



**CTB**



REPUBLIQUE DU RWANDA



# ANNUAL REPORT 2011

## PROJECT EPRER



<b>ACRONYMS.....</b>	<b>4</b>
<b>1 PROJECT FORM.....</b>	<b>5</b>
<b>2 SUMMARY .....</b>	<b>6</b>
2.1 ANALYSIS OF THE INTERVENTION.....	6
2.2 KEY ELEMENTS .....	6
2.3 KEY RISKS .....	6
2.4 KEY LESSONS LEARNED AND RECOMMENDATIONS .....	7
<b>3 ANALYSIS OF THE INTERVENTION.....</b>	<b>8</b>
3.1 CONTEXT .....	8
3.1.1 <i>Evolution of the context</i> .....	8
3.1.2 <i>Institutional Anchoring</i> .....	8
3.1.3 <i>Execution Modalities</i> .....	9
3.1.4 <i>Harmo-dynamics</i> .....	9
3.2 SPECIFIC OBJECTIVE .....	9
3.2.1 <i>Indicators</i> .....	10
3.2.2 <i>Analysis of progress made</i> .....	10
3.2.3 <i>Risks and Assumptions</i> .....	10
3.2.4 <i>Quality criteria</i> .....	11
3.2.5 <i>Potential Impact</i> .....	11
3.2.6 <i>Recommendations</i> .....	11
3.3 RESULT 1 .....	13
3.3.1 <i>Indicators</i> .....	13
3.3.2 <i>Evaluation of activities</i> .....	13
3.3.3 <i>Analysis of progress made</i> .....	13
3.3.4 <i>Risks and Assumptions</i> .....	14
3.3.5 <i>Quality criteria</i> .....	14
3.3.6 <i>Budget execution</i> .....	15
3.3.7 <i>Recommendations</i> .....	15
3.4 RESULT 2.....	16
3.4.1 <i>Indicators</i> .....	16
3.4.2 <i>Evaluation of activities</i> .....	16
3.4.3 <i>Analysis of progress made</i> .....	16
3.4.4 <i>Risks and Assumptions</i> .....	17
3.4.5 <i>Quality criteria</i> .....	17
3.4.6 <i>Budget execution</i> .....	17
3.4.7 <i>Recommendations</i> .....	17
3.5 RESULT 3.....	18
3.5.1 <i>Indicators</i> .....	18
3.5.2 <i>Evaluation of activities</i> .....	18
3.5.3 <i>Analysis of progress made</i> .....	18
3.5.4 <i>Risks and Assumptions</i> .....	19
3.5.5 <i>Quality criteria</i> .....	19
3.5.6 <i>Budget execution</i> .....	19
3.5.7 <i>Recommendations</i> .....	19
<b>4 TRANSVERSAL THEMES.....</b>	<b>21</b>
4.1 GENDER .....	21
4.2 ENVIRONMENT .....	21
4.3 AIDS .....	21
<b>5 DECISIONS TAKEN BY THE JL CB AND FOLLOW-UP.....</b>	<b>23</b>

<b>6</b>	<b>LESSONS LEARNED.....</b>	<b>24</b>
<b>7</b>	<b>ANNEXES.....</b>	<b>25</b>
7.1	LOGICAL FRAMEWORK.....	25
7.2	M&E ACTIVITIES.....	28
7.3	“BUDGET VERSUS CURRENT (Y – M)” .....	29

## Acronyms

<List all acronyms used in the Annual Report (alphabetically; see examples below)>

GoR	Government of Rwanda
MININFRA	Rwanda Ministry of Infrastructure
MINECOFIN	Rwanda Ministry of Finance and Economic Planning
MINAFFET	Rwanda Ministry of Foreign Affairs and Cooperation
EWSA	Energy, Water and Sanitation Authority
BTC	Belgian Development Agency
SMCL	Structure mixte de concertation locale
M&E	Monitoring and Evaluation
MHPP	Micro Hydro Power Plant/Project
HC	Health Center
PV	Photovoltaic
LV	Low voltage ( LV < 0.4 kV)
MV	Medium voltage ( 0.4 kV < MV < 30 kV)
HV	High voltage ( 30 kV < HV)
ASAP	As soon as possible
SWAp	Sector wide approach
PSC	Project Steering Committee
EDPRS	Economic Development and Poverty Reduction Strategy
CB	Capacity Building
PIPO	Planification of interventions per objective
kW	Kilo-Watt (power)
MWh	Mega-Watt hours (energy)
TFF	Technical and Financial File
JLCB	<i>Joint Local Consultative Body</i>

## 1 Project form

<i>Project name</i>	Access to electricity for the rural population by utilization of renewable energy. (EPRER)
<i>Project Code</i>	RWA 07 055 11 - RWA 10 077 11
<i>Location</i>	Rwanda
<i>Budget</i>	€ 17 532 659 (Be) € 1 801 000 (GoR)
<i>Key persons</i>	Intervention Director, Co-manager
<i>Partner Institution</i>	Rwandese Ministry of Infrastructure (MININFRA) Energy, Water and Sanitation Authority (EWSA)
<i>Date of implementation Agreement</i>	December 19 <sup>th</sup> 2007
<i>Duration (months)</i>	71 months +12 months
<i>Target groups</i>	Rural population of Rwanda
<i>Global Objective</i>	Socio-economic development of the population and the improvement of their living conditions
<i>Specific Objective</i>	Put relatively cheap electric energy at the rural population's disposal during times of lower consumption
<i>Results</i>	R1: Electricity production from renewable energy sources has increased
	R2: Electricity access has increased thanks to the electricity distribution grid extension
	R3: Institutional support has been provided to electricity agencies at national and regional levels.

