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

Regulatory accounting and cost modelling in Sub-Saharan Africa

Southern Africa Regional assessment

HIPSSA

Harmonization of ICT Policies in Sub-Saharan Africa

European Commission

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Foreword

Information and communication technologies (ICTs) are shaping the process of globalisation. Recognising their potential to accelerate Africa's economic integration and thereby its greater prosperity and social transformation, Ministers responsible for Communication and Information Technologies meeting under the auspices of the African Union (AU) adopted in May 2008 a reference framework for the harmonization of telecommunications/ICT policies and regulations, an initiative that had become especially necessary with the increasingly widespread adoption of policies to liberalise this sector.

Coordination across the region is essential if the policies, legislation, and practices resulting from each country's liberalization are not to be so various as to constitute an impediment to the development of competitive regional markets.

Our project to 'Support for Harmonization of the ICT Policies in Sub-Sahara Africa' (HIPSSA) has sought to address this potential impediment by bringing together and accompanying all Sub-Saharan countries in the Group of African, Caribbean and Pacific States (ACP) as they formulate and adopt harmonized ICT policies, legislation, and regulatory frameworks. Executed by the International Telecommunication Union (ITU), 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 Development and Cooperation – EuropeAid (DEVCO, European Commission) 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 the ITU. The @CP-ICT aims to support ACP governments and institutions in the harmonization of their ICT policies in the sector by providing high-quality, globally-benchmarked but locally-relevant policy advice, training and related capacity building.

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

These detailed assessments, which reflect sub-regional and country-specific particularities, served as 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. The project is certain to become an example to follow for the stakeholders who seek to harness the catalytic force of ICTs to accelerate economic integration and social and economic development.

I take this opportunity to thank the European Commission 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), 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. Without political will on the part of beneficiary countries, not much would have been achieved. For that, I express my profound thanks to all the ACP governments for their political will which has made this project a resounding success.

Brahima Sanou

BDT Director

Acknowledgements

The present document represents an achievement of a global activity carried out under the HIPSSA project ("Support to the Harmonisation of ICT Policies in Sub-Sahara Africa") officially launched in Addis Ababa in December 2008. Under this global activity, regional assessments were carried out and this is the report for Southern 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), and Economic Community of Central African States (ECCAS), and East African Community (EAC) provided guidance and support to the consultant, Ms. Hilda Mutseyekwa, regional expert for Southern Africa, who was responsible for the assessment and compilation of the regional report for Southern Africa under the guidance of Ms Saïda Ouederni.

ITU would like to thank all the Rgional Regulatory associations in Africa and telecommunications ministries, regulators, academia, civil society, operators and the GSMA for their hard work and commitment in producing the contents of the final report.

Without the active involvement of all of these stakeholders, it would have been impossible to produce a document such as this, reflecting the overall requirements and conditions of the Sub-Sahara Southernn Africa while also representing international best practice.

The activities have been implemented by Ms. Ida Jallow, responsible for the coordination of the activities in Sub-Saharan Africa (HIPSSA Senior Project Coordinator), and Mr. Sandro Bazzanella, responsible for the management of the whole project covering Sub-Saharan Africa, Caribbean and the Pacific (ITU-EC-ACP Project Manager) with the overall support of Ms. Hiwot Mulugeta, HIPSSA Project Assistant, and of 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-Warner, 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 Adviser. The team at ITU's Publication Composition Service was responsible for its publication.

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Introduction

This assessment report, which is in respect of the Southern Africa Sub-Region, relates to the ITU-EC joint project for "Harmonization of ICT Policies in Sub-Sahara Africa" (HIPSSA) which aims at developing and promoting harmonized policies and regulatory guidelines for the ICT market as well as building human capacity in the field of ICT.

Within the framework of its joint project with the EU, ITU is responding to the needs of HIPSSA beneficiaries and its members by providing regional organization with an up-to-date review of regulatory practices regarding regulatory accounting and cost modeling in their respective regions identifying trends on which they could build a common approach on regulatory auditing and cost modeling.

To this end the assessment study involved a review of the description of the cost models and data used by each country with the output being the individual national reports. The national reports were subsequently consolidated into this regional assessment report. The various regional reports shall subsequently be consolidated into a global assessment report for Sub-Saharan Africa.

