

**THE REPUBLIC OF RWANDA**



**MINISTRY OF INFRASTRUCTURE**

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**INFRASTRUCTURE SECTOR ANNUAL REPORT FOR FY 2015/16**

**August 2016**

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## LIST OF ABBREVIATIONS

|           |   |
|-----------|---|
| 7YGP:     | Seven Year Government Programme               |
| ANS:      | Air navigation Services                       |
| BASA:     | Bilateral air service Agreement               |
| CAT:      | Category                                      |
| CHAN:     | African Nations Championship                  |
| COMESA:   | Common Market for Eastern and Southern Africa |
| EAC:      | East African Community                        |
| EICV:     | Integrated Household living Conditions survey |
| FEZ:      | Free Economic zone                            |
| GIS:      | Geographic Information System                 |
| IATA:     | International Air Transport Association       |
| ICAO:     | International civil aviation Regulations      |
| KIA:      | Kigali International Airport                  |
| KM:       | Kilometers                                    |
| MIFOTRA:  | Ministry of Public Service and Labor          |
| MINALOC:  | Ministry of Local Government                  |
| MININTER: | Ministry of Internal Security                 |
| MOU:      | Memorandum of Understanding                   |
| MW:       | Megawatts                                     |
| NMT:      | Non-Motorized Transport                       |
| OSBP:     | One stop border post                          |
| RCAA:     | Rwanda Civil Aviation Authority               |
| REB:      | Rwanda Education Board                        |
| RIM:      | Rwanda Institute of Management                |
| RITCO:    | Rwanda interlink transport company limited    |
| RMF:      | Road Maintenance Fund                         |
| RNAV:     | Air Navigation Services                       |
| RTDA:     | Rwanda Transport Development Authority        |
| SCADA:    | System of control and Data Acquisition        |
| WASAC:    | Water and Sanitation corporation              |
| WASH:     | Water, Sanitation and Hygiene                 |
| WDA:      | Work force Development Authority              |
| WSS:      | Water Supply and Sanitation                   |
| WTP:      | Water Treatment Plan                          |

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## EXECUTIVE SUMMARY

This report highlights the achievements of the Ministry of Infrastructure and its affiliated agencies for the fiscal year 2015/16. It covers the sectors of Energy, Transport, Water and Sanitation and Urbanization and Human settlement.

It is based on the sector targets that were set at the beginning of the year in line with National programs such as Vision 2020, EDPRS II and 7YGP.

**Energy Sector:** the focus was to have a balanced power supply and production. The generation capacity increased by 30MW after commissioning of Kivuwatt Methane Gas Power Plant (26MW) and other small micro hydro power plants (4MW), which led to the current total installed capacity of 190MW. Concurrently there are major projects in pipeline such as 15MW Gishoma Peat to Power, 50MW Symbion Methane Gas to power, 80MW Hakan Peat to Power, and regional projects such as; 80MW Rusumo and 147MW Rusizi III that are at advanced stages and will substantially increase the current installed capacity.

In rural electrification, additional 89,964 households were connected to the grid while 37,250 households to off grid in partnership with private sector players.

The overall percentage connection for on grid was 24.3% while off grid was 2.67%.

In addition, a number of transmission lines and the related substations are under construction to allow power evacuation and trade across the region.

**Transport,** the riding quality of the national road network improved through rehabilitation, upgrade and maintenance. In addition, construction of multinational roads and one stop border posts has improved regional integration and trade.

Access (feeder roads) to productive use areas has also improved to facilitate rural market development.

Conditions of the national road network have remained at an average of 72.6% with national paved roads at 95%, unpaved roads at 55%; and district roads class one at 45%.

Kigali International airport has been upgraded with construction of a new Apron, terminal and land side facilities, installation of the state of the art bird collision avoidance system and construction of a second perimeter fence among others.

Expropriation for the new Bugesera International Airport has also been completed and construction is expected to begin in 2017.

**Water and Sanitation:** Efforts have been put to increase access to clean water and sanitation services. Clean water was extended to 338,466 people in fiscal year 2015/16.

With respect to improving water supply services in the City of Kigali; NZOVE I was completed resulting into additional 25,000m<sup>3</sup>/day.

**Urbanization and Human Settlement:** key milestones achieved include: percentage of population living in urban areas increased to 19% from 17.6% in the FY 2014-15, while the percentage of people living in planned and economically viable settlements increased to 55.8 % from 53% in the previous year.

Activities performed include relocation and resettlement of 50,000 households from scattered areas and high risk zones into organized and planned villages together with developing Integrated Development Program (IDP) model villages and upgrading informal settlements.

Other important milestones achieved include construction and rehabilitation of Public infrastructure such as rehabilitation of 4 stadiums which successfully hosted CHAN 2016 tournament. Repair works on parliamentary building, rehabilitation of the Tri-ministerial building as well as starting the construction of the following new buildings; High Commercial Court, National Archives and the Administrative Office Complex.

## **1. INTRODUCTION**

### **1.1. Rationale**

This annual report is a result of the ministry's fulfillment of its responsibilities to coordinate and report periodically on the performance towards the implementation of the sector programs, policies, laws and projects. The report portrays the achievements registered during the period between July 2015 - June 2016 in comparison with prior years and focuses on the Ministry's performance against the key objectives outlined in the national strategic documents i.e. Vision 2020, EDPRS II, 7YGP, Sector Strategic Plans and other priorities as adopted in different national fora or dialogue such as the National Leadership Retreat, National Dialogue Council (NDC) and Cabinet decisions in addition to various regional integration commitments.

### **1.2. Objective and Scope**

The Ministry Annual report intends to provide timely and focused information to the public and development partners and other stakeholders on the infrastructure sector performance during the previous financial year so as to facilitate policy makers identify key areas that need an urgent attention for efficient and effective allocation of resources and fast track development priorities. The 2015-16 annual report provides an insight in the achievements made in the four infrastructure sectors of Transport, Energy, Water & Sanitation and Urbanization & Human Settlements.

### **1.3. Methodology**

The ministry annual report is premised on an in depth analysis of key performance areas aligned to the achievements of the respective sectors against set targets in the previous action plan and draw lessons for effective and efficient delivery in the following fiscal year. The data used in this report was drawn from reports provided



by the Ministry's affiliated agencies and other sources as a result of joint rigorous monitoring conducted by the Ministry and its affiliated agencies. Households' living conditions surveys for prior years was as well used for comparison purposes.

## **2. INFRASTRUCTURE SECTOR DEVELOPMENT**

The interventions made in the infrastructure sector for the 2015/16 fiscal year are presented here below according to four infrastructure sectors;

### **2.1. ENERGY SECTOR**

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).

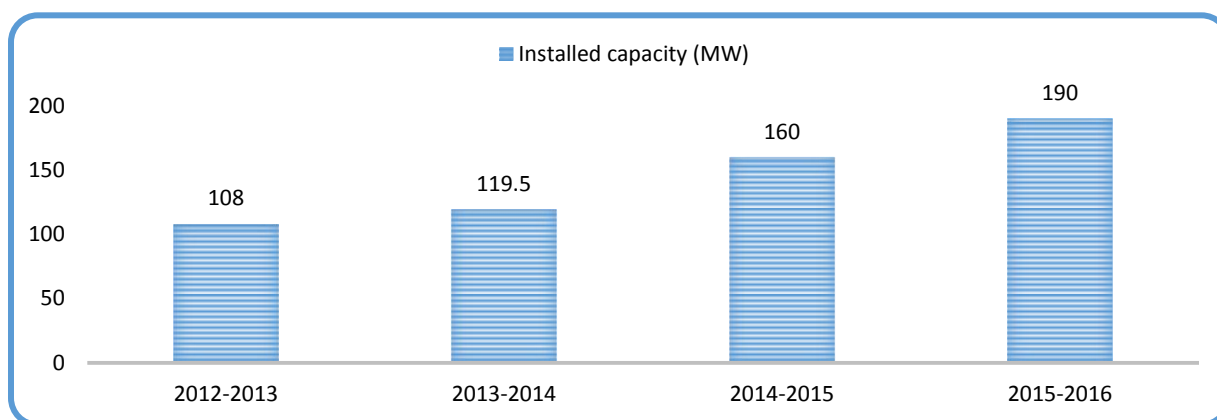
Energy is a critical productive sector that can catalyze broader economic growth and contribute significantly to facilitating the achievement of the country's ambitious social economic transformation agenda. In order to realize the desired development impact of 7-year Government Program, EDPRS-II and 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. It is expected that by the end of the EDPRS II in 2018, the electricity generation installed capacity shall be 563MW, while the overall access to electricity nationwide shall be at 70%, with the priority being given to the electrification of economic areas. In response to this, during the fiscal year 2015/2016, the following achievements were registered in the energy sector:

#### **2.1.1. Energy generation**

During 2015/2016 fiscal year, 30MW were commissioned leading to a cumulative capacity of 190MW; this was mainly achieved by the completion and operationalization of KivuWatt Methane Gas Power Plant with an installed capacity of 26 MW and 4MW from several micro hydro power plants.