## 2 Summary

### 2.1 Analysis of the intervention

Intervention logic	Efficiency	Effectiveness	Sustainability
Specific objective	B	B	B
Result 1: Production	B	B	C
Result 2: Grid Extension	A	A	A
Result 3: Institutional support	A	A	A

Budget	Expenditure per year	Total expenditure year N (31/12/2011)	Balance of the budget	Execution rate
17.532.659 €	3.378.143 €	14.907.710 €	2.624.949 €	85 %

### 2.2 Key elements

A new national electricity utility has been created in 2011: Energy Water and Sanitation Authority (EWSA). Part of the EPRER project team has been shifted to the EWSA implementation unit.

More ambitious national energy targets have been set by the Government of Rwanda.

The MHPP of Cyimbilli (300 kW) has been commissioned in 2011 and is now producing electricity from renewable sources.

The construction of Rukarara II MHPP is 3 months behind the schedule, civil works were on-going at the end of 2011.

### 2.3 Key Risks

Risk (describe)	Probability (score)	Potential implications		Risk Level (score)
		Describe	Score	
Capacity and good will of institutions	Medium	Most of the actions taken need authorization of partner institution	High	C
Natural uncertainties linked to renewable energies	Medium	External factors as climate has a strong impact on renewable energy production	High	C
Bureaucratic delays	High	Potential influence on implementation (expropriation)	Medium	C
Shipping and transport difficulties in a landlocked country	High	Significant delays caused by logistics problems	High	C

High rainfall impact on construction works	High	Heavy rainfall can completely stop construction works	High	C
High employee turnover in partner institutions Retaining experts skills	Medium	Well trained staff has the tendency to quit their job at EWSA/MININFRA in search of other, better paid positions. By giving them training, we increase this risk. It is advisable to implement a sound legal framework to prevent this.	High	C

## 2.4 Key lessons learned and recommendations

Recommendations	Source	Actor	Deadline
Review the energy strategy and focus on realistic objectives for the energy sector.	Specific objective	MININFRA/ EWSA	2012
Align stakeholders activities with a strong SWAP	Specific objective	All stakeholders	2012
Ensure that the maintenance strategy is formulated and followed by site-operators	Result 1	EWSA	ASAP
Follow-up of the works on the construction <b>on site</b> to insure that the planning is followed by the contractor (Rukarara II)	Result 1	EWSA/BTC	Continuous
Follow-up of the administration (expropriations, authorizations, etc.) to ensure that additional delays are not caused by bureaucracy	Result 1	EWSA/BTC	Continuous
Socio-economic impact assessment on the effect of the electricity access in rural centers	Result 2	External consultant under BTC supervision	Q2 2012
Implement capacity building initiatives in both EWSA and MININFRA	Result 3	External consultants with experience in CB in government institutions	2012
Ensure a legal framework to retain qualified staff members	Result 3	Experienced legal advisors, internal or external	2012

## 3 Analysis of the intervention

### 3.1 Context

#### 3.1.1 Evolution of the context

A new national electricity utility has recently been established: **Energy Water and Sanitation Authority (EWSA)**, replacing the former electricity company known as the Rwanda Electricity Corporation (RECO). The implementation aspects of the Energy Policy/Strategy have been separated from the policy-making and overall coordination role of MININFRA. The implementation role has been shifted to EWSA. This shift has led to the relocation of a part of the EPRER project team to EWSA offices.

In 2011, MININFRA was reorganized, with a new minister of state and permanent secretary: Eng. Emma Francoise ISUMBINGABO is the new Minister of State in charge of Energy and Water, James KAMANZI is the new Permanent Secretary.

The **national energy strategy** has also been reviewed by the GoR with higher energy targets. The overall target is to increase the electricity access rate to 50% and to develop over 1000 MW additional generating capacity by 2017 through the following actions:

- (a) Increase **hydropower** generation to about 320 MW
- (b) Develop **geothermal** power plants with capacity of 310 MW
- (c) Generate power from **methane gas** to deliver 300 MW
- (d) Generate power from **peat** to deliver 200 MW
- (e) Strengthen and expand the **transmission lines** by an additional 2100 km
- (f) Reach a total of **1,200,000 connections** to the electricity grid
- (g) Electrify 100% of schools, health facilities and sector offices
- (h) Saving of 50 MW through introduction of **energy efficiency** measures, and development of energy efficiency standards and regulations

#### 3.1.2 Institutional Anchoring

Score: Appropriate

**Strengths:** All the EPRER projects activities fit in the frame of the energy strategy of the GoR aiming to give electricity access to the Rwandan population. Ambitious goals have been established by the government since energy access has been identified as a priority for the socio-economic development of the country. « Economic Development and Poverty Reduction Strategy » (EDPRS) covers the 2008-2012 period. This is the short-term strategy to realize the medium term targets (Millennium Development Goals) in 2015 and the longer-term development goals of the country: Rwanda 2020 Vision. All of those targets include electricity access targets wherein EPRER project finds a good place.

**Challenges:** 2011 has seen a significant evolution of the institutional context. Adaptation during those transition phases remain a challenge for the project team that has to deal with a new organization and new people and policies.



### 3.1.3 Execution Modalities

Score: Appropriate

**Strengths:** The projects are performed in co-management. MININFRA/EWSA is thus the contracting authority and the public tender Rwandan legislation is applicable on all the co-management project activities. The Intervention director and the co-management delegate ensures the strict application of the legislation, detailed in the BTC manual on the application of procurement procedures according to Rwandan law. They take part in the offers opening and analysis.

MININFRA and EWSA also ensure:

- (a) easy access to any documentation or necessary information for the implementation of activities
- (b) any relevant services necessary for the project implementation

In terms of financial modalities, obligations on financial contributions from the Rwandan part are respected, as given in the Specific Agreement and the TFF, which is part of the Convention.

A project steering committee is established to take important decisions on the project. It is composed of a MININFRA representative (PSC Chair), a MINAFFET representative, a MINECOFIN representative and of the BTC resident representative (Vice Chair). It is MININFRA's responsibility to organize this meeting. In 2011, there were four PSC meetings: 8/03/2011, 12/05/2011, 24/06/2011 and 14/12/2011.

