

REPUBLIC OF RWANDA



MINISTRY OF INFRASTRUCTURE

ENERGY SECTOR PERFORMANCE REVIEW

**THE BACKWARD LOOKING JOINT SECTOR REVIEW
(JSR) REPORT FOR FY 2016/2017**

Kigali, November 2017

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List of abbreviations

Abbreviations	
AFDB	African Development Bank
BTC	Belgian Development Cooperation
EARP	Electricity Access Rollout Program
EDCL	Energy Development Corporation Limited
EDPRS	Economic Development and Poverty Reduction Strategy
EIA	Environment Impact Assessment
EU	European Union
FY	Fiscal Year
GOR	Government of Rwanda
HPP	Hydro Power Plant
IAEA	International Atomic Energy Agency
ICS	Improved Cook Stoves
JSR	Joint Sector Review
LCPDP	Least Cost Power Development Plan
LPG	Liquefied Petroleum Gas
LV	Low Voltage
MHPP	Micro Hydropower Plant
MINILAF	Ministry of land and Forestry
MINALOC	Ministry of Administration and Local Government
MINECOFIN	Ministry of Finance and Economic Planning
MINEDUC	Ministry of Education
MOE	Ministry of Environment
MININFRA	Ministry of Infrastructure
MV	Medium Voltage
MW	Megawatt
NDF	Nordic Development Fund
REG	Rwanda Energy Group
SCBI	Strategic Capacity Building Initiative
SMM	Senior Management Meeting of MININFRA
SWH	Solar Water Heater
TL	Transmission Line

I. INTRODUCTION

Access to safe, reliable and cost effective energy is essential to achieving the levels of growth defined under the Economic Development and Poverty Reduction Strategy (EDPRS II).

Energy is a critical productive sector that can catalyse broader economic growth and contribute significantly to facilitating the achievement of the country's social economic transformation agenda. In order to realize the desired development impact of 7-year Government Program, EDPRS-II and Vision 2020, the Government of Rwanda adopted and implements sound, comprehensive national energy policies and plans capable of taking into account dynamic factors such as, economic and population growth, natural resource constraints and dispersed settlement patterns.

1.1.Objectives of the Backward Looking Joint Sector Review.

The backward looking 2016/17 JSR has the key following main objectives:

- To assess progress in achieving sector objectives with focus on 2016/17 targets for: EDPRS 2 core indicators (annex 1.1), selected sector indicators (annex 1.2) and their corresponding policy actions. This will also include a discussion on catch up plans for areas lagging behind.
- To present and discuss budget execution performance (annex.2.1) for 2016/17.
- To highlight priority areas (maximum of five) for the 2018/19 fiscal year that will inform the planning and budgeting process for institutions in the sector.
- To review progress against implementation of recommendations from the last JSR meetings.
- To validate the draft Sector Strategic Plans (SSPs) for the National Strategy for Transformation (NST1).

1.2.Methodology.

A consultative approach was used during the preparation of the backward looking JSR report with involvement of all key stakeholders through Technical Working Groups (TWGs).

Four¹ TWGs met during the period of 07th to 8th November 2017 to discuss on the review of TWGs terms of reference, sector progress, highlighting the key specific challenges, and as well as the backward looking terms of reference and hence established a calendar for the consultation process.

¹ Biomass, Access, Generation, Efficiency TWGs

The draft report was shared with the 4 TWGs for inputs/comments for consideration in the draft final report presented to the Sector Working Group (SWG) for validation.

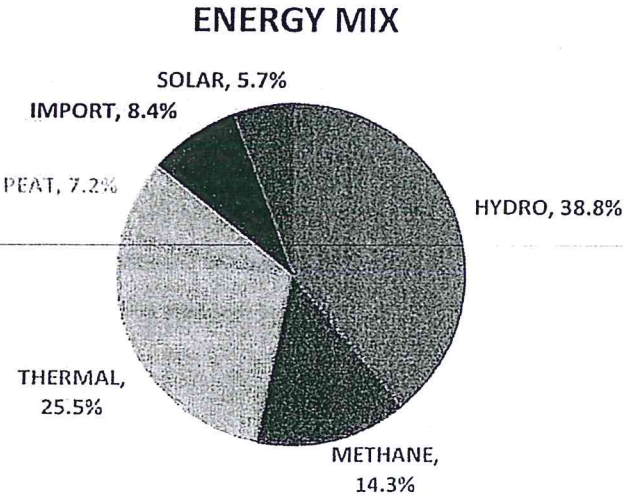
II. PERFORMANCE REPORT ON 2016/17 ENERGY SECTOR PRIORITIES

This section highlights the achievements against 2016/17 energy sector priorities in both generation, electricity access, transmission and distribution, biomass and energy efficiency subsectors.