It is expected that in the FY 2016/17, **17 MW** from Gishoma Peat and Giciye II hydro power Plants will be added to the national grid increasing the total installed capacity to **207MW**.

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



**Figure 1: Evolution of energy generation installed capacity**

Other generation projects in pipeline include:

- ✓ Commissioning of Rukarara V, phase 2 (2.5 MW);
- ✓ Symbion Methane Project (50MW);
- ✓ KivuWatt mini extension (8 MW);
- ✓ Hakan Peat 80 MW;
- ✓ Rusumo HPP regional project 80MW (Rwanda share 26MW);
- ✓ Rusizi III regional project 147MW (Rwanda share 49MW).

### **2.1.2. Access to Electricity**

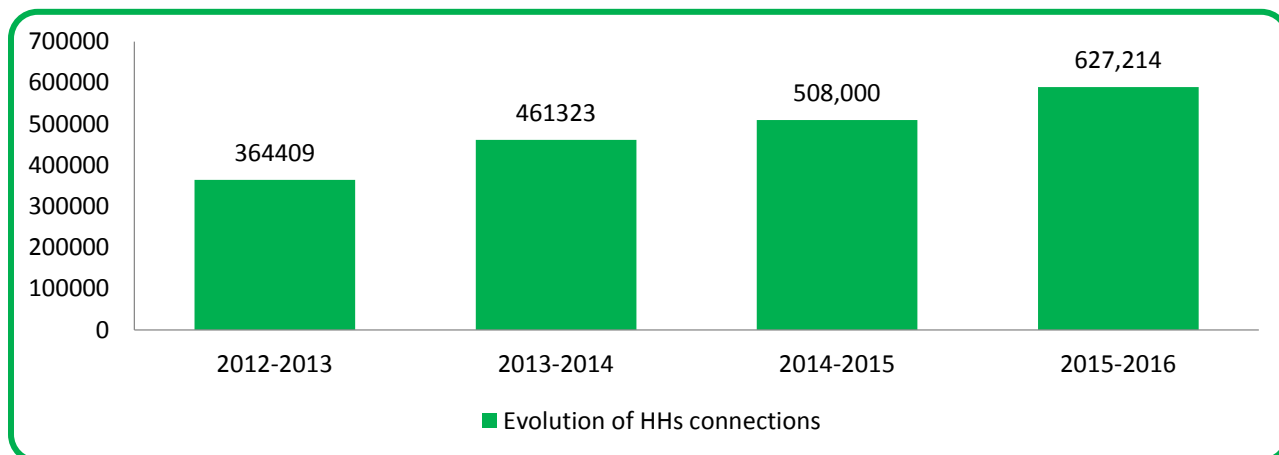
During fiscal year 2015/16, additional 89,964 households were connected to the grid totaling to 589,964 households while 37,250 households have been connected to off grid in partnership with private sector players.

The overall percentage connection for on grid was 24.3% while off grid was 2.67%.

In a bid to accelerate economic growth, numerous productive use areas were connected to electricity, notably: 25 water pumping stations, 324 markets, 34 milk collection centers, 16 irrigation sites and 171 telecom towers.

The figure below indicates the trend of household connections over the past four (4) years.

**Figure 2: Trend of households connections to electricity**



In the next fiscal year, 80,000 connections (including 1,451 connections in designated productive use and social sites) representing 3% increase and 255,363 households from off grid solutions representing 11% are targeted to be connected.

The off grid targets will be achieved through partnership with private sector players that are contributing to the implementation of the rural electrification strategy.

### **2.1.3. Electricity Transmission and Distribution**

To improve quality of power supply and loss reduction, the construction of new transmission lines and the related substations as well as distribution infrastructures were constructed. Some were completed and others are still ongoing.

#### **a. Transmission lines and related substations:**

- 220 kV Mirama–Shango, 98 km transmission line connecting Rwanda and Uganda. Line construction and testing completed 100% and substation construction is ongoing.
- 110kV line Rukarara-Kilinda 32 km Line and substation, construction is at 95%.
- 220 kV Shango–Karongi-Rubavu–Goma 167 km transmission line connecting Rwanda with DRC. Transmission line construction completed at 80% and construction of Shango substation is ongoing.
- 110kV Ntendezi- Bugarama 23 km transmission and substation construction is at 80%.

The construction of the following Transmission lines and related substations will be undertaken in the next fiscal year 2016/17;

- High Voltage (HV) Transmission lines: 110kV Rulindo-Gicumbi-Gabiro-Musha
- High Voltage (HV) substation: 110/30kV Rulindo and Gifurwe substations
- High Voltage (HV) Transmission lines 220kV Kibuye-Kilinda- Kigoma-Bugesera and substations
- High Voltage (HV) Transmission line : 220kV Rusumo-Bugesera-Shango
- High Voltage (HV) Transmission lines: 220kV Kigoma-Butare-Ngozi-Gitega
- 110kV Jabana-Mt. Kigali-Gahanga and substations

During the fiscal year 2015/16, distribution network constructed were;

- 842.96 km out of 766 km MV planned (110.04% of annual target)
- 1155.53 km out of 1302 km LV planned (88.75% of annual target)

It is planned that 336Km of MV and LV lines are expected to be constructed in Fiscal year 2016/17.

#### **2.1.4. Sustainable use of biomass energy solutions**

The ongoing programs to promote sustainable use of biomass fuels, whilst supporting transition to best alternatives to mitigate social and health impacts of traditional use of biomass resources to reduce the wood dependence from 94%-50% by 2018. The National Biogas program (domestic and institutional), use of Improved Cook Stoves (ICSs) and use of liquefied petroleum gas (LPG) were adopted.

##### **Biogas**

In the promotion of use of biogas as an alternative source of energy, the following achievements were registered:

- 2,275 new biogas plants both domestic and institutional were constructed in Districts, and institutions such as schools and prisons, rehabilitation of non-operational digesters.
- In cooperation with MINALOC a follow-up was done to evaluate the operation of the biogas and identify non-operational digesters.
- In collaboration with WDA (Work force Development Authority) the Biogas Curriculum was developed
- Masons in 22 Districts were trained in biogas construction while the remaining 8 Districts will be trained during fiscal year 2016/17.

##### **Improved cook stoves (ICS)**

- Technical support was provided for the promotion, marketing and dissemination of 8700 improved cook stoves.

##### **Use of liquefied Petroleum Gas (LPG)**

Educational campaign on the use of LPG was conducted in urban areas especially in the city of Kigali and the program is ongoing in secondary cities.

### **2.1.5. Energy efficiency and Security of Petroleum Supply**

The Petroleum storage reserves were increased from 31 Million liters to 72 Million liters during fiscal year 2015/16 resulting from additional storage capacity constructed by private sector (OILCOM and SP Ltd) who commissioned 19 Million and 22 Million liters storage depots respectively. Negotiations are also ongoing with the private sector to build additional 60 million liters strategic fuel storage reserves to be added to the national strategic reserves.

### **2.1.6. Revenue collections**

The revenue collections increased from Rwf 70.1Billion to Rwf 91.2Billion during fiscal year 2015/6 translating into 23% increment. Rwf 100billion are projected to be collected in the next year.

