Establishment of Harmonized Policies for the ICT Market in the ACP Countries

Regulatory accounting and cost modelling in Sub-Saharan Africa

Central Africa
Country assessment

HIPSSA

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Foreword

Information and communication technologies (ICTs) are shaping the process of globalisation. The members of the African Union (AU) recognise that ICTs have the potential to accelerate Africa's economic integration, and thereby its greater prosperity and social transformation. In May 2008, they adopted a reference framework for the harmonization of telecommunications/ICT policies and regulations. However, coordination across the region is essential to avoid the various policies, legislation, and practices resulting from each country's liberalization becoming an impediment to the development of competitive regional markets.

Our project, 'Support for Harmonization of the ICT Policies in Sub-Saharan Africa' (HIPSSA), has sought to address this potential impediment by bringing together and supporting all sub-Saharan countries in the group of African, Caribbean and Pacific (ACP) states as they formulate and adopt harmonized ICT policies, legislation, and regulatory frameworks. Executed by the International Telecommunication Union (ITU) and co-chaired by the AU, the project has been undertaken in close cooperation with the Regional Economic Communities (RECs) and regional associations of regulators, which are members of the HIPSSA Steering Committee. A global steering committee composed of the representatives of the ACP Secretariat and the European Commission's (EC) 'Development and Cooperation – EuropeAid' division (DEVCO) oversees the overall implementation of the project.

This project is taking place within the framework of the ACP Information and Telecommunication Technologies (@CP-ICT) programme and is funded under the 9th European Development Fund (EDF), which is the main instrument for providing European aid for development cooperation in the ACP states, and co-financed by ITU. The @CP-ICT programme aims to support ACP governments and institutions in the harmonization of their ICT policies by providing high-quality policy advice, training and related capacity building that is globally benchmarked but locally relevant.

All projects that bring together multiple stakeholders face the challenge of creating a sense of shared ownership while ensuring optimum outcomes for all parties, and HIPSSA has given special consideration to this issue from the very beginning of the project in December 2008. Shared priorities were agreed at the outset and stakeholder working groups were set up to address these. The specific needs of the regions and potentially successful regional practices were then identified and benchmarked against practices and standards established elsewhere.

These detailed assessments, which reflect subregional and country-specific issues, formed the basis for the model policies and legislative texts that offer the prospect of a legislative landscape for which the whole region can be proud. I am certain that the project will become a best-practice example for stakeholders looking to harness the catalytic force of ICTs to accelerate economic integration, and social and economic development.

I take this opportunity to thank the EC and ACP Secretariat for their financial contribution. I also thank the Economic Community of West African States (ECOWAS), West African Economic and Monetary Union (UEMOA), Economic Community of Central African States (ECCAS), Economic and Monetary Community of Central Africa (CEMAC), East African Community (EAC), Common Market for Eastern and Southern Africa (COMESA), Southern African Development Community (SADC), Intergovernmental Authority on Development (IGAD), Communication Regulators' Association of Southern Africa (CRASA), Telecommunication Regulators' Association of Central Africa (ARTAC), United Nations Economic Commission for Africa (UNECA) and West Africa Telecommunications Regulators' Association (WATRA) for their contribution to this work. Finally, my profound thanks go to all the ACP governments for their political will, which has been fundamental to the resounding success of this project.

Brahima Sanou

BDT Director

Acknowledgements

This document represents the achievement of a global activity carried out under the HIPSSA project, officially launched in Addis Ababa in December 2008. Regional assessments were carried out as part of the activity and this is the report for the Central Africa region.

In response to both the challenges and the opportunities of information and communication technologies' (ICTs) contribution to political, social, economic and environmental development, the International Telecommunication Union (ITU) and the European Commission (EC) joined forces and signed an agreement aimed at providing "Support for the Establishment of Harmonized Policies for the ICT market in the ACP", as a component of the Programme "ACP-Information and Communication Technologies (@CP-ICT)" within the framework of the 9th European Development Fund (EDF). i.e., ITU-EC-ACP Project.

This global ITU-EC-ACP project is being implemented through three separate sub-projects customized to the specific needs of each region: sub-Saharan Africa (HIPSSA), the Caribbean (HIPCAR), and the Pacific Island countries (ICB4PAC).

As members of the HIPSSA Steering Committee co-chaired by the African Union's Commission (AUC) and the ITU, all the Regional economic communities (RECs) especially Economic Community of West African Countries (ECOWAS), Southern African Development Community (SADC), Economic Community of Central African States (ECCAS), and East African Community (EAC) provided guidance and support to the consultants. Mr Armand Lichambany, regional expert for Central Africa, was responsible for the assessment and compilation of the regional report for Central Africa under the guidance of Ms Saïda Ouederni.

ITU would like to thank all the regional regulatory associations in Africa and the telecommunication ministries, regulators, academia, civil society, operators and the Groupe Speciale Mobile Association (GSMA) for their hard work and commitment in producing the contents of the final report.

The active involvement of all of these stakeholders made it possible to produce a document that reflects the requirements and conditions of Central Africa, while also representing international best practice.

The activities have been implemented by Ms. Ida Jallow, HIPSSA Senior Project Coordinator (responsible for the coordination of the activities in sub-Saharan Africa) and Mr. Sandro Bazzanella, ITU-EC-ACP Project Manager (responsible for the management of the whole project covering sub-Saharan Africa, the Caribbean and the Pacific). Overall support came from Ms. Hiwot Mulugeta, HIPSSA Project Assistant, and Ms. Silvia Villar, ITU-EC-ACP Project Assistant. The work was carried out under the overall direction of Mr. Cosmas Zavazava, Chief, Project Support and Knowledge Management (PKM) Department. The document has further benefited from the comments of the ITU Telecommunication Development Bureau's (BDT) Regulatory and Market Environment Division (RME), particularly Ms. Carmen Prado-Wagner, Senior Programme Officer Economist. Support was provided by Mr Marcelino Tayob, Senior Advisor at the ITU Regional Office for Africa, and Mrs Asenath Mpatwa, ITU Senior Advisor. The team at ITU's Publication Composition Service was responsible for its publication.

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Introduction

This assessment report, which contains the results of the individual countries in the Central Africa subregion, relates to the ITU-EC joint project for Harmonization of ICT Policies in Sub-Sahara Africa (HIPSSA). The aim of the project is to develop and promote harmonized policies and regulatory guidelines for the ICT market, as well as to build human capacity in the field of ICT.

Within the framework of its joint project with the European Commission (EC), ITU is responding to the needs of HIPSSA beneficiaries and ITU members by providing the regional organizations with an up-to-date review of regulatory practices surrounding regulatory accounting and cost modelling in their respective regions. This identifies trends around which they can then build a common approach on regulatory auditing and cost modelling.

On the basis of this assessment, updated training material will be developed, delivered and integrated into the networks of both regional associations of regulators and ITU centres of excellence, to ensure a sustainable mechanism for delivery.

The report contains relevant information pertaining to eight of the Central African countries: Burundi, Cameroon, Central Africa Republic (CAR), Chad, Congo, Equatorial Guinea, Gabon and Sao Tome & Principe. The survey data collection for the Democratic Republic of Congo (DRC) has not been completed due to the election period.

The present assessment report has been prepared by Mr. Armand Lichambany, the Central Africa Regional Expert contracted under phase one of the HIPSSA project to carry out a regional assessment on costing strategies, and cost model application and processes in the Central African subregion. The assessment study was undertaken under the close guidance of Ms Saida Ouederni, the project's international expert, and the HIPSSA project team.

Special thanks go to Ms Saida Ouederni and the HIPSSA project team members (including Mr Sandro Bazzanella, Ms Carmen Prado-Wagner, Mr Marcelino Tayob, Ms Asenath Mpatwa, Ms Ida Jallow and Ms Hiwot Mulugeta) for the useful guidance, appropriate interventions and assistance they provided throughout the duration of the assessment.

1. BURUNDI

1.1 Burundi in brief

The Republic of Burundi, is a landlocked country in the Great Lakes region of Eastern Africa bordered by Rwanda to the north, Tanzania to the east and south, and the Democratic Republic of the Congo to the west. Although the country is landlocked, much of the south-western border is adjacent to Lake Tanganyika. French and Kirundi are the official languages and Swahili is widely spoken along Lake Tanganyika and in the Bujumbura area.[1]

ITU's ICT statistics[i] show fixed-telephone subscriptions per 100 inhabitants at -1.3 per cent (based on the compounded annual growth rate (CAGR) between 2006 and 2011), while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 57.1 per cent. Thus, the ratio of mobile-cellular subscriptions to fixed-telephone lines is 63.8:1.

Burundi's largest industry is agriculture, which accounted for 58 per cent of GDP in 1997. Some of Burundi's natural resources include uranium, nickel, cobalt, copper and platinum. Besides agriculture, other industries include: assembly of imported components, public works construction, food processing, and light consumer goods such as blankets, shoes, and soap.[ii] Figure 1 presents the country's socio-economic indicators.

Figure 1: Burundi in brief

Area:	27 834 km^2
Capital:	Bujumbura
Currency:	Burundi franc (FBu) (BIF)
Official languages:	Kirundi, French
Calling code:	257
Population:	9,849,569
GDP:	$2,471,954,069
GDP growth:	4.0%
Inflation:	18.0%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

[1] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

1.2 ICT sector overview

Policy

There is a national ICT policy in Burundi: the National Policy for the Development of new Information and Communication Technologies was ratified by the Government of Burundi in February 2007, and is effective from 2007.[iii] The Department of Scientific Research at the Ministry of Higher Education and Scientific Research also compiled an inventory of the country's scientific and electronic potential in 2009.

The government's strategy to embed the development of ICT is:

- to build human resources capacities;
- to improve the legal and regulatory framework;
- to promote and strengthen the development of broadband infrastructure;
- to promote good governance;
- to promote and encourage private investments;
- to promote the development of content and ICT applications.

Regulatory framework

The Agence de Régulation et de Contrôle des Télécommunications (ARCT) is the regulatory authority for the ICT sector and was created in 1997. ARCT's mission is to monitor and regulate the telecommunication sector, as well as to enforce those regulations.

Furthermore, ARCT is responsible for:

- Providing oversight of the telecommunication sector
- Participating in the negotiation of treaties, conventions and international regulations relating to telecommunications, as well as regional and international conferences on the sector
- Enforcing the tariff policy
- Defining the rules for use of leased circuits or networks to private users
- Allocating frequencies and managing the radio spectrum
- Granting the operating authorization of links and private networks independent of value-added services provided by public and private operators
- Providing technical advice to the government relating to permission to operate commercial services
- Granting permits for the installation of subscribers, network construction and equipment by approved private contractors
- Approving subscriber terminal devices and authorizing sale and connection to the public network
- Establishing with operators, on behalf of the government, the conditions for concession operations and licence fees
- Paying contributions to regional and international telecommunication organizations
- Ensuring that interconnection agreements affecting the public network are non-discriminatory, fair and reasonable, and offer the greatest benefit to all users
- Ensuring that interconnection agreements comply with technical standards, quality requirements, and the security and confidentiality of transmitted data or conversations

- Establishing procedures to resolve disputes between service providers and users, enabling intervention in the event of referral
- Limiting, if necessary, the number of private radio stations or prohibiting their operation in the vicinity of government or conceded radio installations.