This report has therefore been prepared by Ms. Hilda Mutseyekwa based on the assessment study on costing strategies and cost model application and processes in the Southern African sub-region under the terms of reference shown in Annex 2.

The assessment report is divided into 4 main parts namely:

Part 1 – Main findings and recommendations,

Part 2 – Legal and regulatory framework for tariff regulation,

Part 3 – Cost accounting and regulatory auditing, and

Part 4 – Costing tools and cost model development.

Part 1 provides a summary of the main findings of the regional assessment as analyzed in parts 2, 3 and 4.

Special thanks for the useful guidance, appropriate interventions and assistance provided throughout the assessment period goes 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 among others.

Part 1 – Main findings and recommendations

Part 1 – Main findings and recommendations

1.1 Main findings

1.1.1 Level of Response to the Questionnaire

Out of the 10 countries under study in the Southern Africa sub-region, 9 countries responded to the questionnaire designed to gather information on regulatory auditing and cost modeling. These include Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe. Only Angola did not respond to the questionnaire due to communication problems. In general, a majority of countries did not complete some parts of the questionnaire. This can be mainly attributable to the fact that they have not yet embarked on regulatory accounting and cost modeling.

Almost all countries that participated in the survey indicated that they intervene in the setting of termination tariffs in one way or another. What differs is how this is done depending on the available expertise, resources, market structure and the enabling legislation. The following are specific observations made:

1.1.2 Legal and Regulatory Framework for Tariff Regulation

Price control for termination rates is generally covered in almost all countries' valid Acts and regulations governing the communication sectors. In particular, the Acts/legislations in place specify the use of forward looking incremental costs as the recommended costing methodology for terminations rates. This is the case in Botswana, Zambia, Mozambique, Zimbabwe, Namibia, and Lesotho. This uniformity is largely attributable to the Southern African Development Community (SADC) Guidelines on Interconnection Rates and the fact that most of the legislations within SADC are based on model legislation guidelines set by the regional organization. Malawi's legislation does not deal adequately with issues to do with tariff regulation as it believed then that market forces would determine prices.

The Law is the main basis for intervention in the determination of termination rates as shown in the table below:

Table 1: Basis for Intervention

Type of intervention	Number of countries where applied
Law	6
Significant Market Power (SMP)	1
Licence	1
N/A	1

1.1.3 Strategy for Regulatory Intervention

The most common strategy in the sub-region for price control is cost orientation followed by price cap and benchmarks respectively. Cost orientation is applied in Botswana, Zambia, Mozambique, Zimbabwe and South Africa. The main differences lie in the methodologies and models used to calculate termination rates. Namibia has used a benchmark study to determine the obtaining termination rates but has indicated it will adopt cost orientation as a strategy to determine interconnection rates in accordance with its legislation. Swaziland relies on benchmarking because it does not have an independent regulator. Swaziland uses price cap for determining termination rate levels. Malawi is the only country that has imposed a Sender Keeps All regime following a string of disputes over chargeable interconnection rates, otherwise prices should be determined by market forces.

Table 2: Types of intervention

Type of intervention	Number of countries where applied
Cost orientation	5
Price cap	1
Retail minus	-
Sender Keeps All	1
Benchmarking	2

1.1.4 Cost Accounting

i) No cost accounting is imposed in Botswana, Lesotho, Malawi, Zambia, Namibia and Swaziland. The major reason being lack of legal basis and requisite skills. In all countries except South Africa, there are no robust cost accounting frameworks. In general, the legislation in place and existing operating licences do not impose detailed obligations on cost accounting. Often, the primary legislation gives the NRAs the flexibility to craft the manner and format for tariff approvals. This is not usually pursued in almost all countries except for general tariff proposal guidelines. Cases in point are that of Botswana and Zimbabwe where NRAs use tariff proposal guidelines as a tool to implement cost accounting obligations.

ii) In all cases, things are done arbitrarily as and when the need arises, usually when there is a tariff review. In all legislations of the countries under study, operators are obliged to provide requested information to the regulators promptly on request.