**Challenges:** Heavy administrative procedures can significantly delay an activity waiting for simple authorization.

### 3.1.4 Harmo-dynamics

The new electricity and gas law was developed in order to encourage private sector participation to the energy development of Rwanda. A sector wide approach (SWAp) was adopted in the electricity sector to harmonize all the stakeholders' actions and align them to government priorities. A new junior assistant in charge of donor coordination arrived in October 2011. He will support the newly formed SWAp secretariat at MININFRA.

## 3.2 Specific objective

The specific objective is **“Put relatively cheap electric energy at the rural population’s disposal during times of lower consumption”**

### 3.2.1 Indicators

Specific objective: "Put relatively cheap electric energy at the rural population's disposal during times of lower consumption"						
Indicators	Baseline value	Progress year N-1	Progress year N	Target year N	End Target	Comments
Electricity production cost (RwF/kWh)	70	67	67	60	60	National data
Annual electricity production (GWh)	237	353	418	400	450	National data
Electricity access rates (%)	5	11	14.5	12.5	16	National data

### 3.2.2 Analysis of progress made

The objective of relatively cheap electricity for rural population is strongly dependent of (1) the production of electricity by renewable and local energy sources, (2) the transmission and distribution of this electricity to the beneficiaries, (3) an adequate institutional framework.

- (1) The production of electricity through renewable energy has been increased thanks to a MHPP of 300 kW hydro power and 46 HC equipped with PV solar panels. The MHPP inject electricity in the national network. The production cost is significantly lower than the existing thermal assets and pushes the electricity production prices downwards. This has a direct consequence on the resale electricity prices for the rural users that are connected to the national network. The electricity produced by the solar panels on the health centers is not injected to the network but directly benefits the rural population coming to the HC. This electricity is relatively cheap in the sense that it is an alternative to very expensive fuel generator sets.
- (2) The electricity production has to be transmitted and distributed to the rural centers so that the rural population has access to this electricity. The link between the second result and the specific objective is thus straightforward. Distribution and transmission grid have to be extended to reach rural populations that live far from the original network.
- (3) Efficient local institutions are essential to guarantee that the specific objective is reached. The support to the local institution should thus contribute to provide cheap electricity to rural population by ensuring good management and maintenance of infrastructure, adapting policies, drafting relevant strategies, etc.

### 3.2.3 Risks and Assumptions

Risk (describe)	Probability (score)	Potential implications		Risk Level (score)
		Describe	Score	
Political risks and opportunities: - Recurrent re-structuration - Objectives change	Medium	The partner institutions are currently being re-structured and the energy	Medium	B

- Priority shifts		objectives, revised upwards, this puts pressure on the project.		
Lack of coordination between the energy stake holders	Medium	Overlap of interventions, double studies...	Medium	B
Capacity and good will of institutions	Medium	Most of the actions taken need authorization of partner institution	High	C
Natural uncertainties linked to renewable energies	Medium	External factors as climate has a strong impact on renewable energy production	High	C

### 3.2.4 Quality criteria

Criteria	Score	Comments
<b>Effectiveness</b>	B	The specific objective will be reached with minor limitations
<b>Efficiency</b>	B	Most resources have been converted into results.
<b>Sustainability</b>	B	The maintenance strategy has been set for renewable energy installations but still has to be implemented
<b>Relevance</b>	A	The intervention is in line with national strategy and ambitious electricity access objectives

### 3.2.5 Potential Impact

The project specific objectives contribute actively to the Rwandan sectorial objective, i.e. the national energy strategy and the EDPRS. Indeed, the national energy strategy target is to increase the electricity access rate to 50% (this can not be reached without spreading electricity in rural areas), and to develop over 1000 MW additional generating capacity, mainly based on local renewable resource, hydropower among others. The specific objective also contribute to EDPRS target that states that 100 % of the schools and the health facilities should be electrified by 2012.

The specific objectives also contributes to the projects global objectives: the socio-economic development of the population and the improvement of their living conditions. In fact, the energy sector in general, and electricity in particular, significantly contributes to sustainable economic growth, social development and the fight against poverty. Electrification is an opportunity to trigger the creation of productive activities. Experience shows that, after a few months, electrification is followed by:

- Cereal mills, facilitating grinding work, mostly done by women
- Batteries load stations, to give place for improvements of lighting and radios. Those two elements are bases for knowledge and increase the chance to create profitable activities.
- Small industrial activities of all kinds, as coffee washing stations for example.

### 3.2.6 Recommendations

<b>Recommendations</b>	<b>Source</b>	<b>Actor</b>	<b>Deadline</b>
Review the energy strategy and focus on realistic objectives for the energy sector.	Specific objective	MININFRA/ EWSA	2012
Align stakeholders activities with a strong SWAP	Specific objective	All stakeholders	2012

### 3.3 Result 1

The first result is “**Electricity production from renewable energy sources has increased**”

#### 3.3.1 Indicators

Result 1: “Electricity production from renewable energy sources has increased”						
Indicators	Baseline value	Progress year N-1	Progress year N	Target year N	End Target	Comments
Annual energy production per MHPP (MWh)	0	0	510	1707	1707 (Cyimbili) + 11 813 (Rukararall)	Cyimbili MHPP (300 kW) was inaugurated in October 2011. 509 GWh corresponds to about 4 month normal production.
Number of electrified HC	0	39	46	46	50	4 out of 50 identified HC were found electrified by other partners (2 by Access & 2 by Global fund.

#### 3.3.2 Evaluation of activities

Activities (See guidelines for interpretation of scores)	Progress:				Comments (only if the value is C or D)
	A	B	C	D	
1. Cyimbili MHPP construction		X			
2. Study and follow-up of the MHPP works in the southern province (Rukarara II)		X			
3 .MHPP construction in the southern province (Rukarara II)			X		Significant delays were encountered on Rukarara II working field, mostly because of a delayed mobilization of the contractor.
4. Study and following of health centers electrification		X			
5. Health centers electrification		X			
6. Renewable energy pilot projects		X			

#### 3.3.3 Analysis of progress made

In the Western province, Rutsiro and Rubavu district, the MHPP of Keya (2270 kW), Nkora (680 kW) and Cyimbili (300 kW) have been inaugurated in October 2011. Cyimbili MHPP is financed by EPRER project while Keya and Nkora belong to another BTC project (“MCH”). The plant was operational during 2976 h in 2011; it has led to a 510 MWh electricity production in 2011.