1.3 Main findings

1.3.1 Legal and regulatory framework for tariff regulation and cost modelling

The telecommunication regulatory framework in Burundi[iv] is supported by:

1. **Decree-Law No. 1/011 of 04 September 1997**

   Article 8: ARCT grants operating licences of links and private networks independent of value-added services provided by public and private operators.

   However, the operating licences of market services are provided by the government after technical review by ARCT.

2. **Decree No. 100/182 of 30 September 1997,** establishing ARCT:

   Article 30: The rates of fees and charges are set and revised by the government, following proposal by the Minister of Guardianship.

3. **Ministerial Order No. 520/730/540/231 from 09 April 1999,** laying down the conditions for firms operating in the telecommunication sector; the ordinance establishes the conditions to be met by any person or entity wishing to operate in the telecommunication service.

The principle adopted in Burundian law is the prior fixation of licence fee by statute, as opposed to the fixing the licence price by open tender. Tariff regulation is based on cost-orientation.

There is still no price regulation or cost modelling in place, and there is also an unjustifiably high transit tariff. The regulator is unable to solve the dispute between operators because of the lack of a costing tool, which causes difficulties for National Regulatory Agencies (NRAs) as they are unable to check if the rates are based on the actual cost of transit incurred by the incumbent.

1.3.2 Status of price control regulation and underlying strategy

Table 1: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
BURUNDI	CO	La, Li	No specific regulatory strategy has been identified within ARCT to impose price control on services. They rely on the law and the contract signed with operators to intervene.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: significant market power.

1.3.3 Cost-accounting and regulatory auditing framework

Table 2: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
BURUNDI	Yes	All	La,	Yes	La, Li

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

1.3.4 Status and development stage of costing tools

Table 3: Costing tools

Use of a costing tool: Yes, No, Pl (1)	Which one: BU, TD, H, B(2)	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P (3)	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
No	BU planned to be used	All	U	COSITU was used 7 years ago, but operators complained about its use; lack of skills

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

1.3.5 Level of MTR and retail price

Table 4: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) (1)	Retail price: lowest average national off-net price (per minute in local currency) (1)
BURUNDI	108FBU/min	208FBU/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

1.3.6 Benchmark scope

Table 5: Strategy of implementation and data used

	Purpose of the benchmark: PT, CT, Other (please specify) (1)	Number of countries included in the benchmark
BURUNDI	CT	Countries in the subregion: 9

(1) PT: primary costing tool, CT: complementary tool to check the outcome of another costing tool

2. CAMEROON

2.1 Cameroon in brief

Cameroon, officially the Republic of Cameroon is a country of central and western Africa with a surface area of 475,650 km2. The capital is Yaounde. It is bordered by Nigeria to the west; Chad to the northeast; the Central African Republic to the east; and Equatorial Guinea, Gabon, and the Republic of the Congo to the south. Cameroon's coastline lies on the Bight of Bonny, part of the Gulf of Guinea and the Atlantic Ocean. The country is called "Africa in miniature" for its geological and cultural diversity. Natural features include beaches, deserts, mountains, rainforests, and savannahs. French and English are the official languages, although French is more commonly spoken. There are also numerous African dialects.[2] ICT statistics show fixed-telephone subscriptions per 100 inhabitants at 35.6 per cent (based on CAGR between 2006 and 2011) while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 52.35 per cent. Thus, the ratio of mobile-cellular subscriptions to fixed-telephone lines is 15.7:1.

Figure 2 presents the country's socio-economic indicators.

Figure 2: Cameroon in brief

Area:	475 442 km^2
Capital:	Yaounde
Currency:	CFA franc (XAF)
Official languages:	French, English
Calling code:	237
Population:	21,699,631 (2012)
GDP:	$24,983,980,484
GDP growth:	4.6%
Inflation:	2.9%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

2.2 ICT sector overview

National policy[v]

The National Policy for the Development of Information and Communication Technologies in Cameroon was published by the National Agency for Information and Communication Technologies in September 2007.

Cameroon's presidency is responsible for defining and laying down guidelines for the national ICT policy.

[2] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

A number of projects have been developed over the past few years in accordance with the national ICT policy that was put in place. In addition, the Government works on:

- Computerization of the electoral process (by the Ministry of Territorial Administration and Decentralization)
- Building human capacities
- Improving the legal, regulatory and institutional framework
- Strengthening the rule of law and sovereignty
- ICT infrastructure development
- Development of social sectors through the use of ICT
- Modernizing public services
- Development of an ICT industrial sector.

Regulatory framework

The Agence de Regulation des Telecommunications (ART) – the local NRA – was created in September 1998.

ART's mission is to provide regulation and control, and monitor the telecommunication operators' activities within the sector.

It also ensures compliance with the principle of equal treatment of all users by carriers.

ART has three main duties:

- To ensure the regulations are implemented
- To guarantee the respect for the regulations and the exercise of competition
- To settle certain disputes between operators.

ART also performs the following activities:

- Definition of the principles governing tariffs for services
- Examination of requests for authorization, declaration and approval for terminal equipments to be connected to the public networks
- Establishment of principles for calculating interconnection costs
- Establishment and management of numbering plans
- Management of telecommunication sector frequencies
- Submission to the government of proposals aimed at developing and modernizing the sector
- Submitting to the government its opinions on draft legislative and regulatory texts concerning the telecommunication sector
- Controlling and imposing penalties for infractions.

2.3 Main findings

2.3.1 Legal and regulatory framework for tariff regulation[vi]

The arsenal of instruments governing tariff regulation in the telecommunication sector includes:

1. Decree No. 2001/830/PM of 19 September 2001, to lay down modalities for the operation of telecommunication networks:

"Article 21: The operator shall provide the Ministry of Telecommunications and the NRA with the figures relating to the operation of its network in financial, commercial and technical areas. In particular, the operator undertakes to communicate the following information:

- *without delay, any change in the capital and voting rights, while the change of the Board of Directors occurs;*
- *at least two months before their implementation, the changing of one element in the authorization and the description of all services;*
- *before their implementation, the tariffs and general conditions of supplying the service;*
- *at intervals to be defined by decision of the agency, the data traffic and revenues; the information about the use of qualitative and quantitative resources allocated by the NRA, including frequencies and numbers; the information needed to calculate the contributions research, training and development; the data relating to the quality of service, especially as regards relevant indicators to assess and traffic routing agreements signed with an operator from Cameroon or abroad;*
- *upon closing, all interconnection agreements.*

Article 24: The specification describes the requirements of operators' use of frequency bands allocated to the operator and details the method and unit amounts to calculate charges for the provision and frequency management due for the use, management and control of frequencies allocated.

***2. Law No. 2005/13 of 29 December 2005,** to amend and to supplement some provisions of Law No. 98/14 of 14 July 1998 to govern the telecommunication sector in Cameroon.*

***3. DECREE No. 00000009/MPT of July 16 2001,** regulating the activity of the installer and/or service provider in the telecommunication sector and establishing conditions for delivering private telecommunication networks facilities:*

Article 8: Costs related to the study of matter, the licence fees and the annual contribution to the costs of management and control activities in the sector are set by a particular text.

***4. Law No. 2010/013 of 21 December 2010**:*

Article 23:

(1) Operators of electronic communications networks must take an accounting to determine the costs, revenues and results of each network operated and each service offered.

(2) The accounts and the summary statements, released at the latest within six months following the closing date of the accounting period, may be subjected to audits, at the cost of operators, by an approved body designated by the NRA.

(3) The audit aims to ensure that the summary statements reflect a regular and accurate costs, outputs and outcomes of each network operated or each service offered."

The contract document drawn up for mobile operators states that ''the Regulatory Agency reserves the right to establish a regulatory regime based on a price cap formula compatible with the criteria of cost effective services in the context of the Cameroonian economy.''

Although international call rates are experiencing a sharp decline, national tariffs are remaining stable and even lower interconnection rates are not affecting them significantly. This shows a need for the NRA to regulate the retail market.

3.3.2 Cost modelling

ART has stopped using the World Bank long-run incremental costs (LRIC) model and is planning to migrate to a new model, adapted to Cameroon's economic situation. Interconnection tariffs had fallen, under the application of a cost model, but this had not always affected retail or end-user prices.

Since 2007, ART has required service providers to make their interconnection catalogue offers available to suppliers of value-added services.

2.3.3 Status of price control regulation and underlying strategy

Table 6: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
CAMEROON	CO	La	The strategy for regulatory intervention is to establish cost-based MTR. The implementation strategy has led to lower termination rates on the national mobile network.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: relevant market analysis

2.3.4 Cost-accounting and regulatory auditing framework

Table 7: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
CAMEROON	Yes	All	La	Yes	La

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

2.3.5 Status and development stage of costing tools

Table 8: Costing tools

Use of a costing tool: Yes, No, Pl [1]	Which one: BU, TD, H, B[2]	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P [3]	If no costing tool is used, please indicate why: lack of resources, lack of skills
Yes	BU	All	P	Not specified

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

2.3.6 Level of MTR and retail price

Table 9: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) [1]	Retail price: lowest average national off-net price (per minute in local currency) [1]
CAMEROON	38 XAF / min	92,24 XAF/ min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

2.3.7 Strategy for implementation of the bottom-up model

Table 10: Public availability of the model and of its input dataset

	Publicly available: Yes, No?	If the model is not publicly available:		
		Please explain why	Shared with operators or for internal use	Planned to be made public: Yes (+date), No
CAMEROON	Yes	Not specified	Yes	N/R

Table 11: Strategy of implementation and data used

	Strategy of implementation: Sh, Co, EE, DI, Other (please specify) (2)	Did you use data from operators: Yes, No?	If operators' data are used, how did you collect them: CA, SR, Cn, Other (please specify)? (1)
CAMEROON	They are planning to migrate to a new model adapted to Cameroon's economic situation	Yes	SR

(1) CA: data from cost-accounting obligation, SR: specific request, Cn: consultation
(2) Sh: 'off-the-shelf' model (such as ITU, WBG, etc.), Co: consultants to develop a bespoke model, EE: evolution of an existing model, DI: developed internally (from scratch)

2.3.8 Model assumptions and parameters

Table 12: Assumptions of the model

	Modeled operator: EO, HE (1)	Time horizon applied for recovering costs		Level of demand used: CL, FL, Other (please specify) (2)	Market share assumed	
		Value (no. of years)	Why (rationale)?		Value (%)	Why (rationale)?
CAMEROON	HE	15	Not specified	FL	Not specified	The model used does not require it

(1) EO: existing one, HE: hypothetical efficient operator
(2) CL: current level, FL: future level based on extrapolation

