,492	1,672	9,164
Direct connections	5,619	1,254	6,873
Direct beneficiaries (assuming 5 persons per connection)	28,095	6,270	34,365

The total budget is estimated to 6.8 million USD, i.e. 6 million EUR at the current exchange rate. The difference with the available budget (6.25 million EUR) is covering additional uncertainties as exchange rate fluctuations.

It is important that, once the project has started, the choice of the lots is reconfirmed, after a detailed analysis by an expert team in order to fine-tune the specifications in the tender documents, by the Project Steering Committee. Indeed, several sources of financing are committed to join the EARP but their commitment timing is often uncertain or unknown (or was unknown at the time of the formulation). The planning management of EARP can only allocate financing to dedicated lots once the financing has been secured. As other contributions, the Belgian contribution to EARP shall be flexible and choose the right priority lots at the time of the intervention.

7.6 Gender Budget Scan

					%	Gender Budget Scan
A			**The access to reliable on-grid electricity services for households and priority public institutions in peri-urban and rural areas is improved**	**10,253,500**	**85%**	
A	*01*		*Rural electricity connectivity is increased through national electricity grid extension*	*8,903,500*	*74%*	
A	01	01	Build electricity transmission and distribution lines and connections services in targeted areas	8,250,000		Blind
A	01	02	Supervise the grid extension construction works	577,500		Blind
A	01	03	Develop and implement EMP and RAP for network extension activity in compliance with ESMF and RPF	76,000		Blind
A	*02*		*Beneficiaries (households, productive and community uses) are supported in improving their tier access level*	*500,000*	*4%*	
A	02	01	Sensitize and educate beneficiaries around (i) Electricity Health and Safety, (ii) Electricity productive use, (iii) Energy efficiency	300,000		Transformative
A	02	02	Scale-up pilot solutions to support connection affordability for low income – and vulnerable - customers in the intervention area	200,000		Transformative
A	*03*		*Coherence and coordination are improved between EARP and off-grid energy access initiatives and the sector*	*850,000*	*7%*	
A	03	01	Support eSWAP in energy sector coordination	550,000		Sensitive
A	03	02	Perform multi-tier access sample surveys using Global Tracking Framework	100,000		Sensitive
A	03	03	Support EUCL in organizing multi-tier access data monitoring for its customers	80,000		Sensitive
A	03	04	Support REG/MININFRA to use monitored data for decision making and coordination	80,000		Sensitive
A	03	05	Capitalize and communicate on lessons learned	40,000		Sensitive
X			**Contingencies**	**57,004**	**0.5%**	
X	*01*		*Contingencies*	*57,004*	*0%*	
X	01	01	Contingencies co-management	37,004		Blind
X	01	02	Contingencies direct management	20,000		Blind
Z			**General Means**	**1,689,496**	**14%**	
Z	*01*		*Salaries*	*1,430,496*	*12%*	
Z	01	01	ITA in sector coordination	432,000		Sensitive
Z	01	02	Project Co-manager	180,000		Sensitive
Z	01	03	Technical staff	529,056		Sensitive
Z	01	04	Responsible Administration and Finance International	180,000		Sensitive
Z	01	05	Administration and Finance local staff	80,640		Sensitive
Z	01	06	Drivers	28,800		Sensitive
Z	*02*		*Investments*	*30,000*	*0%*	
Z	02	01	Vehicles	20,000		Blind
Z	02	02	ICT and office equipment	10,000		Blind
Z	*03*		*Running Costs*	*121,000*	*1%*	
Z	03	01	Vehicle Operating Costs	36,000		Blind
Z	03	02	Communication costs	36,000		Blind
Z	03	03	Field Missions	24,000		Blind
Z	03	04	External Communication costs	10,000		Blind
Z	03	05	Training	10,000		Blind
Z	03	06	Financial costs	5,000		Blind
Z	03	07	VAT costs	0		Blind
Z	*04*		*Audit, Monitoring and Evaluation*	*108,000*	*1%*	
Z	04	01	Monitoring and evaluation: baseline, MTR, ETR	60,000		Sensitive
Z	04	02	Audits	40,000		Blind
Z	04	03	Backstopping	8,000		Sensitive
TOTAL				**12,000,000**		

7.7 References

- Vision 2020 (2000)
- EDPRS 2008-2012 (September 2007)
- EDPRS II 2013-2018 (June 2013)
- NEP (March 2015)
- ESSP 2013-2018 (March 2015)
- Electricity Law (June 2011)
- SE4All Country Action Plan (March 2015)
- EARP Project Implementation Manual
- EARP Connection Policy
- EARP Priorisation Rule
- EARP Environmental and Social Management Framework
- EARP Resettlement Policy Framework
- EARP Mid Term Review (July 2012)
- Economist Intelligence Unit Report on Rwanda (May 2012)
- Indicative Cooperation Program (ICP) Belgium – Rwanda 2011- 2014
- Common Performance Assessment Framework (CPAF) (April 2011)