The contractor for those power plants was the Rwandan company COMECA. It turned out that this local company had not the required capacity to achieve the work completely but the project team decided to keep on working with them in order to reinforce local capacity. In total, the end of the construction works was delayed by 9 months compared to the initial commissioning foreseen in July 2010. This is an unforeseen result of the project

In the Southern province, Nyamagabe district, Rukarara II MHPP construction works should have started in May 2011 after the completion of the execution studies & drawings during the previous February-April period. However, the beginning of the works has been delayed to August 2011 because of late mobilization of the contractor, the German consortium Korchendorfer & FEE Hydropower. At the end of the year 2011, the access road earthworks have been completed, and the excavation of the powerhouse foundation and the pipeline are on-going. The contractor estimates that the plant will be commissioned by October 2012, i.e. 3 months after the initial deadline. Rukarara II will have an installed electrical capacity of 2.2 MW that will significantly increase the renewable energy production.

7 additional health centers (HC) have been electrified in 2011. The total number of HC electrified by the project is now 46. The energy production from the solar panels equipping the Health centers is difficult to estimate since no meter was installed. However, most of them could significantly decrease HC fuel consumption, linked to fuel electricity generator use.

The “renewable energy pilot projects” activity was focused on Energy Kiosks projects in collaboration with Imperial College of London students association Equinox. The project has been mothballed in 2011 to evaluate the quality of the work already done and to assess the socio-economic impact of the energy kiosks. The evaluation will be performed by an external consultant in 2011.

### 3.3.4 Risks and Assumptions

Risk (describe)	Probability (score)	Potential implications		Risk Level (score)
		Describe	Score	
Bureaucratic delays	High	Potential influence on implementation (expropriation)	Medium	C
Shipping and transport difficulties in a landlocked country	High	Significant delays caused by logistic problems	High	C
Capacity and good will of contractors	Low	Execution depends on the contractors.	High	B
High rainfall impact on construction works	High	Heavy rainfall can completely stop construction works	High	C

### 3.3.5 Quality criteria

Criteria	Score	Comments
Effectiveness	B	Delays exist for Rukarara II activity, other implementations have been completed

<b>Efficiency</b>	B	Most results have been achieved and negative effects are very limited
<b>Sustainability</b>	C	There are risks linked with a lack of maintenance of the installations (MHPP and PV) that could harm the sustainability of the projects.

### 3.3.6 Budget execution

See annex 3 for more details

For the result 1, the financial execution rate at the end of 2011 was 76%, i.e. € 5.434.952 on a total of € 7.177.056.

### 3.3.7 Recommendations

<b>Recommendations</b>	<b>Source</b>	<b>Actor</b>	<b>Deadline</b>
Ensure that the maintenance strategy is followed by site-operators	Result 1	EWSA	ASAP
Follow-up of the works on the construction <b>on site</b> to insure that the planning is followed by the contractor (Rukarara II)	Result 1	EWSA/BTC	Continuous
Follow-up of the administration (expropriations, authorizations, etc.) to ensure that additional delays are not caused by bureaucracy	Result 1	EWSA/BTC	Continuous

## 3.4 Result 2

The second result is “**Electricity access has increased thanks to the electricity distribution grid extension**”

### 3.4.1 Indicators

Result 2: “Electricity access has increased thanks to the electricity distribution grid extension”						
Indicators	Baseline value	Progress year N-1	Progress year N	Target year N	End Target	Comments
MV lines constructed by the project (km)	0	130	170	170	175	Last 5 km on the Southern line will be achieved in 2012.
Number of rural centers connected to the MV network by the project	0	21	48	48	48	
Number of schools electrified by the project	0	19	38	38	38	

### 3.4.2 Evaluation of activities

Activities (See guidelines for interpretation of scores)	Progress:				Comments (only if the value is C or D)
	A	B	C	D	
1 Study and follow-up of MV lines and LV network work	X				
2 Construction of the MHPP interconnection lines in the districts of Rutsiro and Rubavu	X				
3 Extension of the MV line Kigali – Kiyumba	X				
4 Construction of the MHPP interconnection line in Nyaruguru district	X				The extension will be completed in February 2012

### 3.4.3 Analysis of progress made

In order to realize result 2, the MV electricity transport network has to be extended, to interconnect the MHPP and to feed the rural centers. Those are connected to the national MV network and fitted with a LV distribution network that provides electricity to their populations.

Concretely, the activities are the following:

- The extension of the Kigali – Kiyumba (KIKI) MV line, yet 100% completed in 2010, allowing 17 rural centers, including 19 schools, to connect to the network.
- The western electric lines interconnection (Rutsiro and Rubavu districts), completed in 2010, adding 9 electrified rural centers to the 3 centers already electrified in 2010. A total of 12 rural centers, including 12 schools have thus been electrified in the Western province.



- The extension of the Southern electrical lines is 90 % completed at the end of 2011 and will be fully accomplished by February 2012. Such works has electrified 9 rural centers, including 7 schools in the Southern province.

An unforeseen result of those activities is the current project of financing, with remaining EPRER budget, the completion of the construction work of Nshili I MHPP (400 kW) in the Western province in 2012. This activity would be the consequence of the electrical line extension to Nshili I.