### **2.1.7. Laws, policies and strategies elaborated**

Different Energy laws, policies and strategies were elaborated and approved while others are undergoing the approval process namely:

- Rural Electrification Strategy approved by Cabinet on 27<sup>th</sup> April 2016
- The approval of Rwanda Energy Investment plan by Scaling up Renewable Energy Plan /SREP Subcommittee approved in November 2015.
- Renewable Energy Law was finalized and submitted to Law Reform Commission.
- Biomass energy strategy is under formulation in consultations with all stakeholders
- Rwanda Energy Policy awareness is being conducted through different media outlets
- LPG baseline and penetration strategy drafted and approved

## **2.2. TRANSPORT SECTOR**

A number of transport infrastructure projects were implemented to improve the domestic and external link to international Markets.

Interventions in the transport sector focused on national roads (upgrade, rehabilitation and maintenance); air transport; inland water infrastructure development and safety; trade facilitation; Resource mobilization for infrastructure development and regulatory frameworks for the transport sector. Major achievements include:

### **2.2.1. Roads construction, rehabilitation and maintenance**

In total, 3 road rehabilitation projects, 6 unpaved national roads were upgraded and 16 national paved and unpaved roads (1,092.8km) were maintained as indicated here below:

#### ***Roads rehabilitation:***

- Karongi-Rubengera (17km) completed at 75% end of June 2016;
- Kigali-Gatuna (77.8km) was completed and inaugurated in September, 2016;
- Huye-Kitabi (53) is under study review and procurement process for works.

#### ***Upgrading of unpaved roads to paved roads***

- Kivu Belt Lot 4&5 (66km) is almost completed at (98.5%);
- Kivu Belt Lot 6 (24.5km) and Kivu Belt Lot 7 (48km) are ongoing and overall works progress is at 20% and 28% respectively;
- Base-Kirambo-Butaro-Kidaho (63km) is ongoing and completed at 12%;
- Base-Gicumbi-Rukomo (51 km) which is at 8%, the overall site installation is completed at 70%;
- Musanze\_ Nyakinama (9km) is completed at 75%.

### ***National paved and unpaved roads maintenance***

In 2015/2016, earmarked resources for roads maintenance projects saw 16 national paved and unpaved roads under maintenance program (1,092.8km). These included Muhanga-Karongi (78km) & Retaining wall (near Urwibutso); Rusizi-Bugarama (38.4km) & Gisakura Black spot; Kigali-Kayonza (74.8km); Kayonza-Rusumo (92km) & Cyunuzi Blackspot; Kayonza-Kagitumba (116km); Musanze-Rubavu (67 km); Kicukiro-Nemba (61 km); Kigali-Huye-Akanyaru (157km) & Umukobwa mwiza, kamonyi, ruhango Blackspots; Ruhango-Kinazi Cassava Factory (36km) completed at 58%; Save-Mamba road (27km) completed; Kibungo-Ramiro road (56km) completed at 40%; Kibeho Kivu-Muganza (14km) – Access road to Muganza Tea Factory completed; Kabarondo-Akagera-Kucyanyirangegene (50km) completed; Access road to Nshili Tea Factory (19km) completed and Mbuga-Mpimbi-Burerabana-Nyabinoni (Lot1: 34km)

### ***Urban roads network upgraded***

In the promotion of urban cities development; rigorous efforts were directed towards urban roads network rehabilitation and upgrading to encourage the development of businesses; reduce congestion on Kigali city and play an important role with regard to economic growth. This saw Gicumbi and Rusizi urban roads completed with 4km and 2.7km respectively; KCC access roads (3km) completed; Kanombe deviation (2.2km) completed, Musanze urban roads (5km) almost completed, at 95% and Rubavu urban roads (5.4km) are at a completion rate of 80%.

### ***Roads conditions***

The efforts invested in the above projects (rehabilitation, upgrading and maintenance) have considerably improved riding quality and roads conditions countrywide; currently 95% of national paved road network, 55% of unpaved national road network from 36% previous year and 45% of district unpaved road



network from 29% last year are in good condition. The combined national paved and unpaved road in good condition stands at 72.6 % from 65.5% in Fiscal year 2014/15 which shows a positive increment. This is the result of roads' condition survey conducted in the 2015 as shown here below.

**Table 1: Road condition survey findings**

| No | Description              | Total length (Km) | Length inspected (km) | Length in good condition | % of roads in good condition |
|----|--------------------------|-------------------|-----------------------|--------------------------|------------------------------|
| 1  | National paved roads     | 1,211             | 1,207                 | 1,150.68                 | 95%                          |
| 2  | National unpaved roads   | 1,538             | 1,538                 | 839.8                    | 55%                          |
| 4  | All National roads       | 2,749             | 2,745                 | 1,990.48                 | 72.6%                        |
| 3  | District Roads Class one | 3,906             | 3,906                 | 1,770.37                 | 45%                          |

The demarcation of the road reserves for the national paved network was increased from 510km, to 1,191km.

### ***Feeder roads development***

To ensure market access for rural agricultural production, a number of Feeder roads were rehabilitated and upgraded. The table below shows the performance over the past 3 years.

**Table 2: Trend of feeder roads development over the past 3 years**

| <b>Fiscal year</b>          | <b>2013/2014</b> | <b>2014/2015</b> | <b>2015/2016</b> |
|-----------------------------|------------------|------------------|------------------|
| Number of Km (cumulative)   | 488.18           | 959.89           | 1507.02          |
| EDPRS 2 target (Cumulative) | 510.00           | 1,020.00         | 1,530.00         |
| <i>Performance in %</i>     | <i>95.7%</i>     | <i>94.1%</i>     | <i>98.5%</i>     |

***Support to Private sector development***

In a bid to promote private sector development and connecting productive use areas; 19.2km of roads were constructed. Projects under implementation during the year were:

- ✓ Upgrading of access road to Fuel Storage (1.5km) progress is at 98%;
- ✓ Access road to Rwamagana Industrial Park (2.7km) progress is at 94%;
- ✓ Access road to Gishari Flower Park (12km) progress is at 65%.

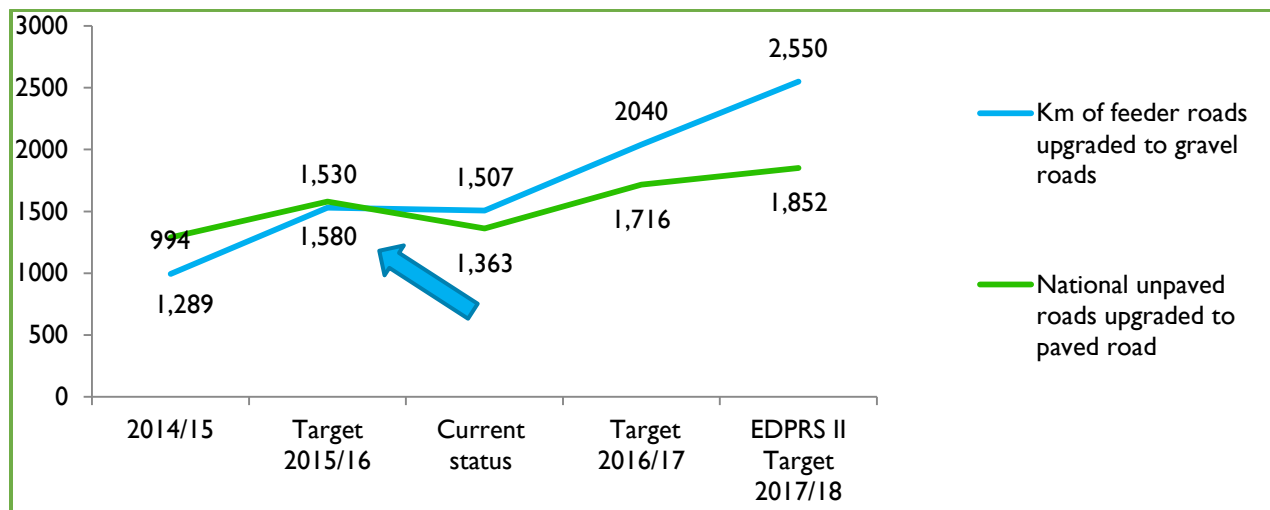
## 2.2.2. Progress against key performance indicators

The table below shows the sector performance against key performance indicators in line with strategic targets.

