

## Case Study Summary Information

### Country

Rwanda (Republic of)

### Title of case study:

An Integrated Communications Infrastructure for Rwanda

### Organization submitting the case study:

THE MINISTRY OF INFRASTRUCTURE

### Address:

BLD DE L'UMUGANDA

### Website:

<http://www.mininfra.gov.rw>

### Status of project(s):

Operational

Completed

### Location and population of the project area

Location (village, district, etc.)

ENTIRE COUNTRY

Population of the project area

Over 8.1M

### Types of projects

Pilots (trials)

Licensed or authorized

Projects funded by USF

Others

### Type of application / service

Public voice services

Radio or TV broadcasting

E-governance, e-administration

Support for small business, e-business

- E-health
- Tele-education, e-learning
- ICT training
- Disaster preparedness / emergency support / disaster mitigation
- Environmental monitoring / protection
- Others

if others, please specify:

### Type of technology

- Wired local loop: Copper, optical fibre, etc. (customers' loop)
- Wireless local loop (customers' loop)
- Fixed wireless access (long distance)
- Mobile wireless access
- Satellite two-way communications: VSAT, etc.
- Wireless LANS and IP-based related networks
- Terrestrial voice, data, sound or television broadcasting
- Satellite voice, data, sound or television broadcasting
- Hybrid or combined technologies
- Others

if others, please specify:

### Organizations involved in implementing the project:

The project is fully funded by the Government of Rwanda. Rwanda is a landlocked country situated in Central Africa. Also known as 'The Land of A Thousand Hills', Rwanda has five volcanoes, twenty-three lakes and numerous rivers, some forming the source of the River Nile. The country lies 75 miles South of the Equator in the Tropic of Capricorn, 880 miles 'as the crow flies' west of the Indian Ocean and 1,250 miles East of the Atlantic Ocean - literally in the heart of Africa. Rwanda is bordered by Tanzania to the East, the Democratic Republic of Congo to the West, Burundi to the South, and Uganda to the North.

Anyone visiting The Land of A Thousand Hills; is in for a multitude of surprises. The loveliness and variety of the landscapes in this 'green country' is dominated to the North by Volcanoes and bordered by Lake Kivu to the West, on top of that, this part of world is the home of nearly 700 mountain gorillas that can hardly be found anywhere else.

### -150 word summary of the project indicating its expected social /economic impacts

In Rwanda, the communications facilities are mostly found in the cities where telecom operators are based. The lack of adequate power supply in rural and remote areas to some extent hinders the development of communications facilities.

The government of Rwanda's developmental agenda states clearly that, all areas within the country should equally access communications services. The "Vision 2020" for development encompasses all sectors.

Located at peak of the highest mountain in Rwanda, the Karisimbi project is believed to be the source of solutions for communications needs in Rwanda will play a significant role in enhancing electronic communications and broadcasting capabilities not only in Rwanda but even in nearby areas in the neighbouring countries. Rwanda's development target is to attain a middle income level by the year 2020.

This project is the Government of Rwanda's initiative that seeks to provide low cost, high-capacity communications capability to both rural and urban population, and will expand coverage for mobile phone, Internet, and TV/FM radio coverage and reach to many beneficiaries. The project also seeks to provide sky safety and surveillance capability through a Communication Navigation Surveillance - Air Traffic Management (CNS-ATM) systems already endorsed by the Common Market for Eastern and Southern Africa (COMESA).

## Detailed project description and analysis

### Overview of project's targets, objectives and financing

#### a. Brief description of the country/region: geography, terrain, climate, demographics, socio-economic situation:

Provide high-capacity, low cost communication→ capability for both urban as well as rural areas;  
Expand mobile phone→ coverage and TV/radio receivership (including national TV and FM radio coverage);  
Provide a backbone for multi-connections hub for Internet→ services, including WiMax and cell-phone-based Internet capabilities (eg. through CDMA, GPRS/EDGE, etc);  
Take advantage of the leap in→ telecommunication industry;  
Sky Safety Vision: Communication Navigation→ Surveillance - Air Traffic Management (CNS-ATM);→  
Enhance→ Broadcasting capabilities in Rwanda and the region, including digital broadcasting Meteorological Information and Disaster Management;→  
→ Better Management of Spectrum as a limited national resource;  
Support→ various e-applications (eg. Virtual Tourism, e-learning, e-health, e-commerce, e-government, tracking and surveillance of goods on transit, etc).