### 3.4.4 Risks and Assumptions

Risk (describe)	Probability (score)	Potential implications		Risk Level (score)
		Describe	Score	
Lack of maintenance and management of the lines by EWSA	Low	EWSA has to put resources on management and maintenance to ensure the sustainability of the lines.	Medium	A
Expropriation on the MV and LV lines sites is realized on time	Medium	Late payment of the expropriation can delay the project and causes bad feelings against the project.	Medium	B

### 3.4.5 Quality criteria

Criteria	Score	Comments
<b>Effectiveness</b>	A	All activities were implemented on schedule
<b>Efficiency</b>	A	The results have already almost fully been achieved
<b>Sustainability</b>	A	EWSA has the capacity to insure a good maintenance of the lines

### 3.4.6 Budget execution

See annex 3 for more details

For the result 2, the financial execution rate at the end of 2011 was 95%, i.e. € 8.561.782 on a total of € 8.990.279.

### 3.4.7 Recommendations

Recommendations	Source	Actor	Deadline
Socio-economic impact assessment on the effect of the electricity access in rural centers	Result 2	External consultant under BTC supervision	Q2 2012

### 3.5 Result 3

The third result is “An institutional support has been provided to electricity agencies at national and regional level.”

#### 3.5.1 Indicators

Result 2: “An institutional support has been provided to electricity agencies at national and regional level.”						
Indicators	Baseline value	Progress year N-1	Progress year N	Target year N	End Target	Comments
Number of support activities financed by the projects	0	6	3	/	/	
Number of trained and operational technicians (MHPP and solar installations)	0	52	37	/	/	

#### 3.5.2 Evaluation of activities

Activities (See guidelines for interpretation of scores)	Progress:				Comments (only if the value is C or D)
	A	B	C	D	
1. Salary of the energy coordinator until May 2011	X				
2. Workshop in PIPO for Hydro power subsector	X				
3. Removal of wind equipment at sites and transportations to EWSA stores in Kigali	X				

#### 3.5.3 Analysis of progress made

Overall we can conclude that the institutional support in the year 2011 has been fruitful and has passed without having to overcome great obstacles or unforeseen circumstances.

Activity nr.1 was a necessary contribution to support the energy sector in Rwanda. The work of the energy coordinator contributed directly to the development of our targets. The workshop in PIPO trained 37 people and provided crucial knowledge on certain aspects of the hydro sector, which we were lacking beforehand. Lastly an external consultant was hired to assist in the removal of wind equipment at various sites. This consultant proved its worth by providing the service in a timely manner and by delivering all the expected output. Overall these activities have served to the interest of the energy sector and in this way provided support to the sector in ways there would have been a gap otherwise.

### 3.5.4 Risks and Assumptions

Risk (describe)	Probability (score)	Potential implications		Risk Level (score)
		Describe	Score	
High employee turnover in partner institutions Retaining experts skills	Medium	Well trained staff has the tendency to quit their job at EWSA/Mininfra in search of other, better paid positions. By giving them training, we increase this risk. It is advisable to implement a sound legal framework to prevent this.	High	C

### 3.5.5 Quality criteria

Criteria	Score	Comments
<b>Effectiveness</b>	A	All activities were implemented on schedule
<b>Efficiency</b>	B	The results have already almost fully been achieved
<b>Sustainability</b>	C	Institutions have to take measures to encourage well trained staff to stay within the institutions and to attract new qualified experts.

### 3.5.6 Budget execution

*See annex 3 for more details*

The budget execution rate at the end of the year 2011 for institutional support in specific was 76%. A sum of 300.000 Euro was available at the start of the project, but only 226.823,60 Euro was used so far. In 2011 18393,28 Euro were used, leaving another 73176,40 Euros left for the project in the year 2012.

### 3.5.7 Recommendations

Recommendations	Source	Actor	Deadline
Implement capacity building initiatives in both EWSA and MINIFRA	Result 3	External consultants with experience in CB in government institutions	2012

Ensure a legal framework to retain qualified staff members	Result 3	Experienced legal advisors, internal or external	2012
--	----------	--	------

## 4 Transversal Themes

### 4.1 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.

Part of the socio-cultural role of women in Rwanda is often to spend long hours looking for wood to carry back home for energy production. Besides the fact that this is very time consuming, the work is also very strenuous implicating that over long term it can damage their health. Once they return to home, they are likely to be exhausted and it therefore restricts them from other educational or economic activities.

Furthermore, we note that it is also women who tend to receive the highest part of the burden on health when using other energy provision methods when electricity is not available. For instance, women are almost always responsible for cooking in a rural context. During this activity they frequently use open fires producing unventilated smoke which in turn exposes them to particulate matter, carbon monoxide and other pollutants.

### 4.2 Environment

The EPRER project benefits the environment in many ways. Most importantly it contributes to a shift in the energy provision balance towards sustainable energy. Electricity produced by hydro plants decreases the need for energy coming from hard fuels, peat and others which can damage the environment.

The availability of electricity will also decrease the need of rural villagers to use wood and charcoal for their energy needs. Deforestation will decrease and therefore the capacity of our planet to digest pollution and to filter the air will increase both because of a greater amount of trees as well as because of the lower pollution caused by cooking fires.

The availability of information through radio and television running on electricity will also increase awareness concerning global warming, pollution and other challenges our planet is facing.

Nevertheless, there can also be negative side effects on the environment resulting from the EPRER project on a local scale (modification of the river flow for example).

### 4.3 Aids

Access to electricity greatly improves the possibilities for households to obtain information through media outlets. Often, electricity access results in the acquisition of a radio or a television. The higher exposure to media can eventually result in households to be more prone to receive information from sensitization campaigns and hence increases their awareness on aids/HIV. In the same way they will learn about anti conception and this will in turn decrease fertility rates as well as the transmission of the disease through birth.

The previously described advantages on general health as well as the higher time

available for education can also transfer into decreased chances of both adopting the disease as well as transferring it.

In addition, electrification brings about the possibility of refrigeration which greatly enhances the lifespan of medicine. Electrified health centers will have more means at their disposal to effectively combat aids/HIV and other diseases.

