

REPUBLIC OF RWANDA



MINISTRY OF INFRASTRUCTURE

FORWARD LOOKING JSR FOR FY 2017/18 REPORT

ENERGY SECTOR

June 2017

KIGALI, RWANDA

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List of abbreviations

Abbreviations	
AfDB	African Development Bank
EDCL	Energy Development Corporation Limited
EDPRS	Economic Development and Poverty Reduction Strategy
GOR	Government of Rwanda
HH	Household
HPP	Hydro Power Plant
IAEA	International Atomic Energy Agency
ICS	Improved Cook Stoves
JSR	Joint Sector Review
LCPDP	Least Cost Power Development Plan
LV	Low Voltage
MHPP	Micro Hydropower Plant
MININFRA	Ministry of Infrastructure
MTF	Multi-Tier Framework
PV	Photovoltaic
REG	Rwanda Electricity Group
KSEZ	Kigali Special Economic Zone
SHS	Solar Home System
SWH	Solar Water Heater
WB	World Bank

I. INTRODUCTION

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

Energy is a critical sector that can catalyze broader economic growth and contribute significantly to facilitating the achievement of the country's ambitious social economic transformation agenda.

Indeed, in order to realize the desired development impact of 7-year Government Program, EDPRS-II and Vision 2020, the Government of Rwanda adopted, 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 Energy Sector objectives

The overall goal of Energy Sector is to ensure that all residents, industries and services have access to energy and associated services that are sufficient, reliable, affordable and sustainable. The core objectives are as follows:

- Ensuring the availability of sufficient, reliable and affordable energy supplies for all Rwandans;
- Creating an enabling environment for increased private sector participation in energy supply and service provision;
- Encouraging and incentivizing more rational, efficient use of energy in public institutions, and amongst industrial and household end-users;
- Ensuring the sustainability of energy exploration, extraction, supply, and consumption so as to prevent damage to the environment and habitats;
- Promoting safe, efficient, and competitive production, procurement, transportation, and distribution of energy;
- Developing the requisite institutional, organizational, and human capacity to increase accountability, transparency, national ownership and decentralized implementation capacity for sustainable energy service delivery.

EDPRSII Sector objectives

- Increasing electricity generation capacity to 563 MW by 2017/18
- Increasing access to electricity to 48% on grid and 22% off-grid by 2017/18
- Maintaining an economic and competitive tariff
- Sustainable and efficient use of biomass energy solutions
- Maintaining security of supply and stability of petroleum products' prices
- Strengthening institutional, legal and regulatory framework and capacity building

II. ENERGY SECTOR PRIORITIES FOR THE FISCAL YEAR 2017/18

2.1 Areas prioritized during planning and budgeting process

The key priority areas considered in both planning and budgeting during the 2017/18 Fiscal Year are: (i) Based on the developed connection policy, Electricity Access Rollout with focus on social and economic productive use areas located (within 1km from MV transformer) and households connection to the grid for those in 37m from the grid and off-Grid connection for those who beyond 37m from the grid, (ii) National Power Network Strengthening, (iii) Implementation of ongoing generation projects, (iv) Development of the strategic fuel reserve and (v) Promotion of biomass alternatives. Both the National Electrification Plan and the Least Cost Power Development Plan under development will give more guidance on the priority areas and further re-define the criteria for power generation, transmission and distribution/connection in the medium term period.

The specific projects to be implemented in 2017/18 were prioritized within the above priority areas that are linked to two EDPRS II main thematic areas i.e. Economic Transformation and Rural Development. The table 1 below shows the linkage between EDPRS II thematic areas and the selected projects.

Table1: Priority projects for FY 2017/18

EDPRS II thematic area/ Sector outcome indicators	Sector priority outputs
Economic transformation	
1. Increase electricity generation capacity from 208.38 MW (by May 2017) to 214.714 MW (new 6.334MW) by June 2018 and diversification of energy sources.	The outcome includes electricity generation projects in Hydro, peat and methane gas to be implemented by EDCL and or private companies. <u>Projects to be completed by 2017/18 FY (30.529 MW):</u> <ul style="list-style-type: none"> ▪ Completion and commissioning of (334 KW) Kavumu MHPP; ▪ 30 MW Liquid Fuel Oil plant to replace the 24MW from decommissioned rental thermal plants at KSEZ (Masoro & CIMERWA); ▪ Feasibility study for conversion of Jabana 20 MW Heavy Fuel Oil plant into Liquefied Natural Gas Plant. ToRs have been completed, and tender to be launched in July 2017. <u>Projects to be completed beyond 2017/18:</u> <ul style="list-style-type: none"> ▪ Development of IPPs MHPPs totaling 29.234MW (list in annex 8), commissioning of Rukarara V, (phase 1: 2MW and phase 2: 3 MW);