Table 13: Parameters of the model

	Key cost drivers: Yes, No				Coverage assumed		
	Number of subs	Traffic	Coverage	Other (please specify)	Basis: AE, CC, TC, PC, Other (please specify) (1)	In % of population?	In % of territory?
CAMEROON	Yes	Yes	Not specified	Network elements, routing factors	Other: coverage as specified in the licences	45	60

(1) AE: average of current coverage of existing networks, CC: current coverage of largest network, TC: theoretical coverage (as derived from efficiency considerations), PC: prescribed coverage (as specified in the licences)

2.3.9 Methodology used to design network and to model operational expenditure

Table 14: Strategy of implementation and data used

	Network design		Operational expenditure (OPEX)		
	Methodology: SN, SE [1]	Rationale behind the choice of scorched node or scorched earth	Modeling approach: MU, Other (please specify) [2]	If a mark-up is used, please specify if it is SA, DA, DT [3]	How were the figures used to calculate OPEX derived: B, OD, VD, Other (please specify) [4]
CAMEROON	SN	To consider the existing network as a starting point, accepting that inefficient items may subsequently be removed	MU	DA	B, OD

(1) SN: scorched node, SE: scorched earth
(2) MU: mark up on network assets
(3) SA: same mark-up for all network assets, DA: different mark-up depending on the type of asset, DT: different mark-up depending on technology i.e. 2G or 3G
(4) B: benchmark, OD: operators' data, VD: vendors' data

2.3.10 Benchmark scope

Table 15: Strategy of implementation and data used

	Purpose of the benchmark: PT, CT, Other (please specify) [1]	Number of countries included in the benchmark
CAMEROON	CT	6

(1) PT: primary costing tool, CT: complementary tool to check the outcome of another costing tool

2.3.11 Benchmark selection process

Table 16: Basis or methodology used to select the benchmarked countries

	'Similar' countries					Only countries using a cost model (Yes, No)	Other selection criteria/ methodo-logy
	Population size (Yes, No)	Population density (Yes, No)	Topography (Yes, No)	Similar market (Yes, No)	Other similarity criteria		
CAMEROON	Yes	Yes	No	Yes	Not	No	Not

	'Similar' countries					Only countries using a cost model (Yes, No)	Other selection criteria/ methodo-logy
	Population size (Yes, No)	Population density (Yes, No)	Topography (Yes, No)	Similar market (Yes, No)	Other similarity criteria		
					specified		specified

2.3.12 Licensing framework

Law 014/98 of 14 July 1998, setting up the regulatory framework for Cameroon's telecommunication sector, specifies three regimes:

- **Concession**: for fixed and mobile public networks
- **Authorisation**: for value-added services
- **Declaration**: for private networks.

3. CENTRAL AFRICAN REPUBLIC

3.1 Central African Republic in brief

The Central African Republic is a landlocked country in Central Africa. It borders Chad in the north, Sudan in the east, the Democratic Republic of the Congo and the Republic of the Congo in the south, and Cameroon in the west. Bangui is the capital city. French is the official language.

Most of the Central African Republic consists of Sudano-Guinean savannahs but it also includes a Sahelo-Sudanian zone in the north and an equatorial forest zone in the south. Two thirds of the country lies in the basins of the Ubangi River, which flows south into the Congo River, while the remaining third lies in the basin of the Chari River, which flows north into Lake Chad[3].

The ICT statistics show fixed-telephone subscriptions per 100 inhabitants in 2011 as 0.12 per cent, while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 40.65 per cent. Thus, the ratio of mobile-cellular subscriptions to fixed-telephone lines is 336.6:1.

CAR's economy is dominated by the cultivation and sale of food crops such as cassava, peanuts, maize, sorghum, millet, sesame, and plantain. Diamonds constitute the most important export of CAR, accounting for 40–55 per cent of export revenues.

Figure 3 presents the country's socio-economic indicators.[vii]

Figure 3: Central African Republic in brief

Area:	622 984 km^2
Capital:	Bangui
Currency:	CFA franc (XAF)
Official language:	French
Calling code:	236
Population:	4,525,209 (2012
GDP:	$2,138,965,636
GDP growth:	4.0%
Inflation:	5.7%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

[3] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

3.2 ICT sector overview

National ICT policy[viii]

The development of a national strategy began in January 2002, when the government decreed a process to set up the National Plan for Information and Communication Infrastructure (NICI).

Consultation workshops were organised for members of the government, university staff, the private sector, managers, and the Telecommunication Regulatory Agency (ART). The national policy aims:

- to promote public participation through dialogue;
- to support initiatives of basic communities through information, knowledge and technical skill exchanges;
- to broadcast information and to introduce new innovations through availability of social communication instruments;
- to promote systems of popularisation, supervision, training and horizontal communication.

3.3 Main findings

3.3.1 Legal and regulatory framework for tariff regulation

Law No.07.020, signed in December 2007,[ix] defines the principles of ART, a self-managed public institution endowed with legal powers. ART has responsibility for:

- assessing developments in technology;
- application of regulation frameworks;
- development and promotion of telecommunication and ICT.

The regulatory framework for tariff regulation states:[x]

1. **Order No. 520** of 23 September 2004:

   "Article 1 *and* ***Article 2*** *set out the charges and methods of apportionment of local, long distance and international calls.*

2. ***Decree No. 09.209,*** *fixing the mode of application* ***of Law No. 07,020****:*

   Article 5: *Operators must keep analytical accounting to determine the costs, revenues and operating results of each network or service offered.*

   The financial statements of syntheses emerged at the latest within three months from the date of holding of the General Assembly who shall act on these statements, the accounting described in the preceding paragraph, must be submitted annually for audit by an independent body.

   Audit reports shall be provided to ART, not later than one month following the date of holding of the General Assembly, ART shall act on these states with information to the minister in charge of telecommunications.

   Article 6: *Operators must provide to ART the figures relating to the operation of their network in the financial, commercial and technical fields.*

   They must communicate the following information:

   - Without delay, any change in the capital and voting rights that allows the operator, in the case of listed companies, any statement of threshold crossing or modification of members of Board of Directors;

- Prior to implementation, tariffs and conditions of the offer;

- At a frequency defined by ART, data traffic and sales, information on the use of qualitative resources assigned by ART, including frequencies and numbers, the information needed to calculate contributions to universal service funding, data on Quality Of Service (QOS), particularly with regard to relevant indicators of appreciation, conventions and routing of traffic signs with a domestic or foreign operator;

- At the request of ART, all interconnection agreements and agreements with regard to the special network access;

- A reasoned application of ART, all other necessary information that has been processed in accordance with the confidential information, including:

- *infrastructure sharing agreements;*
- *customer agreements;*
- Any information required by ART as a result of a conciliation request*;*
- *contracts with third-country operators.*

- Any information to verify compliance of equal conditions of competition, including agreements or contracts between subsidiaries of the operator and companies belonging to the same group of industries or the operator, distinct from those covered by its licence.

ART provides a report thereon to the minister in charge of telecommunications.

Article 40, section 3: *Operators of telecommunication networks opened to the public in a dominant position annually publish a catalogue of interconnection, including benefits."*

3.3.2 Status of price control regulation and underlying strategy

Table 17: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
CAR	Tariff fixed by Ministerial Order	La	No specific strategy properly defined

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: relevant market analysis

3.3.3 Cost-accounting and regulatory auditing framework

Table 18: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
CAR	Yes	All	La	Yes	La

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

3.3.4 Status and development stage of costing tools

Table 19: Costing tools

Use of a costing tool: Yes, No, Pl (1)	Which one: BU, TD, H, B(2)	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P (3)	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
No	None	All	P	Not specified

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

3.3.5 Level of MTR and retail price

Table 20: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) (1)	Retail price: lowest average national off-net price (per minute in local currency) (1)
CAR	70 XAF/min	52 XAF/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

3.3.6 Licensing framework

The following activities are subjected to licensing:

- The establishment and/or operation of fixed and mobile networks opened to the public
- The provision of telephone services between fixed points
- The establishment and/or operation of the international gateway in CAR.

Licences are issued to any person or entity through a competitive bidding process. The licensee must agree to comply with the provisions of the Act and Clauses of the specifications governing the terms and conditions of establishment and operation of telecommunication networks opened to the public.

Procedure

The procedure of competition control is provided by ART. It comprises:

- definition of the specifications;
- launch of the tender;
- receipt of bids;
- scrutiny and tender evaluation;
- awarding the licence.

The establishment of a licence and/or operating telecommunication networks opened to the public are granted by order of the Minister in charge of telecommunications.

The allocation of a license is subject to the payment of a charge, set by the government.

4. CONGO

4.1 Congo in brief

Congo is a state in Central Africa. It is bordered by Gabon, Cameroon, the Central African Republic, the Democratic Republic of the Congo, the Angolan exclave province of Cabinda, and the Gulf of Guinea. Brazzaville was selected as the federal capital[4].

The ICT statistics show fixed-telephone subscriptions per 100 inhabitants at -2.0 per cent (based on CAGR between 2006 and 2011), while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 93.84 per cent. Thus, the ratio of mobile-cellular subscriptions to fixed-telephone lines is 273.6:1.

Figure 4 presents the country's socio-economic indicators.

Figure 4: Congo in brief

Area:	342 000 km^2
Capital:	Brazzaville
Currency:	CFA franc (XAF)
Official language:	French
Calling Code:	242
Population:	4,337,051
GDP:	$13,677,928,883
GDP growth:	3.7%
Inflation:	3.8%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

4.2 Overview of the ICT sector

National ICT policy

Congo developed an official ICT policyco-ordinated by the Committee for the Promotion of Information Technologies in Congo (COPTIC). One of the priorities is to set up a national plan for ICT infrastructure, the lack of which, along with the high cost of computer products and services, is hindering the development of ICT applications in several social sectors, including education.

[4] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

According to the United Nations Economic Commission for Africa (UNECA), Congo is the only country that currently has a real ICT policy in the region co-ordinated by the Committee for the Promotion of Information Technologies in Congo (COPTIC).

The Congo ICT policy[xi] was developed to reduce poverty and introduce the Congolese population to the information society era. It aims:

- to secure ICT infrastructure;
- to define a legal and regulatory framework adapted to ICTs;
- to develop ICT capacities and to transform the educational system by means of ICTs;
- to promote good governance by utilising ICTs.

A regulatory framework has been established in order to accelerate the development of a viable and sustainable economic network, which will contribute to job creation.

4.3 Main findings

4.3.1 Legal and regulatory framework for tariff regulation

The legal and regulatory framework[xii] is governed by:

- **Law 14/97 of 26 May 1997,** authorizing the introduction of competition in the telecommunication market. That Law has abolished the monopoly of the National Office of Post & Telecommunications (ONPT), which was the government company created by Law 9/64 of 25 June 1964. This liberalization was accompanied by the creation, by Decree No. 98-86 of 25 February 1998, of the Branch of Headquarters of Posts and Telecommunications (DGACPT), within the Ministry in charge of Posts, Telecommunications and ICT.