## 5 Decisions taken by the JLCB and follow-up

Decisions	Source	Actor	Time of decision	Status
The PSC meeting approves the principle to fund completion of work for Nshili MHPP on construction of MHPP EPRER budget. An execution agreement will be prepared between BTC and EWSA.	Result 1	EWSA, BTC, Chinese company MS-TECH	End 2011	<b>Execution agreement to be approved</b>
The PSC has not yet approved the transfer of 73.180 euros to EWSA from EPRER project for institutional support. EWSA will first present a clear plan and budget to be included in the execution agreement.	Result 3	EWSA, BTC	End 2011	<b>Execution agreement to be written</b>
The project will not electrify the 4 remaining health centers with solar PV to reach a number of 50 HC. The contracts are closed and this would require a lot of work (new tenders) for limited output. An execution agreement will be concluded with EWSA which will be in charge of electrifying 4 proposed HC.	Result 1	EWSA, BTC	End 2011	<b>Execution agreement to be written</b>
For Rukarara II, the PSC noted that the project is about 3 months behind schedule. To avoid delays, the contractor has to submit the revised and realistic project implementation schedule and a guarantee as a proof of its technical & organizational capacity to execute the project and deliver the results in due time.	Result 1	EWSA, BTC, Kochendorfer & FEE	End 2011	New schedule plan the end of the work in October 2011

## 6 Lessons Learned

Lessons learned	Target audience
<p>The technical and organizational assessment of a contractor cannot be based on the offers only. Evaluators have to evaluate the capacities by checking conscientiously the references and experiences</p>	<p>Project implementation teams, procurement officer</p>
<p>To ensure an adequate project management cycle, a good monitoring and evaluation in particular, the indicators should be properly formulated (SMART). They often remain too vague to evaluate the progress made and this can cause a diversion from the original objectives</p>	<p>Project formulation team</p>



## 7 Annexes

### 7.1 Logical framework

Results	Results indicators	Verification source	Risks and hypotheses
<b>R1. Electricity production from renewable energy sources has increased</b>	<ul style="list-style-type: none"> <li>• Energy production per MHPP</li> <li>• Number of electrified HC</li> </ul>	Statistics from EWSA, MININFRA and MINISANTE	<ul style="list-style-type: none"> <li>• The management and maintenance of the MHPP are done by EWSA</li> </ul>
Activities per results	Means	Costs in Euros	Risks and Hypotheses
1.1. Cymbili MHPP construction	Contractor	457.484 €	
1.2. Study and follow-up of the MHPP works in the southern province (Rukarara II)	Study bureau	450.000 €	The studies confirm the feasibility
1.3 .MHPP construction in the southern province (Rukarara II)	Contractor	5.300.000 €	The Rwandan contribution is equivalent to 80.000 € for expropriation
1.4. Study and following of the health centers electrification	Study bureau	225.000 €	The studies confirm the feasibility
1.5. Health centers electrification	Contractor	1.375.000 €	The maintenance is done by the technical services of MINISANTE
	<b>Total for Energy production</b>	<b>8.007.484 €</b>	

Results	Results indicators	Verification source	Risks and hypotheses
<b>R2. Electricity access has increased thanks to the electricity distribution grid extension</b>	<ul style="list-style-type: none"> <li>• <b>MV lines constructed by the project (km)</b></li> <li>• <b>Number of rural centers connected to the MV network by the project</b></li> <li>• <b>Number of schools electrified by the project</b></li> </ul>	Statistics from EWSA, MININFRA and MINISANTE	<ul style="list-style-type: none"> <li>• <b>The management and maintenance of the installations are done by EWSA</b></li> </ul>
Activities per results	Means	Costs in Euros	Risks and Hypotheses
2.1 Study and follow-up of MV lines and LV network work	Study bureau	300.000 €	The Rwandan contribution is equivalent to 80.000 € for expropriation
2.2 Construction of the MHPP interconnection lines in the districts of Rutsiro and Rubavu	Contractor	1.679.851 €	
2.3 Extension of the MV line Kigali – Kiyumba	Contractor	2.130.000 €	
2.4 Construction of the MHPP interconnection line in Nyaruguru district	Contractor	4.000.000 €	
	<b>Total for lines and network</b>	8.109.851 €	

Results	Results indicators	Verification source	Risks and hypotheses
<b>R3. An institutional support has been provided to electricity agencies at national and regional level</b>	<b>Number of support activities financed by the project</b>	<ul style="list-style-type: none"> <li>○ PV of the PSC meetings</li> <li>○ Analytical accountancy</li> </ul>	<ul style="list-style-type: none"> <li>○ The GoR keeps financing the agencies</li> </ul>
Activities per results	Means	Costs in Euros	Risks and Hypotheses
1.1. Institutional support to national agencies	expertise	150.000 €	The national agency for renewable energy is operational
1.2. Institutional support to regional agency (EGL)	expertise	150.000 €	The Great Lakes countries support the EGL agency
<b>Total for institutional support</b>		300.000 €	

Global execution means	Human resources	Belgian contribution	Rwandan contribution
1. Personal	Minima, EWSA & CTB	760.800 €	66.000 €
2. Investments		70.000 €	
3. Operating costs	Mininfra, EWSA & CTB	69.600 €	60.000 €
4. Audit, Monitoring and Evaluation	Mininfra, EWSA & CTB	98.000 €	
Total for global execution means		998.400 €	126.000 €

<b>TOTAL EPRER (parts 1 &amp; 2)</b>	<b>17.532.569 €</b>	<b>1.800.000 €</b>
	<b>19.332.569 €</b>	

## 7.2 M&E activities

Management and daily following of the project are done by the project management team.