DDPRS II thematic area/ outcome indicators	Sector priority outputs
	<ul style="list-style-type: none"> ▪ Symbion Methane Project (50MW) - financial close to be achieved and access road to be completed in 2017/18; ▪ Hakan Peat (80 MW) - construction works will be at about 15% - 20%; ▪ Rusumo Falls HPP (80 MW with 26.7 MW as share of Rwanda) - both contracts for civil works and electromechanical works, have been signed on November 8, 2016 and the ground breaking ceremony took place on March 31, 2017. ▪ Rusizi III (145 MW with 48 MW share for Rwanda) - Financing agreement with financial institutions have been negotiated and is already signed with African Development Bank (AfDB). The expropriation will be completed by 2017/18.
Rural Development	
<p>2. Increase access to electricity access from 27.2% i.e (679,320 connections by May 2017) to 31.1% on-grid i.e at least (775,968 HHs connections) and 276 socio and economic productive areas) by 2017/18.</p>	<p>This outcome includes the projects to extend the grid and constructions of interconnection transmission lines:</p> <p><u>Projects to be completed by 2017/18 FY</u></p> <ul style="list-style-type: none"> ▪ Construction of new 1268 km MV lines and 2530 km of LV lines to connect new 96648 households. ▪ Connect to 276 socio and economic productive use areas: administrative offices, health centers, milk collection centers, , irrigation schemes, water pumping stations, coffee washing stations, primary and secondary schools, trade centers and markets, telecom towers, etc. ▪ High Voltage (HV) transmission (interconnectors & Domestic lines) lines i.e.: <ul style="list-style-type: none"> ○ 220/110/30kV 75/93.8MVA Shango and Bwishyura, 220/30kV 25/31.5 MVA Rubavu Substations. A new contractor to finalise the works abandoned by ISOLUX is expected to be mobilized by end of 2017, the construction period is estimated at around 12 Months. ○ (110kV/30kV, 20MVA Rulindo Substation and 110/30kV, 10MVA Gifurwe Substation. ○ Construction of 110kV TL Rulindo-Ngarama-Gabiro-Musha (119km) with Gabiro substation and 30kV Rulindo-Byumba-Ngarama TL. ○ 110kV TL Gasogi KSEZ with substation;

EDPRS II thematic area/ Sector outcome indicators	Sector priority outputs
	<p><u>Projects to be completed beyond 2017/18 FY</u></p> <ul style="list-style-type: none"> ○ 220/110/30kV 75/93.8MVA Shango substation; ○ 110kV Mukungwa-Nyabihu and Nyabihu substation; ○ 220kV HV TL Kigoma (Rwanda) – Gitega (Burundi) (62 km); ○ 220kV HV TL Kigoma (Rwanda) – Gitega (Burundi) (62 km); ○ 220 kV HV TL Rusumo-Rilima-Shango (116km); ○ 220kV TL Mamba-Rwabusoro- Rilima (53 Km)and 110kV Rilima-Gahanga (29 Km) with associated substations (Mamba, Rwabusoro and upgrading Rilima substation); ○ 220kV TL Bwishyura- Kigoma-Rwabusoro (74km) with upgrading of Kigoma substation and 220kV Symbion power plant-Rubavu and associated substation.
<p>3. Increase households with access to electricity through off grid from 7.3% (181.318 HHs)¹ by June 2017 to 11.2% (280.295 HHs) by 2017/2018.</p>	<ul style="list-style-type: none"> ▪ Providing access to electricity to new 98,977 households using Solar PV systems (through partnership with solar private companies). ▪ Continue awareness campaign and monitor private companies involved in dissemination of solar home systems.
<p>4. Promote sustainable use of biomass and promote alternative energy solutions</p>	<ul style="list-style-type: none"> ▪ Technical audit of existing domestic and institutional biogas systems; technical support to upgrade non-operational biogas digesters through cooperation with SNV. ▪ Technical audit of ICS standards compliance; ▪ Awareness to eradicate use of charcoal and promotion of clean cooking technologies (LPG, ICS and Biogas), ▪ Annual action plan for Biomass energy strategy.

¹ Estimate of end June 2017.

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EDPRS II thematic area/ outcome indicators	Sector priority outputs
5. Improve energy efficiency and reduce losses from the current estimate of 23% to 20% by 2017/18.	<ul style="list-style-type: none"> ▪ Implementation of loss reduction projects: <ul style="list-style-type: none"> ○ (i) 110 kV line Jabana-Mont Kigali-Gahanga, upgrading month Kigali substation and construction of Gahanga substation (27km); ○ (ii) reactive power compensators; ○ (iii) Smart metering Infrastructures. ▪ Kigali Distribution Network Strengthening by upgrading distribution lines and transformers; ▪ Installation of 450 new solar water heaters through SOLA Rwanda Program; ▪ Energy efficiency strategy awareness campaign; ▪ Develop energy efficiency standards and labeling procedures.
(5. Restore 3.8 million ² liters from the rehabilitation of Rwabuye fuel storage facility to maintain the total capacity of 72 million liters	<ul style="list-style-type: none"> ▪ Rehabilitate of Rwabuye fuel storage facility (3.8 million liters); ▪ Project effectiveness for the additional 38 million liters