iii) Two out three countries that have relied on consultants to develop cost models (Zambia and Botswana) have indicated that they do not have systematic cost accounting frameworks as cost accounting is only done as and when the cost model is reviewed. Information is gathered from operators based on specific requests at the behest of consultants. Namibia is yet to develop cost accounting regulations which are provided for in the Communications Act of 2009. South Africa is developing cost accounting separation guidelines to replace the current COA/CAM regulations which are not enforceable under the new Electronic Communications Act, (ECA). Zimbabwe had a cost accounting system in place based on the COSITU Model but is developing a new system in line with its plans to adopt forward looking Long Run Incremental Costing methodologies for determining termination rates in accordance with its legislation.

iv) Apparently, the major challenge with enforcing cost accounting obligations is lack of detailed cost accounting rules as well as challenges with data collection from operators. Results from the GSMA study show that operators are not comfortable with the level of detail required for cost accounting obligations. They view such obligations as the “most intrusive” form of intervention which is also expensive.

1.1.5 Regulatory Auditing

i. All countries that responded to the survey do not have robust regulatory auditing frameworks. This can be attributed to the dearth of systematic enforceable cost accounting rules and regulatory reporting frameworks to be followed by operators. Regulatory auditing is often done ad hoc. South Africa and Zimbabwe have some semblance of Regulatory auditing systems in place. In Zimbabwe all licensees are required to submit annual regulatory reports to the regulator using a standard template. NRAs have also indicated that their major challenge is that of getting information from operators who are reluctant to part with their business information. This has also been confirmed by operators who participated in the GSMA survey. The operators complain that the process is time consuming and also expressed that they are not comfortable with sharing commercially sensitive information for fear of compromising the confidential aspects of their businesses.

1.1.6 Costing Tools and Cost Modeling

i. The emerging trend is the adoption of hybrid models based on LRIC. Botswana, Mozambique and Zambia have adopted Forward looking Hybrid LRIC models. South Africa and Zimbabwe have used Top down approaches based on fully distributed costing. However, Zimbabwe is set to adopt a forward looking LRIC model in 2012-2013. Lesotho, Malawi, Namibia and Swaziland are still lagging behind in terms of developing cost models or costing tools. Malawi is planning to adopt a LRIC costing model in the near future after realizing that market forces have failed to regulate the market. Swaziland is handicapped by the non-existence of an independent regulatory body as the incumbent operator is doubling up as the regulator.

ii. The major challenge with developing cost models is mostly attributable to lack of requisite skills and resources. This has seen most regulators engaging or planning to engage consultants to come up with cost models for termination rates and other services. Cases in point are Zambia, Botswana, and Mozambique and Namibia where consultants have been engaged to develop cost models or determine termination rate levels.

iii. To this end, 4 out 5 operators in Southern Africa who participated in the GSMA survey have indicated that they have developed their own cost models. Three out of the four operators have engaged consultants to develop the models, whilst one operator developed its own model. Two of the operators have used BU LRIC models whilst the other two have used Top down models. The models are mainly used for regulatory purposes- usually to challenge the NRAs as well as internal product management.

1.1.7 Bottom up Models in Use

i. The three countries that have built forward looking LRIC plus models (i.e. Zambia, Botswana and Mozambique) have used almost the same principles and concepts in building their cost models. All the three countries have used the hybrid approach in building their cost models. This entailed the use of the scorched node approach for the core networks and the use of a hypothetically efficient operator for network dimensioning purposes.

Table 3: Summary of models in use/planed:

Type of model	Number of countries where applied
Bottom up	3
Top Down	1
Hybrid	4

ii. Major cost drivers were identified as traffic, coverage and number of subscribers for the three countries. These were modeled based on specific data requests from operators. CAPEX was calculated using the tilted annuity depreciation method in Zambia and Botswana. Specific details regarding the cost models were not available for Mozambique as author could not access the consultant's report on the cost model. OPEX was modeled by using a mark up on network assets in all the three countries.

iii. The CAPM method was used for purposes of calculating the WACC for telecommunications sector in Botswana (12.75%) and Zambia (23%) and Mozambique (28%).