In addition specific monitoring and evaluation activities are currently being performed on some activities:

- Daily follow-up of the MHPP working field (Cyimbili, Nkora, Keya, Rukarara II) by the consultant *SHER ingénieur conseils*.
- Technical audit of the transmission lines
- Socio-economic impact evaluation of energy kiosks projects and KIKI transmission line
- Organizational assessment of the national institution EWSA
- Back stopping mission performed by Energy specialist from EWSA Headquarter

### 7.3 “Budget versus curent (y – m)”

## Budget vs Actuals (Year to Month, by Quarter) of RWA0705511

Project Title : **Accès à l'électricité pour les populations rurales à travers les énergies renouvelables**

Budget Version : **E05** Year to month : 31/12/2011

Currency : **EUR**

YtM : **Report includes all closed transactions until the end date of the closed closing**

	Status	Fin Mode	Amount	2011				Total	Total Exp.	Balance	% Exec	
				2010	Q1	Q2	Q3					Q4
<b>A L'ÉNERGIE ÉLECTRIQUE</b>			<b>16.467.335,00</b>	<b>11.051.875,31</b>	<b>-280.872,92</b>	<b>1.200.419,85</b>	<b>2.003.639,02</b>	<b>248.498,50</b>	<b>3.171.682,46</b>	<b>14.223.557,7</b>	<b>2.243.777,24</b>	<b>86%</b>
<b>01 La production d'énergie</b>			<b>7.177.055,67</b>	<b>4.344.148,54</b>	<b>-976.846,71</b>	<b>436.504,63</b>	<b>1.480.542,79</b>	<b>150.602,65</b>	<b>1.090.803,35</b>	<b>5.434.951,89</b>	<b>1.742.103,78</b>	<b>76%</b>
01 Construction de la MCH de		COGEST	1.083.920,00	1.946.981,31	-1.070.145,41	-119.563,81	151.611,45	16.292,49	-1.021.805,27	925.176,04	158.743,96	85%
02 Etudes et suivi des travaux		COGEST	450.000,00	209.038,45	47.608,43		91.246,93	91.352,69	230.208,05	439.246,50	10.753,50	98%
03 Construction des MCH de		COGEST	3.843.135,66	1.009.388,48	320,61	572.855,22	1.117.404,20	314,24	1.690.894,28	2.700.282,76	1.142.852,90	70%
04 Etudes et suivi des travaux		COGEST	225.000,00	70.108,14	10.146,58	966,10	1.092,03	1.896,21	14.100,92	84.209,06	140.790,94	37%
05 Electrification des Centres		COGEST	1.375.000,00	1.108.632,16	28.265,94	76.023,57	36.341,79	40.747,02	181.378,32	1.290.010,48	84.989,52	94%
06 Installation pilote d'énergie		COGEST	200.000,00	0,00	6.957,12	9.073,02	236,46		16.266,59	16.266,59	183.733,41	8%
07 Suivi 3MCH		COGEST	0,01	0,00		-102.849,47	82.809,93		-20.239,54	-20.239,54	20.239,55	-202395
<b>02 L'accès à l'énergie</b>			<b>8.990.279,33</b>	<b>6.499.296,45</b>	<b>685.976,23</b>	<b>758.164,69</b>	<b>522.009,22</b>	<b>96.335,68</b>	<b>2.062.485,82</b>	<b>8.561.782,27</b>	<b>428.497,06</b>	<b>95%</b>
01 Etude et suivi des travaux		COGEST	300.000,00	78.280,33	1.100,07	6.954,16	3.420,83	209,49	11.684,55	89.964,88	210.035,12	30%
02 Construction de la ligne		COGEST	1.852.061,43	1.932.728,78	-29.033,20	-42.583,73		1.877,34	-69.739,59	1.862.989,19	-10.927,76	101%
03 Extension de la ligne MT		COGEST	2.180.000,00	2.183.697,96						2.183.697,96	-3.697,96	100%
04 Construction de la ligne		COGEST	4.658.217,90	2.304.589,38	713.909,36	793.794,26	518.588,39	94.248,85	2.120.540,86	4.425.130,24	233.087,66	95%
<b>03 Un appui institutionnel a été</b>			<b>300.000,00</b>	<b>208.430,32</b>	<b>9.997,56</b>	<b>5.750,53</b>	<b>1.087,02</b>	<b>1.558,17</b>	<b>18.393,28</b>	<b>226.823,60</b>	<b>73.176,40</b>	<b>76%</b>
01 Appui institutionnel aux		COGEST	300.000,00	208.430,32	9.997,56	5.750,53	1.087,02	1.558,17	18.393,28	226.823,60	73.176,40	76%
<b>X RÉSERVE BUDGÉTAIRE</b>			<b>66.924,00</b>	<b>0,00</b>						<b>0,00</b>	<b>66.924,00</b>	<b>0%</b>
<b>01 Budget Temp Excel Digestor</b>			<b>66.924,00</b>	<b>0,00</b>						<b>0,00</b>	<b>66.924,00</b>	<b>0%</b>
		REGIE	758.000,00	309.407,26	28.012,94	53.641,88	43.554,55	32.985,84	158.195,21	467.602,47	290.397,53	62,00
		COGEST	16.774.659,00	11.220.158,50	-280.456,95	1.218.120,75	2.018.559,83	263.724,72	3.219.948,36	?	2.334.552,14	86,00
		<b>TOTAL</b>	<b>17.532.659,00</b>	<b>11.529.565,76</b>	<b>-252.444,01</b>	<b>1.271.762,63</b>	<b>2.062.114,38</b>	<b>296.710,56</b>	<b>3.378.143,57</b>	<b>?</b>	<b>2.624.949,67</b>	<b>85,00</b>



Budget vs Actuals (Year to Month, by Quarter) of RWA0705511 Printed on 11/01/2012

page: 1

## Budget vs Actuals (Year to Month, by Quarter) of RWA0705511

Project Title : **Accès à l'électricité pour les populations rurales à travers les énergies renouvelables**

Budget Version : **E05** Year to month : 31/12/2011

Currency : **EUR**

YtM : **Report includes all closed transactions until the end date of the closed closing**