² Nominal capacity

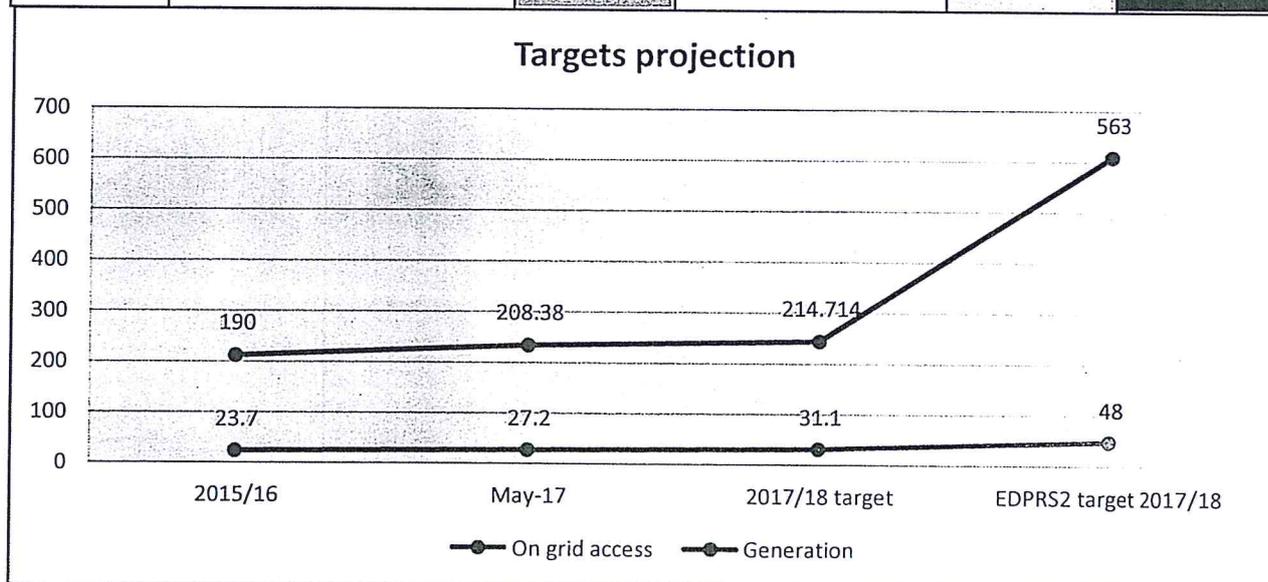
2.2 Sector targets and policy actions for the Fiscal Year 2017/18

Energy sector targets and policy actions for 2017/18 were identified and are detailed in annex2 while EDPRS2 core indicators with their respective policy actions are in annex3.

The graph below shows energy sector targets in terms of electricity installed capacity and access to electricity.

Graph1: Energy sector targets projections

Sector	Indicator	End of 2015/16	Current Status (May 2016/17)	2017/18 Target	EDPRS II Target 2017/18
Energy Sector	Electricity generated in MW	190	208.38	214.714	563
	% of households with access to electricity (on grid)	23.7	27.2	31.1	48 ³
	% of household with access to electricity off grid	2	7.3	11.2	22



³ Revised from 48% to 31-35% in line with Rural electrification Strategy

2.3 Budget allocated to energy sector for FY 2017/18

Energy sector has one development budget program “Fuel and Energy “and 4 subprograms as detailed in the annex 1. Electricity transmission and distribution subprogram takes 75.5% of the total budget while generation, energy efficiency and security supply subprograms represent respectively 6.7 % and 17.8 % of the total budget respectively.

2.4 Policy-related studies selected in 2017/18 FY and progress on 2016/17 analytical works.

During FY 2017/18 FY, there are ongoing studies that will be completed and new ones to be initiated. The main purpose of those studies is either to provide baseline situation or guidance for the review of Energy Sector Strategic Plan with targets and policy actions for the EDPRS 3. The studies to be conducted and their associated source of funds or technical support are detailed in annex 4 while the progress on ongoing studies is in annex 5.

3 PROGRESS ON 2016/17 SECTOR TARGETS AND POLICY ACTIONS

This section highlights the current progress towards implementation of the 2016/17 sector priorities and Annex 6 summarized the progress against 2016/17 key sector policy actions and targets.