1.1.8 Top Down Models in Use

i. Only two out of the seven countries that use cost orientation to set MTRs and other tariffs indicated that they have used top down models. South Africa uses the top down model based on cost accounting separation reports submitted by operators with SMP. The major difference between the two countries is that South Africa used incremental costing to determine termination rates whilst the model used in Zimbabwe is based on FDC.

ii. The CAPM method is also used for calculating WACC in South Africa and Zimbabwe. The principles on cost allocation and asset valuation follow the same principles except that they are based on actual existing networks.

iii. In Zimbabwe the COSITU model was used to computes tariffs using data from the dominant operator. The results were then adjusted downwards based on traffic growth projections. Traffic is the major cost driver and the routing table is used to allocate cost of network elements based on the utilization of the network elements by each service category. The model uses both Historical Cost Accounting (HCA), applicable to operating costs, and Current Cost Accounting (CCA) on network elements. Depreciation is on a straight line basis. The WACC is calculated automatically by the COSITU model using interest rates and the required rate of capital prevailing in the countries from where off-shore funding for network development is sourced. Efficiency considerations are also factored in based on forecast cost reductions derived from average annual growth rate in number of subscribers and utilization of installed capacity and average lead time required by an operator to upgrade a network.

iv. The main difference between the Top Down (TD) models between South Africa and Zimbabwe is that the former did not use a specific model, but used data extracted from Accounting Separation reports and traffic figures submitted by Significant Market Power (SMP) operators. The COSITU model used in Zimbabwe is available on shelf from the ITU.

v. In all cases, the models used to calculate termination rates by NRAs are not publicly available but are shared with operators. The rational being protection of confidential commercial information used in the models.

1.1.9 Foreseen Evolutions and Challenges.

i. Out of the 9 countries that participated in the survey, only two countries (South Africa and Botswana) indicated that they did not anticipate any major shifts in regulatory frameworks, although Botswana indicated the regional harmonization of roaming tariffs.

ii. Six out of nine NRAs who responded to the survey indicated that they have data collection challenges at the operator level. Only South Africa and Zimbabwe indicated no data collection challenges. This is largely attributed to operators' reluctance to provide relevant information as well as weak enforcement powers on the part of regulators.

1.1.10 Price Controls on Other Services other than Termination Rates

i. Price controls for other services other than termination rates are in practice in some counties and is targeted at SMPs. This is the case in Zambia and Botswana where price control is targeted at operators with SMP for both retail and wholesale services. In South Africa, Malawi and Mozambique, there is no price control on all retail services. In Zimbabwe price regulation is applicable to all services. Mozambique however indicated that they were considering to impose price control on retail fixed services.

ii. Apparently, the different price control situations are largely determined by the effectiveness of competition prevailing in the various markets. The SMP criterion is applied in Botswana and Zambia which have conducted market studies to determine operators with SMPs in the various markets. In South Africa the SMP criterion is based on benefits enjoyed by operators from past spectrum allocations. In Zimbabwe, price control is imposed on all services as competition is deemed ineffective to regulate the market.

1.1.11 Benchmarking

i. A few countries are using benchmarking as the primary costing tool. This is the case for Swaziland and Namibia. The rest of the countries i.e. Botswana; Zambia, Mozambique and Zimbabwe only use benchmarking to cross-check tariff levels. The methodologies used for benchmarking are usually simple either as regional comparisons or comparisons with countries that use LRIC methodologies.

1.2 Conclusions and recommendations

1.2.1 Conclusions

The overall observation from responses given by NRAs and issues raised by operators is that there is a dearth of expertise in cost accounting and cost modeling. NRAs that have used the LRIC approach have done so with the assistance of consultants hired from time to time. This has somehow compromised the NRAs ability to implement and manage regulatory auditing systems. Generally, there is very little buy- in on the part of operators. A majority of operators view costs studies done by consultants as not being comprehensive enough and usually based on methodologies and solutions that are mostly suitable for developed countries. Major areas of concern to operators include:

- Understated determination of WACC
- The use of unrealistic assumptions to derive mark up on common costs, traffic estimates
- Inaccurate traffic forecasts
- Lack of consultation with operators
- Benchmarks (which are often done in a hurry and not properly substantiated).

Some countries are still behind in cost modeling and regulatory auditing and they need assistance in terms of appropriate regulatory frameworks, skills and financial resources. This is the case with Malawi, Swaziland and Lesotho.