	Status	Fin Mode	Amount	2010	2011				Total	Total Exp.	Balance	% Exec
					Q1	Q2	Q3	Q4				
01 Réserve Budgétaire		COGEST	61.924,00	0,00					0,00	61.924,00	0%	
02 Réserve Budgétaire REGIE		REGIE	5.000,00	0,00					0,00	5.000,00	0%	
<b>Z MOYENS GLOBAUX</b>			<b>998.400,00</b>	<b>477.690,45</b>	<b>28.428,91</b>	<b>71.342,78</b>	<b>58.475,36</b>	<b>48.214,06</b>	<b>206.461,11</b>	<b>684.151,57</b>	<b>314.248,43</b>	<b>69%</b>
<b>01 Frais de personnel</b>			<b>760.800,00</b>	<b>305.918,14</b>	<b>25.065,22</b>	<b>56.733,42</b>	<b>48.577,51</b>	<b>47.599,09</b>	<b>177.975,24</b>	<b>483.893,39</b>	<b>276.906,61</b>	<b>64%</b>
01 Assistant technique		REGIE	600.000,00	208.148,03	30.746,10	49.958,55	37.270,47	37.625,40	155.600,52	363.748,55	236.251,45	61%
02 Staf national		COGEST	132.000,00	82.501,40	-6.521,12	4.714,44	9.394,02	7.886,80	15.474,15	97.975,55	34.024,45	74%
03 Autres frais personnel		COGEST	28.800,00	15.268,71	840,23	2.060,44	1.913,02	2.066,89	6.900,58	22.169,29	6.630,71	77%
<b>02 Investissements</b>			<b>70.000,00</b>	<b>53.057,80</b>						<b>53.057,80</b>	<b>16.942,20</b>	<b>76%</b>
01 Véhicules		REGIE	55.000,00	37.392,00						37.392,00	17.608,00	68%
02 Equipement bureau et		COGEST	15.000,00	15.665,80						15.665,80	-665,80	104%
<b>03 Frais de fonctionnement</b>			<b>69.600,01</b>	<b>54.637,79</b>	<b>3.363,69</b>	<b>10.926,03</b>	<b>3.613,76</b>	<b>533,69</b>	<b>18.437,18</b>	<b>73.074,97</b>	<b>-3.474,96</b>	<b>105%</b>
01 Frais de fonctionnement		COGEST	48.000,00	32.222,57	5.821,53	6.969,40	2.695,09	2.977,00	18.463,02	50.685,59	-2.685,59	106%
02 Télécommunications		COGEST	9.600,00	7.447,17	926,44	702,49	212,44	88,42	1.929,79	9.376,96	223,04	98%
03 Fournitures de bureau		COGEST	11.999,98	10.200,78	671,04	1.616,12	379,77	685,56	3.352,48	13.553,26	-1.553,28	113%
04 TVA		COGEST	0,01	4.507,95	-1.351,89	1.607,17	306,50	1.488,30	2.050,08	6.558,03	-6.558,02	655803
05 Frais bancaires		COGEST	0,01	259,32	29,74	30,85	19,96	15,26	95,81	355,13	-355,12	355130
06 Assistant Junior		REGIE	0,01	0,00	-2.733,16				-4.720,84	-7.454,00	7.454,01	-745400
<b>04 Audit et suivi et évaluation</b>			<b>97.999,99</b>	<b>63.867,23</b>		<b>3.683,33</b>	<b>6.284,08</b>	<b>81,28</b>	<b>10.048,69</b>	<b>73.915,92</b>	<b>24.084,07</b>	<b>75%</b>
		REGIE	758.000,00	309.407,26	28.012,94	53.641,88	43.554,55	32.985,84	158.195,21	467.602,47	290.397,53	62,00
		COGEST	16.774.659,00	11.220.158,50	-280.456,95	1.218.120,75	2.018.559,83	263.724,72	3.219.948,36	?	2.334.552,14	86,00
		<b>TOTAL</b>	<b>17.532.659,00</b>	<b>11.529.565,76</b>	<b>-252.444,01</b>	<b>1.271.762,63</b>	<b>2.062.114,38</b>	<b>296.710,56</b>	<b>3.378.143,57</b>	<b>?</b>	<b>2.624.949,67</b>	<b>85,00</b>



## Budget vs Actuals (Year to Month, by Quarter) of RWA0705511

Project Title : **Accès à l'électricité pour les populations rurales à travers les énergies renouvelables**

Budget Version : **E05**

Year to month : 31/12/2011

Currency : **EUR**

YtM : **Report includes all closed transactions until the end date of the closed closing**

	Status	Fin Mode	Amount	2010	2011				Total	Total Exp.	Balance	% Exec
					Q1	Q2	Q3	Q4				
01 Suivi et backstopping		REGIE	47.999,99	28.130,02		3.683,33	2.325,08	81,28	6.089,69	34.219,71	13.780,28	71%
02 Evaluation à mi-parcours		REGIE	20.000,00	26.580,92						26.580,92	-6.580,92	133%
03 Audit		REGIE	30.000,00	9.156,29			3.959,00		3.959,00	13.115,29	16.884,71	44%
<b>99 Conversion rate adjustment</b>			<b>0,00</b>	<b>209,49</b>						<b>209,49</b>	<b>-209,49</b>	<b>?%</b>
98 Conversion rate adjustment		REGIE	0,00	0,00						0,00	0,00	?%
99 Conversion rate adjustment		COGEST	0,00	209,49						209,49	-209,49	?%

REGIE	758.000,00	309.407,26	28.012,94	53.641,88	43.554,55	32.985,84	158.195,21	467.602,47	290.397,53	62,00
COGEST	16.774.659,00	11.220.158,50	-280.456,95	1.218.120,75	2.018.559,83	263.724,72	3.219.948,36	?	2.334.552,14	86,00
<b>TOTAL</b>	<b>17.532.659,00</b>	<b>11.529.565,76</b>	<b>-252.444,01</b>	<b>1.271.762,63</b>	<b>2.062.114,38</b>	<b>296.710,56</b>	<b>3.378.143,57</b>	<b>?</b>	<b>2.624.949,67</b>	<b>85,00</b>



Budget vs Actuals (Year to Month, by Quarter) of RWA0705511 Printed on 11/01/2012

page: 3