3.1 Electricity generation capacity

During the 2016/17 Fiscal Year (FY) the electricity generation capacity increased from 188 MW in June 2016 to 208.38 MW in May 2017 and the total energy generated is about 704 GWh; this increase in installed capacity is due to the commissioning of Gishoma Peat Power Project (15MW), 2nd generator of Giciye2, Nasho Solar Power Plant (3.3MW), Nyamata Solar Power Plant (0.03MW) and Gaseke Pico HPP (500KW). The Renewable Energy available is currently 110.6 MW equivalent to about 364 GWh generated in that period.

3.2 Access to electricity

The total number of connections to the national grid has increased from 580,000 (24.3%) in June 2016 to 679,320 by May 2017 (27.2%) and 129,974 SHSs were installed across the country. Over the same period, the national electricity grid had been extended by 335.3Km of HV lines and 2,617 km of (MV&LV) distribution lines across the country.

3.3 Sustainable use of biomass energy solutions.

Since 1st July 2016, EDCL provided training to 300 ICS promoters in 11 districts and 3 promotion workshops on LPG were organized. During the same period two cooperatives of ICS have been mobilized in Integrated Craft Production Centers “Agakiro” of Ngororero and Rulindo.

The ongoing MTF survey will provide the status on biomass use (biogas, ICSs, etc); the report is expected by end of June 2017.

3.4 Energy efficiency and increase security of supply.

For security of petroleum products supply, the national petroleum storage reserves stands currently at 72 Million liters capacity. The 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 contract.

Under energy efficiency, 214 new SWHs have been installed through the Solar Rwanda Program from July 2016 to May 2017.

Regarding the achievement of losses reduction target of 20% by 2017/18, a number of projects to improve the grid network were initiated with support of Development Partners i.e. European Union and World Bank.

3.5 Cross-cutting issues

3.5.1 Capacity building

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.

- ▶ Training of Engineers by GOPA consultants through AfDB financial support; Training and skills transfer in updating the Electricity Master Plan/LCPDP by Israel Electric Corporation (Development of 60 Professional Skills) through SCBI funding;
- ▶ Technical Assistance from the African Legal Support Facility that will provide Legal support to both MININFRA and REG;
- ▶ Training and provision of energy planning tools through the support of IAEA.

Specifically for EDCL, since the beginning of the fiscal year 2016/2017 to-date, 38 employees have so far benefited from short term trainings in different fields and 22 are pursuing Masters Degrees and professional courses. Two completed Master's degree in March 2017. Going forward, for the fiscal year 2017/2018, EDCL plans to train about 30 employees with an estimated budget of 200 Million Frw covered by the government of Rwanda.

3.5.2 Environment and Gender

Awareness continue countrywide for the use of more efficient cooking technologies coupled with the dissemination of improved carbonization techniques across the country as some of programs being implemented to reduce the pressure on forests. The awareness campaign for LPG use mainly in Kigali city and secondary cities is also a priority.

The Environment Impact Assessment (EIA) as a precondition to all power projects and the protection of rivers near Micro Hydro projects is one of measures taken for the protection of environment.

Gender is another cross-cutting issue which is always considered during the implementation of government and donor funded projects. All projects under implementation are encouraged to consider women in the recruitment of workers. A considerable number of women have then access to jobs and incomes contributing to the welfare of the entire family.

However, challenges due to minimal number of qualified personnel have been encountered at higher technical levels (System Planning, design, etc.). Reports have shown minimal numbers of female applicants in such positions probably due to few females undertaking science courses.

MININFRA is undertaking the development of gender mainstreaming strategy to provide an overall outlook of gender mainstreaming in infrastructure sector by providing strategic actions based on identified gaps and strategic entry points in order to facilitate gender evidence based programming, budgeting and accountability.

4 PROGRESS ON THE ELABORATION OF ENERGY SECTOR STRATEGIC PLAN

The Energy Sector Strategic Plan (ESSP) was developed as an implementation plan to achieve national targets in energy sector as reflected in EDPRS 2 i.e. increasing power generation capacity to 563MW by 2018 and boost electricity access to 70% of population with 48% on grid and 22% off-grid by 2018.

The assessment of the implementation progress of EDPRS 2 and ESSP shows gaps in achieving the targets as shown in the table 2 below.

Also, key challenges that have to be addressed during the elaboration of EDPRS 3 are highlighted below:

- (i)** Limited Households' access to Electricity compared to the GoR ambitions by 2024, 2035 and 2050 due to the high costs of connecting households that are far away from the main grid;
- (ii)** Meeting high level of quality of supply to improve operations of customers and anticipated growth of industrial parks remain a challenge;
- (iii)** Insufficient strategic fuel storage capacity poses a threat to the national energy security targets; it leads to higher demurrage charges and inability to implement price stabilization measures;

- (iv) Unlit roads has been leading to increased accidents on the road and increasing insecurities;
- (v) Over 85% on the national population still relies on the use of firewood and charcoal for cooking, this causes health problems, environmental degradation and as well as financial economic challenges to the community.