2.1 Electricity generation.

In the Fiscal Year (FY) 2016/17 the installed capacity was expected to increase from 188MW to 238.529MW. During the 2016/17 FY the electricity generation capacity increased from 188 MW in June 2016 to 208.83 MW in June 2017 and the total energy generated is 704,447.691 GWh; this increase in installed capacity is due to the commissioning of Gishoma Peat Power Project (15MW), Giciye2 second generator (2MW), Nasho Solar Power Plant (3.3MW), Nyamata Solar Power Plant (0.03MW) and Gaseke Pico HPP (500KW). The Renewable Energy available is currently 109.6 MW equivalent to 363,593.290 GWh.

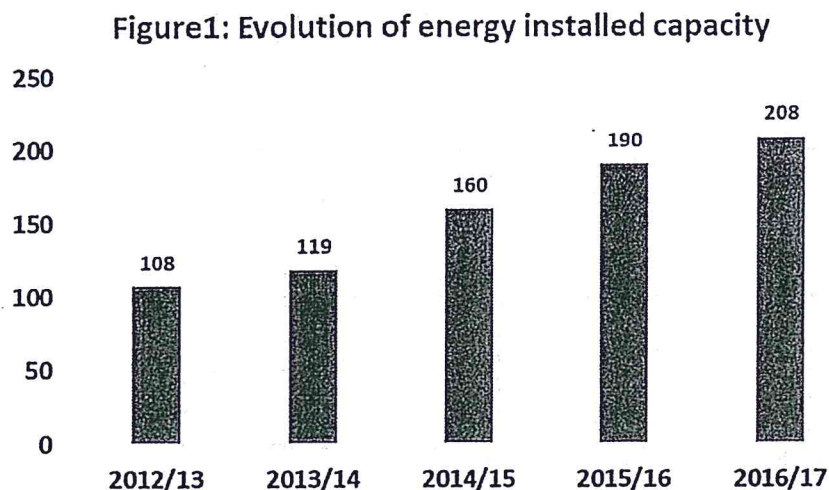
The energy mix as detailed below is composed of hydro at 47.2% (38.8% for domestic generation and 8.4% for import), thermal at 25.5%, methane gas at 14.3%, solar at 5.7% and Peat 7.2%.



It is expected that in the FY 2017/18, a total of 30.334MW will be added to the national grid, generated from Kavumu MHPP (0.334MW) and Hired 30MW Liquid fuel oil power plant to replace the 24MW decommissioned rental thermal plants at KSEZ (Masoro & CIMERWA); increasing the total installed capacity to 214.714MW.

There are other major projects being undertaken which will substantially increase the installed capacity, these projects are highlighted in the list of on-going projects.

The figure below illustrates the evolution of national installed capacity since 2012 until 2016.



2.2 Access to electricity.

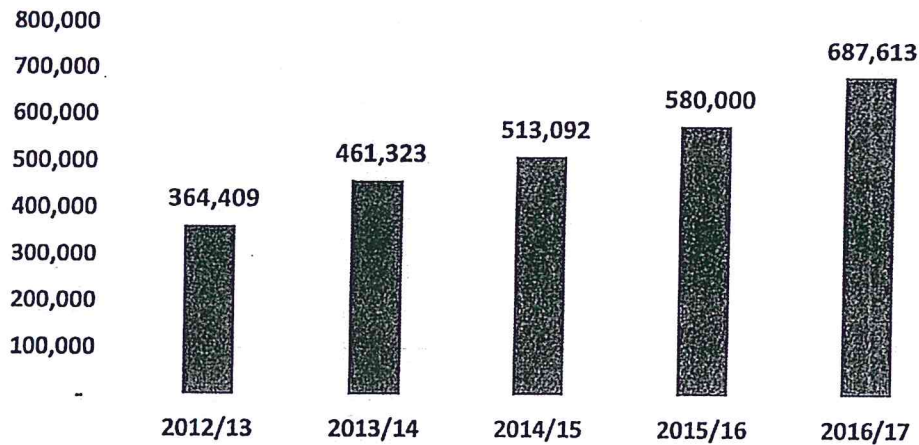
The target for 2016/17 was to have increase the national electricity grid in order to increase the number of households connected to grid electricity by 80,000 new connections. Further, the government priority was to increase electricity access through off-grid solutions with a target of 10% off- grid access by 2016/17.

During the fiscal year 2016/17 electricity access increased from 26.3% to 35.4%. The total number of connections to the national grid increased from 580,000 (April 2016) to 687,613 (107,613 new connections) corresponding to 27.8% of active subscribers with access to electricity, while 142,194 households got access to electricity using off- grid solutions installed in partnership with private sector players. The off-grid connections were standing at 1.5% of households in Rwanda in April 2016 and increased to 7.6% by the end of June 2017.

