TECHNICAL & FINANCIAL FILE

ENERGY SECTOR:

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

BELGIAN CONTRIBUTION TO EARP

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
BTC	Belgian Technical Cooperation (Belgian Development Agency)
CB	Capacity Building
CBF	Capacity Building Fund
CNA	Capacity Need Assessment
DGD	Directorate of Development Cooperation and Humanitarian Aid
DI	Director of Intervention
DP	Development Partners
EA	Environmental Assessment
EC	European Commission
EARP	Electricity Access Roll-out Program
EMP	Environmental Management Plan
EPC	Engineering, Procurement and Construction
ESMF	Environmental and Social Management Framework
ESSP	Energy Sector Strategic Plan
EDPRS	Economic Development and Poverty Reduction Strategy
EWSA	Electricity, Water and Sanitation Authority
GDP	Gross Domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GIS	Geographic Information System
GoR	Government of Rwanda
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
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
MOH	Ministry of Health
MoM	Minutes of Meeting
MoU	Memorandum of Understanding
MTR	Mid Term Review
MV	Medium Voltage
NCBS	National Capacity Building Secretariat
NGO	Non-Governmental Organization
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
PSCBS	Public Sector Capacity Building Secretariat
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
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
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
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, split over four interventions: (i) geothermal energy development-, (ii) access to energy-, (iii) feed-in-tariff- and (iv) capacity building component. The present document covers the access to energy component that has a total Belgian contribution of 17 million EUR and a duration of 4 years plus two extra year for the Specific Agreement.

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

It should be regarded as the Belgian contribution to the nationwide Electricity Access Roll-out Program (EARP), the focus remaining on the electricity grid extension with the construction of new transmission and distribution lines connected to the national electricity network. In addition, the present intervention will be involved in targeted strengthening of the existing network and in several other activities aiming at increasing the sustainability of the electrification program.

With the support of technical assistance, the intervention will give a special attention to the respect of harmonized quality standards to increase the sustainability, quality and security of the new installations. Resources will also be allocated for adapted development and implementation of Environmental Management Plan (EMP) and Resettlement Allocation Plan (RAP). In order to improve operation and maintenance of the network infrastructure, several specific capacity building activities will be developed and supported. Last but not least solutions to support low-income beneficiaries to afford the electricity connection will be tested in the intervention area.

The intervention will be executed in joint responsibility between the Energy, Water and Sanitation Authority (EWSA) and the Belgian Development Agency (BTC).

Considering the specificity of the fast evolving context, flexibility will be given to the project in terms of intervention area for grid extension and grid strengthening. Instead of including in the Technical and Financial File (TFF) a predefined list of lots to be built, this mandate is given to the Project Steering Committee (PSC) based on a list of objective criteria and an analysis that will be conducted by the intervention.

ANALYTICAL RECORD OF THE INTERVENTION

National Number DGD	3012660
BTC Navision Code	RWA 12 081 11
Partner Institutions	Ministry of Infrastructure Energy Water and sanitation Authority (EWSA)
Duration of Specific Agreement	72 months
Duration of implementation	48 months
Rwandan Contribution	448.252 EUR
Belgian Contribution	17.000.000 EUR
Intervention Sectors	Main sector : 23040 Energy – Electricity transmission and distribution Sub-sector : 23010 Energy – Energy policy and management
General 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 and priority public institutions in rural areas is improved
Intermediate Results	1) Rural electricity access is increased through national electricity grid extension 2) Electricity grid reliability is increased through existing grid strengthening 3) Electricity grid access affordability is improved through pilot activities in the intervention area 4) Local capacity is strengthened within EARP and EWSA Utility

1 SITUATION ANALYSIS

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.

However, infrastructure bottlenecks in the urban areas and limited access in the rural areas have emerged as a significant constraint to continuing economic growth and human capital development. The Rwanda Economic Development and Poverty Reduction Strategy (EDPRS) therefore targeted to support economic growth by improving infrastructure service provision – especially transport, power, and communications.

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:

- geothermal energy component (27M€)
- access to energy component (17M€)
- feed-in tariff component (6M€)
- capacity building component(5M€)

The present document formulates the access to energy component.

1.1 The general policy context for the Energy Sector

1.1.1 Vision 2020 and the importance of the energy sector

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 catalyzed 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 is even projecting an average annual growth of 11.5% between 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 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.

1.1.2 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.

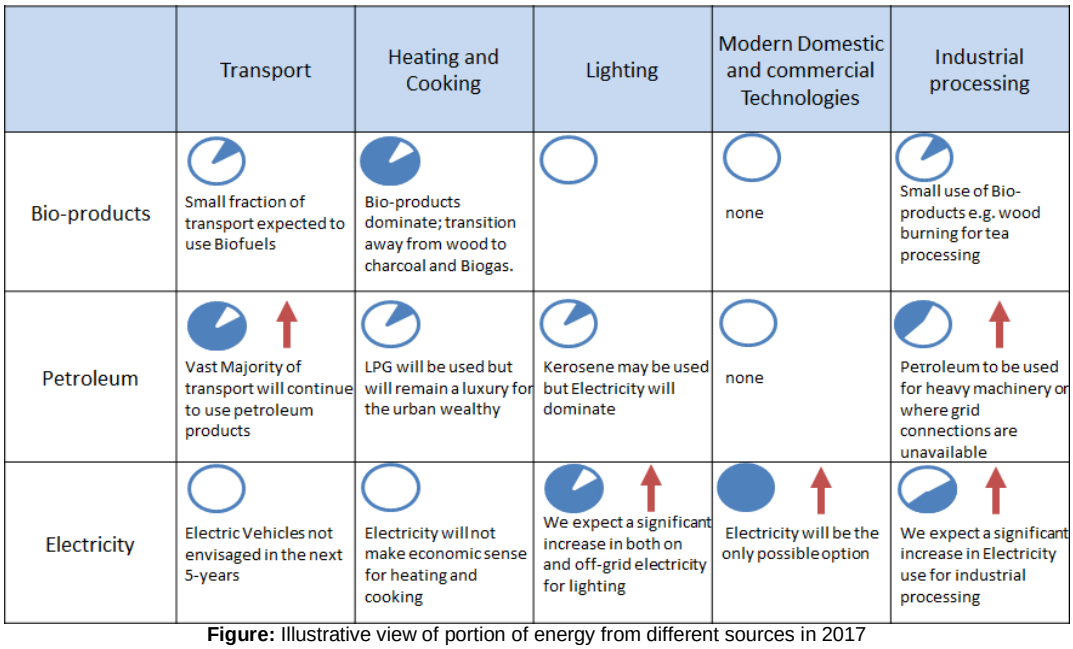


Figure: Illustrative view of portion of energy from different sources in 2017

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 over the coming 5-years.

1.2 EDPRS II and the electricity sub-sector

1.2.1 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[1] for the energy sector:

1. Increase Rwanda's electricity generation capacity to 563 MW, leveraging large-scale private sector investment by 2018;
2. 48%. 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:

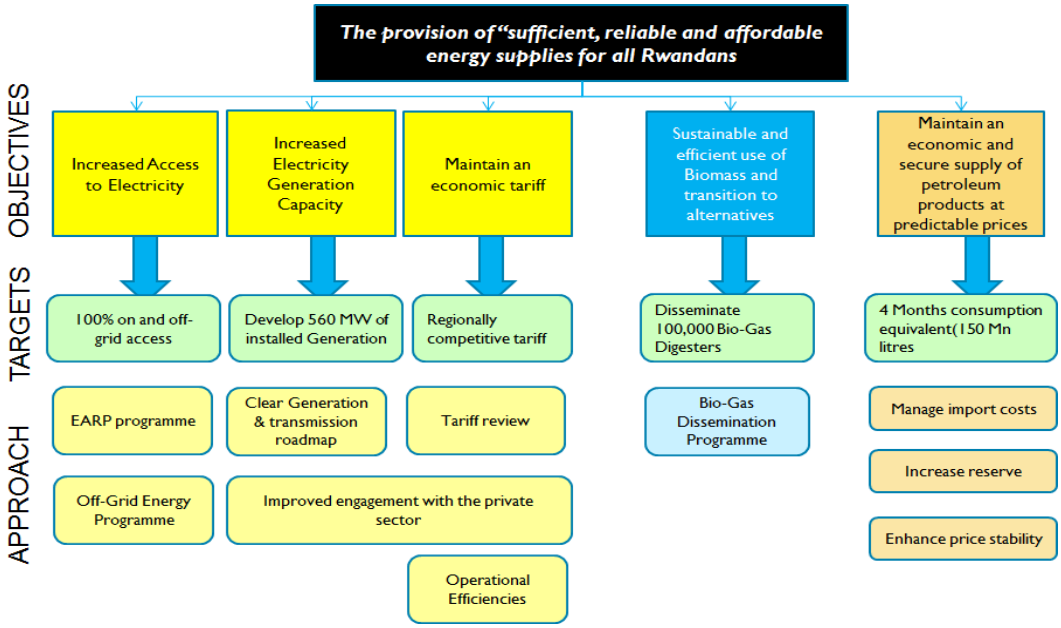


Figure: Summary of Energy sector Vision, Objectives, Targets and strategic approaches

[1] Economic development and poverty reduction strategy (EDPRS II), 2013 – 2018, S*haping our development,* final version

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.

In the short term, the growing electricity demand will be met by a pipeline of generation capacity coming online in 2013-2014:

- KivuWatt Methane gas power plant: 25 MW
- Nyabarongo Hydro power plant: 28 MW
- Several smaller hydro power plants: ~15 MW
- Gishoma peat to power project: 15 MW

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. and the EDPRS II, is twofold:

- On the one hand, the GoR wants to continue its efforts, under the EARP programme, to connect rural households to the national electricity grid.
- On the other hand, 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 off-grid solar power and hydro power installations to provide electricity to the local population.

3. Assuring and maintain a regionally competitive tariff

The current electricity tariff is heavily subsidized, with about 20% of EWSA's revenue coming through government subsidies in 2011/12[2]. These subsidies were introduced to insulate consumers from the impact of the costly diesel-powered electricity generation EWSA needed to employ as other generation capacity failed to keep pace with consumer demands. As a first step to evolve towards a regionally competitive tariff, the GoR has decided in its Energy Sector Strategic Plan to transition away from rental diesel by 2015. As a result the costs to EWSA of generating electricity is expected to drop significantly and by then it might no longer be necessary to grant direct subsidies to the electricity tariff. This means that by then EWSA's tariff will have to become completely cost reflective.

But transitioning EWSA away from operational subsidies is only one part of assuring a regionally competitive tariff. In fact, there are a number of areas through which EWSA could increase

[2] Based on preliminary information provided by EWSA.

operational efficiency, thus reducing operation and maintenance costs and increasing revenues. Since the operational costs of EWSA have a direct impact on the height of the tariff, improvement of operational efficiency would certainly contribute to a further decrease of the electricity tariffs.

1.3 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 social infrastructures-health facilities, schools and administrative offices. EARP is a nationwide program operating under the Energy Water and Sanitation Authority (EWSA) which has set up a program management department for this purpose.

1.3.1 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 jointed 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.

A mid-term review (MTR) was undertaken between May and July 2012 to assess EARP outputs and future challenges. In term of quantitative outputs, the job accomplished by EARP was extraordinary with an increase from 130,000 to 335,000 connections between 2009 and the end of 2012. Nevertheless, the MTR identified several important challenges for the next phase. They are highlighted below:

(i) The slow impact of electrification on economic development; low electricity usage during the first years after electricity access

(ii) The low availability of generation capacity

(iii) The utility sustainability; especially through operations and maintenance (O&M) of networks and customer services.

Several actions are being undertaken to tackle these challenges:

(i) The impact of electrification on rural population is analysed by EWSA in 2013. Supported by the WB, the study shall give recommendations on the actions to be undertaken to improve electricity affordability and productive uses of electricity. At higher level, the GoR is preparing a new electrification roadmap including several measures to increase productive uses of electricity.

(ii) The challenge of generation capacity is being addressed through the electricity generation national roadmap (see 0).