Table2: Energy sector monitoring matrix

Sector Indicator	2014/15	2015/16 Target	Current Status	2017/18 Targets	EDPRS II Target 2017/18	Gap 2017/18 targets to EDPRS2 targets
Installed capacity for power generation (MW)	160	219	208.38MW	214.714 MW	563	348.286
% of households with access to electricity (on grid).	22%	25.50%	27.2	31.1%	31-35% ⁴	3.9%
% of household with access to electricity off grid.	-	1	7.3%	11.3%	35% ⁵	23.7%

Medium term priorities

For the medium term period, five priorities areas have been identified based on the challenges highlighted above and in line with the overarching objectives of Vision 2050 (upper middle

⁴ Revised from 48% to 31-35% in line with Rural electrification Strategy

⁵ Revised from 22% to 35% in line with Rural Electrification Strategy

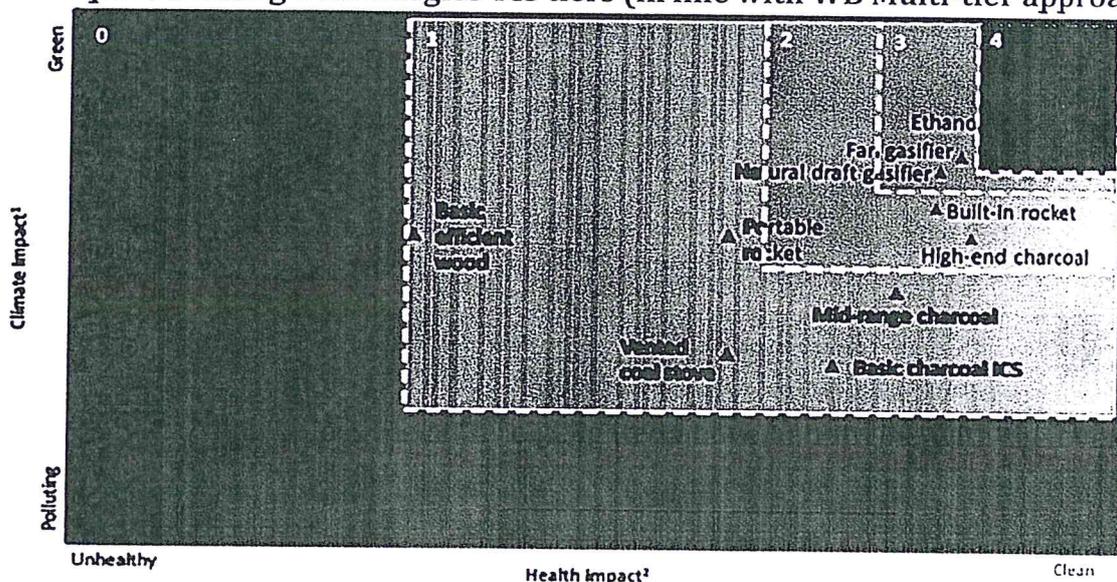
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income by Country 2035 and high income country by 2050). The related annual targets, policy actions and projects will be detailed in the EDPRS 3 and ESSP.

- **Universal access to electricity:** GoR plans to achieve universal electricity access with a combination of both grid extension and off-grid solutions for the most isolated areas and progressing to have at least 70% of the population with advanced access (Tier 3-5) and the rest with moderate access (Tier 2-3) by 2030.
- **Increase electricity generation to meet demand:** GoR will undertake investments into electricity generation to boost local capacity to meet demand, premised on core principles of; power availability, reliability and affordability to its clients. By 2024, total electricity installed capacity is to be increased as per the prevailing demand. A policy reserve margin ranging between 15% and 20% of the maximum available capacity shall be kept to ensure security of supply.
- **Maintaining adequate national strategic petroleum storage capacity:** GoR will undertake construction of Strategic Petroleum fuel storage facilities with the capacity to maintain an equivalent of 3 months petroleum fuel reserve.
- **Access to clean and sustainable cooking technologies:** the target is to eliminate the use of traditional cooking practices, recognizing that poorest households may still use Tier 1 and have 90% of households using Tier 2 to Tier 4 by 2030. The current status is expected from the Baseline Multi-Tier Survey Framework under implementation. The graph below shows the various tiers in line with cooking technologies.
- **Street lighting:** GoR will invest in putting up and maintaining street lights along the major highways and urban centers countrywide.

Graph2: Cooking technologies-ICS tiers (in line with WB Multi-tier approach)



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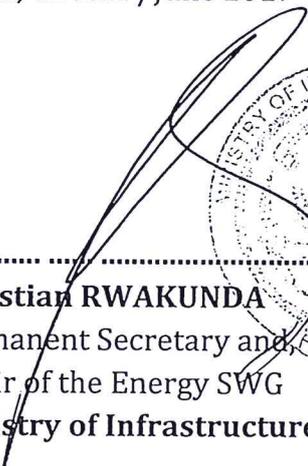
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Roadmap for the development of ESSP

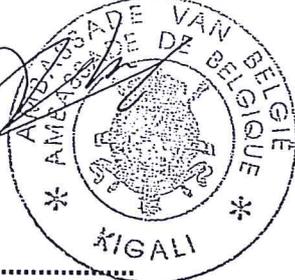
The elaboration of the Energy sector Strategic Plan will be conducted with a highly participatory and consultative process through Technical Working Groups and Sector Working Groups.