- **Law 09/2009 of 25 November 2009,** establishing the legal and regulatory framework for electronic communications in Congo. Article 5 describes the glossary wherein the key role of the NRA is defined:

  "Agency: the Posts and Electronic Communications Regulatory Agency created by an Act of the Republic of Congo to ensure the regulation of sectors Post and Electronic Communications."

- **Law 11/2009 of 25 November 2009,** establishing the Post & Electronic Communications Regulatory Agency (ARPCE), which is the NRA.

  ***"Article I**: There is created a regulatory authority referred to as 'Posts and Electronic Communications Regulatory Agency' (ARCPE).*

  ARCPE is a public administrative institution with legal powers and financial autonomy, under the umbrella of the Ministry for Post and Electronic Communications.

  ***Article 5**: ARCPE has the following tasks:*

  - To ensure implementation of laws and regulations governing postal and electronic communications

  - To prepare and maintain, in conjunction with other relevant government departments and public agencies, the specifications defining the rights and obligations of operators of posts and electronic communications networks

  - To investigate applications for licences, prepare and implement the procedures for licensing by competitive bidding, receive statements prior to post and electronic communications activities, and to encourage technological innovation in this field

  - To issue permits and licences, and to prepare relevant specifications

- To establish technical specifications and administrative approval of equipments; accurate methods applicable to networks of all kinds that can be connected to public electronic communications networks and any electronic communications network open to the public. These specifications and rules are binding on third parties only after publication in the official newspaper.

- To issue licences to private installers and distributors of electronic communications equipment

-To ensure compliance by operators on the clauses in their licences, authorizations, approvals and technical specifications

- To ensure sound and fair competition in the postal and electronic communications sector

- To develop and, if necessary, revise the accounting requirements and charging principles to be used by operators and service providers

- To manage and control voice traffic

- To approve and control, before they are implemented, the tariffs charged by operators

- To approve equipment and develop the specifications and standards it must meet

- To plan, manage and control the radio frequency spectrum

- To develop a national radio frequency, in conjunction with the granting agencies

- To ensure that radio frequencies and orbital positions recorded and reserved for the Congo protect national interests

- To participate with the government authority responsible for electronic communications in international meetings relating to the regulation of postal and electronic communications, and the management of the radio spectrum

- To participate in the national, regional and international actions on the study and the better regulation and management of the postal and electronic communications sector

- To ensure compliance with obligations towards international and regional organizations in the postal and electronic communications sector

- To control interconnection agreements to ensure they are fair, competitive and non-discriminatory

- To approve the network interconnection catalogues

- To establish and manage the national numbering plan and addressing

- To evaluate the cost of universal service annually, in accordance with the policy defined in the sector by the government, and to set the terms of its financing and management

- To define, establish and monitor service quality standards in the postal and electronic communications sector

- To promote and protect the interests of users in the postal and electronic communications sector

- To protect the intellectual property in accordance with legal policies

- To contribute, on behalf of the State, the recovery by the Public Treasury of the duties, taxes and fees for the postal and electronic communications sector

- To follow, on behalf of the State, the development of the postal and electronic communications sector."

4.3.2 Tariff regulation[xiii]

Tariff regulation is governed by **Law 09/2009 of 25 November 2009,** establishing the legal and regulatory framework for electronic communications:

Article 36: the NRA monitors:

a) termination costs, including costs of call termination between operators;

b) charges and tariff structures, retail prices, and interconnection and revenue-sharing between operators of origin and termination;

c) possible rearrangements in tariff structures of retail prices and interconnection;

d) the relevance of the interconnection market;

e) the identification of SMP operators in these markets and implementation of necessary measures to promote harmonious development of the electronic communications market.

4.3.3 Regulatory accounting[xiv]

Regulatory accounting is governed by **Law 09/2009 of 25 November 2009,** establishing the legal and regulatory framework for electronic communications:

Article 49: Operators with SMP must implement a cost-accounting system for the purposes of regulation.

The analytical accounting must have separate accounts in accordance with international best practices. It is also recommended that the accounts relating to regulated and unregulated activities are separated.

The accounts must be separated by activity.

The analytical accounting must be audited annually by an independent body selected by the NRA in charge of the operator with significant market power. It should enable the NRA to publish a schedule of costs prior to submission of technical and tariff for approval.

Pending the implementation of cost accounting, interconnection charges should be calculated using the following recommendations:

a) using a regional benchmark;

b) using an existing costs tool;

c) using the market database to determine the appropriate rate of return based on cost of capital;

d) using for calculating the cost of equity, the hybrid method called 'Equilibrium Model of Financial Assets'.

4.3.4 Regulatory strategies for new services and associated challenges

Table 21 Anticipated regulatory strategies for new services and associated challenges

	Service (1)	Considered: Yes/No	Legal/ regulatory basis	Regulatory models/ strategies being considered	Challenges
Congo	Roaming	Yes	Not specified	They are planning to use the ICT NET SIM model	Not specified
	Broadband infrastructure	Yes	Not specified	They are planning to use the ICT NET SIM model	Not specified
	NGN	Yes	Not specified	They are planning to use the ICT NET SIM model	Not specified

(1) Roaming, broadband infrastructure, NGN/NGA, mobile payment, if other please specify

4.3.5 Status of price control regulation and underlying strategy

Table 22: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
CONGO	CO	La	Avoid market collapse

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: relevant market analysis

4.3.6 Cost-accounting and regulatory auditing framework

Table 23: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
CONGO	No	All	La	Yes	La, only operators with SMP

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

4.3.7 Status and development stage of costing tools

Table 24: Costing tools

Use of a costing tool: Yes, No, Pl [1]	Which one: BU, TD, H, B[2]	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P [3]	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
Yes	Other: ICT NetSim Simulator	All	E	The costing tool was not fully implemented and used for calculation at the time of data collection

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

4.3.8 Level of MTR and retail price

Table 25: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) [1]	Retail price: lowest average national off-net price (per minute in local currency) [1]
CONGO	46 XAF/min	86 XAF/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3-minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3-minute\ call\ during\ off-peak\ hours * off-peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

4.3.9 Licensing framework[xv]

The licensing framework is governed by **Law 09/2009 of 25 November 2009,** establishing the legal and regulatory framework for electronic communications:

Article 6: The electronic communications activities are freely practiced in compliance with the terms of legislation and regulations.

However, the supply of networks and electronic communications services is conditional on obtaining, as appropriate:

a) licence;

b) authorization ;

c) agreement;

d) declaration;

e) experimentation.

5. GABON

5.1 Gabon in brief

Gabon is a state in west central Africa sharing borders with Equatorial Guinea to the northwest, Cameroon to the north, and with the Republic of the Congo curving around the east and south. The Gulf of Guinea, an arm of the Atlantic Ocean is to the west. Its capital and largest city is Libreville. Gabon is a French speaking country.

There are three distinct regions: the coastal plains (ranging between 20 to 300 km from the ocean's shore), the mountains (the Cristal Mountains to the northeast of Libreville, the Chaillu Massif in the centre, culminating at 1575 m with Mont Iboundji), and the savannah in the east[5].

The ICT statistics show fixed-telephone subscriptions per 100 inhabitants at -10.9 per cent (based on CAGR between 2006 and 2011), while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 117.32 per cent. Thus the Ratio of mobile-cellular subscriptions to fixed-telephone lines is 80.0:1.

Gabon's economy is dominated by oil. Oil revenues comprise roughly 46 per cent of the government's budget, 43 per cent of GDP and 81 per cent of exports. Oil production is now declining rapidly from its high point of 370 000 barrels per day in 1997. Some estimates suggest that Gabonese oil will be expended by 2025. In spite of the decreasing oil revenues, planning is only now beginning for an after-oil scenario.

Figure 5 presents the country's socio-economic Indicators.[xvi]

Figure 5: Gabon in brief

Area:	267 667 km^2
Capital:	Libreville
Currency:	CFA franc (XAF)
Official language:	French
Calling code:	241
Population:	1,632,572
GDP:	$18,661,104,043
GDP growth:	6.0%
Inflation:	2.6%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

[5] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

5.2 ICT sector overview

5.2.1 Institutional framework

The Government of Gabon has set up a special three-year plan, called 'Digital Gabon', for the development of the country's broadband infrastructure. This will support broadband services such as distance learning, telemedicine, video conferencing and e-Government. The Digital Gabon plan is governed by an institutional framework, a legal and regulatory framework and numerous programmes including over 40 projects in the digital economy sector.

Figure 6 presents the Gabonese institutional framework.

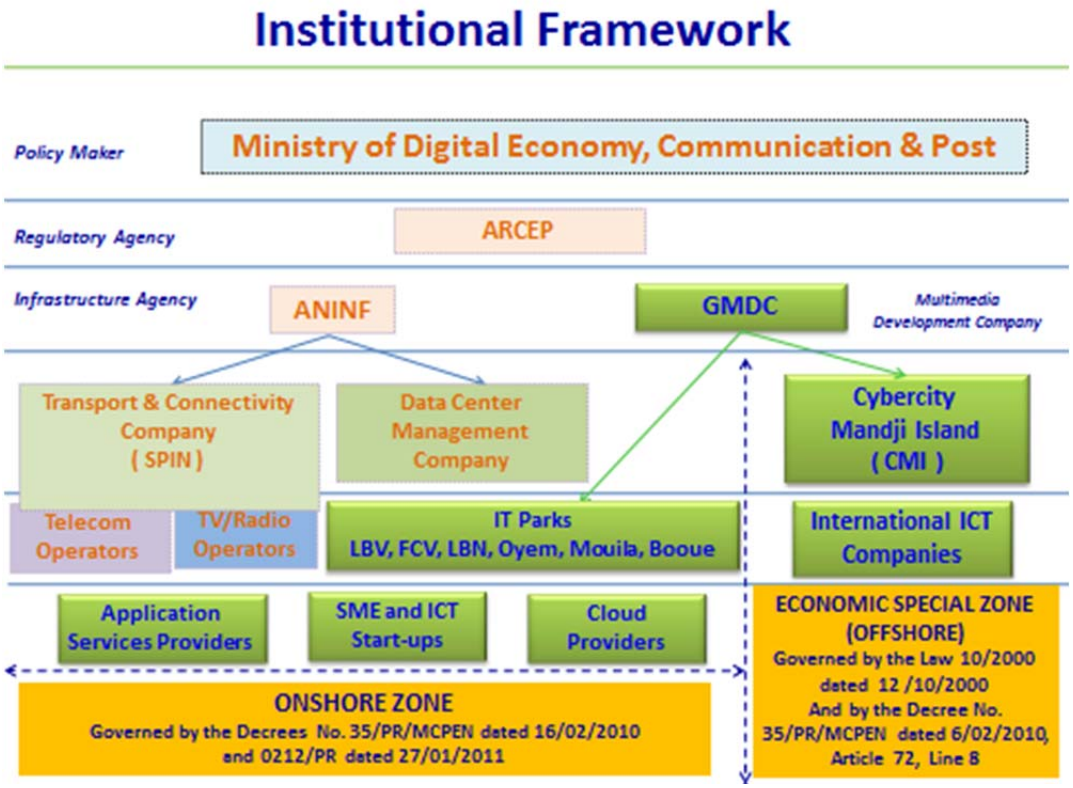


Figure 6: Gabonese ICT institutional framework

Notes:
ARCEP: Post & Electronic Communications Regulatory Agency
ANINF: National Agency for Digital Infrastructures and Frequencies
GMDC: Gabon Multimedia Development Company
SaaS: Software as a Service (cloud computing)

5.2.2 Legal and regulatory framework[xvii]

In 1999, the telecommunication market was opened to competition in mobile telephony through the awarding of GSM licences to three operators: Libertis, Celtel (Airtel) and Telecel (Moov).