1.2.2 Recommendations

The following are recommendations on what needs to be done to improve the situation.

i. NRAs need to develop the requisite skills in the area of cost accounting and cost modeling to avoid too much reliance on consultants. This will enable them to develop cost models that are appropriate to their environmental situations as well as save on money that can be used for promoting universal access of services. This will go a long way in building trust from operators as well as improve on their cooperation to provide information.

ii. There is need for NRAs to set up costs accounting rules and robust regulatory auditing frameworks that are well provided for in the relevant Acts and licences. In essence, assistance in crafting detailed cost accounting rules/ regulations is needed including the requisite training in cost accounting for both NRAs and operators. This will also help improve quality of cost models developed and conduct regulatory audits on their own.

iii. NRAs should review their legislation with a view to give them enough powers to enforce cost accounting obligations and access to operators' information for purposes of regulatory auditing.

iv. NRAS should address the problem of transparency by engaging and consulting with operators in drawing up the conceptual framework, scope and structure of cost studies.

v. NRAs should conduct regulatory impact assessments before implementing results of cost studies or any other obligations on cost accounting or regulatory auditing. This will help them identify operators where such obligations are necessary as well as determine the proportionality of the obligations.

vi. NRAs need to conduct market studies to enable them to identify SMP operators and impose cost accounting and regulatory auditing obligations accordingly. This will help reduce unnecessary regulatory burden on the part of smaller operators as well as NRAs.

Part 2 – Legal and regulatory framework for tariff regulation

Part 2 – Legal and regulatory framework for tariff regulation

2.1 Strategy for regulatory intervention

2.1.1 Status of price 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.
Botswana	CO	Law; Licence;	Purpose: To ensure tariffs are aligned to costs Goal: Attract investment; consumer protection.
Lesotho	PC	Law	Purpose: to recover incremental costs
Malawi	Sender Keeps All	N/A	Goal: Stop gap measure to deal with never ending disputes on interconnection rates among operators. Outcome and achievements: Respite on interconnection disputes.
Mozambique	CO	Law	Goal: promote competition and ensure interoperability of services. Outcome and achievements: reasonable prices.
Namibia	B	Law	
South Africa	CO	SMP	Purpose: To reduce cost of termination Goal: To promote competition at retail level Outcome and achievements: imposed price controls and accounting separation guidelines.
Swaziland	B; CO (planned)	Licence	Purpose: To ensure prices are not arbitrarily set Goal: To ensure value to customers and justifiable prices in comparison to regional price levels. Outcome and achievements: Prices in line with regional levels.
Zambia	CO	Law	Purpose: Tariff rebalancing Goal: Termination rate harmonization Outcome and achievements: Reduction of termination rates; Control of abusive behavior of SMPs.
Zimbabwe	CO	Law; Licence	Purpose: To ensure tariffs are cost based. Goal: Promote competition, consumer protection and promote investment. Outcome and achievements: Increased investment, increased number of players and more variety of services being offered.

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

2.2 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)
Botswana	Yes	All	Law	No	N/A
Mozambique	Yes	All	Law	yes	Law
South Africa	Yes	SMP	Law	yes	SMP
Zimbabwe	Yes	All	Law	yes	Law

(1) Pl: Planned
(2) Li: license, La: law, SMP: relevant market analysis, if other please specify

Table 3 – Reasons for which cost accounting and/or regulatory auditing are not implemented or foreseen

	Cost accounting not mandated or foreseen	Regulatory auditing not mandated or foreseen
	Please specify the reasons: lack of legal basis, insufficient resources.	Please specify the reasons: lack of legal basis, lack of audit framework, insufficient resources,.
Botswana	Use consultants	Not mandated because there is no regulatory auditing framework in place.
Lesotho	Lack of legal basis	N/A
Malawi	Lack of legal basis and insufficient resources.	No legal basis and insufficient resources
Namibia	Lack of skills	Lack of skills (New NRA)
Swaziland	Lack of legal basis	Lack of legal basis
Zambia	Lack of expertise (Use consultants)	Lack of audit framework and insufficient resources.