The ESSP will build on the outcomes from the analysis of electricity demand and supply, the updated LCPDP and the Electrification Plan. Following the roadmap for the development of the ESSP the draft strategy will be presented to the SWG by October 2017 and after its submission to MINECOFIN for quality assurance in August 2017. The final ESSP is expected to be approved by the SWG in November 2017 prior to further approval process.

Signed, on 23th /June 2017



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Christian RWAKUNDA
Permanent Secretary and
Chair of the Energy SWG
Ministry of Infrastructure



.....
Johan Debar
Minister of Counselor Development
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Co-Chair of the Energy SWG
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Annex 1: Linking Sector Outcomes Budget programme and sub-programmes

Sector Outcome 1: Increased electricity generation capacity			
No.	Sub-programme	2017/18 Budget allocated (RwF)	Percentage
1	Electricity Generation	5,447,878,400	7%
Sector Outcome 2: Increased access to electricity for households and enterprises			
2	Electricity transmission and distribution	61,718,896,036.00	76%
Sector Outcome 3: Sustainable use of biomass and other resources promoted			
3	Alternative energy sources promotion	-	
Sector Outcome 4: Increased energy efficiency and security supply			
4	Energy efficiency and supply security	14,569,792,764	18%
TOTAL		81,736,567,200	

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Annex 2) Targets and Policy Actions for the Sector Indicators Matrix (For the selected 10 sector indicators)

EDPRS2/sector outcome	Sector outcome indicators (not exceeding 10 including EDPRS2 Core indicators)	Baseline (2015/16)	Current status	2017/18 Targets	2017/18 Policy Actions/ priority outputs (maximum of 2 per each indicator)
ECONOMIC TRANSFORMATION					
1	Increased electricity generation capacity (including imports)	Electricity generated (MW)	188 MW (June 2016)	208.38MW	214.714 MW (new 6.334MW)
					1. Completion and commissioning of Kavumu MHP (334Kw) and Kigasa MHP (195 Kw)
					2. 30 MW Liquid Fuel Oil plant to replace the 24MW from decommissioned rental thermal plants at KSEZ (Masoro & CIMERWA).
2	Increased access to electricity for households and enterprises	Households with access to grid electricity	580,000 connections on-grid (24.3%) by end June 2016	679,320 HHS (27.2%) by Mid May 2017.	775,968 HHS connections on-grid (from 27.2% to 31.1% on-grid).
		Households with access to off-grid electricity	2.0%	7.3%	From 7.3% to 11.2% off-grid (98,977 New households using solar PV systems.
					Implementation of Rural Electrification Strategy Continue awareness campaign and monitor private companies involved in dissemination of solar home systems
3	Increased fuel storage capacity to 150 million litres by 2017	Concession relating to 60 Million Liter Facility for storage of petroleum strategic	72 million liters (June 2016)	72 million liters	Reach the effectiveness of the signed concession for the additional 38
4	Increased use of Solar Water Heaters (SWHs)	Number of SWHs installed	2,133 SWHs (June 2016)	2,256 SWHs	2,706 SWHs installed (450 new systems)
					Awareness campaign of Solar-Rwanda Program Supervision of Supply and Installation of new solar water heaters
RURAL DEVELOPMENT					

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Increased domestic biogas digesters	Domestic biogas digesters constructed	Cumulative 10,216 biogas plants installed across the country	10,472 biogas digesters	Biogas systems disseminated and quality Insurance for 4500 biogas systems in districts	To conduct technical assessment of existing biogas digesters to ensure quality compliance
Increased Number of institutional biogas digesters	Institutional biogas digesters constructed	81 institutional biogas digesters	86 institutional biogas digesters	Biogas systems disseminated in schools and 2 new biogas constructed in Mageragere Prison	Working with MINEDUC for the dissemination of biogas in schools. Provide technical support to Mageragere Prison for the construction of 2 additional biogas.
Increased use of efficient cooking methods	Technical support provided to ICSS producers and promoters	1,687,572 ICSS stoves which are not technically measured. 328,222 cook stoves fulfilling technical requirements in use across the country. Note: RBG started the technical evaluation of ICSS fulfilling required	330,222 units (annual increase of 2,000 units),	Monitoring ICSS Standards compliance in 30 districts Promoting efficient stoves in 15 districts	Assessing ICSS producers and the type of the stoves produced. Monitoring ICSS Standards compliance Technical assessment of existing ICSS
Use of Liquefied Petroleum Gas improved	Awareness and use of Liquefied Petroleum Gas (LPG) enhanced	7 importers are identified and in partnership with energy authority	11 importers are identified	Restaurants, Hotels and Guest Houses in CoK are mobilized to shift from raw biomass to LPG	Awareness campaign of LPGs Supervision of LPGs dissemination