In a bid to accelerate economic growth, 272 productive use areas were connected to electricity including 12 water pumping stations, 10 markets, 11 milk collection centres, 2 irrigation sites, 1 telecom towers, 11 Tea factories, 165 Schools, 31, Health centres, 23 commercial centres, and 6 model villages.

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Figure2: Evolution of electricity connections



2.3 Electricity Transmission and Distribution.

To improve quality of power supply and reduce transmission and distribution losses, new 335.3KM of transmission lines and substations were constructed. Some were completed, while others are still ongoing.

During the fiscal year 2016/17, distribution network 847.9 KM were constructed, these include; 235.7 km (766 KM) Medium voltage level and 612.2 km (1302 KM) Low voltage level.

Transmission lines completed and commissioned.

- 110kV line "Ntendezi- Bugarama" 17.5 km (Construction of TL completed 100% and, Construction of Ntendezi and Bugarama substations completed and commissioned)
- 220kV line "Mirama – Shango": 93.5 km (Shango substation completed at 75%)
- 220kV line "Shango – Karongi -Rubavu – Goma" 167 km (TL complete and energized at 110KV associated substations are still under construction)
- 110kV line "Rukarara-Kilinda" 31.5 km
- 110kV line "Gishoma - Bugarama" 13 km
- 110kV line "Birembo - Shango" 9 km

2.4 Energy efficiency and energy security.

Energy efficiency and security of supply covers ongoing programs to promote sustainable use of energy saving lights (LEDs & CFLs), LPG, biogas, Improved Cook Stoves (ICSs), Solar Water Heaters, power loss reduction projects and fuel storage projects.

LPG, Biogas and ICSs- efforts were made for the promotion of biogas as an alternative source of energy with the following achievements against the annual target for the 2016/17 FY:

- ✓ By end June 2017, 4 selling points had been established, of which two are from existing Integrated Craft Production Centre in the Northern Province, locally known as Udukiriro. Refresher courses through the support of civil society –SNV Rwanda were conducted for Improved Coking Stove (ICs) producers in 20 districts of the country. 300 ICS promoters were supported in ICS manufacturing in 11 districts country wide.
- ✓ 877 new domestic and 4 institutional biogas digesters were constructed and rehabilitation of the non-operational digesters was done;
- ✓ Within the same period, technical support was provided for the promotion, marketing and dissemination of 349,539 ICSs.

Solar Water Heater - Under the “Solar Rwanda Program”, 388 SWHs were installed against the annual target of 450 and an awareness campaign was conducted to continue mobilizing households and health centers to use solar water heaters. However, the pace of dissemination of the systems remains lower than required, mainly due to few market players especially during the start of the program, 4 companies had been onboard to support in dissemination of solar Water Heaters but currently only 2 are actively involved in the business.

Power Loss reduction: A net reduction of losses by 1.62 % was registered. This means an annual loss for FY 2016/17 of 21.08% compared to 22.7% in 2015/16 and 22.5% in 2014/15. Currently poor losses are combined i.e technical and commercial and generation is compare to billing.

Fuel storage- The current monthly fuel consumption is in the range of 25 to 30 Million litres. The current national petroleum storage reserves (commercial & strategic) stands at 72 Million liters. A contract of rehabilitation of Rwabuye fuel storage was terminated with the 1st contractor and the tender documents are being prepared for the recruitment of the new contractor by January 2018. In line with the 2015 energy policy requirement, the country is to have at least the three (3) Months’ worth consumption of fuel storage reserves for the prevailing demand, a concession agreement for the construction of an additional 60 million liters of the national strategic fuel storage reserves to be added to the national fuel storage capacity. Completion of the project construction is expected by July 2020.

2.5 Implementation status of EDPRS2 and recovery plan.

Considering the EDPRS2 mid-term targets and with reference to the current implementation status, progress was made with respect to access to electricity and electricity generation capacity increase, which are respectively 34.5% (27.2% on grid and 7.3% off-grid) and 208.83MW as of June 2016.

However, it appears that the gap is still huge to meet both electricity access and generation targets of 70% and 563 respectively by 2018. The main challenges faced by energy sector include (i) financing gaps, (iii) affordability/accessibility for the use of off-grid solutions and dependence on biomass for cooking for the majority of households, (iv) High energy losses and unreliable power supply. The detailed challenges and lessons learned are developed in the (Annex 3). Some of the proposed strategies include:

For demand and Supply:

- ✓ The current status clearly justifies the need for the sector to strategize more in order to achieve the set targets. Several assessment and analysis that will guide the review exercise especially in demand and supply management. Some of these studies include the update of the “Least Cost Power Development Plan” –being done by MININFRA and REG and Electricity Development Master Plan (2017-30) – a review being undertaken with support from Israel Electric Corporation (IEC), expected to be delivered by end of 2017;
- ✓ At the same time, strategies are being implemented to fast-track the main projects that will help in achieving access targets for both on and off-grid.