In 2001, the telecommunication sector and postal services were deeply restructured and three laws were adopted by Parliament:

- **Law No. 0004/2001 of 27 June 2001,** reorganizing the Post and Telecommunications sector in the Gabonese Republic. This resulted in the creation of **Gabon Telecom** and **Gabon Poste.**

- **Law No. 0005/2001 of 27 June 2001,** establishing the regulation of the telecommunication sector in the Gabonese Republic. This resulted in the creation of the **Telecommunications Regulatory Agency (ARTEL).**

- **Law No. 0006/2001 of 27 June 2001,** establishing the regulation of Posts sector in the Gabonese Republic. This resulted in the creation of the **Posts Regulatory Agency (ARP)**.

Subsequently, these laws were supplemented by legislation under the form of **Orders, Decrees and Decisions**.

In February 2007, Gabon Telecom and its mobile subsidiary were privatized. The new shareholders were Telecom Morocco (51 per cent) and the Government of Gabon (49 per cent).

In November 2009, a fourth mobile licence was awarded to USAN, which operates a GSM network under the trademark 'AZUR Gabon'.

- **Decree No. 035/PR/MCPEN of 16 February 2010,** reorganizing the Ministry of Communication, Post & Digital Economy.

Article 72, Line 8: the Promotion of Digital Economy Department establishes the Technology Parks for promoting the ICT sector;

- **Decree No. 0212/PR of 27 January 2011,** establishing a National Agency for Digital Infrastructures and Frequencies (ANINF) attached to the Presidency of the Republic, and under the technical supervision of the Minister in Charge of Communication, Post & Digital Economy, which is responsible for the development and implementation of digital infrastructure projects;

- **Decree No. 726/PR/MCPEN 26 June 2011,** establishing the Gabonese Broadcasting Company and specifying procedures for design, installation and operation of transmission equipment and broadcast radio and television programmes;

- **Order No. 004/MCPEN of 15 February 2010,** on the establishment and composition of the Commission for managing the transition from analogue to digital TV in the Gabonese Republic;

- **Order No. 0018/MCPEN of March 4, 2011,** on the modernization of terrestrial broadcasting in Band III, IV and V in the Gabonese Republic.

- Since 13th February 2012, ARP and ARTEL have been combined by **Ordinance No. 0000008/PR/2012** into one agency, **the Post & Electronic Communications Regulatory Agency (ARCEP)**.

5.2.3 Digital Gabon: the roadmap for Gabon's ICT sector

Within the framework of the Emerging Gabon development strategy, the government has developed a special three-year plan, called '**Digital Gabon**'. Significant investment will be made in developing Gabon's digital economy, in particular broadband infrastructure, including the development of high-speed services such as e-Learning, e-Health, m-Health, video-conferencing, telemedicine, tele-education, e-Government and m-Government services.

Currently connected to the SAT3 submarine cable linking Africa to Europe, Gabon is planning to increase its bandwidth in order to make broadband more accessible.

To this end, a second international landing point will be operational in Libreville from 2012, on the new high-speed ACE submarine cable.

The **Digital Gabon** plan supports the 'services' element of the national development strategy, which aims to turn Gabon into an emerging country by 2025, and is therefore the government's roadmap for the national development of the ICT sector.

A number of programmes, including several projects based on infrastructures, networks and services are described and scheduled for the period 2011 to 2016.

The main projects are the following:

- To connect the country to the international broadband submarine cable ACE, which interconnects the west coast of Africa to Europe;
- To set up an optical fibre network between Libreville and Mayumba, with a loop to Port-Gentil;
- To set up a national backbone based on optical fibre from Libreville to Franceville, crossing several provincial capitals and following the railway;
- To build a WiMax Network in all the nine provincial capitals, in order to connect the whole Administration;
- To reduce the cost of access to these new technologies, for all Gabonese citizens;
- Gabon's participation in the Central African Backbone (CAB) project, designed to connect the countries in CEMAC, with broadband fibre optic links;
- To equip all the schools in Gabon with multimedia rooms with Internet connections, in order to develop e-Education, m-Education and tele-education;
- To develop telemedicine and m-Health;
- To implement a digital Administration (e-Government, m-Government);
- To manage digital TV migration before the deadline of 17 June 2015;
- To develop mobile broadband based on LTE technology;
- To build the largest Central African Technology Park of Digital Economy in the Economic Special Zone of Port Gentil (**Cybercity of Mandji Island**).

The maps in Figure 7 show the international broadband networks (SAT 3 and ACE), the regional broadband network Central African Backbone (CAB) and the national networks based on optical fibre, as well as terrestrial digital television in development.

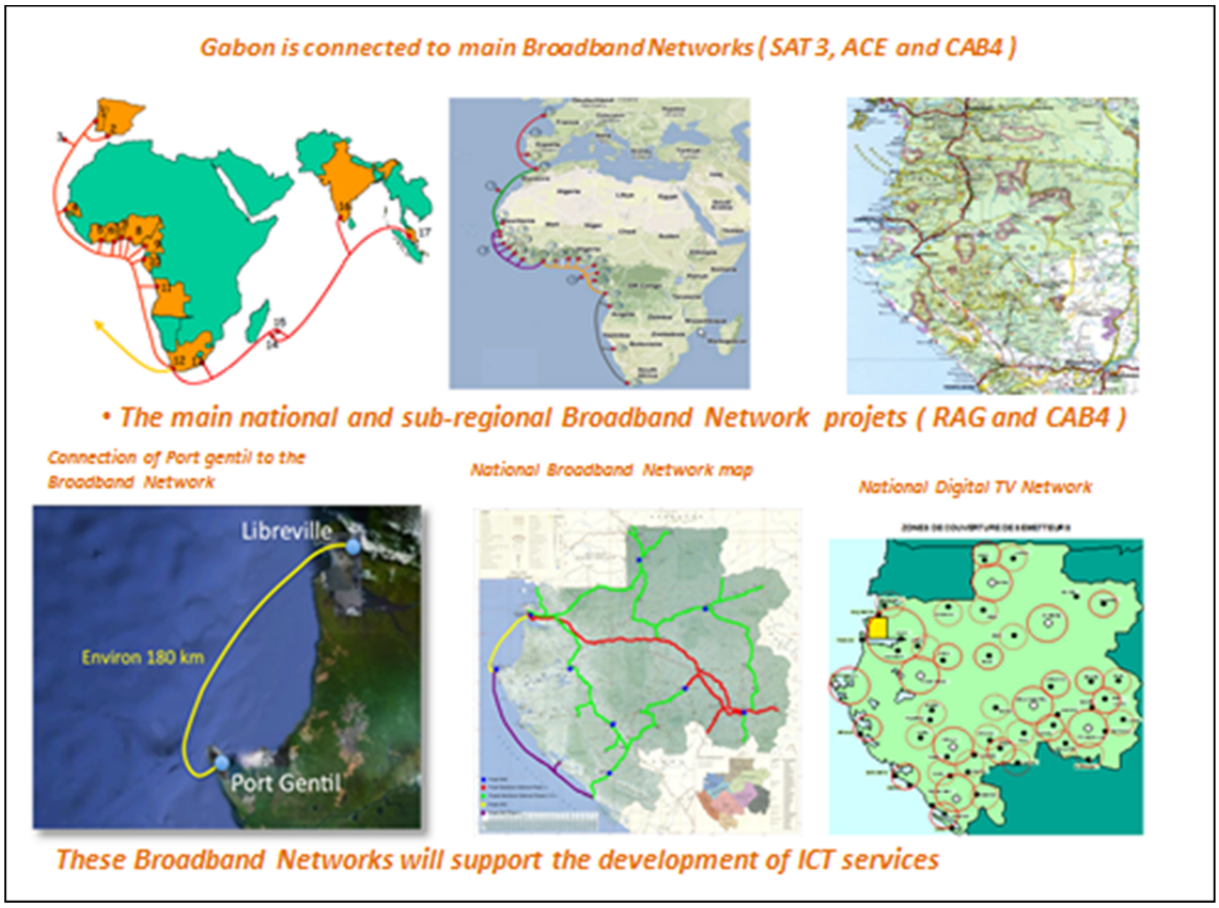


Figure 7: Gabon's broadband networks

The submarine link between Libreville and Port-Gentil, the country's economic capital, was completed at the end of 2012. The link, which was financed by the French oil company, Total Gabon, is directly connected to the ACE submarine cable.

In order to create a high level activityn in the ICT sector for the implementation of the **Cloud Gabon** project, **seven flagship zones** will be developed within the cities that host the local universities and institutes.

5.3 Main findings

5.3.1 Legal and regulatory framework for tariff regulation

Decree No. 000840/PR/MCPTI, setting the terms for price caps and telecommunication services, provides in **Article 11** that: "*The price caps for Telecommunications services open to the public is made by determining price ceilings and price floors (price cap), to be met by the weighted average prices of services or the basket of services subject to supervision.*"

A Decree of the Minister, after consulting the NRA, indicates the NRA's methods of determination of the price cap and price floor rates for the telecommunication services subject to supervision.

Article 22 of Decree No. 00540/PR/MPT of 15 July 2005, setting the terms for interconnection of networks and telecommunication services, infrastructure sharing, pricing principles and the arbitration procedure, provides that: "*Dominant operators are required to publish a Reference Interconnect Offer (RIO) approved by the NRA.*"

For this purpose and according to **Article 27** of the same Decree, the NRA (ARCEP) may, at any time, request an amendment of the interconnection catalogue if it considers that the conditions of competition and interoperability of networks and telecommunication services are not guaranteed. It may also decide to add or delete services included in the catalogue, to implement the guiding principles of interconnection tariffs towards costs or to better meet the needs of the community.

Decree No. 000840/PR/MCPTI, setting the terms for setting price caps and telecommunication services, provides in **Article 3** that the prices of telecommunication services provided in a competitive environment are freely determined by the operators and service providers. They are communicated to ARCEP. Rates for telecommunication services provided in 'non-open competition' are subject to a regulatory framework defined by ARCEP. The operator specifications contain additional provisions that are applicable in each particular case, in accordance with the provisions of the Act and this Decree.

Regarding the universal service, a **Public Service Delegation (PSD)** has been attributed to GABON TELECOM SA by the Government. The Agreement for the **PSD, signed on the 9th of February 2007, states in Article 17:** "*Subject to the exceptions referred to in the paragraph below, the Delegate is free to determine its pricing and marketing policies*".