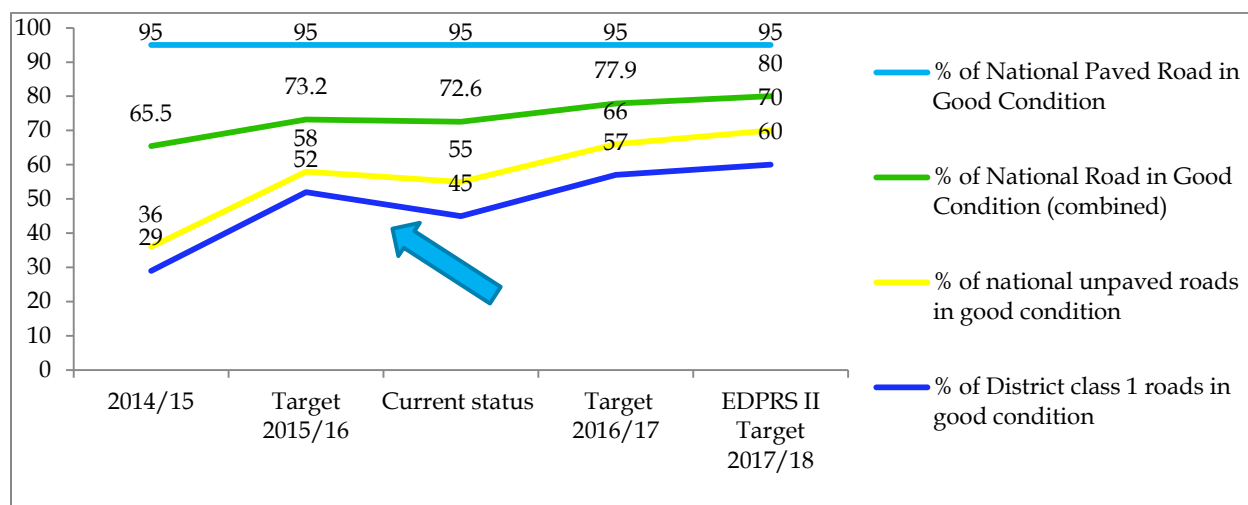
**Table 3: key performance indicators for the transport sector**

| No | Indicator   | Baseline<br>2014/2015 | 2015/2016<br>targets | Status<br>2015/2016 | EDPRSII<br>targets | %<br>performance |
|----|---|-----------------------|----------------------|---------------------|--------------------|------------------|
| 1. | Number of km of paved roads                             | 1,211                 | 1,580                | 1,363               | 1,852              | 73.5%            |
| 2. | Number of Km of Feeder roads                            | 959.89                | 1,530                | 1,507               | 2,550              | 59.1%            |
| 3. | % of paved and unpaved national roads in good condition | 65%                   | 73.2                 | 72.6%               | 80%                | 90.7%            |
| 4. | % of national paved roads in good condition             | 95%                   | 95%                  | 95%                 | 95%                | 100%             |
| 5. | % of national unpaved roads in good condition           | 36%                   | 58                   | 55%                 | 70%                | 78.5%            |
| 6. | % of District class 1 roads in good condition           | 29%                   | 52                   | 45%                 | 60%                | 75.0%            |

**Figure 3: Trends analysis for paved roads and feeder roads**



**Figure 4: Trend analysis for roads conditions**



### 2.2.3. Revenue collection and generation

A total amount of Rwf 39 Billion was collected for road maintenance against the target of Rwf 30 Billion. The increment of Rwf 9 Billion was as a result of the revised fuel levy.

The revenues generated from aeronautical and non-aeronautical streams were Rwf 16.5 Billion which accounted for 28% increment compared to the previous year.

The National Carrier generated revenues amounting to \$90,776,298 from \$88,275,389 registering an increase of 3% compared to the previous year. This is attributed to the increased number of passengers and flight frequencies by 16% and 40% respectively.

#### **2.2.4. Air transport development and safety**

Consistent with global trends and focused on the policies of the Government of Rwanda, aviation sector continues to be a strong driver of economic growth. Considerable progress has been made in the area of Airport Infrastructure, Air Navigation Services (ANS) and aviation safety and security and it has supported growth in Tourism industry, the MICE initiatives contributing significantly to economic growth.

However, increasing traffic placed an increased demand on the airport infrastructure, particularly the terminal building and aircraft parking space. With KIA operating close to capacity levels, RCAA has put in place plans for modular airport infrastructure development and completed major airport infrastructure developments including construction of a new Apron to the South of the airfield and taxiways; Installation of CCTV Cameras at KIA, Upgrade of KIA Airfield Ground Lighting System from CAT1 to CAT2, Construction of RwandAir business Lounge and walkway Canopies at KIA; some upgrade on KIA terminal and land side facilities; Construction of a second perimeter fence; Operationalization of Radar & Satellite RNAV procedures; and development of security personnel has significantly enhanced Airports security.

In recognition of the wildlife threat to aviation safety, RCAA installed the first civilian application worldwide, state of the art Bird Collusion Avoidance System. This has significantly reduced the number of wildlife related incidents at Kigali International Airport.

On the other hand, RwandAir successfully renewed its IATA Operational Safety Audit (IOSA) certification and passed the IATA's Safety Audit for Ground Operations (ISAGO) for the very first time with an exemplary 2 findings and 2 observations (awaiting the final official report from IATA).

RwandAir has also invested in additional equipment for ground handling services in preparation of the introduction of the new fleet acquisitions (acquisition of four new aircraft; two Airbus A330s and two Boeing 737-800s of which the biggest proportion of Pre-Delivery Payments (PDPs) have been completed and delivery schedules have been slotted within the first and second quarters of FY 2016-17) and the increase in the total aircraft movement at our hub in Kigali. This includes 2 executive passenger buses, high loaders, aircraft passenger stairs and other aircraft equipment.

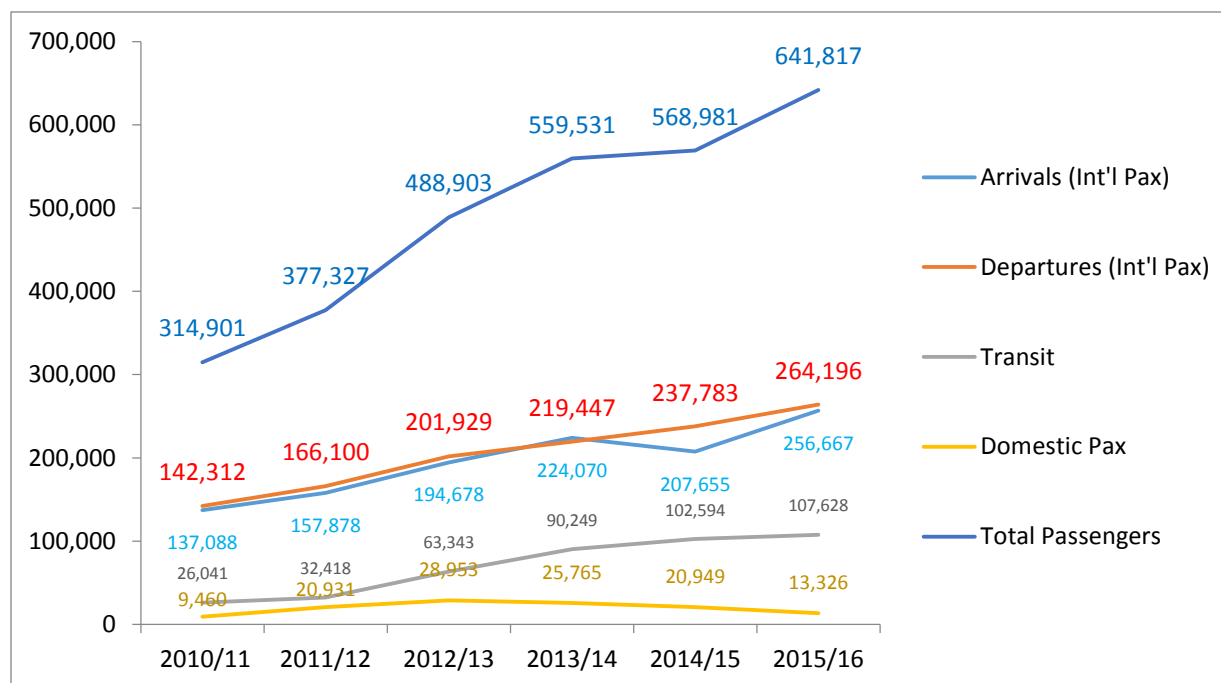
Seven (7) Bilateral Air Services Agreements (BASA's) have been signed between:

- Rwanda and Uganda; - Rwanda and South Sudan; Rwanda and Guinea;
- Rwanda and Ethiopia, - Rwanda and the Central African Republic,
- Rwanda and Benin, and Rwanda and Ivory Coast.