For off-grid connections:

- ✓ Twenty-three (24) agreements were signed between EDCL and private off-grid companies. The framework contracts signed with these companies will help in expediting the procurement process and hence help in accelerating the off-grid connections.
- ✓ The energy sector (MININFRA and REG) coordinated with different institutions has been mobilising different companies to help in getting electricity to the needy through various off-grid as part of their corporate social responsibilities. Some organisations such as Police, Bank of Kigali, Rwanda Environmental Management Authority, and MTN have so far contributed to over 60,180 connections.
- ✓ Incentives to private companies active in Solar Home Systems (SHSs) for the availability of products at affordable prices will contribute to speed up the implementation of Rural Electrification Strategy (RES) and achieving off-grid target.

For on-grid connections:

- ✓ To accelerate on-grid connection, all households within 37 meters from LV poles and all villages within 500 m from distribution transformers were identified for connections. The new connection policy has been adopted and approved by MININFRA SMM which mainly facilitates the low-income to have access to on-grid electricity. The revised electricity tariff also aims at promoting industrial growth and hence increased electricity consumption

during off-peak hours.

For System Strengthening and Network Reliability:

- ✓ For the last two years, the government has prioritized strengthening of the national grid and system reliability improvement, various transmission lines and substations to comply with N-1 Principle are being constructed. Network protection standards and Supervisory control and data acquisition (SCADA) systems are being implemented throughout the planning process of REG.

For procurement and contract management:

- ✓ Capacity building in the area procurement and contract management has been given a priority. All the procurement staff in REG and MININFRA has have been offered trainings in procurement and some others are pursuing long term trainings offered by the Chartered Institute of Procurement & Supply (CIPS).

2.6 Cross-cutting issues.

2.6.1 Capacity Building and Technical Assistance

There are a number of ongoing initiatives to improve the capacity of the sector through technical assistance and trainings with the support of different partners.

- ▶ **Short-term and Long term trainings:** Capacity building through short term trainings, professional courses in power system planning using PSSE, HOMMER for Off-grid energy, PRINCE2 for Project Management, ACCA & CPA, Human Resource, Inspection of Fuel Depots, Financial Modelling and many others including Master programs were offered in the Energy Sector, about 3000 REG, MININFRA, RURA, RSB Engineers working with energy sector and other support service units were trained. The main sources of funds were Government of Rwanda and AfDB through GOPA Intec contract. The total consumed budget was around USD 2.5 Million.;
- ▶ **Specialised Trainings:** Also, training and provision of energy planning tools through the support of IAEA. Energy division staff and REG staff attended two trainings on energy demand and supply using tools developed by IAEA i.e, Model for Analysis of Energy Demand (MAED) and Model for Energy Supply Strategy Alternatives and their General Environmental Impact (MESSAGE) were offered. Other specialised trainings and skills transfer were offered in the updating the Electricity Master Plan/LCPDP by Israel Electric Corporation (Development of 60 Professional Skills) through SCBI funding

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- ▶ **Technical Assistance:** There are a number of technical assistance support through international and local experts in energy sector are being offered through various programs by National Employment and capacity Development Board, Africa Governance Initiative, BTC, European Union and the World Bank.

2.6.2 Environment and Gender-

Environment is one of the cross-cutting issues that is predominantly addressed in the implementation of energy programs/ projects. The replacement of biomass energy with other alternatives such as LPG, biogas and peat briquettes, LPG tax removal, subsidies and technical support for biogas and private sector involvement in making peat briquettes are some of measures in place to reduce the pressure on use of row biomass.

Environment Impact Assessment (EIA) is also a precondition to all power projects development and the protection of rivers near Micro Hydro projects is done in a coordinated way with all concerned institutions.

Gender is another key cross-cutting issue that is being addressed by energy sector at policy, strategy and operational levels. For example, under the Rural Electrification Program, increasing energy access to majority households especially in rural areas in itself promotes women's empowerment by; i) enabling more small business start-ups and increasing productivity of existing one's including those owned by women, ii) security and safety to the rural households especially to women who are prone to rape and other delinquent behaviours, among others. The use of improved cooking techniques reduces the burden of firewood collection and the time of cooking, making women save time for other productive activities, contributing then to improvement of the quality of life and education to women and men.

In 2016/17 the Ministry of Infrastructure through its planning department developed a gender mainstreaming strategy. The gender mainstreaming plan is being implemented in construction of energy projects, employment policies and in leadership.

III. BUDGET EXECUTION FISCAL YEAR 2016/17

During the Fiscal Year 2016/17, the Energy sector was allocated the development budget program referred to as "Fuel and Energy" with 4 subprograms. Electricity transmission and distribution subprogram had 86.5% of the total budget while generation, alternative energy sources and energy efficiency and security supply subprograms represented respectively 3.6%, 2.7% and 7.3% of the total budget.