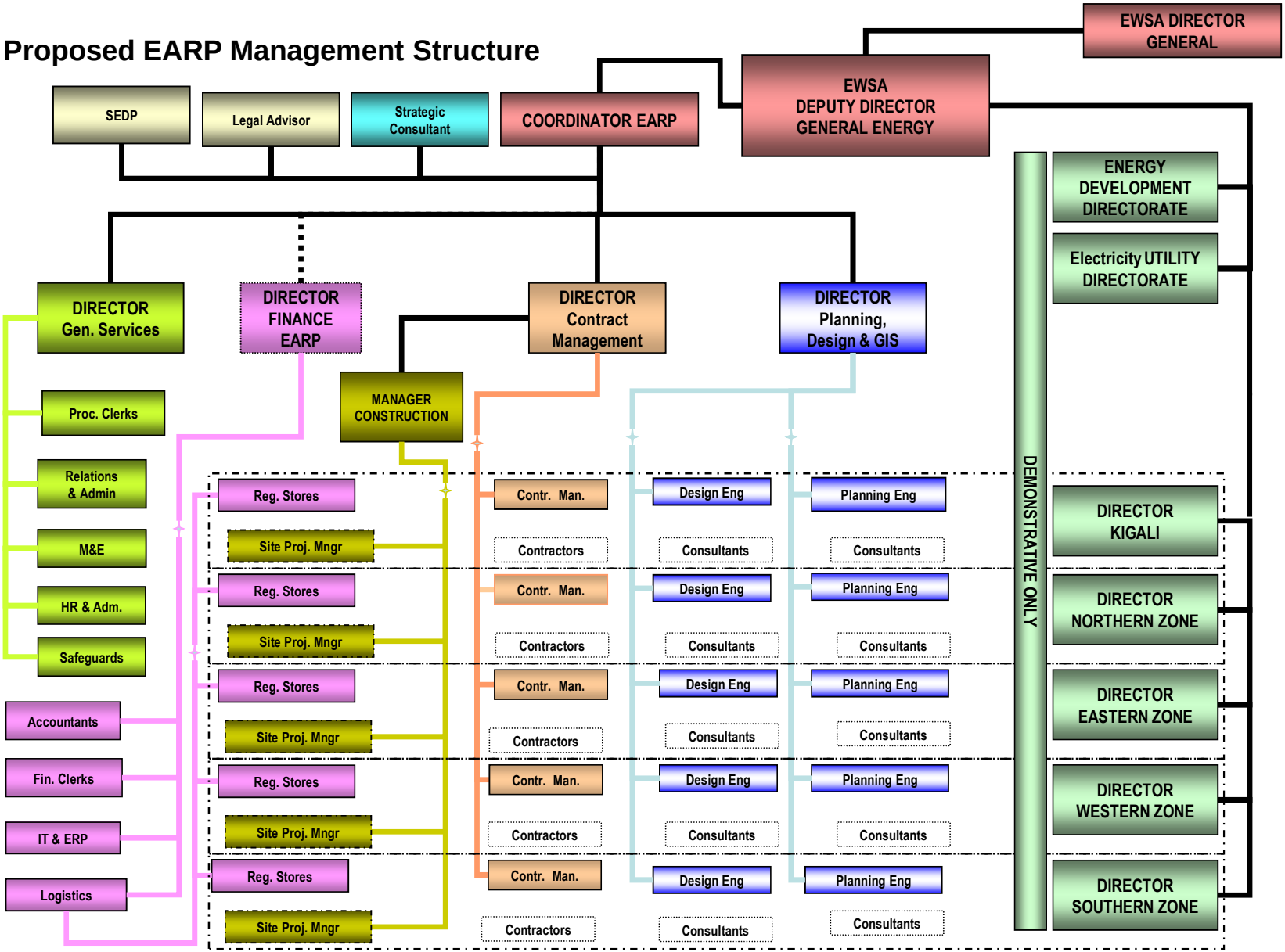
(iii) To enhance its sustainability, EWSA has prepared a medium term road map aiming at putting in place sufficient generation capacity to meet demand with adequate reserve margin, reducing the cost of electricity and introduction of cost reflective tariffs through use of cheaper energy sources, energy diversification, reduction of system losses and increase in energy efficiency. The roadmap includes: increasing low-cost generation;

increasing average tariff by approximately 30 percent by July 2013 ; phasing out Government support of EWSA's operational costs by 2014; restructuring electricity tariff customer categories by July 2013; and improving EWSA revenue collection to about 98% and system loss reduction to about 15% by 2017. Furthermore, it is important that the BTC capacity building intervention will have an important component focusing on Operations & Maintenance within EWSA Utility.

1.3.2 Organizational setup

EARP is anchored within EWSA. The program organizational setup has been designed as presented in the flowchart hereunder. Some functions still have to be filled in when the program grows with additional GoR and development partners (DP) contributions.

Proposed EARP Management Structure



1.3.3 Planning and targets

The first phase of EARP is currently ending; the period 2013 – 2017 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 coming 5 years. These targets call for the total number of electricity connections to increase from 335,000 at the end of 2012 to 1,000,000 by 2018.

The total cost of required investments is estimated to 570 million USD on the period 2013 - 2018. This represents a considerable financial challenge that can only be met with massive Government funding and support from development partners.

For its second phase, the EARP appointed the company SOFRECO to assist the Planning and Design Unit to carry out the planning, design, costing and 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[3] contracts and smaller lots to be dedicated for local contractors and EWSA in house construction. The lots are prioritized according to their average connection costs and their interdependence.

1.3.4 Stakeholders

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

DP's and funders	Amount in USD (million)	Date of agreement (tentative)	Effectiveness date	Date of closure	Comments
AfDB	41	June 2013	2014	2018	18 Grant + 23 Loan
GoR	4	June 2013	2014	2018	Counterpart to AfDB
Netherlands	25	2014			Grant
OFID	12	Sept 2012			Loan
WB	60	Feb 2013	Apr 2013	June 2016	Credit
AFD	10	2014			On hold
Belgium	22	2014	2014	2017	Grant
EU	??	2014			On hold
Total expected	**174**				
Total needs	**570**				To reach 48% target

The figure of USD 570 million for total needs points out the high ambition of the GoR for EARP II. A roadmap is currently[4] being developed by the GoR to set the milestones on how the gap will be filled.

[3] 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.

[4] Roadmap expected end 2013

2 STRATEGIC ORIENTATIONS

2.1 Guiding principles

The focus for the present intervention was determined, based on the following guiding principles:

- The will to contribute to the **achievement of the Strategic objectives** for the Energy Sector in Rwanda (EDPRS II)
- The need 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

Those principles lead to focus the intervention on the following orientations:

- The choice to **focus on the national grid extension**; i.e. working on-grid
- The will to place additional focus on **sustainability of the investments** by:
    - working with harmonized high quality standards,
    - mitigating adverse impact on the environment and the population,
    - contributing to the existing network strengthening,
    - supporting connection affordability,
    - including a capacity building component complementing the other capacity building interventions.

The rationale behind those choices is developed in the following paragraphs.

2.1.1 Focus on national grid extension

There are several alternatives for rural electrification: either transmission and distribution grid extension (on-grid), either local generation and distribution in isolated grid or stand-alone systems (off-grid). Both of these forms of electricity will have a role to play in meeting the EDPRS objectives but this intervention is designed to focus on on-grid electrification through national grid extension.

The rationale behind this choice is that national on-grid connections provide stable electricity required to power large domestic and industrial machinery required for productive uses[5]. Grid connections do however require significant capital investment. Given the high population density, the investment per beneficiary is limited and GoR vision is to connect 48%. of the country to the electricity grid during the EDPRS II period.

Despite those ambitious plans to connect such a large percentage of the population to the network, a significant number of households will remain unconnected. These are households where either EWSA or the household decide it is uneconomic to connect. EWSA could decide this if the capital costs of connection are too high (e.g. they are in a significant distance from the

[5] See chapter 2.3.1for details on potential productive uses of electricity in rural areas.

network); the household could decide they are not likely to consume enough electricity to ressettle or to pay the customer contribution.

These households shall be presented with alternative options. Off-grid solutions are ranging from small scale solar chargers for lighting and perhaps charging a mobile phone to generating electricity through small hydro installations. These solutions will not provide the voltage or the stability provided through a grid connection but are often far more economical for low usage consumers due to reduced capital costs. Smaller solutions are better suited for private sector investments, some development partners supporting actively these initiatives (SEDP, GIZ energizing development).

2.1.2 Additional focus on sustainability of the investments

2.1.2.1 Harmonized technical specifications

Building on the lessons learned from the past experiences (cfr. technical audit performed on the Kigali-Kiyumba transmission line funded by Belgium), there is room for improvements on the technical specifications, norms and standards applied for the lines built in Rwanda.

Since technical viability and conformity is essential for the sustainability of the installations, the intervention will give special attention to technical specifications requirements that are harmonized and adapted to the local context.

2.1.2.2 Mitigated adverse impact on the environment and the population

EARP is expected to have a widespread positive impact on overall socio-economic status and livelihoods of the people in the country. Though some activities will carry some risks of adverse environmental and social impact. Special attention will be given to address those risks in order to increase the sustainability of the investments.

2.1.2.3 Existing network strengthening

Efforts have mainly been focused on increasing new connections and new transport and distribution lines. However, those new connections increase the load on the existing network. In some cases additional extensions can only be undertaken after a strengthening of the existing network has been carried out.

Detailed network modelling and load flow analysis is necessary to identify potential capacity constraints in specific areas. Any bottlenecks can then be remedied through appropriate network strengthening investments including upgrading, rehabilitating or replacing substations, transformers and line capacity. The costs of network strengthening investments have been estimated by the SOFRECO study and energy audit and will be included by EWSA in the electrification roadmap.

2.1.2.4 Connection affordability

The bulk of the network infrastructure investment is financed by GoR and DP's but new customers have to contribute financially through a connection fee (56.000 Rwf i.e. € 68) covering the electricity meters and a small connection service. If they want to connect directly, poor consumers that cannot afford such an upfront payment can spread it over one- or two years. EWSA purchases the meter before it has been reimbursed by the new customers.

Together with the WB, EWSA is currently performing a customer survey to optimize the connection policy and support the electricity access for a bigger part of the population.

This intervention shall not only extend the network to the rural areas but also learn from the recommendations of the survey and test new approaches to support low-income customers to

afford the grid connection in the intervention area.

2.1.2.5 Operation & maintenance capacity development

Adapted operation and maintenance – and cost reflective tariffs to cover maintenance requirements – are essential for the sustainability of the existing and future infrastructure. Given the fast growing load and generation capacity, EWSA needs sufficient support to develop its O&M capacity.

This support will be the focus of the energy capacity building (CB) component of the Belgian-Rwandan ICP 2011-2014. While the CB intervention shall take the organizational level of EWSA Electricity Utility as entry point, the present intervention within EARP also includes CB activities in the field of electricity network with the individual level as entry point. The reasons to focus on individual capacities are:

- As a Belgian contribution to EARP, this intervention is mainly designed to extend the infrastructure in contrast to the CB component aiming at strengthening EWSA Electricity Utility in its core missions;
- EARP unit has been set up as a temporary organization to reach medium-term objectives. In the longer term, the unit should be merged with EWSA Utility;
- EARP unit has been functional since its beginning to absorb big investments from several DP's.

2.1.2.5.1 Activities to strengthen individual capacity

Activities for individual capacity development can take different shapes in the present intervention and each shape has its specific characteristics. However, these activities should always be linked to the tasks that the individual has to perform within his/her team. Learning objectives should always be linked to an envisaged improvement in the functioning or the performance of the team. Possible activities for individual capacity development are described below:

- **Short term trainings and workshops** will be primarily used as a way to **introduce new concepts**, especially for new staff members. This type of activities can also be used to **inform and sensitize** the people that participate in them. The direct impact of this type of activities in term of visible changes on the workplace is usually rather limited. However, this type of group activities do play an important part in assuring that staff members receive basic information that can be built upon through on-the-job training. Also, organizing workshops is a good way to keep staff members updated on on-going changes in the organization. As such, short term trainings and workshop must be treated as a first step in a multi-phased learning or change process.
- The intervention will not finance **long term training (master programme)** for beneficiaries in the intervention. In fact, the advantages of sending someone on a long term training (abroad) must be weighed against the **disadvantages of disconnecting that person** from his work context and possibly losing this person in the process. Financing this type of activities is not relevant for EARP which is a temporary organization.
- The intervention will favor **on-the-job training and coaching** since evidence shows that on the job training and coaching produce the best results in terms of changes in individual performance. Technical assistants play an important role in this type of activities but on-the-job training can also be done by external trainers/coaches,

supervisors (line managers) or even by peers. EWSA already has some experience with on-the-job coaching by peers. However, in this case, the line manager and staff members responsible for coaching their colleagues must also be strengthened in order for them to do a good job in this area.

- **Industrial attachment** can be considered as a hybrid between long term training and on the job coaching. This approach is very useful when specific (technical) expertise is not available in the organization while at the same time, partner organizations can be identified that have the same mandate and the same operational processes. In this case, the intervention can finance **an internship** that allows selected trainees to learn a specific job by working in the partner organization for a limited period of time. Although this approach has considerable benefits, the advantages of the industrial attachment approach must be weighed against the **disadvantages of disconnecting that person** from his work context and possibly losing this person in the process.
- In some cases **field visits and study tours** can be a good approach to bring new ideas into an existing team or to confront people with alternative approaches. The impact of this type of activities is mainly on the level of new insights. However, afterwards, participants still have to be accompanied in order to translate these new insights into practice.
- Finally, other types of learning like **self-study and e-learning** are well suited to increase knowledge of staff members on specific topics.

2.1.2.5.2 Logistical support

To complement the support to Capacity Development, the intervention will also provide a specific budget for logistical support to the EARP and the EWSA Electricity Utility. The use of this budget will always be linked to activities on capacity development and will allow EWSA staff members to put into practice the newly acquired individual competencies or organizational procedures/processes.

Logistical support in this intervention will be limited to the purchase of equipment, tools or minor infrastructural investments.

2.2 Implementation principles

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

- Intervention flexibility has to be foreseen in the TFF so that the Project Steering Committee (PSC) can adapt the activities and their budget to the priorities at the time of the intervention.
- The intervention will align as much as possible with the Rwandan vision of Technical Assistance. The profile of the ITA has been defined together with EWSA/EARP, its recruitment and evaluation shall be jointly managed by BTC and EWSA/EARP.
- Project Human Resources Strategy will be aligned as much as possible with the 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 EWSA. Smaller lots can be allocated to local companies to build the installation.

2.3 Beneficiaries

EARP target calls for a total number of electricity connection to increase from 335,000 at the end of 2012 to 1,000,000 by 2018, with a special emphasis on connecting social infrastructure-health facilities, schools and administrative offices.

EARP implements all its activities within the whole country and the Belgian contribution shall contribute to provide electricity access to populations in some rural areas. The beneficiaries are further described in chapter 3.

2.3.1 Positive impact of electricity

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 and air pollution, 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 Infrastructures (MININFRA) has the primary responsibility for setting the overall policy and strategy of the energy sector, and for coordinating the developments of the electricity sub-sector. The ministry is in charge of budgeting and resource mobilization, develop institutional and legal frameworks as well as overall energy sector performance monitoring.

MININFRA chairs the Sector Working Group (SWG) and the Sector Wide Approach (SWAp) Secretariat, supervising actions to mobilize resources and partnerships in the area of energy at a national and regional level.

MININFRA also chairs the EARP Steering Committee.

One point of attention for the intervention team shall be the coordination of different interests in

expropriation issues and planning design between road department of MININFRA and EARP.

2.4.2 Other ministries

2.4.2.1 MINECOFIN

The Ministry of Finance and Economic Planning (MINECOFIN) is ensuring the provision of necessary funding to support undertaking of the additional responsibilities for the different Ministries that are party of the energy sector and operational/managerial agencies arising out of this policy.

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.

2.4.2.3 MINEDUC

The Ministry of Education (MINEDUC) is participating in school-based energy educational programs and is also involved in schools electrification that is a condition for the "one laptop per child" program.