#### b. Objectives and implementation details of the project applications (basic telephony, e-business, e-administration, e-education, e-health, ICT training etc):

These services will basically surface base on ease to access communications facilities and ICT technologies and services such:

Radio; ♣  
Television; ♣  
Telephone; ♣  
Cell phone; ♣  
♣ Internet access and services;  
Air traffic Management; ♣  
♣ Meteorological/weather information;  
Data Bank Centres (call centers); ♣  
♣ E-governement;  
Payment on line services; ♣  
Spectrum Management; ♣  
♣ Trackingand Surveillance of goods in transit;  
Tourism on the Net, ♣ etc.

#### Implementation details:

1985 - 1988: Government of Rwanda to construct FM antenna;  
•1989: Power supply to summit - blown off by violent storm;  
•After 1994: Restoration of DC power supply Infrastructure destroyed in 1994 events;  
•2001: Efforts undertaken to restore power supply to summit;  
•2003: Design report by a hire Consultant;  
•2004: Project confirmed with high priority Government of Rwanda decides to replace Hired consultants with a Rwandan Coordination Team;  
•2004: Government of Rwanda enters negotiations with TERRACOM for electrification of Kalisimbi;  
•2005: Government of Rwanda undertakes to finance the Project and signs contract with TERRACOM for Power line construction;  
•2006: New Artel, BushNet/BIG DISH and ELECTRONICA (Italy) retained by Government of Rwanda to roll out digital broadcasting services (DVB-T/H) to pilot schools and hospitals.

#### c. Consideration of indigenous communities, isolated and poorly served areas, small islands and their particular needs and situations.

The projectb is mainly designed to benefit poorly served areas but cities will also be served. Schools, hospitals, and local administrative units are targeted to begin with. It's expected that:

a) 400 schools (school net);  
b) 200 dispensaries and hospitals;  
c) 300 local government offices in districts;  
d) 100 ministries/government offices in main cities in Rwanda  
will be connected in first phase of the implementation.

#### d. New technologies deployed for providing reduced cost capital and operating cost solutions.

Digital Video Broadcqaast-Terrestrial-Handheld technology have been demonstrated.

e. Financing and partnership aspects of the project, including the estimated total cost of the project and the types of funders (e.g. sponsors' contribution, charitable donations and subsidies from USAID).

Right now no any other funding from anywhere. The government of Rwanda funds the projects. however, at some point, funds are needed to fully complete the project as planned. COMESA has pledged to provide some of sort of funding because the project will also cover areas in neighboring countries in the region.

f. Decision-making process to determine the project

The decision is made by the government of Rwanda through the in-line ministry; the Ministry of Infrastructure.

## Infrastructure and regulatory environment

a. Infrastructure components: Pre-existing telecommunication facilities, transport access, electricity supply, distance to the nearest local exchange and/or IP network, human resources, security

Few activities had been done on summit of Karisimbi, that's before 1994. However, the facilities installed there were completely destroyed by the war.

Right facilities have been restored and operational. The means to access to the summit is by helicopter, electricity has been installed. Local citizens living nearby the Karisimbi have been employed to work and earn some some money for living.

b. Regulatory components: Universal service obligations, licensing conditions, frequency availability (for radio-based projects), other regulatory issues

Rwanda utilities Regulatory Agency is responsible to issue operating license and regulates tariffs for transport, utilities, and communications. Services that will be offered by Karisimbi Project will also be regulated by RURA. Project activities have been authorized through normal procedures that other local operators go through.

c. Other factors which influenced the operating environment (manufacturers, standards etc).

The Ministry of Infrastructure is working around the clock to get standards set for local companies and services. the Rwanda Bureau of Standards is responsible to monitor the quality and services offered in Rwanda.