The overall energy budget execution rate was 95 % for the Fiscal Year 2016/17. The execution rate

was at 86% for the recurrent and 101% for development budget. The budget allocated to fuel subsidies decreased from 14,503,828,324 FRW to 12,431,367,069 FRW during the budget revision.

The budget execution per program and subprograms as defined by MINECOFIN (Program: Fuel and Energy, subprogram1: Electricity Generation, subprogram2: Electricity Transmission and subprogram3: Alternatives Energy Sources Promotion subprogram4: Energy Efficiency and Supply Security) is detailed in annex 2.1 for the domestic budget.

For the fiscal year 2015/16 the overall energy budget execution rate was 92% with 112% for the recurrent and 87% for development budget.

The annex 2.2 shows the execution rate and general performance of other off-budgetary projects externally financed. The latter includes loans and grants signed between the Government of Rwanda represented by MINECOFIN and Development Partners I.e. World Bank, Kingdom of Belgium, OFID, EU, Netherland, AfDB, KFW, NDF to support the implementation of electricity generation and transmission projects.

IV. PRIORITY AREAS FOR THE 2018/19 FISCAL YEAR

The priorities for 2018/19 that shall be the reference point for energy sector in planning and budgeting are in line with EDPRSII annual targets and the ESSP. The key priority areas will cover the following:

1. Electricity Access Rollout: Government funding will mainly focus on social and productive use areas; the private sector support is envisaged for reaching off-grid electrification targets.
2. National Grid Network Strengthening: The government will focus on network upgrade initiatives, transmission system expansion and protection.
3. Implementation of on-going generation projects: Committed generation projects in micro hydros, methane, peat and regional Hydro power plants will be monitored for timely implementation.
4. Development of the strategic fuel reserve: Implementation of the national strategic fuel storage facilities is underway. The construction of the 60 Million Litre facility started in July 2017 is to complete in 2020.
5. Promotion of biomass alternatives: Biomass alternatives such as LPG, Pellets, Briquettes, and Biogas systems will be promoted. Various initiatives have already been initiated including a short-term catch up plan/strategy in line with the revised BEST being developed by the REG, MININFRA, MINILAF and MoE technical teams.

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V. UPDATE ON THE PREVIOUS JSR RECOMMENDATIONS

The forward Looking Joint Sector Review report was discussed approved during the 13th June 2017 Sector Working Group Meeting. Most of the recommendations on the discussion items were implemented and some others have been captured in this report.

- I. Detailed Breakdown of off-grid numbers: The meeting had requested to share a more detailed status of off-grid electrification. This information has been provided.
- II. Biomass: A target based budgeting approach was recommended in last FLJSR. The Energy Sector Strategic Plan for future planning and target setting puts into account this recommendation.
- III. Energy Efficiency Strategy: The SWG comments on the Draft Energy Efficiency Strategy comments were incorporated and the strategy was endorsed by SWG for MININFRA's SMM further endorsement and submission for cabinet approval.
- IV. Off-grid Ministerial Guidelines: The final off-grid ministerial guidelines were endorsed and approved by both SWG and MININFRA SMM after incorporation of stakeholder comments.

V. STATUS OF THE IMPLEMENTATION OF AUDITOR GENERAL'S RECOMMENDATIONS FOR THE FY 2014/2015

The 14/15 Auditor General's queries which were published in 2016 were in total of 69 issues, classified into: Accounting issues, Technical issues, Strategic issues and Administration issues. The table below illustrates the implementation status as of June 2017.

QUERY DESCRIPTION	TOTAL	IMPLEMENTED	IN PROGRESS	Percentage achievement
Accounting	77	73	4	92%
Technical & Commercial Strategic	36	32	4	89%
Administration	3	2	1	67%
Procurement	12	9	3	90%
	19	19	0	100%
Total	147	135	12	92%

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VI. STATUS OF INSTITUTIONAL, LEGAL AND REGULATORY FRAMEWORK, ANALYTICAL STUDIES AND PROJECTS UNDER IMPLEMENTATION

During the FY 2016/17 various sector documents i.e. laws, policies, strategies and studies were elaborated and approved while others are still under development:

- a. **Strategic Power Sector Audit for Rwanda:** Full report presented to stakeholders and published.
- b. **National Power Master Plan for Rwanda:** Modelling of a comprehensive current and future Generation & Transmission Model for Rwanda grid, using the software available at the utility level was completed with the assessment of current situation of the power sector in Rwanda.
- c. **Ministerial Guidelines on Minimum Standards Requirements for Rural Electrification Program:** The ministerial guidelines were presented and validated by the SWG and approved by MININFRA SMM.
- d. **EARP impact evaluation survey:** Draft final report ready to be presented to energy stakeholders for final inputs.
- e. **Biomass Strategy Review:** Study was contracted to C & E Advisory have currently submitted the Demand & Supply Scenario report and a Draft Strategy for review, the study was presented to the steering committee and comments have been shared to the consultants. Another accelerated plan on top of the BEST study is being developed to propose the quick-wins the scaling up/promoting biomass alternatives. A task force led by the Ministry of Infrastructure and composed of technical teams from REG, MINILAF, MoE has been tasked to complete the first draft by end of November 2017. The draft will later be discussed in the Biomass Technical Working Group for further inputs.
- f. **Development of Energy Efficiency Strategy:** The SWG of 7th September 2017 adopted the EE Strategy. An action plan shall be developed to accompany the strategy for further necessary approvals.
- g. **Development of Energy Efficiency Law:** The first draft of the Energy Efficiency and Renewable Energy law was developed. Discussion of the same and technical working group level will be done by Q3.
- h. **Multi – Tier Framework survey:** Electricity and Biomass draft report findings were presented and approved by the SWG of 7th September 2017.
- i. **Nyabarongo II multipurpose project:** Feasibility Study completed, modality and means to develop the projects is under consideration. Negotiation with potential EPC contractor is on-going)

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- j. **50 MW Symbion Methane Gas Power Plant Project:** The Concession Agreement and PPA signed, expropriation completed, the developer has not yet reached financial close. Two-year extension was granted.
- k. **80 MW Hakan Peat Power Project:** The project is in the implementation phase since this May 2017 and is expected to be completed in three years.
- l. **80 MW Rusumo Falls Hydro Power Projects:** The project is under implementation phase since April 2017 and is expected to be completed in three years. This capacity will be shared between three countries.
- m. **147MW Rusizi III Hydro Power Projects** (Negotiations with investors done. Initial tripartite agreement between Rwanda, DRC and Burundi to be signed by 29 November 2017 including Project Implementation. This capacity will be shared between three countries.
- n. Installation of capacitor banks (reactive power compensation project)
- o. Kigali ring (Jabana-Mont Kigali-Gahanga 110kV transmission line and associated substation under EU financing, scheduled to be completed April, 2018,
- p. Advanced Metering infrastructure for quantification of Technical losses (Huawei pilot is completed and rollout is scheduled to be completed January, 2018)
- q. Installation of smart meters on big customers under world Bank financing, (project is on-going with 10months duration effective form August, 2017,
- r. Reinforcement of Kigali distribution network (world Bank funded, scheduled to be completed Sept, 2018),
- s. Gasogi upgrade with associated substations and distribution lines under JICA financing,
- t. Gasogi upgrade with associated substations and distribution lines under JICA financing,
- u. Upgrade of Rubavu distribution network from 6.6kV to 30kV, under BTC financing
- v. Upgrade of Single phase to three phase (eastern province, the project is in its early stages of procurement, it's financed by BTC.

Signed on/11/2017

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Christian RWAKUNDA
 Permanent Secretary &
 Chair of the Energy SWG
 Ministry of Infrastructure - Rwanda



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N. Kipwola
Norah KIPWOLA
 On behalf of the Co-Chair of
 the Energy SWG
 World Bank

Annex 1.1 EDPRES 2 Core Indicators Matrix

No.	EDPRS OUTCOME	INDICATORS	UNIT	BASELINE VALUE (2015/16)	2016/17 Target (EDPRS 2 Mid-term Target)	Actual Performance	Indicator Score	Policy Actions	Key Narrative Progress against Policy Actions	Responsibility for Reporting	Catch up Plans for areas lagging behind
1	Increased electricity generation capacity	Electricity generated	Mega Watts	188	238,539 MW (Additional 50,259 MW)	208.83 (Additional 20.83 MW)	75%	Least Cost Power Development Plan	The LCPDP is still under development. Once completed, it will form as the basis for the long term and short term approach towards a sustainable supply and demand balance will be based on	REG	1. Kiyaas MAPP: The developer officially requested the PPA Amendment with an extension of the COD for 9 months. 2. Kavumu MAPP: Activities are ongoing on site with civil works on the canal. 3. Ruberera V: The developer, REFAD has submitted a draft of the proposed PPA amendment. The Contractor is currently working on camp site and site office and access road to new power house site. 4. 30MW from thermal were commissioned (Mukungwa (July), KSEZ/Vuguvu) and Birembo (Speneber)
2	Increased access to basic infrastructure for household and enterprises	Households with access to grid electricity	Number, percent	24.03% (80,000 HHs)	107,613 new connections on-grid (27.8%) to 28.6% on-grid.	133,511 new connections (27.8% of-grid)	133%	Connection Policy	The plan is still under development and this will also be the basis on which future Generation & Transmission will be Modelled.	REG	
		Households with access to off-grid electricity	Number, percent	1.3% (235,000 SHS) of-grid	139,402 new SHS (7.8% of-grid)	60%	Rural Electrification strategy	The strategy was developed and approved with the objective of increasing access to electricity through the most cost effective means by developing programmes that will facilitate both the end users to access less costly technologies and increase private sector participation in the provision of these solutions	Energy	Conducting awareness and Mass education campaigns on use of off-grid solutions	