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 engaged to follow and comply with environmental concerns during energy related investments like assessments of the potential impacts of developing energy resources on the environment.

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 EWSA

As the implementing agency EWSA is responsible for the development and operation of electricity infrastructure.

According to law No 43/2000 of 7/Dec/2010, the mission of EWSA is to implement government policy for developing energy sector through the coordination, conception, development, monitoring and evaluation of the actions and programs that are within the framework of its mission.

The EARP is implemented under EWSA. This intervention will be implemented in co-management between EWSA and BTC (see chapter 5 on execution 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

The Rwanda Development Board (RDB) was set up to bring all the governmental actors involved in attracting private investments together under one roof. This includes key agencies responsible for business registration, **investment promotion**, **environmental clearances**, privatization and specialist agencies which support the priority sectors of ICT and tourism as well as SMEs and human capacity development in the private sector.

2.4.6 RURA

Rwanda Utilities Regulatory Agency (RURA) is a national institution established by the Law N°39/2001 of 13/09/2001 for the Regulation of Public Utilities (Energy, Telecommunications, Water and Sanitation, and Transport). One of RURA's mandates is to regulate an efficient, sustainable and reliable energy sector.

The legal mandate under energy entails the following components:

- Ensure energy service provision throughout the country is meeting the demand;
- To ensure that licensees have adequate means to finance their activities;
- To promote the interest of users and potential users of services through effective competition;
- Ensure Consumer protection ;
- Facilitate and encourage private sector participation in investments by setting up conditions enabling electric power investments;
- Ensure compliance by public utilities with the laws ;

2.4.7 RBS

Rwanda Bureau of Standards (RBS) is a public institution responsible to undertake all activities pertaining to the development of Standards, Quality assurance and Metrology in the country. It is the only body with powers to define and possess national standards. Public services and public or private firms must present their standards to RBS for adoption at national level.

2.4.8 Other development partners

Many development partners are involved in different activities of electrification through EARP. The WB being the lead donor, most donors align with its strategy. WB, OFID, BADEA, NL, Saudi Fund, JICA and AFD have contributed to the first phase of EARP. The second phase is likely to involve WB, OFID, NL, AfDB, BE, 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 CB intervention of the current Belgian-Rwandan ICP will work on the three levels of capacity building (individual & equipment, organizational, and institutional). Methodological and practical coherences shall be developed with the EARP CB component (activities 3.1 and 3.2). Regular joint meetings between BTC interventions within EWSA will be held to foster dialogue and synergies.

Through its objectives, the CB intervention shall increase the sustainability of the EARP investments by strengthening EWSA utility in the O&M of the power network.

2.5 Location

Because the intervention is part of a large national program with an established planning, the exact location of the intervention depends on priority area at the time of the intervention. The decision of the location shall be taken by the Project Steering Committee (PSC) during the project implementation phase.

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

For grid extension activities (3.3.1.1):

- The lots to be implemented by the intervention shall be high in the priority list i.e. no more than 1000 USD/household (lot average)
- The choice of the intervention area shall be harmonized with other DP's intervention
- 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 last version of the electrification roadmap
- The content of the lot can be adapted depending on the context
- The lots to be implemented shall be concentrated in the same region to avoid scattering of resources.

For network strengthening activities (3.3.2.2):

- The targeted grid area shall present specific weaknesses or bottlenecks
- The installations that feed directly the areas constructed or planned by the intervention shall be targeted in priority
- The choice of the activity content shall be adapted to the last version of the electrification roadmap

The proposition for the choice of the location will be prepared by the ITA together with the EARP planning and design team. They will analyse the respect of the criteria's to submit a proposal to the PSC during the first three months after the beginning of the ITA contract.

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.

3.2 Specific objective

The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved

3.3 Expected results and activities

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

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 previously 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 greenfield area or grid intensification in already-connected areas. EARP will 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 EWSA in-house capacity to implement the works.

With the available budget (**€ 11.600.000**), the intervention can contribute to the electrification of 2 to 6 lots depending of their size in the decided intervention area.

According to the preliminary results of the SOFRECO planning and design, this budget should provide the expected outputs of about 160 km of MV lines and 270 km of LV lines. Those figures will depend on the choice of the lots that shall be analysed by the project team and decided by the PSC as described in paragraph 2.5.

In annex 7.4 a detailed simulation using the SOFRECO planning and design estimates is described for lots 1, 2 & 11.

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 execution 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 5% of the construction budget: **€ 580.000**

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 known, the preparation of an EMP and a 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 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 be a pre-condition to allow the construction activity to be implemented;
- Implementation by EWSA, 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 **€ 100.000** is foreseen for contracting specific studies or mitigation activities 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[6]. 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[7] 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 **176 million RwF** (i.e. € 214.721 at current exchange rate)

3.3.2 Result 2: Electricity grid reliability is increased through grid strengthening and harmonized standards

3.3.2.1 Activity 2.1: Prepare harmonized technical specifications and standards for the power network infrastructure

Taking into account the lessons learned from the technical audit[8] performed on the mount Kigali-Kiyumba line, consistency of the technical specifications and standards can be improved to increase the sustainability, quality and security of the new installations.

This activity aims at editing standards documents containing standard based values and requirements to be respected during the construction of power network components for medium-voltage (MV) and low voltage (LV) lines. The activity will be led by an ITA specialized in power network supported by the EARP planning and design department, in consultation with RBS. They can be assisted by targeted consultancy services hired via public tender according to Rwandan public procurement law.

Since the deliverables of this activity shall be useful for the whole EARP, special attention should be given to coordination with the DP's. Harmonization- and communication activities

[6] 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.

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

[8] Technical audit performed by the companies SHER and ELIA regarding the assessment of the lines 30 kV Mont Kigali – Kiyumba built in 2010 as one part of the Rwandese territory electrification projects funded by Belgian and Rwandan Authorities.

(workshop, leaflets…) will be organized by the intervention to capitalize the results with relevant EWSA staff and DP's.

This activity shall begin directly once the ITA has been hired since it will contribute to the quality of activities 1.3 (3.3.1.1) and 2.1 (3.3.2.2); the standards will be integrated in the technical specifications of those activities.

The budget allocated to this activity (**€ 50.000**) shall cover consultancy needs and capitalization costs.

3.3.2.2 Activity 2.2: Upgrade identified installations in targeted areas to strengthen existing grid

Grid strengthening works address supply issues in the Rwandan national grid such as supply bottlenecks and low voltage level to reach the required transfer capacity supply quality to the targeted areas in the EARP. Investments will be focused on continued rehabilitation and capacity improvement of the existing grid infrastructure based on the priorities identified by the load flow analysis (SOFRECO).

Grid strengthening works include upgrading, rehabilitating or replacing substations, transformers and line capacity.

This activity will be performed by a contractor recruited via public tenders according to Rwandan public procurement law.

The budget allocated to this activity is **€ 1.400.000**. The precise content of the activity shall be analysed by the project team and decided by the PSC as described in paragraph 2.5

3.3.2.3 Activity 2.3: Design and supervise grid strengthening works

The design of grid strengthening investments will be performed by a consultant before execution of activity 2.2.

The installations provided by the contractors needs to be controlled by a supervision team during execution of activity 2.2.

The design and supervision will be performed together by a specialized company that will be hired via public tender according to Rwandan procurement law.

The budget allocated to this activity are estimated to 5% of the construction budget: **€ 70.000**

3.3.3 Result 3: Electricity grid access affordability is improved through pilot activities in the intervention area

The Result 3 focuses on learning from pilot activities to contribute to the connexion policy discussions at institutional level.

3.3.3.1 Activity 3.1: Perform baseline survey and socio-economic monitoring of the beneficiaries in the intervention area

A baseline survey on the beneficiaries in the intervention area shall be performed by a consultant at the beginning of the intervention.

Within this survey, the consultant shall analyse the affordability of the connection fee and the electricity cost for the direct beneficiaries (households and public institutions) and provide recommendations on the solutions to support affordability for low-income customers.

In particular, the consultant will assess the socio-economic status of the beneficiaries, their ability to afford grid electricity, the potential use of electricity in the area, the awareness of the

population on electrification and the relevance of the connection policy on low-income customers in the intervention area. The result of this survey will be used for activity 3.2.

The budget allocated for those activities is **€ 30.000**

3.3.3.2 Activity 3.2: Test pilot solutions to support connection affordability for low income customers in the intervention area

Building on the recommendations of the baseline survey, this activity will test pilot solutions to support electricity connection affordability in the intervention area.

This activity shall also take into account the recommendations of the last studies[9] on tariff impact and low income solutions in Rwanda.

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

- Awareness raising activities for beneficiaries to be connected
- Training of the beneficiaries on electricity related issues
- Micro-credit system to support low-income beneficiaries
- Subsidies for the poorest beneficiaries
- Support EWSA branches in local activities targeting the beneficiaries

A budget of **€ 100.000** is foreseen for implementing this activity through an organization (company or NGO) hired via public tender.

3.3.4 Result 4: Local capacity is strengthened within EARP and EWSA utility

3.3.4.1 Activity 4.1: Train local interns through industrial attachment to contractors

Local interns, mostly young graduates, will be attached to experienced contractors to learn by doing during the whole design and construction process.

This activity will be developed in collaboration with local engineer schools and universities having a MoU with EWSA as the Kigali Institute for Sciences and Technology, the Tumba College of Technology, the Umutara Polytechnic University, the Integrated Polytechnic Regional Center or the Kicuckiro College of Technology.

There will be a synergy and coordination with the NCBS to avoid duplication with their industrial attachment initiatives.

The budget for this activity is estimated to **€ 81.000,** providing internship allowance to 30 interns during 6 months.

3.3.4.2 Activity 4.2: Support EWSA grid maintenance activities through new equipment and staff training

Based on the findings of the capacity building plan[10] and on the conclusions of a cost benefit

[9] Together with GoR, WB is showing interest to develop solutions adapted for low-income households. A study will be performed in 2013 on this topic.

[10] A capacity building (CB) plan and M&E framework for skills development under the intervention shall be developed at the beginning of the intervention with the assistance of the NCBS and the Belgian-Rwandan CB intervention to have a clear roadmap on how the skills will be transferred.

analysis to be performed by the ITA's, in synergy with the Belgian-Rwandan CB intervention within EWSA Utility, a list of needs will be identified and shared with the partner.

Activities will be proposed by the project team to the PSC for approval.

The financing is available for one or several of the following activities:

- Purchase equipment needed to improve power network O&M and train EWSA staff to use this equipment;
- Build or rehabilitate local workshop or branches building;
- Organize trainings and workshops for EWSA staff in any relevant field (technical, managerial, environmental,…).

The budget allocated for those activities is **€ 260.000**

3.4 Monitoring and evaluation

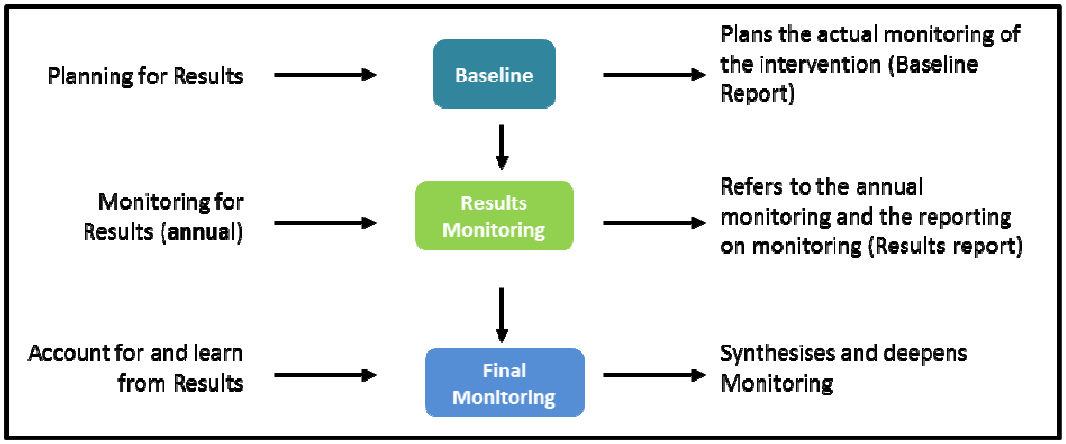
EARP has already developed a M&E process of systematic collection, analysis and use of data to improve project performance. The program has adopted a common set of result-based indicators that are reflected in the Results Framework for the project. All indicators are in line with EDPRS and sector strategies.

The intervention will use the already existing EARP M&E framework and adapt it to its specific needs.

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.

3.4.1 Different components of Monitoring

The different monitoring processes are summarized in the figure underneath.



3.4.1.1 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 intervention that is

supposed to take place

- That everybody knows how progress towards the objective (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 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

3.4.1.2 Results Monitoring

Results Monitoring is the centerpiece 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, analyze 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?
- Etc.

During Results Monitoring, 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.

3.4.1.3 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 EWSA, 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.

The PMU will investigate the possibilities to use the Study and Consultancy Fund[11] to finance an evaluation/study that goes further than the one described in 3.4.4. This implies that the socio-economic baseline study (Activity 3.1) would be part of a larger exercise that involves measuring the impact of access to electricity. For establishing the ToR of this impact study, the PMU is to seek expert help.

Is the Study and Consultancy Fund cannot be used, the activity 3.1 will be implemented as described in this TFF

3.4.2 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 21 months of implementation. In the MTR the focus is on strategic decision-making for the intervention.

An End-of-Term Review (ETR) will be organized at the end of the intervention. In the ETR, the focus is on learning.

3.4.3 Indicators and means of verification

3.4.3.1 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:

- The electricity price per kWh (RwF/kWh);
- The levelled cost of electricity generation (RwF/kWh);
- The per capita monthly power consumption (kWh/inhabitant/month).

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

3.4.3.2 Specific objective

For the specific objective: "*The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved*"

[11] PAREC Study and Consultancy Fund: Belgium is supporting this instrument to help Rwanda in: (i) study and appraisal of actions in the priority sectors (including Energy) and cross cutting issues identified in the ICP; (ii) study and appraisal of actions in support of coordination and harmonization of donor support.