However, the setting of tariffs within the universal service may be subject to conditions specified in laws and regulations. This framework must be established under conditions that respect the delegate's right to a reasonable margin in return for providing these services.

The strategy and the result of imposing price controls on the service in question: goal, objective, results and achievements.

Decree No. 000840/PR/MCPTI, fixing the terms for setting price caps and telecommunication services, provides in **Article 9** that:

"The price caps for operators of public Telecommunications is applied by the NRA to address the lack and the inadequacy of competition in a service or a basket of services, in particular where:

– an operator has a monopoly or dominant position;

– one or more operators engaged in anti-competitive practices;

– the anti-competitive service market is found.

The NRA shall notify the operator or operators concerned of his reasoned decision to submit to supervision rates for a service or set of services.

The frame ends when the causes that justified disappeared. The end of the frame is notified to the operator or operators concerned."

The NRA analyses the cost price of services on the basis of all available information, including the cost structure and sales services.

For this purpose, subject to supervision, operators provide the NRA with a detailed calculation of cost per unit services sold, subject to supervision and all information in accordance with the principles set by Ministerial order. This takes place once a year, after the close of their annual accounts and not later than three months after the end of the fiscal year.

5.3.2 Regulatory auditing

All operators are subject to regulatory auditing, including the delegate of the Public Service Provider, the mobile operators and operators with a significant influence.

Law No. 005/2001 of 27 June 2001, regulating Gabon's telecommunication sector, in **Article 42** for the universal service, states: *"Costs relating to universal service obligations are valued on the basis of cost accounting required by operators. Such records must be audited at the expense of operators by an independent body designated on a list established by the Telecommunications Regulatory Agency."*

Decree No. 000841/PR/MCPTI fixes the rights, royalties and contributions applicable to those telecommunication operators holding a public service concession or licence.

Article 12 states that *"The Telecommunications Regulatory Agency may carry out any check to ensure the validity of the information received. To this end, it may be assisted by specialists of regulatory auditing and information systems management. They are required to respect the confidentiality of information to which they have access."*

Decree No. 000840/PR/MCPTI, fixing the terms for setting price caps and telecommunication services, states in **Article 8** that: *"The Operators are submitted, at the request of the Agency, to audit the tariffs and to verify the rules of a healthy and fair competition in the market."*

The **Public Service Delegation (PSD)**, in **Article 43** relating to analytical accounting, states that: *"In accordance with **Article 65 of Law no. 004/2001**, the Delegate undertakes to keep a separate accounting for each activity and each services offered in order to identify the costs attributable to the performance of its obligations and to the Universal Service objectives according to the accounting principles and rules in force in Gabon. Such records must be audited at the expense of the Public Service Delegated by a reputed Audit firm."*

5.3.3 Cost-accounting obligation

Law No. 004/2001 of 27 June 2001, re-organizing the Gabonese postal and telecommunication sectors, states in **Article 65** that the specification book defines in detail the financial and accounting structure of Gabon Telecom, which is the Public Service Delegate. That Law obliges Gabon Telecom to keep analytical accounting, which must determine the cost of each service offered.

Law No. 005/2001 of 27 June 2001, regulating the Gabonese telecommunication sector, states in **Article 42 for universal service** that the costs relating to universal service obligations are valued on the basis of cost accounting required by operators. Such records must be audited at the expense of operators by an independent body designated on a list established by the NRA.

Decree 000540/PR/MPT of 15 July 2005, setting the terms for interconnection of networks and telecommunication services, infrastructure sharing, pricing principles and procedure of arbitration, states in **Article 34** that the operators are required to establish, within two years from the granting of a public service concession or licence, an accounting system that will allow them to identify the specific costs of:

– general network costs (costs related to network elements or interconnection capacity lease);

– interconnection services or lease of capacity (costs directly incurred by services alone).

–interconnection services or lease of capacity (costs directly incurred by the only interconnection services or lease of capacity);

–services other than computer interconnection or leasing capacity (the cost of implementing these services alone);

– interconnection services or leasing capacity (if fully allocated to these services).

The **PSD**, in **Article 43** relating to accounting in accordance with **Article 65 of Law no. 004/2001,** states that: "the Delegate undertakes to keep a separate accounting for each activity and each of the services offered his identification including costs attributable to the performance of its obligations and Universal Service objectives, according to accounting principles and rules in force in Gabon. Such records must be audited at the expense of Delegated by a reputed audit firm."

The **specifications books of mobile operators**, in **Article 43** relating to **Bookkeeping, Paragraph 1**, state that the Holder (Investor) agrees to keep at its principal office in Gabon, a separate accounting book for its activities in an appropriate manner and in accordance with the generally accepted accounting principles in Gabon, to reflect fairly and accurately the costs, revenues and balance sheet financial operations of telecommunications.

Paragraph 2 states that the Holder keeps an analytical accounting to determine the real costs, revenues and results of each network operated or services offered.

5.3.4 Regulatory strategies for new services and associated challenges

Table 26: Anticipated regulatory strategies for new services and associated challenges

	Service (1)	Considered: Yes/No	Legal/ regulatory basis	Regulatory models/ strategies being considered	Challenges
GABON	Mobile payment	Yes	Not specified	Not specified	Not specified
	Roaming	Yes	Not specified	Not specified	Not specified
	Broadband infrastructure	Yes	Not specified	Not specified	Not specified

(1) Roaming, broadband infrastructure, NGN/NGA, mobile payment, if other please specify

5.3.5 Status of price control regulation and underlying strategy

Table 27: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
GABON	PC	La	By law, the Agency supervises the operators' tariff. The Agency will notify operators of its decision to supervise their rates for a service or set of services, along with reasons for this requirement. The Agency then analyses the cost price of services on the basis of all available information, including cost structure and sales services. To this end, operators under supervision provide to the Agency once a year, after closing their annual accounts and no later than three months after the end of the fiscal year, a detailed calculation of cost-per-unit of services sold, subject to supervision and all information in accordance with the principles set by ministerial order.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: relevant market analysis

5.3.6 Cost-accounting and regulatory auditing framework

Table 28: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
GABON	Yes	All	La, Li	Yes	La

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

5.3.7 Status and development stage of costing tools

Table 29: Costing tools

Use of a costing tool: Yes, No, Pl (1)	Which one: BU, TD, H, B(2)	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P (3)	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
Yes	BU, B	All	P	BU used in 2009. Benchmark currently used.

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

5.3.8 Level of MTR and retail price

Table 30: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) (1)	Retail price: lowest average national off-net price (per minute in local currency) (1)
GABON	60 XAF/min	120 XAF/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

5.3.9 Strategy for implementation of the bottom-up model

Table 31: Public availability of the model and of its input dataset

	Publicly available: Yes, No?	If the model is not publicly available:		
		Please explain why	Shared with operators or for internal use	Planned to be made public: Yes (+date), No
GABON	No	N/R	Internal use only	No

Table 32: Strategy of implementation and data used

	Strategy of implementation: Sh, Co, EE, DI, Other (please specify) (2)	Did you use data from operators: Yes, No?	If operators' data are used, how did you collect them: CA, SR, Cn, other (please specify)? (1)
GABON	The World Bank model for sub- Saharan countries was adapted to Gabon's situation	Yes	Specific requests, consultation of operators' websites

(1) CA: data from cost-accounting obligation, SR: specific request, Cn: consultation
(2) Sh: 'Off-the-shelf' model (such as ITU, WBG, etc.), Co: consultants to develop a bespoke model, EE: evolution of an existing model, DI: developed internally (from scratch)

5.3.10 Benchmark scope

Table 33: Strategy of implementation and data used

	Purpose of the benchmark: PT, CT, other (please specify) (1)	Number of countries included in the benchmark
GABON	CT	5

(1) PT: primary costing tool, CT: complementary tool to check the outcome of another costing tool

5.3.11 Benchmark selection process

Table 34: Basis/methodology used to select benchmarked countries

	'Similar' countries					Only countries using a cost model (Yes, No)	Other selection criteria/ methodo -logy (please specify)
	Population size (Yes, No)	Population density (Yes, No)	Topography (Yes, No)	Similar marke t (Yes, No)	Other similarity criteria (please specify)		
GABON	No	No	No	Yes	Not specified	No	Not specified

5.3.12 Methodology used to set price

Table 35: Methodology used to derive the level of price

	On what basis is the price set?				Currency conversion
	Average of some prices: e.g. All, Best 5 (please specify) (1)	Best rank 'n' price (please specify 'n')	Other (please specify)	Rationale behind the chosen basis used to set the price	Method used to convert to national currency (2)
GABON	All				Latest rate

(1) Please specify which prices are selected to calculate the average: e.g. All, Best 5, Best 3 excluding rank 1 (1st) price
(2) L: latest, A1: average over 1 year, A3: average over 3 year, if other please specify

5.3.13 Licensing framework

The three main operating licensing regimes of telecommunications, governed by the NRA in Gabon, are as follows:

- **PSD** for basic telecommunication services (fixed network)
- Licence for operators of telecommunication networks using radio frequencies, such as mobile operators and 'restricted area' telephone operators
- **Authorization or Declaration** for providers of value-added services and for private telecommunication network operators.

6. SAO TOME & PRINCIPE

6.1 Sao Tome & Principe in brief

Sao Tome & Príncipe is a Portuguese-speaking island nation in the Gulf of Guinea, of the western equatorial coast of Central Africa. It consists of two islands: Sao Tome & Príncipe, located about 140 Km apart and about 250 and 225 Km, respectively, of the north-western coast of Gabon. Both islands are part of an extinct volcanic mountain range. Sao Tomé, the sizable southern island, is situated just north of the equator. The capital Sao Tome gathers 95% of the population[6].

The ICT statistics show fixed-telephone subscriptions per 100 inhabitants at -0.7 per cent (based on CAGR between 2006 and 2011), while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 68.26 per cent. Thus, the ratio of mobile-cellular subscriptions to fixed-telephone lines is 14.5:1.

Since the 19th century, the economy of Sao Tome &Principe has been based on plantation agriculture.

Other than agriculture, the main economic activities are fishing and a small industrial sector engaged in processing local agricultural products and producing a few basic consumer goods. The scenic islands have potential for tourism, and the government is attempting to improve its rudimentary tourist industry infrastructure. The government sector accounts for about 11 per cent of employment.

Figure 15 presents the country's socio-economic indicators.

Figure 15: Sao Tome & Principe in brief

Area:	1 000 km^2
Capital:	Sao Tome
Currency:	Dobra (STD)
Official language:	Portuguese
Calling code:	239
Population:	**188,098**
GDP:	**$263,729,026**
GDP growth:	**3.9%**
Inflation:	**10.4%**

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

6.2 Overview of the ICT sector

The Government of Sao Tome & Principe does not consider ICT to be a priority sector, and there is currently no specific policy that addresses ICTs. Internet service is not yet liberalized, but there is some restructuring of telecommunication infrastructure underway.