Annex 1.2 Sector Indicators Matrix (For the selected 10 sector indicators)
 NB: The 10 Sector selected indicators (including the EPPRS 2 Core indicators) should be consistent with those reported in the 2014/15 Backward Looking JSRS

No.	EDPRS/SECTOR OUTCOME	INDICATOR	UNIT	BASELINE (2015/16) VALUE	2016/17 Targets	Actual Performance	Indicator Score	Policy Actions	Brief Narrative Progress against Policy Actions	Catch up Plans for areas lagging behind
ECONOMIC TRANSFORMATION										
1	Increase electricity generation capacity (including imports)	Electricity generated (MW)	Mega Watts	188	238,529 MW (Additional 50,529 MW)	208,83 (Additional 20,83 MW)	41%	Least Cost Power Development Plan	The LCPDP is still under development. Once completed, it will form as the basis for that the long term and short term approach towards a sustainable supply and demand balance will be based on	1. Kigesa MHP: The developer officially requested the PPA Amendment with an extension of the COD for 9 months. 2. Kavumu MHP: Activities are ongoing on site with civil works on the canal, Manufacturing of Turbine and Generators almost completed and waiting for FAT. 3. Rukarara V: The developer, REFAD has submitted a draft of the proposed PPA amendment. The Contractor is currently working on camp site and site office and access road to new power house site. 4. 30MW from thermal were commissioned (Mukungwa (July), KSEZ(August) and Biremba (September))
2	Increase access to electricity for households and enterprises	Households with access to grid electricity	Percent	24.3%	80,000 HHS connections on-grid (from 24.3% grid).	107,613 new connections (27.8%)	135% (Achieved)	Connection Policy National Power Master Plan.	The plan is still under development and this will also be the basis on which future Generation & Transmission will be Model.	
3	Increase the current fuel storage facility of 72 million liters by starting construction of new fuel storage facility.	Fuel storage capacity (million liters)	Million liters	72 Million Liters (June 2015)	No additional capacity during 2016/17 (under construction)			ESSP		Conducting awareness and Mass education campaigns on use of off-grid solutions
4	Increase use of Solar Water Heaters (SWHs)	Number of SWHs installed	SWH installed	2215	450 SWHs installed	392 SWHs have been installed by the end of June 2017	87%	ESSP		
RURAL DEVELOPMENT										
5	Increase use of domestic biogas digesters	Domestic biogas digesters constructed	Number of biogas digesters installed	10216	417	316	71%			

6) Increased Number of institutional biogas digesters	Institutional biogas digesters constructed	Number of institutional biogas	Technical support to construct institutional biogas digesters	3 institutional biogas digesters in Gtisarera district were inspected and advice given on technology use and maintenance.	10%			
7) Increased use of efficient cooking methods	Number of Improved Cooking Stoves (ICS) disseminated	Number of ICSs	10 production setting centers initiated	349,539 ICS Distributed. 4 Integrated craft production centers (Udabistro) established				

Annex.2.1 Execution Performance against Domestically Financed Budget

Table.1. 2016/17 Budget Execution by Programme and Sub Programme				
	Allocation (Frw)	Execution (Frw)	Balance (Frw)	% execution
Recurrent budget				
Sub Programme 1: Administrative And Support Services	16,169,800,984	13,959,841,374	2,209,959,610	86%
Development Budget	16,169,800,984	13,959,841,374	2,209,959,610	86%
Programme 1. Fuel And Energy				
Sub Programme 1: Fuel And Energy	25,617,027,606	25,867,773,964	(250,746,358)	101%
Sub Programme 2: Electricity Generation	5,323,414,538	5,183,583,618	139,830,920	97%
Sub Programme 3: Alternative Energy Sources Promotion	18,337,741,124	18,736,115,299	(398,374,175)	102%
Sub Programme 4: Energy Efficiency And Supply Security	609,892,820	609,892,820	-	100%
TOTAL BUDGET	1,345,979,124	1,338,182,227	7,796,897	99%
	41,786,828,590	39,827,615,338	3,918,426,504	95%

Annex.2.2 Execution performance of other off-budgetary Projects externally financed*
 NB. This is meant to capture execution on Externally financed projects that were not on budget in the 2016/17 Finance law