### **2.2.5. Air transport statistics and trends**

This section covers air transport statistics which include: passengers, aircraft, cargo movements and trend analysis for the past five years. The 2015/16 financial year showed a significant increase in international passenger movement compared to the previous year. International arrivals increased by 18.5%, departure passengers on the other hand increased by 8% and transfer passengers by 10.2%. The table below shows that trend from 2010 to 2015.

**Figure 5: Trend analysis for Air transport infrastructure**



The graph shows that there has been a steady growth of passengers over the years though at varying degrees. This was due to the engagement of various airlines and growing of RwandAir’s fleet and most importantly the open up of international conferences (MICE) held in Rwanda in recent years.

### 2.2.6. Inland water and Railway infrastructure development

The following studies were conducted in the framework of developing Inland Water and Railway transport namely; development of ports on Lake Kivu completed, SGR Kampala-Kigali progress is at 45% and Dar- es -salaam – Isaka- Kigali –Keza- Musongati completed. The inland ports development is planned in the next fiscal year.

### 2.2.7. Transport infrastructure development for cross border trade facilitation

Transport and Trade facilitation measures were adopted to reduce non-tariff barriers along the northern and central corridors. During this year, Rusumo One

Stop Border Post including an international bridge were inaugurated on 6<sup>th</sup> April 2016 by the Heads of State of the Republic of Rwanda and United Republic of Tanzania. Kagitumba OSBP was commissioned in July 2015 thus reducing trade costs and travel time on the routes; Kampala -Kigali and Dar es Salaam -Kigali.

Furthermore, 2 other OSBPs; Gatuna and Rubavu are under construction with completion rate at 30% and 45.5% respectively. The study for Cyanika OSBP is ongoing and its overall progress is at 90%.

### **2.2.8. Rural and urban interconnectivity through public transport**

In order to improve the public transport sector, routes were allocated to private operators. The former public transport company (ONATRACOM) was dissolved and Rwanda Interlink Transport Company (RITCO) was created to take over mainly rural transport.

### **2.2.9. Laws, Policies and Strategies developed for the Transport sector**

During the fiscal year 2015/2016, a number of laws, policies and strategies were elaborated; and many of them were approved while others are still under the approval process.

The Road Safety Policy and strategy; Inland Water transport Policy and strategy; Transport fares policy; Road Transport Law; Inland water Transport law were developed and now undergoing higher level approval processes.

Furthermore, Road act was modified and complemented to give district authorities rights to decide the road reserves in line with the elaborated master plans; Feeder roads Policy and strategy was developed in partnership with the Ministry of Agriculture; Pollution and congestion management strategy and the study on computerization and harmonization of motor vehicles traffic registration system were completed.



The ministerial instructions governing incorporation NMTs in infrastructure development were developed and non-objection secured from the Law reform commission and is awaiting official signature by competent office.

Under air transport sub-sector, the following were achieved:

The law authorizing the ratification of 12 BASAs was promulgated in the official gazette No.34 OF 24/08/2015 and invitation for BASA signing were sent to 37 countries and 7/37 responded, BASAs signed and are undergoing ratification process.

Ministerial instructions governing unmanned aircrafts No.01/MoST/016 of 26/4/2016 was adopted by the cabinet and gazetted in the official gazette No.20 of 16/05/2016.

The law modifying and complementing the law N°53/2011 of 14/12/2011 Establishing Rwanda Civil Aviation Authority (RCAA), and determining its Mission, Organization and Functioning was also approved by the Cabinet.

ATL was legally established with 5 subsidiaries and is in the process of full operationalization.

The presidential order No.206/10 of 15/7/1977 establishing and determining the responsibilities, organization and functioning of the National Air Transport Facilitation Committee is under review to meet the current ICAO updated standards.

Rwanda Civil Aviation Authority concluded two (2) MoUs on Search and Rescue as well as Accident and Incident Investigation within the Northern Corridor Air Space Block.

## 2.3. WATER AND SANITATION SECTOR

The Water and Sanitation services were extended to rural and urban areas, with additional 338,466 and 97,634 people accessing clean water and sanitation facilities, translating to 10,440,853 people covered country wide.

This was achieved through the construction of new water supply systems, rehabilitation and extension of existing network and sanitation infrastructure development.

Developments recorded under this sector are highlighted in the following sections;

### 2.3.1. Access to safe drinking water

708 km of piped water systems were constructed countrywide of which 555km are in rural and 153 Km in Urban areas.

Key projects implemented include:

#### ❖ Rural Areas:

- Construction of Mbona-Nyabirasi-Kivumu water supply system (122Km) completed
- Reinforcement of Kageyo-Ngororero town WSS (22km);
- Construction of distribution networks 30 km in Musheru (I) Rwimiyaga , Karangazi And Rwempasha in Nyagatare District;
- Construction of Rurembo cell WSS in Rugera Sector, Nyabihu District (8km);
- Construction of WSS of 79 km in Rulindo Districts;
- Reinforcement and extension of WSS Ruhasha-Ntyazo (95 Km) water supply system in Nyanza District;
- Connecting water supply systems to Early Child Centres and Health Centres (15 km)

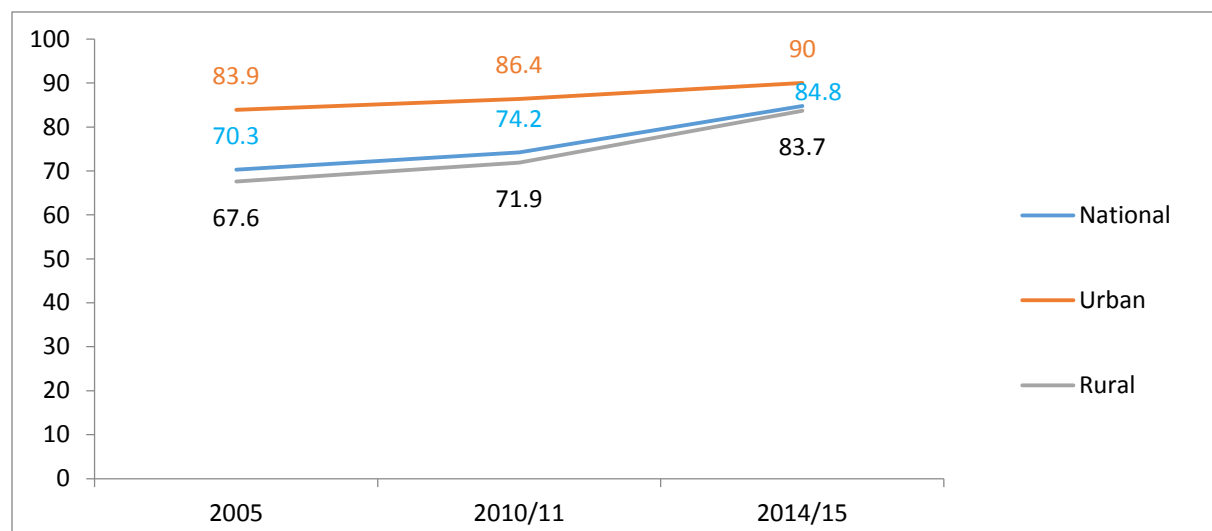
- Construction of Nyungwe-Kibeho-Ndago-Coko water supply system (112Km) completed at 82%;
- Construction of Giheke-Kamembe-Nkanka water supply system (126) km progress at 92%;
- Construction of a water supply system in Nkombo/ Rusizi District (WTP & forwarding infrastructure of 3 km) which is at 81%;
- Construction of water network from Gihengeri WTP, Nyagihanga, Ngarama, Gatsibo sectors in Gatsibo District (60 km) progress at 12%.