[6] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

Internet service access is not yet liberalized, in contrast with the majority of African countries.

CST is currently the sole Internet Service Provider (ISP). It operates through TELEPAC, a branch of Portugal Telecom. It also offers connections through Wi-Fi.

Using local and Swedish funds, Bahnhof ST[xviii] is planning to offer wireless access from an underground station. It already offers an electronic message service and Internet site hosting.

6.3 Main findings

6.3.1 Legal and regulatory framework for tariff regulation

Law 3/2004 of 23 April 2004 regulates the telecommunication sector in Sao Tome & Principe.

The legal framework (licence, law, analysis of relevant markets) is based on the licence (**Decree-Law No. 33/2007 of 7 December 2007)**.

However, there is only one operator on the market that is free to set the prices for its services. In that way the operator will be the only actor in the market to take and supervise the method of capping.

6.3.2 Regulatory auditing

Concerning the statutory audit, the law does not specify an implementation of the periodic occurrence in the market.

6.3.3 Status of price regulation and underlying strategy

Table 36: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
SAO TOME & PRINCIPE	PC	Li	Only one operator is in place. No strategy has been developed up to this stage.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus

(2) Li: licence, La: law, SMP: relevant market analysis

6.3.4 Cost-accounting and regulatory auditing framework

Table 37: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl [1]	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify)[2]	Mandated: Yes, No, Pl [1]	Basis: Li, La, SMP, Other (specify) [2]
SAO TOME & PRINCIPE	Yes	All	Li	Yes	Li

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

6.3.5 Status and development stage of costing tools

Table 38: Costing tools

	Use of a costing tool: Yes, No, Pl [1]	Which one: BU, TD, H, B[2]	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P [3]	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
SAO TOME & PRINCIPE	No	To be determined	All	P	Not specified

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

6.3.6 Level of MTR and retail price

Table 39: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) [1]	Retail price: lowest average national off-net price (per minute in local currency) [1]
SAO TOME & PRINCIPE	6.426 STD/min	2.520 STD/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

6.3.7 Licensing framework

Law 3/2004 of 23 April 2004, regulating the telecommunication sector in Sao Tome & Principe, specifies three regimes:

- **License**: for public networks
- **Authorisation**: for private networks
- **Declaration**: for value-added services.

7. EQUATORIAL GUINEA

7.1 Equatorial Guinea in brief

Equatorial Guinea is a country located in Middle Africa. It is one of the smallest countries in continental Africa. It is also the richest per capita. It comprises two parts: a Continental Region (Río Muni), including several small offshore islands like Corisco, Elobey Grande and Elobey Chico; and an insular region containing Annobón island and Bioko island where the capital Malabo is situated. Equatorial Guinea is bordered by Cameroon on the north, Gabon on the south and east, and the Gulf of Guinea on the west, where the island nation of São Tomé and Príncipe is located between Bioko and Annobón. Formerly the colony of Spanish Guinea, its post-independence name is suggestive of its location near both the equator and the Gulf of Guinea. It is one of the few territories in mainland Africa where Spanish is an official language[7].

The ICT statistics show fixed-telephone subscriptions in 2006 at 1.6 per cent, while mobile-cellular telephone subscriptions per 100 inhabitants in 2011 were at 59.15 per cent.

The discovery of sizeable petroleum reserves in recent years is transforming the country's economic and political status. Its GDP per capita ranks 28th in the world. On 1st January 1985, the country became the first non-francophone African member of the franc zone, adopting the CFA franc as its currency.

Figure 16 presents the country's socio-economic indicators.[xix]

Figure 16: Equatorial Guinea in brief

Area:	28 000 km^2
Capital:	Malabo
Currency:	CFA franc (XAF)
Official language:	Spanish
Calling code:	240
Population:	**736,296**
GDP:	**$17,697,394,251**
GDP growth:	**2.4%**
Inflation:	**6.1%**

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/

[7] HIPSSA – Cross Border Frequency Coordination HCM4A – Central Africa Report, http://www.itu.int/en/ITU-D/Projects/ITU-EC-ACP/HIPSSA/Documents/FINAL%20DOCUMENTS/FINAL%20DOCS%20ENGLISH/hcm4a_central_africa_assessment.pdf

7.2 ICT sector overview

Equatorial Guinea is currently modernizing its telecommunication sector. The market is also opened to competition.

A number of projects have been launched, including the country's first fibre optic submarine cable, which will connect the continental and insular areas. Further initiatives are also underway, such as the installation of a national backbone cable and connection.

There are currently three operators in Equatorial Guinea: GETESA, HITS and the newly arrived GECOMSA (Guinea Ecuatorial Comunicaciones Sociedad Anónima).

GECOMSA, which is a joint venture between the Government of Equatorial Guinea (51 per cent of shares) and China (49 per cent of shares), operates a mobile network and provides Internet services.

7.3 Main findings

7.3.1 Legal and regulatory framework for tariff regulation

The telecommunication sector in Equatorial Guinea is governed by:

- **Law No. 7/2005,** setting up the legal and regulatory framework
- **Decree No. 63/2007,** regulating tariffs.

The services below are open to competition and the local NRA (ORTEL) controls and regulates the sector:

- Local services
- Domestic fixed long distance
- International fixed long distance
- Wireless local loop
- Data
- DSL
- VSAT
- Leased lines
- Fixed wireless broadband
- Mobile
- Internet services.

7.3.3 Regulatory auditing

Regulatory auditing is not undertaken, due to a lack of human and financial resources.

7.3.4 Regulatory strategies for new services and associated challenges

Table 40: Anticipated regulatory strategies for new services and associated challenges

	Service (1)	Considered: Yes/No	Legal / regulatory basis	Regulatory models/ strategies being considered	Challenges
EQUATORIAL GUINEA	Roaming	Yes	Not specified	On a basis that is referenced to the applicable international standards.	The country is still in the first stage of the implementation process: benchmarking of tools. Having the services regulated, as recommended by ITU.
	Broadband infrastructure	Yes	Not specified	Not specified	Not specified
	Mobile payment	Yes	Not specified	Not specified	Not specified
	SMS	Yes	Not specified	Not specified	Not specified

(1) Roaming, broadband infrastructure, NGN/NGA, mobile payment, if other please specify

7.3.5 Status of price regulation and underlying strategy

Table 41: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
EQUATORIAL GUINEA	Still in the process of deciding which method to apply	La	No specific strategy has been used. They act toward operators in an objective way.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus

(2) Li: licence, La: law, SMP: relevant market analysis

7.3.6 Cost-accounting and regulatory auditing framework

Table 42: Status on cost-accounting obligation and regulatory auditing

	Cost accounting	Regulatory auditing

	Mandated: Yes, No, Pl [1]	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) [2]	Mandated: Yes, No, Pl [1]	Basis: Li, La, SMP, Other (specify) [2]
EQUATORIAL GUINEA	No	All	No basis. The material is missing elements, specifically a legal basis.	Yes	La

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

7.3.7 Status and development stage of costing tools

Table 43: Costing tools

	Use of a costing tool: Yes, No, Pl [1]	Which one: BU, TD, H, B[2]	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P [3]	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
EQUATORIAL GUINEA	No	None	None	Planned	Lack of resources, lack of skills

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

7.3.8 Level of MTR and retail price

Table 44: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) [1]	Retail price: lowest average national off-net price (per minute in local currency) [1]
EQUATORIAL GUINEA	125 XAF/min	150 XAF/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

7.3.9 Licensing framework

Law No. 7/2005, setting up the legal and regulatory framework of the telecommunication sector in Equatorial Guinea, specifies two regimes:

- **Concession**: for public networks
- **Authorisation**: for value-added services.

Chad

8. CHAD REPUBLIC

8.1 Chad in brief

Chad is a landlocked country in Central Africa bordered by Libya to the north, Sudan to the east, the Central African Republic to the south, Cameroon and Nigeria to the southwest, and Niger to the west. Due to its distance from the sea and its largely desert climate, the country is sometimes referred to as the "Dead Heart of Africa".

Chad is divided into multiple regions: a desert zone in the north, an arid Sahel belt in the centre and a more fertile Sudanese savannah zone in the south. Lake Chad, after which the country is named, is the largest wetland in Chad and the second largest in Africa. N'Djamena the capital is the largest city. Arabic and French are the official languages.

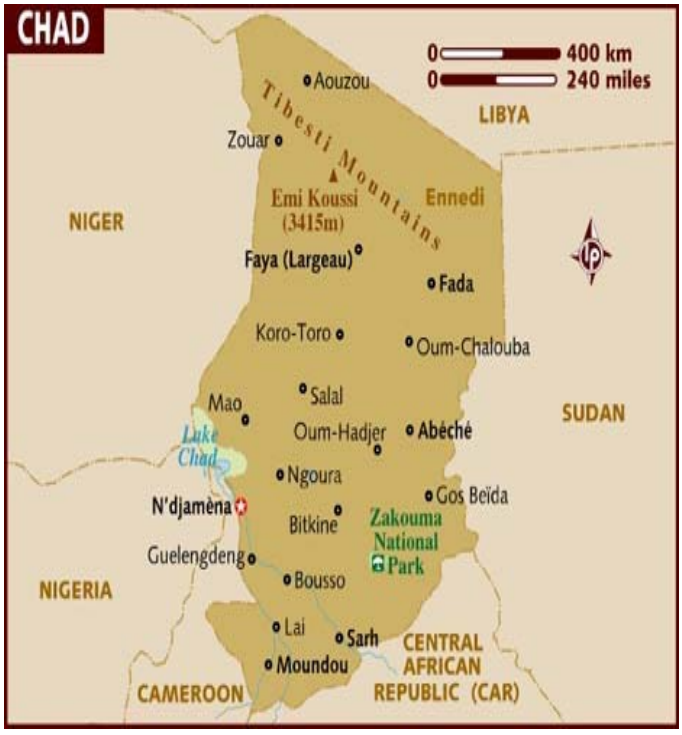
Over 80 per cent of Chad's population relies on agriculture and livestock raising for its livelihood. Chad's main export products are cotton, livestock, and Arabic gum, and the country started exporting oil in 2004.

Figure 17 presents the country's socio-economic indicators.[xx]

Figure 17: Chad in brief

Area:	1 259 201 km^2
Capital:	Ndjamena
Currency:	CFA franc (XAF)
Official language:	French
Calling code:	235
Population:	11.5 Million
GDP per capita:	$760
GDP growth:	-3.1%

Source: www.worldbank.org/en/country (data 2012)
www.itu.int/net4/itu-d/icteye/



8.2 Overview of the ICT sector

Despite becoming Africa's most recent oil exporter, Chad has one of the least developed telecommunication markets in the world. Penetration rates in all market sectors – fixed, mobile and Internet – are well below African averages.

The mobile sector is growing fast under competition between two foreign-owned networks: Bharti Airtel (formerly Zain) and Millicom (Tigo).