The proposed indicators are:

- The national electricity access rate (%)
- The number of households connected to the electricity grid by the intervention;
- The number of health centres connected by the intervention;
- The number of schools connected by the intervention;
- The number of sector offices connected by the intervention;
- The technical losses on the national electricity network (%)
- Power consumption in area of intervention (MWh).

The verification sources are EWSA utility statistics and EARP quarterly and annually monitoring progress reports

3.4.3.3 Result 1: Electricity access

For the Result 1: “Rural electricity access is increased through national electricity grid extension”

The proposed indicators are:

- The number of km of MV lines constructed by the intervention
- The number of km of LV lines constructed by the intervention
- EMP have been properly developed and implemented for grid extension activities

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

3.4.3.4 Result 2: Grid reliability

For the Result 2: “Electricity grid reliability is increased through existing grid strengthening”

The proposed indicators are:

- The rolling average monthly number of technical breakdown per km of MV line in the target area.
- The number of upgraded substation;
- The number of upgraded transformers;
- The number of km of upgraded lines;

The verification sources are the intervention M&E, EARP quarterly and annually monitoring progress reports and EWSA utility statistics.

3.4.3.5 Result 3: Connection affordability

For the Result 3: “Electricity grid access affordability is improved through pilot activities in the intervention area”

The proposed indicators are:

- The Number of beneficiaries that afford the connection in the intervention area

- The Number of beneficiaries supported by the pilot activities
- The average contribution of the beneficiaries to the connection fee[12] (RwF)
- The type of disbursement schemes used by the beneficiaries to afford the electricity connection

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

As Result 3 contains a pilot activities, that are to be determined, additional indicators will be developed for this results area once pilot activities are decided upon.

3.4.3.6 Result 4: Capacity strengthening

For the Result 4: “Local capacity is strengthened within EARP and EWSA utility”

The proposed indicators are:

- The number of trainees supported by the intervention
- The number of staff trained within the intervention
- The percentage of staff who report that the capacity building plan is appropriately targeted to needs of their organization
- The percentage of participants who consider the activity to be of high quality.
- The quality and effect of trainings and skills transfer (to be specified during the Capacity Building Plan)

The verification sources are the staff-, trainees-, contractors- and schools satisfaction surveys. In order to measure the quality and effect of trainings, SoVs/methods will be established during the baseline.

A capacity building plan and M&E framework for skills development under the intervention shall be developed at the beginning of the intervention with the assistance of the NCBS and the Belgian-Rwandan CB intervention to have a clear roadmap on how the skills will be transferred.

3.4.4 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.

The project team shall prepare 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 execution 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 execution phase, a continuous socio-economic monitoring shall take place

[12] The connection fee is a leading indicator, it does not directly measure R3

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.

3.5 Description of beneficiaries

3.5.1 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: At average cost of 1000 USD per new connection, the € 11,6 M investment may provide around 14.500 new households connections. At an average of 5 people per households, the number of persons connected to the electricity grid may reach 72.500.
- Social facilities: health centres, schools and local administration offices
- Businesses and small industries benefiting from productive use of electricity
- EWSA staff and trainees taking part to capacity building activities

3.5.2 Indirect beneficiaries

The indirect beneficiaries are:

- The rural populations using the social facilities where the service is improved by the electricity access.
- The population already connected to the grid benefiting from increased grid reliability

3.6 Risk Analysis

3.6.1 Implementation risks

Risks	Risk Level	Alleviation measure
Bureaucracy in project implementation, especially on procurement issues	Medium	Clearly follow the procedure for project resources approval process from the procedures manuals Use EARP own procurement unit for public tenders, appearing to be more efficient than EWSA's procurement unit. Dedicated contract manager to speed-up BTC and EWSA processes
Lack of appropriation and/or availability of the recommendations and suggestions made by the project team	Medium	Joint description of the ToR of the co-manager and the TA Joint selection and joint appraisal of his performance should increase appropriation
Resettlement issues causing delays in the implementation	Medium	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
Difficulties in supplying the material in a landlocked country with limited transport infrastructures	Medium	Select contractors with experience in the region and support them in imports management
Weak harmonization of DP's in electrification efforts (EARP)	Low	EARP is framed to harmonize efforts in electrifying Rwanda Exchange with DP's part of the ToR for ITA BTC representation in Energy SWG

3.6.2 Management risks

Risks	Risk Level	Alleviation measure
High staff turnover within EARP	Low[13]	Staff attraction and retention strategy developed by EWSA
EWSA financed staff is not available for the intervention	Low	Needed resources are jointly defined in the TFF

[13] This risk has been assessed as "High" for EWSA electricity utility in the formulation of the Capacity Building Component. For EARP, the risk is considered to be much lower because of the attractive salaries that are offered to EARP staff

Staff working for the Belgian contribution perceived as independent PMU separated from EARP	Medium	Project support team will be fully integrated to the EARP unit

3.6.3 Effectiveness risks

Risks	Risk Level	Alleviation measure
EWSA economic viability threatened by too low electricity demand from new customers	Medium	Grants from donors reduce the risk Activities 3.1 and 3.2 work on the electricity demand side In the short term, the SWAP is promoting productive use of electricity to accelerate demand. In the longer term, demand will progressively increase by itself
Lack of production capacity compared to electricity demand growth	Medium	Many projects for new production capacity are in the pipeline. Some of them are at advanced stage (KivuWatt, Nyaruguru Hydro,…)
Priority shift on off-grid solutions	Low	Rwanda density of population justifies grid extension to the whole country in the medium term

3.6.4 Sustainability risks

Risks	Risk Level	Alleviation measure
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
Global economic crisis-dwindling resources	Medium	EARP has a resource mobilization strategy and sufficient international visibility
Lack of O&M to sustain the investments	High	Focus of the CB component of the Rwandan-Belgian ICP in Energy sector
Adverse impact on the environment	Low	ESMF strictly followed through EMP development and implementation

3.6.5 Fiduciary risks

Risks	Risk Level	Alleviation measure
Use of funds for unintended purpose	Medium	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	High	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
Lack of Value-for-money objectives achievements	Low	Lessons learned from the EARP first phase and from previous projects. Backstopping missions and MTR are planned and budgeted

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 **€ 144.305** 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) – estimated to **€ 89.225** over the intervention period
- 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 **€ 214.722** over the intervention period
- Provision of office 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 that the new customer has paid its connection fee: EWSA shall pay for the meter upfront to be able to purchase the meter before it has been reimbursed by the new customers.

Regarding this contribution, it is important to note that as agreed upon in the General Development Cooperation convention signed on the 18th of May 2004 between both governments, any tax, including VAT on the supplies and equipment, works and services is covered by the Government of Rwanda.

The total Rwandan contribution is estimated to **€ 448.252**

4.1.2 Belgian contribution

The Belgian contribution for the EARP program is **€ 17 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[14] Table 1/2

RWA 12 081 11: EARP				BELGIAN CONTRIBUTION	modality	YEAR 1					YEAR 2	YEAR 3	YEAR 4
						Q1	Q2	Q3	Q4	YEAR 1			
A			**The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved**	**14.271.000**		***15.000***	***15.000***	***50.000***	***2.776.200***	**2.856.200**	**5.605.733**	**4.302.633**	**1.506.433**
A	*01*		*Rural electricity access is increased through national electricity grid extension*	***12.280.000***		***-***	***-***	***-***	***2.466.000***	***2.466.000***	***4.922.000***	***3.674.000***	***1.218.000***
A	01	01	Build electricity transmission and distribution lines on targeted areas [15]	11.600.000	co-mngt	*0*	*0*	-	*2.320.000*	2.320.000	*4.640.000*	*3.480.000*	*1.160.000*
A	01	02	Supervise the grid extension construction works	580.000	co-mngt	-	-	-	*116.000*	116.000	232.000	174.000	58.000
A	01	03	Develop and implement EMP and RAP for network extension activity	100.000	co-mngt	-	*0*	-	*30.000*	30.000	*50.000*	*20.000*	-
A	*02*		*Electricity grid reliability is increased through existing grid strengthening*	***1.520.000***		***15.000***	***15.000***	***20.000***	***294.000***	***344.000***	***588.000***	***441.000***	***147.000***
A	01	01	Prepare harmonized technical specifications and standards for the power network infrastructures	50.000	co-mngt	*15.000*	*15.000*	*20.000*	-	50.000	-	-	-
A	02	02	Upgrade identified installations in targeted areas to strengthen existing grid	1.400.000	co-mngt	*0*	*0*	-	*280.000*	280.000	*560.000*	*420.000*	*140.000*
A	02	03	Design and supervise grid strengthening works	70.000	co-mngt	-	-	-	*14.000*	14.000	*28.000*	*21.000*	*7.000*
A	*03*		*Electricity grid access affordability is improved through pilot activities in the intervention area*	***130.000***		***-***	***-***	***30.000***	***-***	***30.000***	***33.333***	***33.333***	***33.333***
A	03	01	Perform baseline survey in intervention area	30.000	co-mngt	-	-	*30.000*	-	30.000	0	0	0
A	03	02	Test pilot solutions to support connexion affordability for low income customers in the intervention area	100.000	co-mngt	-	-	-	-	0	33.333	33.333	33.333
A	*04*		*Local capacity is strengthened within EARP and EWSA utility*	***341.000***		***-***	***-***	***-***	***16.200***	***16.200***	***62.400***	***154.300***	***108.100***
A	04	01	Train local interns through industrial attachment to contractors	81.000	co-mngt	*0*	*0*	*0*	*16.200*	16.200	*32.400*	*24.300*	*8.100*
A	04	02	Support EWSA grid maintenance activities through new equipment and staff training	260.000	co-mngt	-	-	-	-	0	*30.000*	*130.000*	*100.000*

[14] "Year 1" begins once the project team is in place (i.e. at the arrival of the ITA's)

[15] See Annex 7.4 for more details

Budget[16] Table 2/2

RWA 12 081 11: EARP				BELGIAN CONTRIBUTION	modality	YEAR 1					YEAR 2	YEAR 3	YEAR 4
						Q1	Q2	Q3	Q4	YEAR 1			
X			**Contingency**	**411.659**		***25.729***	***25.729***	***25.729***	***25.729***	**102.915**	**102.915**	**102.915**	**102.915**
X	01	01	Contingency	354.152	co-mngt	*22.134*	*22.134*	*22.134*	*22.134*	88.538	88.538	88.538	88.538
X	01	02	Contingency	57.508	direct mngt	*3.594*	*3.594*	*3.594*	*3.594*	14.377	14.377	14.377	14.377
Z			**General means**	**2.317.341**		***216.163***	***127.163***	***122.163***	***144.663***	***610.152***	***559.396***	***549.396***	***598.396***
Z	*01*		*Wages and Salaries*	***1.966.341***		***145.163***	***115.163***	***115.163***	***115.163***	***490.652***	***481.896***	***481.896***	***511.896***
Z	01	01	Project Co-Management	780.000	direct mngt	*75.000*	*45.000*	*45.000*	*45.000*	210.000	180.000	180.000	210.000
Z	01	02	Technical staff	783.732	direct mngt	*45.000*	*45.000*	*45.000*	*45.000*	180.000	201.244	201.244	201.244
Z	01	03	Administrative ad financial staff	367.486	direct mngt	*22.968*	*22.968*	*22.968*	*22.968*	91.872	91.872	91.872	91.872
Z	01	04	Other support staff	35.122	direct mngt	*2.195*	*2.195*	*2.195*	*2.195*	8.780	8.780	8.780	8.780
Z	*02*		*General and Statutory contributions*	***166.000***		***71.000***	***7.000***	***7.000***	***7.000***	***92.000***	***25.000***	***25.000***	***24.000***
Z	02	01	Vehicles	60.000	direct mngt	*60.000*				60.000	0	0	0
Z	02	02	IT and office equipment	10.000	direct mngt	*5.000*	*1.000*	*1.000*	*1.000*	8.000	1.000	1.000	
Z	02	03	Operational budget (incl stationery, fuel, communications, ...)	96.000	direct mngt	*6.000*	*6.000*	*6.000*	*6.000*	24.000	24.000	24.000	24.000
Z	*03*		*Audit, monitoring, evaluation*	***185.000***	*direct management*	***0***	***5.000***	***0***	***22.500***	***27.500***	***52.500***	***42.500***	***62.500***
Z	03	01	M&E	60.000	direct mngt					0	30.000		30.000
Z	03	02	Capitalization and communication	30.000	co-mngt							20.000	10.000
Z	03	03	Technical backstopping BTC	25.000	direct mngt		*5.000*		*5.000*	10.000	5.000	5.000	5.000
Z	03	04	Audits	70.000	direct mngt				*17.500*	17.500	17.500	17.500	17.500
			TOTAL	**17.000.000**		***256.892***	***167.892***	***197.892***	***2.946.592***	***3.569.267***	***6.268.044***	***4.954.944***	***2.207.744***

Contingency (2.4% of activities):

An amount for contingency of **€ 411.659** is set to compensate the exchange rate fluctuations and to allow flexibility in the project implementation.