❖ **Urban areas:**

- Construction of Runda Water supply system phase II (26 Km);
- Construction of Mageragere Water Supply System (13 Km);
- Constructed water network in Branches (95 km);
- Construction of transmission pipeline (7km) of Ngenda-Mont Nsoro in Bugesera District
- Construction of Muhazi-Karangara WSS (Rwamagana FEZ) 12 km.

The figure below highlights the rural and urban water supply for the past ten (10) years.

**Figure 6: Trend of rural and urban water supply**



*Source: Integrated Households Living Conditions Survey; (EICV4)*

### **2.3.2. Water production capacity**

Water production and storage capacity increased from 42,975,742 m<sup>3</sup>/ year to 45,031,510 m<sup>3</sup>/ year representing a 4.7% increment. This was as a result of the 18 water reservoirs with additional water storage capacity of 3,525m<sup>3</sup> constructed

Key implemented projects that contributed to these achievements include;

- ✓ Construction of Nzove II Water Treatment Plant with production capacity of 25,000 m<sup>3</sup>/day;
- ✓ Construction of Gihengeli Water Treatment Plant with 2,500m<sup>3</sup> per day;
- ✓ Upgrading of Nyamabuye Water Treatment Plant from 1,100 m<sup>3</sup> to 1,600 m<sup>3</sup> per day;
- ✓ Upgrading of Mpanga Water Treatment Plant from 1,200 m<sup>3</sup> to 3,200 m<sup>3</sup> per day;
- ✓ Upgrading of Gihuma Water Treatment Plant from 1,900 m<sup>3</sup> to 3,900 m<sup>3</sup> per day
- ✓ Nyagatare water Treatment Plant from 5,100 m<sup>3</sup> to 11,000 m<sup>3</sup> per day.

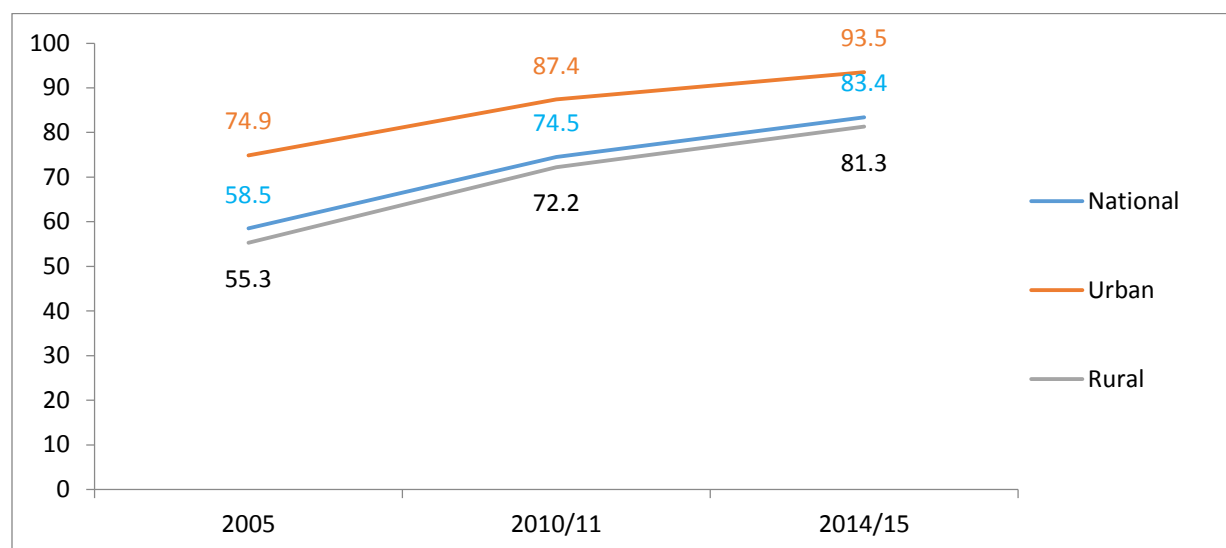
### 2.3.3. Access to improved sanitation services

Sanitation projects under implementation include:

- 3 landfills and 3 faecal sludge treatment plants in Kayonza, Nyagatare and Nyanza are on going with overall progress of 35% and 3 faecal sludge compactor trucks were supplied.
- Study for rehabilitation and upgrading of Semi- centralized in Kigali estates;
- Study for Construction of Kigali Septic Tank sludge management;
- The studies (engineering design, financial and economic feasibility study and EISA) for Kigali Central Sewerage Project phase I is at 95% completion
- Sanitation master plans elaborated for Muhanga, Huye and Rwamagana are at 95% completion rate.

The figure below illustrates the increment in the population accessing improved sanitation facilities over the last ten (10) years.

**Figure 7: Access to sanitation services**



**Source:** Integrated Households Living Conditions Survey; (EICV4)

#### **2.3.4. Revenue collection**

Efforts to increase revenue collections through the Performance Improvement program (PIP) and Water billing & payment system have been made during the period and this resulted in improved collection of water revenues of Rwf 18.5 Billion compared to the Rwf 13.8 Billion collected the previous year 2014/15.

Non-revenue water loss was reduced from 38% to 35% representing a reduction of 3%.

#### **2.3.5. Laws, Policies and Strategies developed**

During the 2015/16, different laws, policies and strategies to make the sector more effective were developed and approved while others are still in process of being validated by competent organs. These include;

- National Water supply policy and strategy is under approval process;
- National Sanitation Policy and strategy is under approval process
- National guidelines for WASAC , Districts and operators' roles and responsibility in the Operation and Maintenance of Rural water supply system Elaborated

#### **2.3.6. Key projects and activities planned for FY 2016-2017**

In order to achieve a universal access to water and sanitation services by end of EDPRS 2, the efforts will be concentrated on the implementation of key projects for both urban and rural areas. This will be achieved through the construction of 512 Km of piped water systems in rural areas to supply water to 328,321 new people and increasing water production in urban water from 45,031,510m<sup>3</sup>/year to 48,379,510 m<sup>3</sup>. The following are key planned projects for both water supply and sanitation services:

- Reinforcement of Kageyo-Ngororero town WSS (22km);

- Construction of water network from Gihengeri WTP, Nyagihanga, Ngarama, Gatsibo sectors in Gatsibo District (60 km);
- Construction of distribution networks of Musheru phase II (97Km) in Nyagatare;
- Reinforcement and extension of WSS Ruhashya-Ntyazo (95 Km) WSS in Nyanza District;
- Construction of Giheke-Kamembe-Nkanka water supply system (126 km) in Rusizi District;
- Completion of Nyungwe-Kibeho-Ndago-Coko water supply system (112 Km);
- Construction of NKOMBO WSS
- LVWATSAN II Projects; WASH Project; Rulindo Challenge Project
- Gicumbi WASH Program : construction of WSS in Gicumbi District
- Construction of Murama - Rwamiko - Bukure and Miyove - Nyamiyaga WSS
- Construction of Nzove I WTP, upgrade of Nzove II WTP and Forwarding Infrastructure of 5.4 km
- Construction of Karuruma-Gatsata and Muko-Jali water network extensions (16 Km)
- Construction of water network extensions in Kicukiro District (45 Km)
- Construction of 8 Water storage facilities and Supply water to Symbion power project.
- Construction of 3 solid waste land fill and 3 faecal sludge treatment plants in Kayonza, Nyanza and Nyagatare,
- Installation of faecal sludge treatment machines.
- Completion of sanitation master plans of Muhanga, Huye and Rwamagana Town.

## **2.4 URBANISATION AND RURAL SETTLEMENT SECTOR**

Under the urbanization and Rural settlement sector, a number of achievements were registered. Notably, relocation of households from scattered settlements and high risk zones into planned and economically viable settlements, development of secondary cities, facilitation for affordable housing program, upgrade of urban centers, Public assets management and elaboration of regulatory framework and promotion of locally produced construction materials.

These achievements have contributed immensely to the improved wellbeing of the Rwandan population in general.

### **2.4.1 Development of Secondary cities:**

Rwanda Urban Development program for six secondary cities was developed in collaboration with World Bank. The project focuses on development of basic infrastructure particularly roads and drainage system. The preliminary designs were elaborated and the final detailed designs are in progress.

In addition, a detailed roadmap for Green Secondary Cities' development was completed and is under implementation.