The national Telco and fixed-line operator, Sotel Tchad (ST), was participating in another mobile network in partnership with Orascom Telecom until it ceased operations in 2004 over legal disputes between the shareholders.

ST is rolling out a CDMA2000 fixed-wireless system that enables it to potentially re-enter the mobile sector. It supports broadband Internet access using EV-DO technology.

The mobile networks offer basic mobile data services using GPRS and EDGE technology. Third generation (3G) mobile services have not yet been introduced.

Chad still lacks a national backbone infrastructure and international fibre optic access to support efficient broadband services.

All long-distance connections, national and international, are currently made via satellite. However, the World Bank-funded **CAB** project (summarized in Annex 1) is now laying the foundation for the development of a broadband market.

Market highlights:

- One of the world's most underdeveloped markets
- Broadband market lacks international bandwidth and backbone network infrastructure
- Additional USD 30 million approved for CAB fibre optic project
- Almost all cell sites powered by diesel generators.

Estimated market penetration rates in Chad's telecoms sector: [xxi]

Table 45: Estimated market penetration rates

Market	Penetration rate
Mobile	35%
Fixed	0.4%
Internet	2.3%

Main operators:

- Sotel Tchad (LAP Green)
- TchadNet
- Bharti Airtel (Zain)
- Millicom (Tigo)
- Tchad Mobile (Orascom).

8.3 Main findings

8.3.1 Legal and regulatory framework for tariff regulation

The legal and regulatory framework in Chad[xxii] is governed by:

Law 009/PR/98 of 13 July 1998, organizing the telecommunication sector in Chad.

***"Article 1:** This Act aims:*

– *to promote the development of telecommunications throughout the national territory, especially in rural areas;*

– *to determine the mode of installation and operation of all activities;*

– *to ensure effective and fair competition among operators of telecommunication activities in the interests of users;*

– *to guarantee the right for everyone to have access to telecommunications throughout the territory of the Republic of Chad;*

– *to ensure that the activities of telecommunications be regulated in an efficient, transparent and impartial way.*

***Article 57**: This Act creates a body responsible for regulating the telecommunication sector in Chad, called Chadian Telecommunications Regulatory Office (OTRT)".*

OTRT controls and monitors the activities of operators in the sector through fair competition between them, and equal treatment of users. The main objective of its mission is to reduce the digital divide, to provide citizens with the benefits of new technologies to promote people's access to the telephone, especially in rural areas, and to promote telecommunication development through increased private investment.

Ordinance No. 003/MPT/DG/02, fixing charges, taxes and duties.

Ordinance No. 001/MPT/DG/02, on arrangements for contributions to the Fund for Research, Training and Development Conference (FRFT) – a research, education and development fund for telecommunications.

Decree 453/PR/MPT/99, endorsing the status of the NRA.

Decree No. 167/PR/MC, setting the tariffs for postal, financial and telecommunication services.

8.3.2 Regulatory Auditing

Regulatory auditing is governed by:

Law 009/PR/98 of 13 July 1998, organizing the telecommunication sector in Chad.

*"**Article 4**: Telecommunication activities, national and international, are freely practiced in the conditions and in compliance with authorizations and declarations under this Act and are subjected to compliance with essential requirements.*

The control function of telecommunication activities is independent of the operating telecommunication networks and the provision of telecommunication services. It is exercised under the conditions set by the regulator under section 57 of this Legislation."

OTRT uses a special tool named **ICTNetSim** (Simulator Networking and Telecommunication Services) as the main instrument to control network implementation for sector stakeholders.

Using this software allows the operators (whether mobile or fixed) to scale their networks in order to accommodate addional demand, calculate cost-based tariffs for client services and determine the cost of services provided to competitors.

As the regulator, OTRT is able to mediate conflicts on interconnection charges between operators and determine the merits of the operators' proposed tariffs.

For the MTR service, the type of price control is based on the price cap. The strategy and the resulting price controls on services are set by the licence. The licence determines the pricing terms and principles that must be met.

The texts on the strategy and the imposition of price controls on mobile termination service of voice are not still applied.

The unwillingness of the operators in providing relevant data leads to a lack of regulatory foundation and also legal difficulties.

A lack of staff and financial resources has also contributed to poor regulatory auditing.

8.3.3 Cost-accounting obligations

Law 009/PR/98 of 13 July 1998,[xxiii] organizing the telecommunication sector in Chad, specifies the NRA's missions and the obligations of operators in terms of interconnection network tariffs (Article 59, Lines **d** and **e**).

However, there is no cost-accounting obligation.

8.3.4 Status of price regulation and underlying strategy

Table 46: Type of regulatory intervention, legal basis and underlying regulatory strategy

	Type: CO, B, PC, RM (1)	Basis: Li, La, SMP (2)	Underlying strategy: purpose, goal, outcome and achievements
CHAD	PC	Li	Strategy based on the specifications written in the operators' licence.

(1) CO: cost-orientation (cost-accounting approaches), B: benchmark, PC: price cap, RM: retail minus
(2) Li: licence, La: law, SMP: relevant market analysis

8.3.5 Cost-accounting and regulatory auditing framework

Table 47: Status on cost-accounting obligation and regulatory auditing

	Cost accounting			Regulatory auditing	
	Mandated: Yes, No, Pl (1)	Operators: All, SMP, Incumbent	Basis: Li, La, SMP, Other (specify) (2)	Mandated: Yes, No, Pl (1)	Basis: Li, La, SMP, Other (specify) (2)
CHAD	No	All	Li	Yes	Li

(1) Pl: planned
(2) Li: licence, La: law, SMP: relevant market analysis

8.3.6 Status and development stage of costing tools

Table 48: Costing tools

	Use of a costing tool: Yes, No, Pl (1)	Which one: BU, TD, H, B(2)	Operators: All, SMP, Incumbent	Level of development of the tool: E, U, P (3)	If no costing tool is used, please indicate why: e.g. lack of resources, lack of skills
CHAD	No	They plan to use a benchmark tool	All	U	Lack of resources

(1) Pl: planned
(2) BU: bottom-up, TD: top-down, H: hybrid, B: benchmark
(3) E: existing, U: under development, P: planned

8.3.6 Level of MTR and retail price

Table 49: Level of MTR and retail price

	Lowest average level of regulated MTR (per minute in local currency) (1)	Retail price: lowest average national off-net price (per minute in local currency) (1)
CHAD	60 XAF/min	55 XAF/min

(1) The average price for MTR as well as for retail is calculated as follows:

$$\frac{Total\ cost\ of\ a\ 3{-}minute\ call\ during\ peak\ hours * peak\ ratio + total\ cost\ of\ a\ 3{-}minute\ call\ during\ off{-}peak\ hours * off{-}peak\ ratio}{3}$$

Where:
Peak ratio is the proportion of calls passed during peak hours.
Off-peak ratio is the proportion of calls passed during off-peak hours. Off-peak ratio = 1 – peak ratio.
In case the peak/off-peak ratio is not known, please use the following: peak ratio = 70% and off-peak ratio = 30%.

8.3.7 Regulatory strategies for new services and associated challenges

Table 50: Anticipated regulatory strategies for new services and associated challenges

	Service (1)	Considered: Yes/No	Legal/ regulatory basis	Regulatory models/ strategies being considered	Challenges
CHAD	Broadband infrastructure	Yes	Not specified	Development of the price list is ongoing for connection to optical fibre	– Lack of resources – Harmonize the regulatory texts of the subregion
	Services provided by 3G	Yes	Not specified	Development of the price list is ongoing for connection to optical fibre	– Lack of resources – Harmonize the regulatory texts of the subregion

(1) Roaming, broadband infrastructure, NGN/NGA, mobile payment, if other please specify

8.3.8 Strategy for implementation of the bottom-up model

Table 51: Public availability of the model and of its input dataset

	Publicly available: Yes, No?	If the model is not publicly available:		
		Please explain why	Shared with operators or for internal use	Planned to be made public: Yes (+date), No
CHAD	No	The model is under experiment	Yes	Yes, in the near future

Table 52: Strategy of implementation and data used

	Strategy of implementation: Sh, Co, EE, DI, Other (please specify) (2)	Did you use data from operators: Yes, No?	If operators' data are used, how did you collect them: CA, SR, Cn, Other (please specify)? (1)
CHAD	Work with advisory services to draft a customized model	No	Not specified

(1) CA: data from cost-accounting obligation, SR: specific request, Cn: consultation
(2) Sh: 'off-the-shelf' model (such as ITU, WBG, etc.), Co: consultants to develop a bespoke model, EE: evolution of an existing model, DI: developed internally (from scratch)

8.3.9 Benchmark scope

Table 53: Purpose of the benchmark study

	Purpose of the benchmark: PT, CT, Other (please specify) (1)	Number of countries included in the benchmark
CHAD	CT	3

(1) PT: primary costing tool, CT: complementary tool to check the outcome of another costing tool

8.3.10 Licensing framework

Law 009/PR/98 of 13 July 1998, organizing the telecommunication sector in Chad, specifies three regimes:

- **Authorization**: for networks open to the public
- **Declaration**: for internal networks and value-added services
- **Agreement**: for terminal devices.

Glossary

CAB	Central African Backbone
CAPEX	Capital expenditure
CAPM	Capital asset pricing model
CCA	Current cost accounting
CVR	Cost/volume relationships
FCM	Financial capital maintenance
FDC	Fully Distributed Costs
	(also referred to as Fully Allocated Costs – FAC)
HCA	Historical cost accounting
IGW	International gateway
IXP	Internet exchange point
LRIC	Long-run incremental costs
MEA	Modern equivalent asset
MNO	Mobile network operator
MTR	Mobile termination rate
NRA	National regulatory authority
OCM	Operational capital maintenance
OPEX	Operating expenditure
SMP	Significant market power
WACC	Weighted Average Cost of Capital

NRAs

Country	Organisation	Address	SG Contact	Title (Pers)	Telephone (Org)	Fax (Org)	Email (Pers+Org)
Burundi	Agence de Régulation et de Contrôle des Télécommunications (ARCT)	360, Avenue Patrice Lumumba, BP 6702 Bujumbura	M. Diomède Jérémie Hageringwe	Directeur technique	+257 22 243630	+257 22 242832	djhageringwe@yahoo.fr; arct@cbinf.com
Cameroon	Agence de Régulation des Télécommunications (ART)	B.P. 6132 Yaounde	M. Jean-Louis Beh Mengue	Directeur général	+237 22 230380	+237 22 233748	beh.mengue@art.cm; dg@art.cm
Central African Rep.	Agence de Régulation des Télécommunications (ART)	B.P. 1046 Bangui	M. Joseph Nganazoui	Directeur général	+236 21 614912	+236 21 610582	joseph_nganazoui@yahoo.fr; art-rca@art-rca.org
Chad	Office Tchadien de Régulation des Télécommunications (OTRT)	B.P. 5808 Ndjamena	M. André Gandala	Chef de service aux relations internationales	+235 22 521514	+235 22 521517	agandala@yahoo.fr; info@otrt.org
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Endnotes:

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