MAIN AGENCY	Project Name	Project financier	Project objective	Project Start	Initial End date	Revised end date	Project total budget (Commitment Currency)	Disbursements to-date (Commitment currency)	Disbursement RATE
EDCL	Rwanda Electricity Access Scale-up and sector-wide approach (SWAP) Development Project -EASSDP	World Bank (IDA)	Improve access to reliable and cost-effective electricity services for households and priority public institutions	09-06-10	30/06/2016	30/11/2017	\$130,000,000	\$119,470,000	92%
	Rwanda Electricity Sector Strengthening Project-RESSP	World Bank (IDA)	Enhance the operational efficiency of the utility and increase electricity access	05-10-16	31/10/2021	N/A	\$95,000,000	\$6,335,742.00	7%
		OFID	Rukarara Step-Up Sub Station Strengthened	22/06/2010	31/12/2015	Closed	\$10,000,000	\$9,864,048.91	99%
		OFID	Rukarara Step-Up Sub Station Strengthened	22/06/2010	31/12/2015	30/06/2018	\$12,000,000	\$10,332,990	86%
	Promotion of Solar Water Heaters	Nordic Devt Fund	Promote market for Solar Water Heaters (SWH) and avoid CO2 emissions	04-01-11	31/12/2015	31/12/2018	\$4,000,000	\$ 2,450,212	61%
	Increasing Access to Electricity to Some Areas in Rwanda Project	Kingdom of Saudi Arabia	Increase access to electricity to customers close to the existing network in Kigali, Southern Province and North Eastern Areas, by using cost-effective	06-04-11	31/03/2015	25-Dec-17	\$11,736,000	\$ 1,538,072	13%
	Rural Electrification Project in Burera and Nyagatare Districts	BADEA	Increase access to electricity to customers close to the existing network in Burera and Nyagatare Districts	12-04-14	30-Apr-17	30/06/2018	\$11,210,000	\$225.73	0%
		AfDB	Improve access to reliable and cost effective electricity services and strengthen the institutional capacity of key sector players in the project	30/1/2014	31/08/2018		\$41,451,659	\$ 18,626,952	45%
	Scaling-up Energy Access Project								

	SEAP-GEF	AIDB	Increase climate change, adaptive capacity of Rwanda communities benefiting electrification from Scaling up energy access project	12-09-16	30/06/2021	N/A	\$8,824,749	\$67,170.00	1%
	Improving Access to Reliable On-Grid Electricity Services for Households and Priority Public Institutions - (BE1EARP)		The access to reliable on-grid electricity services for households and priority public institutions in rural areas is improved	15-May-14	01-May-18	N/A	€ 17,000,000.00	€ 3,666,000	22%
	Improving Access to Reliable On-Grid Electricity Services for Households and Priority Public Institutions - (BE2EARP)	BTC	Provide sufficient, reliable and affordable energy for all Rwandans	17-Dec-15	16-Dec-19	N/A	€ 12,000,000.00	€ 941,000	8%
	Improving Access to Reliable On-Grid Electricity Services for Households and Priority Public Institutions - (BE2EARP)		Provide sufficient, reliable and affordable energy for all Rwandans	17-Dec-15	16 Dec 2019	N/A	€ 10,000,000	0	0%
EUCL	Electricity Loss reduction project		Electricity Loss reduction	19-Mar-15	17-Mar-20		€ 20,000,000	€ 5,874,878,399	29%
EDCL	Prepaid Energy - Rent to own solar home system (off grid)	EU	provision of electricity access to households using offgrid electricity (SHS)	16-Jul-14	16-Jul-18	27-Jan-19	€ 6,000,000.00	€ 2,888,676,672	48%
EDCL	Multinational-Interconnection of Electrical Grids of Nile Equatorial Lakes Countries (Construction of 220kv Electric Kibuye-Gisenyi-Goma-Shangobiremba And Associated Substations)	AIDB/KfW	Interconnectio of Eastern African countries to enable power trade	16-Mar-09	31/12/2017	TBD	Rwf 51,800,966,257	Rwf 38,248,275,763	74%
EDCL	Lake Kivu Monitoring Program	Netherlands Government	Monitoring of L. Kivu development activities	07-01-12	06-01-18	06-01-19	Rwf 9072584369	Rwf 3,907,097,839	43%
EDCL	Construction of Gasogi-KSEZ Transmission line and associated substations	JICA	Improvement of Substations and Distribution network	08-03-16	28-02-20	N/A	Rwf 16,657,400,000	Rwf 7,000,000,000	42%

Annex 3: Challenges and lesson learnt

Challenges	Lessons learnt/strategies
Financing gaps for the implementation of priorities and achievement of targets.	Continued mobilization of Private players into partnership with GoR in energy investments.
Affordability/accessibility of use of off-grid solutions.	<p>Awareness campaign and sensitization conducted countrywide for use of off-grid solutions in remote areas,</p> <p>Promotion of use of biomass alternatives such as LPG, biogas and peat briquettes.</p> <p>LPG tax removal,</p> <p>Subsidies and technical support for biogas and private sector involvement in making peat briquettes are some of measures in place.</p> <p>Design for RES program 1/Ubudehe category 1 and 2 is ongoing</p>