### **2.4.2 Plots servicing in secondary cities**

Emphasis was put on plots servicing in different urban areas of the secondary cities with a total of 49.3 Km of roads constructed as detailed below:

- ✓ In Rusizi, 5km of road network have been completed.
- ✓ In Musanze and Muhanga works on the construction of 5 Km road network are completed at 74% and 60% respectively.
- ✓ In Huye, 21.4Km of roads were constructed using collaboration of both the community and private sector.
- ✓ In Nyagatare, 10km of roads in two different settlement sites were constructed while Rubavu road network is at 90% completion on 2.9Km.



### **2.4.3 Upgrading of Informal Settlements in Secondary Cities and CoK**

Informal Settlements upgrading activities were piloted in two Secondary Cities of Huye and Musanze, together with one site in City of Kigali located in Nyarugenge district. Achievements recorded are as follows:

- ❖ In Huye: Detailed Engineering Design for all informal settlements was completed and 8.4km gravel road was constructed at 95% and street lighting in Gatobotobo site were completed.
- ❖ In Musanze: the Detailed Engineering Design study was finalized.
- ❖ In Nyarugenge: construction of the 400m link cobble-stone Road was completed in Agatare site.

### **2.4.4 Urban and rural development planning and upgrading**

To better plan for urban and rural developments; 13 Local Urban Development Plans for emerging market towns were elaborated of which Six (6) have been fully accomplished and three (3) are still under development and four (4) are at final stage of development and awaiting validation.

### **2.4.5 Relocation of households living in Scattered and high risk areas**

60,136 Households living in scattered settlements and high risk zones were relocated using unconventional methods.

In addition to the relocation activities, 104 dwelling units were constructed for people from Mazane and Shalita islands to Rweru model village in Bugesera District. Musovu settlement Project was completed with 62 dwelling units and occupied by the people resettled from the NBIA site. Nasho settlement Project has been completed with 52 dwelling units.

#### 2.4.6 Integrated IDP model villages development in secondary cities

The development of IDP model villages in Secondary Cities was adopted as one of the best options to encourage and promote rural-urban linkages among these cities. The Project has been implemented in four Secondary Cities namely Huye, Muhanga, Rubavu and Rusizi. Construction works of both housing units and provision of basic infrastructure are close to completion stages in all Cities as presented here below:

- **Muhanga:** 7 block of 4 in 1 construction works are at the completion stage and overall progress is estimated at 98%.
- **Huye:** 2 Blocks of 4 in 1 are at the completion stage of 98% and Common cowshed and water tanks are under construction.
- **Rubavu:** 4 Blocks of 4 in 1 are ongoing at ring beam stage (75%).
- **Rusizi:** Plot servicing is completed and construction works are ongoing and estimated at 78%.

#### 2.4.7 Affordable housing development

The prime objective was to acquire and service land for affordable housing and mobilize private investments for the development.

Different housing development sites with a total area of approximately 257.5 ha are open for investors to develop. It is anticipated that 22,000 housing units will be constructed to promote high density and mixed use. On-going affordable housing projects are:

- Land expropriated for the construction of Pilot project of 1,200 units for Affordable Housing in Ndera and Busanza sites
- 17ha have been acquired in 6 Secondary cities (Nyagatare, Muhanga, Huye, Rusizi, Musanze & Rubavu) and road grading was done in Muhanga, Huye & Nyagatare in collaboration with respective districts.

- Batsinda affordable housing project with 536 units was approved for government support on plot servicing.
- Housing designs for projects in the city of Kigali and secondary cities were completed.

#### **2.4.8 Government assets management and Construction**

In line with the preparation to host CHAN 2016, 4 Stadia (Amahoro, Nyamirambo, Huye, Umuganda) were upgraded and the tournament was successfully hosted.

With respect to promoting tourism industry through Meetings, incentives, conferences and events (MICE); the completion of Kigali convention center (KCC) that hosted the African Union Summit was among the key achievement registered in the year 2015/16.

Government office buildings were also renovated and rehabilitated, these include; Tri-Ministerial Building refurbishment that accommodates MINALOC, MININTER, MIFOTRA and Migration-Emigration offices. Renovation works for Parliament building and construction of its fence have been completed.

In addition to the above completed projects; other ongoing construction projects that include: Bweyeye Border Post construction completed at 64%; construction of high Commercial Courts (Phase 1) which is at site mobilization level; Administrative Office Complex (AOC) which is at site installation level; Construction of National archives which is at contract signature.

#### **2.4.9 Sector regulatory framework development**

A number of policies, laws and strategies were elaborated and disseminated to ensure community/public awareness and conformity, these include;

- ✓ National Urbanization policy;

- ✓ the Prime Minister Order determining the conditions and procedures for obtaining government support in affordable housing project;
- ✓ Presidential order determining organization, functioning and responsibilities of urban development fund still under development
- ✓ National Informal Urban Settlement Upgrading Strategy has been drafted is ready for adoption to guide the implementation of urban upgrading and investment prioritization principle.
- ✓ Study to integrate cultural identity in the context of urban renewal has been commissioned to assist in establishing clear guidelines for culturally appropriate urban development.

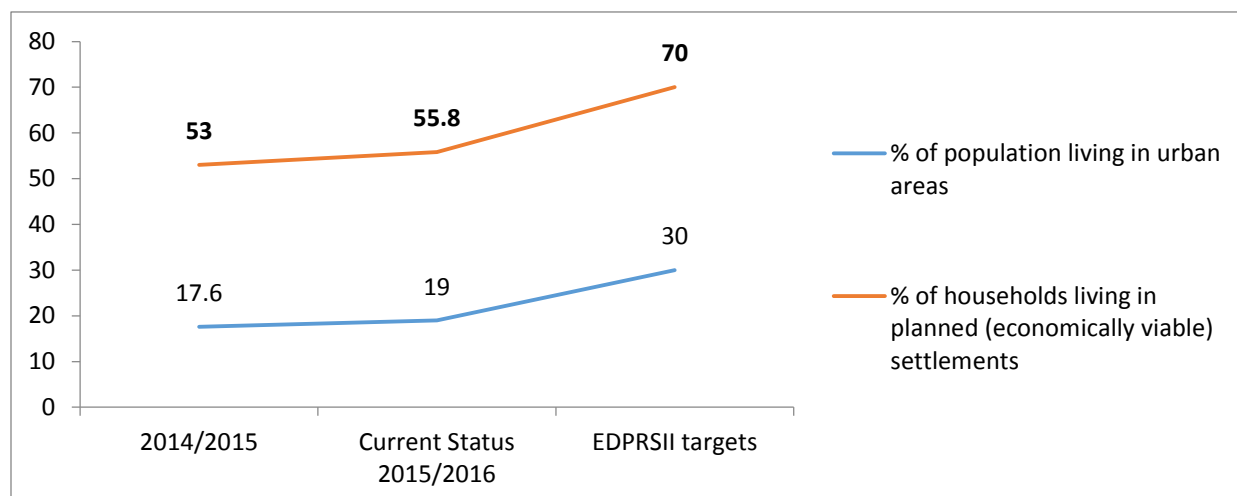
#### **2.4.10 Trend analysis for urbanization key performance indicators**

The table below shows the sub-sector performance against key performance indicators in line with strategic targets as embedded in EDPRS II.

**Table 4: Urbanization key performance indicators**

| No | Indicator   | 2014/2015 | Current Status<br>2015/2016 | EDPRSII targets |
|----|---|-----------|-----------------------------|-----------------|
| 1  | % of population living in urban areas                               | 17.6      | 19                          | 30              |
| 2  | % of households living in planned (economically viable) settlements | 53        | 55.8                        | 70              |

**Figure 8: Trend of urbanization key performance indicators**



The above figure shows that to achieve the 7YGP and EDPRS 2 targets, an increase of **11%** for urban population and 14.2% for households in planned settlements is needed in the remaining two years. This compels a need to accelerate projects and programs in line with urban population growth through increased socio-economic opportunities and ensure rural population are working towards planned settlement development.

### **3 MAINSTREAMING OF CROSS-CUTTING ISSUES**

#### **A. Environment**

Infrastructure development has direct impact on the environment; therefore, it is important to mitigate environmental impact that may arise during the infrastructural development.