[16] "Year 1" begins once the project team is in place (i.e. at the arrival of the ITA's)

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 not only be technically proficient but also have clear capacity building skills
- Possibility to share international resources between different interventions within the Energy sector

4.2.2 Project staff

The list of the **project staff** is indicated in the following table (see also organizational structure in chapter 5):

Position	Quantity x Duration	Remarks	
Director of Intervention (DI)	10% x 48 months	**Assigned and financed by EWSA** Direct counterpart of the BTC funded project co-Manager,	**EARP** **Project Management**
Project Manager	1 x 48 months	**Assigned and financed by EWSA** Deputy to EWSA Director of Intervention for day to day management	
Project Co-Manager	1 x 48 months	BTC International Technical Assistant (ITA) Direct counterpart of the EWSA Director of Intervention Funded by the intervention	**BTC** **Project Management**
International Technical Assistant in Power network	1 x 48 months	BTC International Technical Assistant (ITA) Funded by the intervention	
Electrical Engineer (Planning and design)	1 x 12 months	**Assigned and financed by EWSA** Attached to Power Network ITA during the Planning and design phase	**Project Support Functions**
Project Engineer (Construction site)	1 x 36 months	Funded by the intervention Attached to Power Network ITA during the Planning and design phase	

Environmental Safeguard	30% x 48 months	**Assigned and financed by EWSA**	
Social Safeguard	30% x 48 months	**Assigned and financed by EWSA**	
M&E Specialist	20% x 48 months	**Assigned and financed by EWSA**	
Procurement Officer	1 x 48 months	Funded by the intervention	
RAF(i) [17]**: Responsible for Administration, Finance and procurement**	1 x 48 months	BTC (inter)national Technical Assistant (shared ITA or NTA) (ToR in annex 7) Part of the Project Management Unit Funded by the intervention	
Project Accountant	1 x 48 months	Funded by the intervention	
Drivers	2 x 48 months	Funded by the intervention	
M&E Junior Assistants (Optional)	2 x 24 months	Funded by BTC Junior Programme	

The ToR (job description and profile) of the project staff is defined in Annex 7.3

[17] When at least two out of the four interventions in the energy sector are launched, and if found relevant and adding value by the partners, this RAF position could be reinforced / coached by an international RAF(i), shared between the different interventions. It is currently estimated (and budgeted) that the CD Energy's contribution to this international profile would be 25% of a Full Time Equivalent (FTE). If not found appropriate or necessary, this budget can be reallocated by the PSC.

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 2 cars + running costs
- Tools and equipment for maintenance premises
- Didactical equipment for the EWSA Training Centre
- Communications

4.3.3 Works

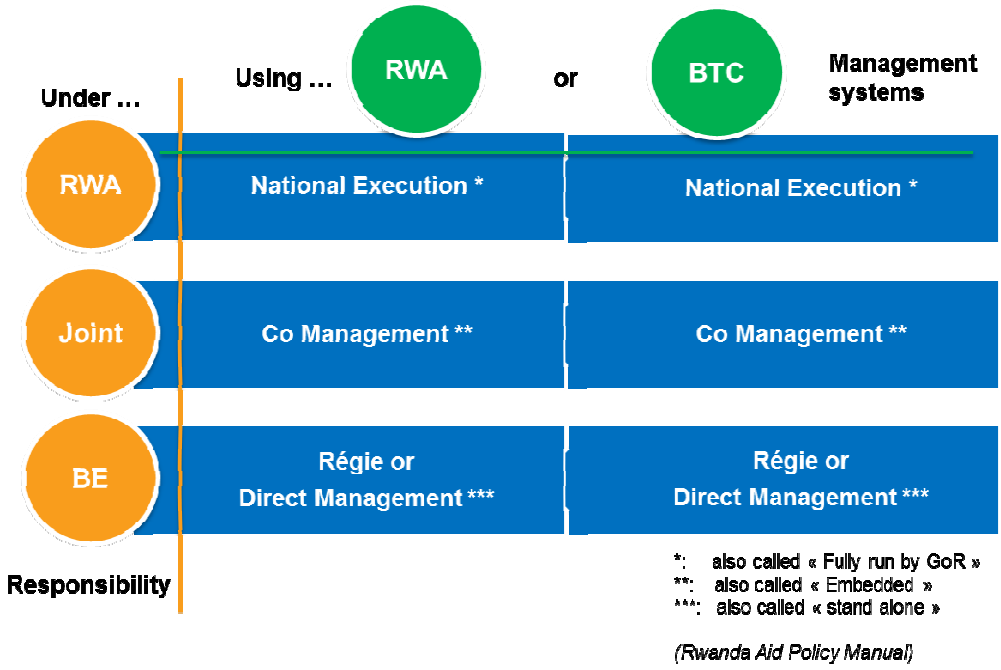
- Rehabilitation of maintenance premises

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 direct 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.

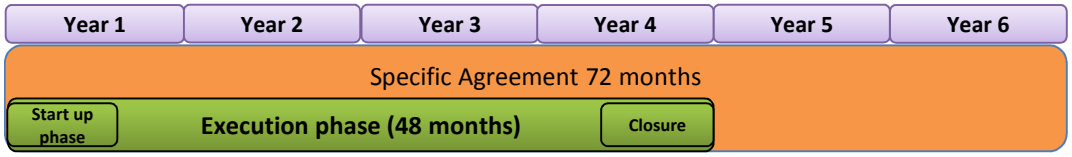
In line with the Paris Declaration, the Aid Agenda of Accra, the Rwanda Vision 2020, this project, like all BTC projects, will combine various modus operandi, depending on the management area. The aim is to come as close as possible to a "fully run by GoR" situation, while taking into account risks and constraints, as assessed by the organizational assessment made end on 2011 and by the formulation mission.

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, 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 6 years (72 months) while the actual execution phase of the intervention is 4 years (48 months). The execution phase starts when the SA is signed. All project activities must be terminated at the end of the 48 months execution 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[18].

The execution 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 execution period.

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

[18] In order to guarantee a quick start of the intervention and a proper closure, in case of late arrival or early departure of the co-managing positions, a support by the BTC program Officer in charge of this thematic is budgeted (equivalent 4 months PO ad interim during start-up and closure phases (1/3 time over 2 x 6 months). This budget will be used if necessary. It will also be planned and mutually agreed. If not useful, the PSC will decide of its destination. Specific ToRs for these assignments will be jointly developed by BTC and EWSA

5.3 Project organization and anchorage

5.3.1 Project Steering Committee (PSC)

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 EWSA strategy (strategic planning, annual planning and budgeting),
- 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 EWSA,
- Solving problems that cannot be solved at the operational level in the PMU,
- Enhancing harmonization among donors.

5.3.1.2 Composition

The **voting members** of the PSC are:

- The EWSA General Director, or his delegate, is the chair of the PSC
- The BTC Resident Representative, or his delegate, is the co-chair of the PSC
- A representative of the MININFRA,
- A representative of the MINECOFIN,
- A representative of the MINAFFET

Non-voting members of the PSC are:

- The EWSA Deputy Director General - Energy
- A reprensentative of the NCBS
- Representatives of the other Belgian financed bilateral projects in the Energy sector

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

5.3.1.3 Operating rules of the PSC

The PSC meets at least every six 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 2/3 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.

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:

- An EWSA 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.
- An EWSA 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 EWSA, 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 executed in joint responsibility.
- A BTC appointed **Power network International Technical Assistant (ITA)** in charge of assuring coherence with activities. This person will be acting as authorizing officer for the Belgian side for technical, content and quality matters.

- A BTC appointed **Responsible for Administration and Finance and Procurement (RAF(i))**,[19] delegate for all administrative, procurement and financial matters executed in joint responsibility.

5.3.2.3 Operating rules of the PMU

The PMU meets at least once a week 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:

a) the DI and the Project Co-Manager for administrative, procurement and financial matters

b) the DI and the ITA for technical matters, content and quality

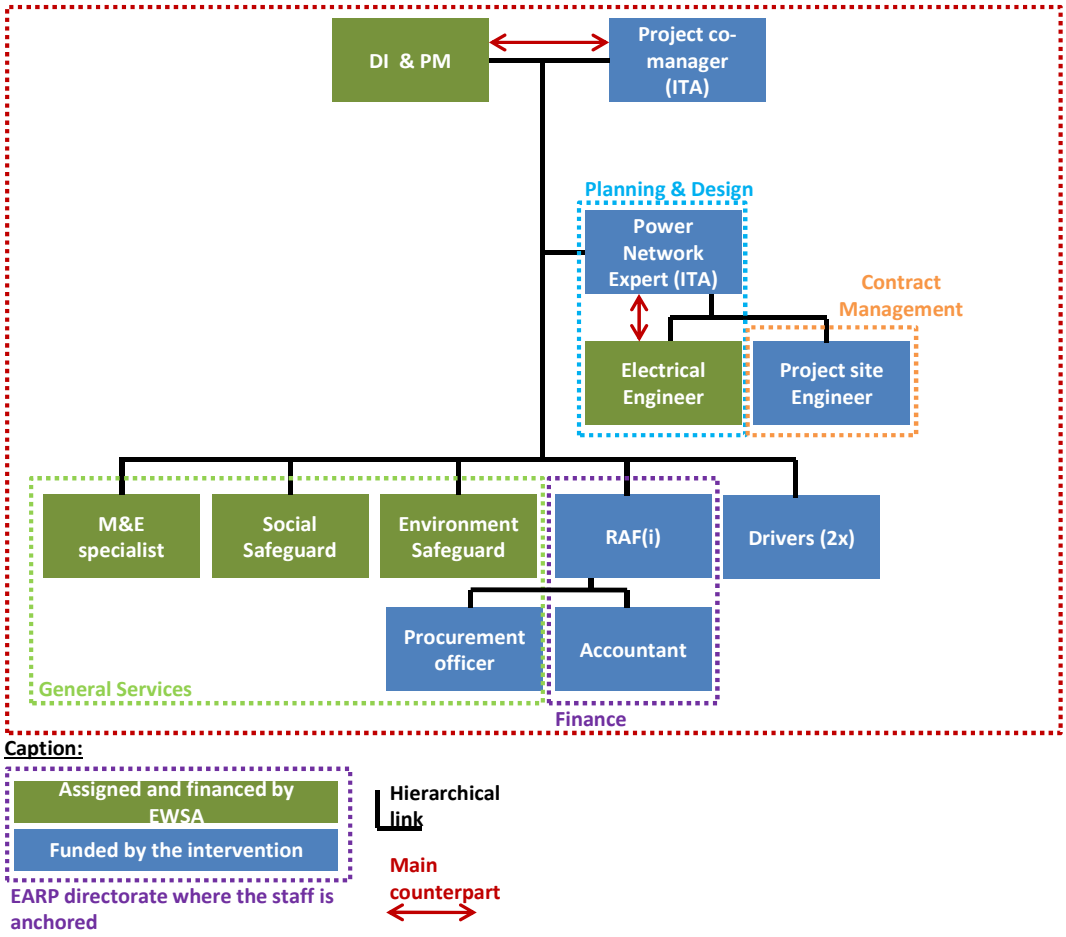
Decisions of each meeting of PMU are recorded in minutes.

5.3.3 Organizational structure and institutional anchorage

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

- The PMU will be located in the EARP premises.
- The ITA can provide its expertise to serve other EARP activities that are not funded by BE. He will be anchored within the planning and design team.
- Both project co-manager and power network ITA shall take part to institutional discussion within EARP/EWSA and DP coordination meetings in their domain.
- The support staff will be anchored in EARP and will be attached to their specific EARP directorate so that it can contribute actively to the global program:
    - Procurement officer within “General Services Directorate”
    - Project Engineer within contract management directorate
    - Accountant within Finance Directorate

[19] When at least two out of the four interventions in the energy sector are launched, and if found relevant and adding value by the partners, this RAF position could be reinforced / coached by an international RAF(i), shared between the different interventions. It is currently estimated (and budgeted) that the CD Energy’s contribution to this international profile would be 25% of a Full Time Equivalent (FTE). If not found appropriate or necessary, this budget can be reallocated by the PSC.



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, execution 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, execution and follow-up of the activities lead by the project team itself, are a joint responsibility of the PM and the power network ITA, except if expressly stated otherwise here under.

The PM and the power network ITA are supported by the other members of the project team , by other EARP and EWSA 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 CB building intervention within EWSA 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 EWSA Manual of Procedures[20]. In addition, specific BTC requirements apply, as described in BTC project execution 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 EAPR DI and the BTC project Co-manager both approve the quarterly procurement plan in joint responsibility.

[20] Currently under review by the EWSA Board, based on a KPMG conducted exercise.

5.5.2 Procurement execution

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 2 key moments during the tendering process: before launching and before awarding. 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):
EWSA DI	For commitments: Project Co-Manager For payment: RAF	X ≤ 25.000
“Chief budget officer”	Resident Representative	25.000 < X ≤ 67.000
“Chief budget officer”	Resident representative, after review by local independent lawyer appointed by BTC	67.000 < 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, VTA 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

5.6 Finance management

All finance management processes must use at least the BTC system, as described in the global and Rwandan BTC guidelines on project execution (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 execution are produced by the Project Co-Manager, 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 RAF. The EARP DI and the BTC Project co-manager 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 RAF, 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	RAF	< 25.000	Operational
Chief budget officer	Manager Administration & Finance (BTC MAF) Resident Representative *following BTC mandates*	> 25.000[21]	Main

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

Account in BTC responsibility:

For local expenses under BTC responsibility, a project account will be opened at BTC, 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 project co-manager 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.

[21] According to BTC systems

5.6.4 Assets and inventory management

System:	BTC system for PMU's assets Rwandan system for assets officially transferred
Responsibility:	Joint 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 good 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 execution agreement (DGD-CTB)

The following expenses can be incurred by BTC before 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 execution agreement

Activity	**Amount in Euros**	Period and Comments
Recruitment costs	10,000	National & International staff
Capital Investment	60,000	Vehicles
	8,000	ICT equipment
Total	**78,000**	

5.6.6 Financial closure

5.6.6.1 Financial balance

From six months before the end of the project execution 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:

- Project co-manager
- Power Network ITA
- Project engineer
- Responsible for Administration and Finance (RAF)
- Project Accountant
- Procurement Officer
- 2 Drivers

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

The following modalities apply:

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

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

Positions **HR processes**	EARP Project director	EARP Project manager	BTC Project co-manager	BTC Power network ITA	Support Staff funded by the intervention	Support Staff assigned and financed by EWSA
ToR (job description and profile)	Joint (in the TFF)	Joint (in the TFF)	Joint (in the TFF)	Joint (in the TFF)	Joint (in the TFF)	EWSA (in EARP manual)
Short listing	N/A	Joint	Joint	Joint	Joint	N/A
Assessment	N/A	Joint	Joint	Joint	Joint	N/A
Contracting	EWSA	EWSA	BTC HQ	BTC HQ	BTC RepRwa	EWSA
Orientation	Joint	Joint	Joint	Joint	Joint	Joint
Probation and performance appraisal	Joint	Joint	Joint	Joint	Joint	Joint
Training	EWSA	Joint	BTC	Joint	BTC / Joint	Joint
Missions/Leave	EWSA	Joint	Joint	Joint	BTC	EWSA
Payroll	EWSA	EWSA	BTC RWA	BTC HQ	BTC RWA	EWSA
Salary scale and staff regulations	EARP	EARP	BTC RWA	BTC HQ	EARP	EARP
Early termination of contract	Joint	Joint	Joint	Joint	BTC	Joint

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.