## Technical description and services provided

a. Architecture, type of systems, main technical characteristics, frequencies (for radio-based projects), power consumption, performances (capacity, reliability, quality of service), network management, etc.,

b. Installation and deployment: network planning, subscriber management, etc.

The Karisimbi project will link all local tele operators that provide GSM, GPRS, SMS, MMS, CDMA, ISDN, POTS, WiFi, WiMAX, V-Sat, DVB-T, and DVB-S2.

c. Interconnection to national networks/backbones

The project is still on upper level of installation of main station. The plan puts that once the project is complete will connect to existing fiber optic backbone that already installed in main cities. Furthermore, the project will also be merged with the East African Submarine Cable System (EASSy).

d. For each service delivered (POTS, "IP telephony", etc.): mode (data type and bit rate) and quality (voice quality and bit error rate).

Information to be available later when the project is extending in other areas countrywide.

## Cost aspects

a. Cost of the equipment, cost per line and cost of the operation of the system

No data available as per now.

b. Cost of each terminal and cost of the service for the user.

No actual costing data available

## Effectiveness and sustainability of the project

a. Effectiveness and benefits of the project for the targeted user groups

Once the project is completed, various communications services will be available to people of Rwanda. The commissioning of the antenna on the Karisimbi summit will broaden the information base for the people of Rwanda, in cities, rural and remote areas by providing. The Karisimbi communications infrastructure will act as an engine to drive socio-economic development activities and services delivery in Rwanda. These services will basically surface base on ease to access communications facilities and ICT technologies and services such:

Radio; ♣

Television; ♣

♣ Telephone;

Cell phone; ♣

Internet access and services; ♣

Air traffic ♣ Management;

Meteorological/weather information; ♣

Data Bank Centres (call ♣ centers);

E-gouvernement; ✱  
Payment on line services; ✱  
Spectrum ✱ Management;  
Tracking and Surveillance of goods in transit; ✱  
Tourism on ✱ the Net, etc.

#### b. Profitability of the project and/or its contribution to local entrepreneurial activities

The project intends to provide services to local entrepreneurs especially those dealing with ICT service provision activities through agriculture, commerce, etc.

#### c. Specific strategies to respond to the needs of women, youth, handicapped, indigenous people and other marginalized or socially disadvantaged groups

The people will be offered trainings through different institutions using bandwidth provided by the project. The poor people living in rural and remote areas will be lifted out of isolation and get connected through radio and telephony links. The project intends to further penetrate to uncovered areas within the country and reach out to the people and provide affordable services.

#### d. Aspects of the project, which could be strengthened to enhance its effectiveness or sustainability maximizing the benefits of telecommunication infrastructure in rural and remote areas.

The human development needs for Rwanda are among the challenges it faces. Currently they are no local trained professionals who can take up technical works. More training needs are a necessity to strengthen the competency of local people.

### Social and human development impacts

#### a. Overview of key social and human development needs of the population in the project area

Communication is a key aspect that all citizens deserve to have. Rwandan people need equal opportunities to share and have services. The government is strongly committed to make this dream a reality through Karisimbi.

#### b. Role and commitment of the project to addressing these needs

The government of Rwanda emphasises on use of ICT for economic development of people. GOR is committed to support ICT related initiatives including its own sponsored projects. Once the Karisimbi project is complete, network coverage will increase, bandwidth will also increase while the its cost reduces.

#### c. Socio-economic benefits for, and impacts on the community(ies) and/or at a wider level, including support for gender equity, promotion of community participation and the needs of marginalized and disadvantaged populations

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#### d. Means foreseen to enhance the project's future contributions to human and social development.

To enable further means to continue provide services to the people, the GoR needs to have in place long term plan to continue such services.

### Other observations

#### a. Unexpected results and lessons learned

The project still in progress. No evaluation has been carried out at this point.

#### b. Anticipated near/long-term project challenges and reorientation.

At this point, the major challenge has been to purchase equipment its delivery. More time is spent on making orders from outside the country, this deters the time plane d for the completion of the project.

#### c. Additional information considered useful