Annex 3) Targets and Policy Actions for the EDPRS 2 Core Indicators Matrix

No.	EDPRS Outcome	Indicators	UNIT	Baseline (2015/16) VALUE	Current status	2017/18 Targets	2017/18 Policy Actions	Responsibility for Reporting
ECONOMIC TRANSFORMATION								
1	Increased electricity generation capacity (including imports)	Electricity generated (MW)	MW	188 MW (June 2016)	208.38MW	214.714 MW (new 6.334MW)	1. Completion and commissioning of (334) Kavumu MHPP 2. 30 MW Liquid Fuel Oil plant to replace the 24MW from	Energy Sector/REG-MININFRA
2	Increased access to electricity for households and enterprises	Households with access to grid electricity Households with access to off-grid electricity	Number, percent Percent	580,000 connections on-grid (24.3%) by end June 2016	679,320 (27.2%) by Mid-May 2017. 7.3% (projection by June)	New 96,648 HHS connections on-grid (from 27.2% to 34.5%) by June 2017 (181,318) to 41.7% (280,295) by 2017/2018.	Complete construction HV transmission lines and Substations. Construction of MV and LV lines including Implementation plan of Rural Electrification Strategy Monitor private companies Installation involved in dissemination of solar home systems (new 98,977 SHSS)	Energy Sector/REG-MININFRA

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Annex 4: Sector Priority Analytical Studies for 2017/18

EDPRS2/sector outcome	Planned Analytical Work & Duration	2017/18 Budget	Funding Source (GoR, if otherwise, specify, also state the status i.e. Secured/ Still under mobilization)
ECONOMIC TRANSFORMATION	Draft Energy Efficiency Law	N/A	GoR
	National Power Master Plan	N/A	GoR (NCBS)
	Multi-Tier Framework baseline survey for Measuring Energy Access	N/A	WB
RURAL DEVELOPMENT	National Electrification Plan	TBD	WB
	Biomass Strategy and action plan	300,000 Euros	BTC
CROSS-CUTTING	Energy Sector Strategic Plan	N/A	GoR
	Energy Efficiency Strategy and Action Pla	N/A	GoR

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Annex.5: Progress against 2016/17 Sector Analytical Studies

EDPRS2/sector outcome	2016/17 Planned Analytical Work	Brief progress, challenges and actions to be taken if any
ECONOMIC TRANSFORMATION	Strategic Power Sector Audit for Rwanda	The full report was presented to the REG/EUCL/EDCL and MININFRA Leadership and the report findings at CERAwweek 2017. The final report was presented to energy sector stakeholders on 25th May 2017.
	National Power Master Plan for Rwanda	Modeling 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. The roadmap to complete the remaining deliverables by September 2017 was provided by IEC.
	Ministerial Guidelines on Minimum Standards Requirements for Solar Home Systems	Draft ministerial guidelines are ready to be presented to energy stakeholders for inputs.
RURAL DEVELOPMENT	RES Implementation - Programme 1 Design	Final draft proposal of the design was completed.
	EARP impact evaluation survey	Draft final report ready to be presented to energy stakeholders for final inputs.
	Biomass Strategy Review	The draft report was submitted end May for review.
CROSS-CUTTING	Multi-Tier Framework survey	Preliminary results on electricity access was presented to the stakeholders in Rwanda and international community in Vienna Austria. Final report expected to be completed by October 2017.

Remarks and clarifications

- DP Studies claimed as completed should be confirmed and shared
- Min The Strategic Audit Report was shared with DPs in hard copy
- DP Several DPs didn't receive a copy

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Annex-6) Progress against 2016/17 Policy actions (for the selected 10 sector indicators)