The Project RAF and 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 DI.

Project objectives are included in the performance contracts of both the EWSA 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
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) .

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[22]

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.

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

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

qualified external financial auditor selected and contracted by BTC, will execute the auditing. 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 EWSA 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 EWSA 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 direct 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 "direct 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 Specific Objective of the intervention;
- Modification of the execution modalities.

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 program results and activities and their respective budgets;
- The composition and responsibilities of the Steering Committee;
- The mechanism to change the TFF.

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

The project is likely to have some positive impact on the environment in Rwanda: environmental costs, in noise and air pollution, associated with existing generator usage will be reduced and there will be a more limited requirement for fuel for lighting.

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[23] 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.

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

[23] 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.

    - 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's and RAP's.

6.2 Gender

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.

6.3 Children's rights

The project itself will not impact 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	Global objectives *The energy sector is able to provide sufficient, reliable and affordable energy for all Rwandans*	Electricity price per kWh (RwF/kWh) Levelized cost of electricity generation (RwF/kWh) Per capita monthly power consumption (kWh/inhabitant/month)	EDPRS M&E reports EWSA utility statistics	On-Grid electricity is competitive to off-grid solutions. Generation capacity is increasing at least as fast as electricity demand.
SO	Specific objectives *The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved*	National electricity access rate (%) – 48% Households connected to grid electricity by the project (number of households) – 14,500 households Number of social facilities with access to electricity (Health centres, Schools, Sector offices) Technical losses on national electricity network (%) Power consumption in the intervention area (MWh)	EWSA utility statistics EARP annual performance report EARP quarterly monitoring progress report	Grid extension results in a higher electricity access rate for households and social facilities close to the grid. By strengthening existing facilities, the technical losses will diminish.

R 1	Result 1 Rural electricity access is increased through national electricity grid extension	MV lines constructed by the project (km) – 160 km LV lines constructed by the project (km) – 270 km Monthly number of technical breakdown per km of newly constructed line – 0.07 interruption/km/month EMP have been 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 EWSA
R 2	Result 2: Electricity grid reliability is increased through existing grid strengthening	Number of upgraded installations (Substations, Transformers, Line capacity) Monthly number of technical breakdown per km of MV line in the target area 0.07 interruption/km/month	EARP annual performance report EARP quarterly monitoring progress report	The O&M of the existing and new installations are properly performed by EWSA
R 3	Result 3: Electricity grid access affordability is improved through pilot activities in the area of intervention	Number of beneficiaries able to afford the connection in the intervention area Number of beneficiaries supported by the pilot activities Contribution of the beneficiary to the connection (RwF) Type of disbursement schemes used by the beneficiaries to afford the electricity connection.	Baseline study for the intervention area M&E reports	Lessons learned from the pilot activities are utilized.
R 4	Result 4: Local capacity is strengthened within EARP and EWSA utility	Number of trainees – 30 trainees Number of staff trained Percentage of staff who report that the capacity building plan is appropriately targeted to needs of their organization Percentage of participants who participated in the capacity building activity who considered the activity to be of high quality The quality and effect of the trainings	EARP annual performance report EARP quarterly monitoring progress report Trainees-, contractors-, and schools surveys	Trained staff retention

	Activities to reach Result 1	Means	Belgian Contribution	Rwandan contribution
R 1	Result 1 Rural electricity access is increased through national electricity grid extension		Costs in Euros	Costs in Euros
A 1.1	Build electricity transmission and distribution lines in targeted areas	EPC contractor Local contractor EWSA utility	11.600.000	
A 1.2	Supervise the grid extension construction works	Consultancy Technical Assistance	580.000	
A 1.3	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	100.000	214.722
	TOTAL		12.280.000	214.722

	Activities to reach Result 2	Means	Belgian Contribution	Rwandan contribution
R 2	Result 2 Electricity grid reliability is increased through existing grid strengthening		Costs in Euros	Costs in Euros
A 2.1	Prepare harmonized technical specifications and standards for the power network infrastructures	Technical Assistance Targeted consultancy	50.000	
A 2.2	Upgrade identified installations in targeted areas to strengthen the existing grid	Contractor	1.400.000	
A 2.3	Design and supervise grid strengthening works	Consultancy Technical assistance	70.000	
	TOTAL		1.520.000	

	Activities to reach Result 3	Means	Belgian Contribution	Rwandan contribution
R 3	Result 3 Electricity grid access affordability is improved through pilot activities in the area of intervention		Costs in Euros	Costs in Euros
A 3.1	Baseline survey on connection policy affordability in intervention area	EARP social safeguards Consultant Junior Assistant	30.000	
A 3.2	Test pilot solutions to support connection affordability for low income customers in the intervention area	EARP social safeguards EWSA local branch NGO or Company Junior Assistant	100.000	
	TOTAL		130.000	

	Activities to reach Result 4	Means	Belgian Contribution	Rwandan contribution
R 4	Result 4 Local capacity is strengthened within EARP and EWSA utility		Costs in Euros	Costs in Euros
A 4.1	Train local interns through industrial attachment to contractors	Schools and universities Project management	81.000	
A 4.2	Support EWSA grid maintenance activities through new equipment purchase and staff training	Technical Assistance Consultancy	260.000	
	TOTAL		341.000	

	General Means	Means	Belgian Contribution	Rwandan contribution
Z 01	Wages and salaries	Local and international staff	1.966.341	233.530
Z 02	General and statutory contributions	Vehicles, equipment, op. budget	166.000	
Z 03	Audit, monitoring and evaluation	Evaluations, Backstopping & Audit	185.000	
	TOTAL		2.317.341	180.459

7.2 Implementation calendar[24]

Budget Code	Results/activities	Year 1				Year 2	Year 3	Year 4
		Q1	Q2	Q3	Q4			
A_01	**Rural electricity access is increased through national electricity grid extension**							
A_01_01	Build electricity transmission and distribution lines on targeted areas							
A_01_02	Supervise the grid extension construction works							
A_01_03	Develop and implement EMP and RAP for network extension activity							
A_02	**Electricity grid reliability is increased through existing grid strengthening**							
A_02_01	Prepare harmonized technical specifications and standards for the power network infrastructures							
A_02_02	Upgrade identified installations in targeted areas to strengthen existing grid							
A_02_03	Design and supervise grid strengthening works							
A_03	**Electricity grid access affordability is improved through pilot activities**							
A_03_01	Perform baseline survey in intervention area							
A_03_02	Test pilot solutions to support connection affordability for low income customers in the intervention area							
A_04	**Local capacity is strengthened within EARP and EWSA Utility**							
A_04_01	Train local interns through industrial attachment to contractors							
A_04_02	Support EWSA grid maintenance activities through new equipment and staff training							

[24] "Year 1" begins once the project team is in place (i.e. at the arrival of the ITA's)

7.3 ToR long-term personnel

7.3.1 Director of Intervention

The EWSA appointed Director of Intervention (DI) is acting as a sponsor and as an authorizing officer for the Rwandan side for all scope and technical matters, executed in joint responsibility. His responsibilities go beyond the project since he is also the EARP coordinator.

Duty station: Kigali, Rwanda

Duration of the assignment: The DI works part time on the project

7.3.1.1 Main duties and responsibilities

The joint responsibilities of the DI will include (but not necessarily be limited to) the following areas:

- Contracting and supervising the EARP staff, consultants and Contractors
- Ensure that procurement plans are prepared, implemented and updated from time to time as required
- Coordinate the preparation, implementation and revision of work plans and budget of the project
- Ensuring that project activities are related to the agreed performance indicators to measure results
- Ensuring that all contracting, procurement, disbursements and financial management functions at all level of the project are carried out in accordance with established rules and regulations
- Carrying out of periodic checks of financial Records and physical evidence of expenditures
- Ensure complete files for all procurement Records are maintained
- Ensure that project reports are prepared including the Financial, physical progress, social safeguards and environmental, mid-term review reports and any other report that may be required
- Ensure that construction works under the project are executed as planned
- Implement defined strategies to increase electricity connectivity to reach agreed targeted beneficiaries in accordance with PSC priorities
- Ensure that new customers are well registered and automatically transferred in EWSA system
- Ensure that contractors are implementing activities in accordance with international best practices
- Attend and prepare the Project Steering Committee (PSC) meetings on a regular basis

7.3.1.2 Reporting

The DI shall discuss and agree with the PSC on the form and frequency of reporting. Besides periodic progress and financial reports the DI shall provide the following reports:

- Consolidated and coordinated quarterly and annual progress reports, including

recommendations;

- Financial reports in accordance with the requirements of BTC and EWSA;
- A Final report summarising the results of the Project including lessons learnt, conclusions and recommendation on how the achievements of the Project can be sustained;
- Any other reports as requested by the Chairperson of the PSC or BTC, Such as procurement plan.

7.3.1.3 Profile

- University degree in Engineering, Finance, Economics, or other related field
- A strong experience of 10 years in program/ or project management, 8 of which he/she shall have managed programs or project in the field of infrastructure
- Proven experience in electrification projects
- Proven experience in project management in international environment (planning, administration, budget management,…)
- Strong managerial and supervisory skills, tact and negotiating skills
- Sound computer skills, including proficiency in Microsoft Office products
- Proven ability to write in a clear and concise manner and effective oral communication skills.
- Strong interpersonal skills, ability to establish and maintain effective working relations with sensitive people and with respect for diversity.
- Fluent in English and in Kinyarwanda

7.3.2 Project manager – Project focal point

The EWSA appointed **Project Manager (PM)** will have primary and overall responsibility for managing the day to day activities of the project. He/She will be the designated point person for managing the operations; including timely monitoring and results reporting.

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months on full time basis

7.3.2.1 Main duties and responsibilities

The joint responsibilities of the PM will include (but not necessarily be limited to) the following areas:

- Manage, organise, coordinate and supervise the implementation of project activities together with the BTC co-management
- Coordinate the project staff in joint responsibility with the BTC project co-manager
- Ensure that procurement plans are prepared, implemented and updated from time to time as required.
- Prepare and review work plans and budget of the project
- Ensuring that project activities are related to the agreed performance indicators to measure results
- Maintaining adequate records of intervention activities.
- Ensuring that all contracting, procurement, disbursements and financial management functions at all level of the project are carried out in accordance with established rules and regulations
- Submission of appropriate justification (financial reports, bank reconciliation statements and other reasonable documentation)
- Ensure complete files for all procurement records are maintained.
- Prepare project reports including the Financial, physical progress, safeguards and environmental, mid-term review reports and any other report that may be required.
- Establish and maintain good working relationships with project participants, counterpart agencies, BTC CB intervention, donors and other relevant organizations and government agencies
- Share information about the project with other organizations and agencies as needed.
- Liaises and co-ordinates project activities with other relevant technical assistance projects
- Attend and prepare the Project Steering Committee (PSC) meetings on a regular basis
- Any other task that may be assigned by the director of intervention

7.3.2.2 Reporting

The PM shall discuss and agree with the DI on the form and frequency of reporting. Besides periodic progress and financial reports the PM shall provide the following reports:

- Consolidated and coordinated quarterly and annual progress reports, including recommendations;
- Financial reports in accordance with the requirements of BTC and EWSA;
- A Final report summarising the results of the Project including lessons learnt, conclusions and recommendation on how the achievements of the Project can be sustained;
- Any other reports as requested by DI, such as procurement plan.

7.3.2.3 Profile

- University degree in Engineering, Finance, Economics, or other related field
- Having at least 8 years of experience in program/ or project management is a advantage, 6 of which he/she shall have managed programs or project in the field of infrastructure
- Proven experience in project management in international environment (planning, administration, budget management,…)
- Experience in rural electrification projects is an added value
- Experience with Government procedures as well as Development Partner Projects is desirable
- Good managerial and supervisory skills, tact and negotiating skills
- Sound computer skills, including proficiency in Microsoft Office products
- Proven ability to write in a clear and concise manner and effective oral communication skills.
- Strong interpersonal skills, ability to establish and maintain effective working relations with sensitive people and with respect for diversity.
- Fluent in English and in Kinyarwanda, knowledge in French is an added value

7.3.3 Project co-manager

A BTC appointed **Project Co-manager**, acting as contract manager and authorizing officer for the Belgian side for all administrative, procurement and financial matters executed in joint responsibility.

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months on full time basis

7.3.3.1 Main duties and responsibilities

The joint responsibilities of the project co-manager will include (but not necessarily be limited to) the following areas:

- Manage, organise, coordinate and supervise the implementation of project activities in accordance with the approved work plans
- Support EARP relevant staff through coaching and mentoring
- Coordinate the project staff in joint responsibility with the EARP project manager
- Ensure that procurement plans are prepared, implemented and updated from time to time as required
- Coordinate the preparation, implementation and revision of work plans and budget of the project
- Ensuring that the baseline is performed at the beginning of the project
- Ensuring that project activities are related to the agreed performance indicators to measure results
- Ensuring that all contracting, procurement, disbursements and financial management functions at all level of the project are carried out in accordance with established rules and regulations
- Carrying out of periodic checks of financial Records and physical evidence of expenditures
- Submission of appropriate justification (financial reports, bank reconciliation statements and other reasonable documentation)
- Ensure that project reports are prepared including the Financial, physical progress, safeguards and environmental, mid-term review reports and any other report that may be required
- Ensure that construction works under the project are executed as planned
- Contribute to the preparation of financial and procurement planning and budgeted work plans
- Establish and maintain good working relationships with project participants, counterpart agencies, BTC CB intervention, donors and other relevant organizations and government agencies
- Share information about the project with other organizations and agencies as needed.
- Liaises and co-ordinates project activities with other relevant technical assistance

projects

- Attend and prepare the Project Steering Committee (PSC) meetings on a regular basis

7.3.3.2 Reporting

The Project co-manager shall discuss and agree with the Chairperson of the PSC and the BTC representation on the form and frequency of reporting. Besides periodic progress and financial reports the Project co-manager shall provide the following reports:

- Consolidated and coordinated quarterly and annual progress reports, including recommendations;
- Financial reports in accordance with the requirements of BTC and EWSA;
- A Final report summarising the results of the Project including lessons learnt, conclusions and recommendation on how the achievements of the Project can be sustained;
- Any other reports as requested by the PSC, the BTC representation or BTC HQ.