In energy sector, in a bid to enhance environmental protection, a number of strategies were developed to increase access to off-grid electricity and promote sustainable use of biomass and other resources. Special effort was also put in increasing energy generation from clean renewable sources of energy and sustainable small-scale energy installation in rural areas (biogas, ICS dissemination, solar energy kits and LPG).

Progress was made in access to clean water and sanitation services, as policies for water supply and sanitation services were developed to protect contamination of water sources. In the field of solid waste management, 3 landfills and faecal treatment plants construction were initiated are under construction in Kayonza, Nyagatare and Nyanza. Sanitation masterplans were also developed to streamline sanitation services in the six secondary cities and towns of Karongi and Rwamanagana. All these efforts are geared towards mitigating the impact of poor sanitation to the environment.

In the effort to improve environmental protection in transport sector, the pollution and congestion management strategy was developed and a number of measures have been implemented, including the car import age limit, vehicle inspection to measure quantity and concentration of emitted gases, introducing buses for public transport promotion and the Kigali ring road study were devised

In urbanization, a number of policies and strategies were elaborated to enable green and sustainable urban and rural settlement. In this case, a green growth road map was developed.

## **B. Gender**

In a bid to mainstream gender in the infrastructure sector, sensitization to contractors and consultants on projects women and girl's employment was done before and during implementation. Gender issues are also considered in the Bidding Documents in such a way that contractors and consultants must show how they will cater for Gender balance employment during project implementation. However, more efforts will be focused to include women in the infrastructure development. And a gender mainstreaming strategy in infrastructure is planned to be develop in the fiscal year 2016/17.

### **C. Capacity building**

**Transport:** To enhance skills and knowledge development, 54 staff in RTDA were trained in various fields; including Railway Project Management & Construction for Developing Countries, Road Administration, Comprehensive Transport Planning, Road Pavement Design, Management and Economics in Developing Countries, etc...

In RMF, 3 people were trained by RIM through MIFOTRA capacity building program by Gisagara District.

RCAA trained 99 staff in Air Traffic Management, Airports certification and infrastructure standards, industry surveillance and inspection.

In RwandAir, 10 cadet pilots and 10 aircraft technicians were trained under REB budget.

**Energy :** In REG, 25 employees benefited from short-term trainings ranging from accounting, procurement, finance management, investment planning, M&E for energy projects, HR policy and strategy, payroll management etc. other areas of training included the following : Power system Engineering(3), Transmission optimization (15), GIS Introduction (13), System of control and data acquisition \_SCADA(8) Training on fire safety and use of fire extinguishers (62) energy policy and shift (2) , Strategic Procurement Risk and Tender Management (5) etc.

**Urbanization and Human Settlement:** More efforts have been put in increasing both planning and operational capacity in the sector with the development of MININFRA geo data portal, development of building permit Management information System to be installed in district one stop centers and district staff have been trained on their usage.

## **D. Regional Integration**

To entrench regional integration and break barriers to free movement of people and goods infrastructure development plays an important role. The following are among the strides made in this direction.

- RwandAir is actively involved in opening up the region with route expansion and frequency increase in the regional blocs of EAC, COMESA, etc
- Railway projects; Study of Kampala-Kigali Railway line project implementation, Transaction Advisory services for Dar Es-Salam Isaka-Kigali/Keza-Gitega -Musongati Railway;
- Road Projects To connect Rwanda to the neighboring countries include; Rehabilitation and Widening of Kagitumba- Kayonza- Rusumo (208 Km) that link to the neighboring Uganda and Tanzania; Kivu Belt Lot 4 & 5, 6 and 7 linking Rwanda, Eastern DRC and Burundi ; Ngoma-Nyanza (130 Km) road upgrading project to link Rwanda, Tanzania and Burundi;
- Continued partnerships in regional energy projects (interconnections transmission lines and regional hydropower dams are implemented);
- Cooperation in airspace management. COMESA Airspace Integration Project.

## **4 CHALLENGES ENCOUNTERED**

During this past year the infrastructure sector encountered a number of challenges of which the Ministry endured through and managed to record remarkable/impressive achievements in the same year. Main challenges encountered are but not limited to:

- ❖ Landslides for completed projects and during implementation caused delays on Projects completion and called up numerous emergency works;
- ❖ Delays in providing non objection and funds disbursement from the development partners and legal opinions from stakeholders;



- ❖ Pockets of expropriation issues that delays implementation of different projects; especially associated with lack of land titles, complaints and non-compliance by some land owners;
- ❖ Extensive procurement procedures associated with appeals delayed the implementation of different programs/projects;
- ❖ Payments have been delaying for so long than usual;
- ❖ Budget constraints which led to partial execution of some projects or cancellation;
- ❖ Poor studies for some projects, unexpected additional works, delays to start works by some contractors and suspension of works at times delayed projects implementation;
- ❖ Weakness in contract Management has delayed execution of projects as aligned to set targets;
- ❖ Storm water management issues resulting in high level pollution risks due to erosion and wastewater discharges;
- ❖ Poor collaboration and coordination between stakeholders especially the implementing agencies, hinder smooth progress of certain projects, more importantly on the execution of earmarked funds to their budgets;
- ❖ In particular, securing traffic rights for the RwandAir and city pairs with other airports across the world is critical for Rwanda and accessing European and USA markets is still a challenge because of many protective huddles on the way;
- ❖ Unstable power supply due to unbalanced generation from Northern and southern network, Network topology (radial), Old network of 1959 and 1970, Overstretched MV and LV network, Overloaded transformers;
- ❖ Vandalism of electricity infrastructures & Illegal connection.

## 5 LESSONS LEARNED

Despite the challenges aforementioned above, there were lessons drawn for last fiscal year as shown here below:

- Establishing good collaboration and partnership with different stakeholders is very essential especially in planning process and Sector Working Group Meetings;
- Outsourcing extra budget through targeting external funders mainly financing minor projects is of paramount as it greatly supplement additional ordinary budget requirements;
- Improved coordination and communication has contributed to effective implementation of projects.
- Private sector involvement greatly contributed to the successful implementation of different projects.
- Strong Monitoring and Evaluation system is believed to help in the successful projects implementation;
- Anticipated Procurement process contributes to the timely projects execution without delays;
- Increased ownership by projects implementers and stakeholders has raised projects execution rate.

## 6 RECOMMENDATIONS FORMULATED

Below are recommendations to be adopted for effective projects and programs implementation:

- ❖ To establish a strong coordination and partnership mechanism between all stakeholders especially with districts on the use of transferred funds;
- ❖ Procurement planning should always start in advance, so as to ensure that all issues in procurement are furnished in advance to avoid risks of delays;

- ❖ Close supervision, technical support provision and monitoring of earmarked transfers to ensure proper projects implementation and proper absorption rate of earmarked budget;
- ❖ Put more emphasis and importance on projects preparation; Planning ahead for getting non-objection and legal opinions on time and improve communication and projects information sharing;
- ❖ Fast-track the review of electricity law to include penalties for such offences and engage citizens to disclose the evil doers;
- ❖ Construction of transmission ring network to establish alternative power evacuation by December 2017 and Upgrade identified key substations ( 20 Kigali MV substation, Mt Kigali, Mukungwa) by December 2017;
- ❖ In expropriation process, district one stop center should always be consulted especially to fast-truck issuing of genuine land titles for respective clients;
- ❖ Liaise with MINECOFIN for invoices payments on time to avoid delays and suspension of works by contractors;
- ❖ To entrench the culture and spirit of result based management through a comprehensive mechanism between planning and implementation of projects;
- ❖ Smart project environmental and social impact assessment and analysis should go hand in hand with the project study to minimize social complaints and delays;
- ❖ Effective monitoring and Evaluation of implementation of Procurement plan and contract management shall be given high priority;
- ❖ Job trainings tailored to the needs of the staff are required to be periodically organized to increase technical skills and boost personal development career plans as one of retention measures;
- ❖ Organize exchange meetings for sharing lessons learned and best practices in the infrastructure sector;
- ❖ Instill the culture of excellence in all staff and stakeholders.

## 7 CONCLUSION

This report is a summary of achievements registered in the infrastructure sector over the course of fiscal year 2015/16. These achievements were registered despite of various challenges that the Ministry persevered during the same financial year. Therefore, resilient and concrete measures are put in place to guarantee improved performance across all the sectors in the next fiscal year.