EDPRS2/sector outcome	Sector outcome indicators (not)	Baseline (2015/16)	2016/17 Policy Actions	Brief Description of Progress against implementation of 2016/17 Policy actions
ECONOMIC TRANSFORMATION				
Increased electricity generation capacity	Electricity generated	188 MW (June 2016)	1. Complete commissioning of Gicije II MHPP (2MW), construction and commissioning of Gaseke MHPP (500kW), Kigasa MHPP (195 kW), Kavumu (334kW) and Rukarara V (2.5MW). Complete commissioning of Gishoma Peat Power Plant (15MW)	1. Gicije II MHPP: power plant operational at full capacity. 2. Gaseke MHPP: Testing and Commissioning successfully completed; 3. Kigasa MHPP: The developer officially requested the PPA Amendment with an extension of the COD for 9 months. 4. Kavumu MHPP: Activities are ongoing on site with civil works on the canal. Manufacturing of Turbine and Generators almost completed and waiting for FAT; 5. 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. 6. Gishoma Peat to Power Plant: Testing and commissioning completed, power plant is generating 15MW. The PPA was signed on 22 February 2017, shipping is in progress and preliminary electrical installations underway. Power Master Plan under development
Increased Household access to Electricity	% households with access to on-grid electricity	580,000 connections on-grid (24.3%) by end June 2016	3. National Power master Plan.	335.3 Kms HV achieved of HV lines completed: Rukarara-Kilinda: 31.5 Km; Ntendezi -Bugarama: 17.5 Km; Biremo-Shango: 9 Km; Gishoma- Bugarama: 13 Km; Mirama-Shango: 93.5 Km and Shango -Rubavu border-Kivu watt: 170.8 Km. The network of MV and LV lines attained 2,617 Km across the country. Number of HHs connected to the grid increased to 679,320 by May 2017. About 129,974 SHSs were installed by different solar private companies.
	% households with access to off-grid electricity	1.5%	Implementation plan of Rural Electrification Strategy	
Increased fuel storage capacity to 150 million litres by 2017	Fuel Storage volume facilities constructed	72 million liters (June 2015)	Installation of 236,000 SHSs through Mobisol, Nots, Ignite, NESELTEC, others. Start construction of fuel storage capacity of 38 million liters	Contract terminated with the 1st contractor for the rehabilitation of Rwabuye fuel storage Tender documents are being prepared for the recruitment of the new contract.
Increased use of Solar Water Heaters (SWHs).	Number of SWHs installed.	2,133 SWHs (June 2016)	Awareness creation of solar Rwanda program	2,386 systems of solar water heaters installed so far. The main challenges are related to a lack of active suppliers.
RURAL DEVELOPMENT				
Increased use of domestic biogas digesters	Domestic biogas digesters constructed	10,216 domestic biogas	Training of technicians on domestic biogas technologies	i) 3 institutional biogas digesters in Gisagara district were inspected and advice given on technology use and maintenance. ii) Performance assessment of domestic biogas digesters in Rutsiro, Ngororero & Gisagara was undertaken in August 2016. Trainings undertaken in Kayonza and Rwamagana DISTRICTS. iii) new 316 technicians were trained across districts in the third quarter
Increased Number of institutional biogas digesters	Institutional biogas digesters constructed	81 (no additional biogas digester)	Training of technicians on institutional biogas technologies	
Increased use of efficient cooking methods	Number of Improved Cooking Stoves (ICS) disseminated	1,687,572 ICSs	Development of selling points for improved cook stoves	i) Refresher courses to ICs producers conducted in 20 districts. ii) 300 Improved Cook Stove (ICS) Promoters supported in ICS manufacturing in 11 Districts (Gatsibo, Kicukiro, Nyagatare, Gisagara, Ngororero, Ngoma, Kirehe, Karongi, Gicumbi, Rulindo and Rwamagana). iii) 2 Udukiriro (Ngororero and Rulindo) committed to offer services as ICS selling centres iv) Two new selling points were established, one in Ruhango District, another one in Ngoma District

Annex 7: Roadmap for the development of Energy Sector Strategic Plan (ESSP)

NO	Activity	Timeline	Responsible	Status
1.	Finalize the analysis of demand and supply	End May 2017	Energy Division and REG	On-going
2	Assessment of policy gaps	End May 2017	Energy Division and REG	On-going
3	Development of Least Cost Power Development Plan (LCPDP)	June-September 2017	Energy Division and REG	On-going
4	Consultations process: Presentation of LCPDP draft report to energy stakeholders	Sep-17	Energy Division and energy stakeholders	-
5	Draft LCDDP final report	End September 2017	Energy Division and REG	Status
6	Development of Electrification Plan	Sep-17	REG/EARP	Tender stage
7	Development of ESSP	Sep-17	Energy Division	On-going
8	Consultations process: presentation of the draft ESSP	Oct-17	Energy Division and stakeholders	-
9	ESSP- draft final report	End October 2017	Energy Division	-

Annex 8: List of Hydropower Plants to be commissioned beyond 2017/2018

No	Project Name	Capacity
1	Rwaza-Muko	2.6 MW
2	Nyundo III	3.9 MW
3	Rubagabaga	0.280 MW
4	Muhembe	0.323 MW
5	Nyirahindwe I	0.909 MW
6	Nyirahindwe II	0.359 MW
7	Nyirantaruko	1.263 MW
8	Base I	2.9 MW
9	Base II	2.9 MW
10	Ngororero	2.7 MW
11	Rwondo	2.31 MW
12	Ntaruka A	2.09 MW
13	Rukarara VI	6.7 MW
Total		29.234 MW

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