7.3.3.3 Profile

- University degree in Engineering, Finance, Economics, or other related field
- Having at least 10 years of experience in program/ or project management (8 of which he/she shall have managed programs or project in the field of infrastructure) is an advantage
- Proven experience in project management in international environment (planning, administration, budget management,…)
- Experience with Government procedures, an experience in Rwanda is an added advantage
- Experience in rural electrification projects is an added value
- Strong managerial and supervisory skills, tact and negotiating skills
- Sound computer skills, including proficiency in Microsoft Office products
- Proven ability to write in a clear and concise manner and effective oral communication skills.
- Strong interpersonal skills, ability to establish and maintain effective working relations with sensitive people and with respect for diversity.
- Sensitivity to socio-environmental issues
- Fluent in English, knowledge in French is an added value

7.3.4 Power Network ITA

A BTC appointed **Power network International Technical Assistant (ITA)** in charge of assuring coherence with activities. This person will be acting as authorizing officer for the Belgian side for technical, content and quality matters.

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months on full time basis

7.3.4.1 Main duties and responsibilities

The responsibilities of the ATI will include (but not necessarily be limited to) the following areas:

- Provide strategic guidance to any sub-project of the EARP
- Provide technical input into the definition of the content of the activities
- Review the last update of planning and design and its coherence with the national electrification strategy
- Provide technical advice related to rural electrification
- Provide guidance and training through coaching and mentoring of the EARP technical staff in order to strengthen the local capacity together with SCBI experts within the sector
- Provide technical input into the preparation of terms of reference for the various studies and construction activities subcontracted and support the implementing agency to ensure their adequate implementation
- Support and provide technical advice for recruitment of specific technical international and national expertise required for the project implementation
- Ensure coherence and coordination of project strategies and activities for areas related to electrification
- Technically supervise the implementation of project activities in accordance with the approved work plans
- Lead the project activities related to harmonization of quality standards
- Accompany, support and guide the capacity need assessment for capacity building activities in the field of power network.
- Implement defined strategies to increase electricity connectivity to reach agreed targeted beneficiaries in accordance with PSC priorities
- Ensure that new customers are well registered and automatically transferred in EWSA system
- Ensure that contractors are implementing activities in accordance with international standards and best practices for quality, sustainability and security

7.3.4.2 Reporting

The ITA will report frequently to the DI and project co-manager. They shall discuss and agree on the form and frequency of reporting.

7.3.4.3 Profile

- University degree in Electrical Engineering, or equivalent
- Having at least 10 years of experience in electricity grid infrastructures, preferably in an international environment is an advantage
- Proven experience in rural electrification projects, an experience in the region is an added advantage
- Proven expertise in MV and LV lines design and construction;
- Proven expertise in power network international standards
- Solid understanding of capacity building principles, strategies and techniques and proven competences in knowledge transfer
- Strong managerial and supervisory skills, tact and negotiating skills
- Sound computer skills, including proficiency in Microsoft Office products
- Excellent communication and report writing skills.
- Sensitivity to socio-environmental issues
- Fluent in English, knowledge in French is an added value

7.3.5 Project construction site engineer

The project site engineer will be recruited by the project to operate on site. He will be in charge of the daily follow-up of construction activities.

Duty station: Construction site in the area of intervention, Rwanda

Duration of the assignment: 36 months on full time basis

7.3.5.1 Main duties and responsibilities

- Ensure that contractors are implementing activities in accordance with international standards and best practices
- Keep a proper site diary for the project construction activities in collaboration with the supervising company
- Supervise the implementation of project construction activities in accordance with the approved planning
- Ensure that Environmental Management Plan and Resettlement Action plan are properly implemented on site
- Ensure that new customers are well registered and automatically transferred in EWSA system

7.3.5.2 Reporting

The project site engineer will report daily to the PM, the Project co-manager and the power network ITA.

7.3.5.3 Profile

- University degree in Construction- or Electrical Engineering, or equivalent
- Having at least 5 years of experience in electricity grid construction is an advantage
- Proven experience in rural electrification projects, an experience in the region is an added advantage
- Proven expertise in MV and LV lines construction;
- Understanding of in international standards for power network infrastructure
- Strong managerial and supervisory skills, tact and negotiating skills
- Sound computer skills, including proficiency in Microsoft Office products
- Excellent communication and report writing skills.
- Sensitivity to socio-environmental issues
- Fluent in English and Kinyarwanda, knowledge in French is an added value

7.3.6 Procurement officer

The procurement officer will advise and assist program stakeholders in preparing necessary documentation, take responsibility for procurement processes, ensuring that all steps are properly undertaken, and that procurement files are maintained in accordance with GoR and BTC requirements, track all program procurements, identify issues especially deviation from agreed procurement schedules, and seek to resolve issues in a timely manner.

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months on full time basis

7.3.6.1 Main duties and responsibilities

- **Adverting, planning and filing**
    - Prepare and publish general notices, specific notices and request for expressions of interest
    - Establish a data base of qualified suppliers and service providers and update it regularly,
    - Establish and update regularly the project procurement plans spelling out the various services financed by the project,
    - Establish a reliable and comprehensive filing system of all procurement of the project.
- **Rules and Procedures**
    - Ensure that the procurement activities are carried out in accordance with the rules and procedures of IDA and other donors;
    - Ensure that the quality of bid documents and request for proposals is guaranteed, by verifying in particular that all the required conditions to be fulfilled are included;
- **Selection of the consultants**
    - Draw up Request for proposals and the consultants shortlist on the basis of elements and the specifications of services financed by the project and prepare no-objection requests when required;
    - Participate to the evaluation process of the technical and financial proposals, coordinate and participate to the negotiation process when required;
    - Prepare the draft of the contract between the Project/EWSA and the chosen consultants after obtaining the no-objection(if required);
    - In collaboration with the contractor management directorate, ensure that services are provided as stipulated in the contract provisions, propose recommendations for the settlement of disputes which could occur during the implementation of the contract;
    - In collaboration with the contractor management, Planning, GIS &Design, ensure a timely response of the Project to the consultant's reports as well as the final approval of the consultants' work.

- **Works and Goods**

    - Establish procurement plans and prepare tender documents on the basis of the technical specifications prepared by the service beneficiaries financed by the Project, ensure that the tender documents are advertised;
    - Be present during the opening of bids, write minutes for opening session, evaluation report, draw up minutes of the award of the tender, prepare contracts between the Project and the suppliers/entrepreneurs awarded after tender process and No-objection(if required);
    - In collaboration with the contractor management, Planning, GIS& Design directorates, ensure that the works and goods be executed according to the contractual clauses, propose recommendations on the settlement of disputes which could occur during the contract execution.
    - In collaboration with the Stores and Logistics Manager and other concerned parties, ensure timely reception of the goods and the works of the various contracts financed by the project;
    - Establish a database of the performance goods suppliers, entrepreneurs, consultants and update database regularly;
    - Undertake any other task related to procurement that could be requested by the Director of General Services.

7.3.6.2 Reporting

The procurement officer will report to the Project co-manager, the PM and the EARP Director of General services

7.3.6.3 Profile

- University degree in Law, Engineering, Accounting, Finance, Management, or other related field;
- A certificate or a diploma in Procurement would constitute an added advantage
- Having a strong experience of 5 years in procurement (3 of which he/she shall have worked as a Procurement Specialist in donor funded program or project) is an advantage

7.3.7 BTC RAF(i)

The RAF is responsible for a variety of administration and finance-related tasks. He works under direct supervision of the project management for all co-management related expenses and under BTC supervision for all direct management related expanses

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months

7.3.7.1 Main duties and responsibilities

As the person in charge of procurement, financial management and administration, he/she will:

- Control all procurement, financial management and administration issues: solve problems, help improve administration by developing tools, point out and correct errors and problems, report any major problem to the authorizing officers.
- Ensure a correct, smooth and efficient organization of the financial administration;
- Organize regular meetings with financial and administrative staff, and ensure good communication, information and cooperation within the financial administration team.
- Supervise compliance with legal and administrative procedures and guidelines; this implies the he/she studies, checks and reinforces financial guidelines and procedures of the Belgian Technical Co-operation and Ministry of Finance (for direct management) in addition to the Rwandan regulations (for co-management), including the Specific Agreement, the TFF, the BTC quality handbook and any guidelines provided from Brussels or Rwandan legal texts.
- Ensure all instructions received from the representation or BTC headquarters are correctly applied and followed and that the requests are met within the deadline.
- Update guidelines and system of all types of payments in project, esp. allowances.
- Update Administrative and Financial Manual, and ensure communication of new procedures to all admin/fin staff involved.
- Review (and approve) the periodic (monthly/quarterly/bi-annual) accountability returns from implementing partners to ensure that they follow the regulations referred to in the TFF and Project Financial and Operational Manual and meet international accepted standards of public accountability ; and provide comments and advice in improving these systems when required;
- Ensure that the projects narrative and financial reporting guidelines are adhered to including the specified Monitoring and Evaluation processes
- Support the procurement process, contract management and supervision processes

Financial activity reporting

- Final responsibility for timely production of FIT statements; provide guidance and supervision to the accountant who produces the FIT statements.
- Produce financial reports whenever requested following format laid out (e.g. for steering committees), or develops customized formats for ad hoc reports (in excel).

- Make electronic back-up of final versions of financial reports

Budgeting and financial planning

- Follow up and update of budget; Compare budget and planning with actual expenses; provide monthly overview of budget balance to co-management and technical teams
- Financial short-and long term planning: overall, yearly and quarterly (in co-operation with co-management and technical teams); monthly and weekly, in co-operation with accountant.
- Overall management of bank and cash accounts, making cash calls on basis of the financial planning.

Auditing, monitoring, consulting, training

- Audit and analyse project expenses monthly, report any inconsistencies or irregularities.
- Control supporting accounting documents on quality and completeness, and follow up on corrections by the accountant.
- Consult and monitor financial issues related to technical project components (e.g. accountability of beneficiaries and institutions)
- Prepare and provide training on financial management for stakeholders
- Preparing and assisting internal and/or external financial audit missions
- Any other tasks reasonably requested

7.3.7.2 Reporting

The RAF will report to the Project co-manager, the PM and the EARP Finance Director.

7.3.7.3 Profile

- University degree in finance, business administration or business economics;
- At least 5 year experience in financial management, project administration and procurement is an advantage;
- Management experience and experience with an international organization or NGO, 3 years minimum is an advantage;
- Very good hands-on knowledge of excel and word is a must. Other programs (Database, accounting programs) a strong advantage;
- Proficient in English and in French;
- Mature, good communicator and team player;
- Able to work under stressful conditions and not objecting to overtime and field missions.

7.3.8 Project accountant

The Project accountant is under contract with BTC and financed by this project and is responsible for a variety of finance-related tasks including the ones listed below (this list is not exhaustive).

He/she works under direct supervision of the RAF(i) and of both co-directors for all Co-management-related expenses.

Duty station: Kigali, Rwanda

Duration of the assignment: 48 months on a full time basis

7.3.8.1 Main duties and responsibilities

Banking & cheque and cash management

- Prepare, register and keep cheques
- Prepare staff payroll for bank transfers at the end of each month.
- Ensures all invoices from external parties (contractors, suppliers,…) are paid in due time, by bank transfer, cheque or cash and arrange those documents by date: her/his task of preparing bank transfer and cheque documents. And manage pipe line payment to external parties.
- Check and approve document requested by Secretary and further the request to RAF then finally to co-manager for final approval.
- Attend and record all bank transactions, maintain bank accounts, ensure monthly bank statements and account overviews
- Final responsibility for the cash management, and supervision of secretary in this task: this includes regular daily cash counts, verification of balance of cash book and cash-on-hand, assistance of cashier in solving imbalances, establishment and signature of cash count statements.
- Ensure liquidation of any internal advances and update advance outstanding by the end of each month and report to RAF.
- Responsible for sound cash planning & cash withdrawals, so as to avoid cash shortages or large amounts cash in safe (security issue).
- Updates fixed asset register, follow up consultancies, contractor contract and stock of stationary.

Financial activity reporting

- Record all project expenses properly in FIT, following guidelines and within the deadlines the latest 15th of the following month.
- Produce FIT statements for control by the Project Management, make all necessary corrections and make all preparations for the monthly closing of the accounting.
- Supervise daily entry of expenses in the cashbook by cashier.
- Produce FIT statements for control by the Project Management, make all necessary corrections and make all preparations for the monthly closing of the accounting.
- Supervise daily entry of expenses in the cashbook by secretary.
- Check and control to ensure quality and completeness of justification and supporting accounting documents of all expenses following guidelines
- Ensure accounting coding and budgeting lines are corrects: this includes verification of financial reports, expenses and supporting documents.

- Keep tack accounting data by putting reference as GT and AT on the specific documents on the monthly basic.
- Ensure monthly balance of FIT/Cashbooks/Cashboxes and bank statements are the same, and responsible for completion and approval of reconciliation statements if any.
- Responsible for transparent and consistent filing of all accounting, banking and cash management documents (that arranged by secretary).
- Organize that copy of all supporting Bank documents and check cash document copy by cashier, before sent to LAF on a monthly basis.

Financial Administration

- Check to ensure correct application of allowances.
- Assist the Project Management with a variety of tasks: e.g. cost calculations, filing finance-related documents, monthly and weekly financial planning, managing pipeline payments…etc.

Budgeting and financial planning

- Provides all necessary accounting data and information to the Project Management, for him to be able to follow up on budget and planning.
- Assist the PM in the elaboration of reports, budgets or plans.

7.3.8.2 Reporting

The RAF will report to the Project Management, the BTC LAF and the EARP Finance Director.

7.3.8.3 Profile

- Degree in accounting;
- Minimum 5 year experience accounting and project administration is an advantage;
- Experience with an international organization or NGO;
- Very good hands-on knowledge of excel and word is a must. Other programs (Database, accounting programs) a strong advantage;
- Fluent in English, French and Kinyarwanda
- Mature, good communicator and team player;
- Able to work under stressful conditions and not objecting to overtime and field missions.

7.4 Unit cost of electricity lines in EARP project (A1.1 – network extension)

Introduction

Concerning network extension (Activity 1.1 – 11,6 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 EWSA 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.

For example, the following table provides the lots division for the Eastern region:

	SUM MV LINES (km)	SUM LV LINES (km)	SUM TRANS FORMERS	SUM MV SWITCHGEAR	POTENTIAL CONN's	COST (USD)	COST/ CONN 75%
Lot1	93.85	161.6	66	4	11997	7 290 874	810
Lot10	72.45	126.2	48	5	9147	5 734 905	836
Lot11	88.45	123.1	57	2	5065	4 894 058	1288
Lot12	54.14	87.8	46	4	4956	3 808 412	1025
Lot13	44.18	66.4	44	0	2635	2 363 114	1196
Lot14	61.81	115.4	53	4	4971	4 373 122	1173
Lot15	66.30	87.5	44	2	3167	3 487 720	1468
Lot16	54.74	122.4	46	3	6568	4 809 004	976
Lot17	54.92	125.7	52	2	6713	4 877 870	969
Lot18	71.97	128.7	79	0	7247	4 732 336	871
Lot19	88.20	122.7	55	4	6286	5 057 796	1073
Lot2	41.44	85.4	45	0.0	6798	3 481 780	683
Lot3	81.92	136.2	50	2.0	9577	6 151 057	856
Lot4	75.84	120.3	59.0	4.0	8505	5 447 887	854
Lot5	118.99	177.0	72.0	4.0	11362	8 029 183	942
Lot6	85.44	139.7	54.0	7.0	9737	6 398 745	876
Lot7	84.10	182.4	77.0	3.0	10706	7 033 437	876
Lot8	118.37	220.4	72.0	6.0	14692	9 451 745	858
Lot9	66.57	142.4	74.0	0.0	10425	5 617 619	718
SUM EPC	**1423.68**	**2471.2**	**1093**	**56**	**150554**	**103 040 662**	**913**

	SUM MV LINES (km)	SUM LV LINES (km)	SUM TRANS FORMERS	SUM MV SWITCHGEAR	POTENTIAL CONN's	COST (USD)	COST/ CONN 75%
MV_LV1	10.31	23.7	8	0	1938	1 283 526	883
MV_LV10	14.99	22.61	15	0	1323	1 005 662	1014
MV_LV11	12.11	28.8	15	0	2179	1 258 346	770
MV_LV12	12.10	22.5	12	0	752	907 701	1609
MV_LV2	20.37	56.96	17	1	4137	2 548 117	821
MV_LV3	23.40	37.2	22	1	1711	1 516 435	1182
MV_LV4	42.41	64.8	35	2	3372	2 732 212	1080
MV_LV5	37.61	37.6	35	1	1895	1 665 021	1172
MV_LV6	22.01	26.8	21	0	1161	1 122 894	1290
MV_LV7	27.14	32.2	16	0	1110	1 441 104	1731
MV_LV8	13.97	51.7	20	0	2873	2 028 827	942
MV_LV9	21.00	32.6	15.0	1	1019	1 305 566	1708
SUM MV/LV	**257.42**	**437.26**	**231**	**6**	**23470**	**18 815 409**	**1069**

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 EWSA 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.

The following figures are based on the SOFRECO study for the Eastern region. No national average has been provided but it can be assumed that the figures for other regions in Rwanda would give quite similar results.

Quantities and Cost

Using the costing as per the Bill of Quantities, the average cost for the installation of lines and transformers are provided in the study final report.

The average cost of MV lines (excluding transformer installations) is calculated to be USD 12,004 per km of line.

MEDIUM VOLTAGE				Cost USD
Poles	Wood Poles			6,558,558
	14m Sectional Steel pole for special use			386,055
	Concrete Poles			445,592
	Foundations			697,819
Stay	Stay and Strut pole structures			1,242,785
MV Assembly	Combined MV Assemblies			1,952,676
Conductor	All Single and 3 phase conductor			7,068,860
Overhead	Site Establishment, etc.			489,365
TOTAL COST			USD	20,446,465
	Total MV line length	1,713.3	km	
COST PER KM			USD	11,934
Switches	Links, Air break switch and Sectionalizer			120,438
COST INCLUDING SWITCHES				20,566,903
COST PER KM			USD	12,004

The average cost of LV lines (excluding transformer installations) is calculated to be USD 13,848 per km of line.

LOW VOLTAGE			Cost USD
Poles	Wood Poles		17,250,646
	Foundations		2,347,623
Stay	Stay and Strut pole structures		2,957,796
MV Assembly	Combined LV Assemblies		5,287,145
Conductor	All Single and 3 phase conductor		9,361,886
Survey	Survey of LV Lines		2,583,177
Overhead	Site Establishment, etc.		489,365
TOTAL COST		**USD**	**40,277,638**
Total LV line length		2,908.5	km
COST PER KM		**USD**	**13,848**

The definition of beneficiary covered under planned electrification is that it is within service connection length from a LV line. The beneficiaries are next to LV lines and can be connected with a normal service cable that cost 251 USD on average.

SERVICE CONNECTION COST (Prepaid meter excluded)	
Total Service connection cost	26,292,454
Number of connections	104,582
Service connection cost	**251**

The average cost per transformer installation was calculated to be USD 8,859 per transformer.

TRANSFORMERS	Cost USD
Transformers	**7,112,588**
LV DB	**1,288,517**
Trf Circuit breakers	**159,628**
Feeder Breakers	**537,939**
Trf Cable	**253,099**
Feeder Cable	**253,099**
Earthing, S/Arrestors	**2,151,275**
TOTAL COST	**11,756,145**
Number of Transformers	1327
COST PER TRANSFORMER INSTALLATION	**8,859**

Prioritization of lots

The 19 LOTS have been prioritized for construction between 2013 and 2017. 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 final selected priority. 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
Lot2	41.44	85.39	45	0	6798	3 481 780	683	1	1
Lot1	93.85	161.64	66	4	11997	7 290 874	810	3	1
Lot3	81.92	136.17	50	2	9577	6 151 057	856	6	1
Lot11	88.45	123.14	57	2	5065	4 894 058	1288	18	1
Lot10	72.45	126.17	48	5	9147	5 734 905	836	4	2
Lot4	75.84	120.30	59	4	8505	5 447 887	854	5	2
Lot8	118.37	220.39	72	6	14692	9 451 745	858	7	2
Lot16	54.74	122.39	46	3	6568	4 809 004	976	13	2
Lot14	61.81	115.40	53	4	4971	4 373 122	1173	16	2
Lot15	66.30	87.46	44	2	3167	3 487 720	1468	19	2
Lot6	85.44	139.73	54	7	9737	6 398 745	876	10	3
Lot5	118.99	177.02	72	4	11362	8 029 183	942	11	3
Lot17	54.92	125.72	52	2	6713	4 877 870	969	12	3
Lot12	54.14	87.80	46	4	4956	3 808 412	1025	14	3
Lot19	88.20	122.71	55	4	6286	5 057 796	1073	15	3
Lot9	66.57	142.38	74	0	10425	5 617 619	718	2	4
Lot18	71.97	128.66	79	0	7247	4 732 336	871	8	4
Lot7	84.10	182.40	77	3	10706	7 033 437	876	9	4
Lot13	44.18	66.37	44	0	2635	2 363 114	1196	17	4
SUM EPC	**1423.68**	**2471.2**	**1093**	**56**	**150554**	**103 040 662**	**913**		

Belgian Contribution to EARP

Given the uncertainty on the timing of the start of the intervention and the significant contribution/interest from other partners, it was not possible during the formulation exercise to validate the selection of the lots that would be executed under the Belgian contribution. This choice shall be reconfirmed by the Steering Committee after analysis of the technical team under the criteria's defined in the TFF (Paragraph 2.5).

Depending on the chosen lots, the available budget of 11.6 M€ for network extension should finance between 2 and 6 lots.

Based on the rated average on the 10 first lots on the priority table, the formulation estimated that the 11.6 M€ budget could contribute to an indicative amount of 160 km MV line and 270 km LV line.

This calculation is based on an exchange rate of 1 € for 1.25 USD (11.6 M€ = 14.5 MUSD). A security margin of 20% is applied to the indicative targets to take into account inflation and fluctuation of market prices (potential increase of the cost of material between the time of the study and the execution).

Details are given in the table hereunder. Exact calculated figures are 159.21 km MV lines and 273.74 km LV lines and 114 transformers but such a detail is not appropriate in the TFF since those figures are a rough indication based on averages to give an image of what can be performed with such a budget. The final figures will depend on the final choice of the intervention area and the choice of the lots within this region that shall be analysed by the project team and decided by the Project Steering Committee as described in the TFF.

Priority	MV lines	LV lines	Transfo	MV Sw.	Potential	Cost
	km	km	#	#	conn's	USD
1	41.44	85.39	45	0	6798	$ 3,481,780
1	93.85	161.64	66	4	11997	$ 7,190,874
1	81.92	136.17	50	2	9577	$ 6,151,057
1	88.45	123.14	57	2	5065	$ 4,894,058
2	72.45	126.17	48	5	9147	$ 5,734,905
2	75.84	120.30	59	4	8505	$ 5,447,887
2	118.37	220.39	72	6	14692	$ 9,451,745
2	54.74	122.39	46	3	6568	$ 4,809,004
2	61.81	115.40	53	4	4971	$ 4,373,122
2	66.30	87.46	44	2	3167	$ 3,487,720
Total	755.17	1298.45	540	32	80487	$ 55,022,152
BE	199.01	342.18	142	8	21211	$ 14,500,000
Security margin = 20 %						
	159.21	**273.74**	**114**			

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 donors (WB, NL, AfDB,…) 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.

Simulation

Important notice: the simulation is based on the cost estimations currently available. It needs to be emphasized that this simulation illustrates how the mechanism to determine the estimated cost will function during the execution of the intervention. The simulation during the execution can only be made after thorough analysis by electricity network experts which is planned at the beginning of the project.

Assumptions for the simulation:

- Current exchange rate is 1 EUR = 1.35 USD. Available budget for A1.1. is consequently close to 15.6 MUSD.
- No lots have been assigned yet for the Eastern region and the Belgian contribution can take the first lots of the priority list for this region since WB is financing network extension in Northern and Western region and AfDB is financing Southern 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 the study (January 2013)

Choosing the Lots 1, 2 & 3 would deliver good results (low cost/connexion) but the total cost is too high in relation to the available budget..

Lots 1, 2 & 11 cumulated cost is 15,566,712 USD. It just fits within the global budget and those lots can all be realized without depending on another lot (Priority Year 1).

	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
Lot2	41.44	85.39	45	0	6798	3 481 780	683	1	1
Lot1	93.85	161.64	66	4	11997	7 290 874	810	3	1
Lot3	81.92	136.17	50	2	9577	6 151 057	856	6	1
Lot11	88.45	123.14	57	2	5065	4 894 058	1288	18	1
Lot10	72.45	126.17	48	5	9147	5 734 905	836	4	2
Lot4	75.84	120.30	59	4	8505	5 447 887	854	5	2
Lot8	118.37	220.39	72	6	14692	9 451 745	858	7	2
Lot16	54.74	122.39	46	3	6568	4 809 004	976	13	2
Lot14	61.81	115.40	53	4	4971	4 373 122	1173	16	2
Lot15	66.30	87.46	44	2	3167	3 487 720	1468	19	2
Lot6	85.44	139.73	54	7	9737	6 398 745	876	10	3
Lot5	118.99	177.02	72	4	11362	8 029 183	942	11	3
Lot17	54.92	125.72	52	2	6713	4 877 870	969	12	3
Lot12	54.14	87.80	46	4	4956	3 808 412	1025	14	3
Lot19	88.20	122.71	55	4	6286	5 057 796	1073	15	3
Lot9	66.57	142.38	74	0	10425	5 617 619	718	2	4
Lot18	71.97	128.66	79	0	7247	4 732 336	871	8	4
Lot7	84.10	182.40	77	3	10706	7 033 437	876	9	4
Lot13	44.18	66.37	44	0	2635	2 363 114	1196	17	4
SUM EPC	**1423.68**	**2471.2**	**1093**	**56**	**150554**	**103 040 662**	**913**		

Simulation results:

- MV lines: 223.74 km
- LV lines: 370.17 km
- Number of Transformers: 168
- Potential connexions (long term): 23,860
- Direct connexions (short term assuming 75% connexion): 17,895
- Number of beneficiaries (assuming 5 persons per connexion): 89,475

These results are significantly more ambitious (about 30%) than the average provided in chapter 3 and the logical framework. This is due to the fact that the simulation assumptions are optimistic, namely the absence of a security margin on the SOFRECO costs and the fact that the first lots in the priority list will be selected to be executed by the EARP project.

The simulation is thus close to the *"best case" or "ideal"* scenario while the figures provided in the TFF are conservative.

Key limitations of this simulation:

- Assumptions at the time of the intervention will probably be different (currently they are "best case")
- Some priority lots might already be assigned at the start of the intervention

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7.5 References

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- EDPRS 2008-2012 (September 2007)
- EDPRS II 2013-2018 (June 2013)
- ESSP 2012-2017 (October 2012)
- Electricity Law (June 2011)
- EARP Project Implementation Manual (2009)
- EARP Connection Policy (2009)
- EARP Priorization Rule (2009)
- EARP Mid Term Review (July 2012)
- EARP Environmental and Social Management Framework (2009)
- EARP Resettlement Policy Framework (2009)
- Economist Intelligence Unit Report on Rwanda (May 2012)
- Indicative Cooperation Program (ICP) Belgium – Rwanda 2011- 2014
- Common Performance Assessment Framework (CPAF) (April 2011)