2.2.1 Status and development stage of costing tools

Table 4 – 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 …
Botswana	Yes	H	All	Existing	N/A
Lesotho	No	BU	All	Planned	Lack of resources and a restrictive law.
Malawi	No	N/A	N/A	Planned	Lack of resources and skills. No legal basis.
Mozambique	Yes	Hybrid	All	Existing	N/A
Namibia	No	Benchmark	All	Existing	Lack of skills.
South Africa	No	Prices calculated on the basis of traffic and cost figures in accounting separation reports submitted by operators	SMP Operators who benefited from spectrum allocation policies.	Existing	Insufficient legal framework. The NRA is in the process of developing costs accounting separation regulations.
Swaziland	Pl	BU	All	Planned	No regulator; Lack of resources and skills.
Zambia	Yes	Hybrid	SMP	Existing	N/A
Zimbabwe	Yes	TD	All	Existing	N/A

(1) Pl: Planned
(2) BU: bottom-Up, TD: top-Down, H: Hybrid, B: benchmark
(3) E: existing, U: under development, P: Planned

Table 5 – 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)
Botswana	Botswana Pula 0.453 (USD 0.13)	Botswana Pula 1.70 (USD0.47)
Lesotho		
Malawi	NIL (Sender Keeps All)	N/A
Mozambique	MT2.5 (USD 0.17)	MT 6.67 (USD 0.45) (1USD = MT 26.7)
Namibia	N$0.30 (USD 0.05)	N$.38
South Africa	R0.73 (peak) (USD 0.15 peak) R0.63 (Off peak) (USD 0.13)	N/A
Swaziland	Elangeni 0.76 (USD 0.17)	Elangeni 1.47 (USD 0.33)
Zambia	295 Kwacha (USD0.059) (USD0.08)	ZMK 1,200 (USD 0.31)
Zimbabwe	USD 0.07	USD 0.22

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

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

Where:

Peak ratio is the proportion of calls passed during peak hours.

Off-peak ratio is the proportion of call 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 Difficulties encountered by NRAs

2.3.1 Data collection

Table 6 – Issues in data collection

	Occurred: Yes, No	If yes, at which stage of the collection process	If yes, what were the reasons? (1)
Botswana	Yes	Operator	Data not usually organized
Lesotho	yes	Operator	Operators just do not provide relevant data.
Malawi	N/A	N/A	N/A
Mozambique	No	N/A	N/A
Namibia	Yes	Operator level	Unwillingness to cooperate on the part of the dominant operator.
South Africa	No	N/A	N/A
Swaziland	Yes	Operator	Operators not willing to give data to the incumbent who is both regulator and competitor.
Zambia	Yes	Operator	Operators not willing to give information.
Zimbabwe	No	N/A	N/A

(1) For instance: lack of legal basis, difficulties for operators to provide relevant data, lack of will from operators.

2.3.2 Disputes

Table 7 – Legal disputes

	Occurred: Yes, No	Nature of the dispute	Date	Object of the dispute	Outcome	Impacts, if any, on tariff regulation or cost modeling
Botswana	yes	BTC Vs Mascom on chargeable termination rates	2003	Mobile to fixed and fixed-mobile termination rates	Regulator set termination rates based on international benchmarks.	The dispute caused the regulator to engage a consultant to conduct cost studies in 2004 which were reviewed in 2010.

	Occurred: Yes, No	Nature of the dispute	Date	Object of the dispute	Outcome	Impacts, if any, on tariff regulation or cost modeling
Malawi	yes	CELTEL (now Airtel) Vs MTL and TNL on chargeable termination rates	Since 2001	CELTEL demanding mobile termination rate of USD0.20 and fixed termination rates of USD0.05 payable to the fixed operator. Chargeable termination rates for new entrant (CELETEL).	Initially regulator set the termination rates at USD0.04 for both fixed and mobile termination and then imposed SKA in 2010.	The regulator has realized that market forces have failed to regulate termination rates and planning fo a cost oriented regulatory strategy.
Mozambique	yes	Vodacom vs. TDM	2002	Mobile to fixed and fixed to mobile interconnection rates.	Regulator set termination rates based on international benchmarks.	The dispute caused the regulator to engage a consultant, Mathias Haffmann, to develop cost models for termination rates in 2007.
Namibia	yes	MTC versus other operators	2009	Termination rates	Regulator engaged consultant to come up with termination rates.	Benchmarked termination rates based on Australian efficient operator.
South Africa	yes					
Swaziland	No	N/A	N/A	N/A	N/A	N/A
Zambia	No	N/A	N/A	N/A	N/A	N/A
Zimbabwe	No	N/A	N/A	N/A	N/A	N/A

2.4 Foreseen evolutions and challenges

2.4.1 Price control regarding other services

Table 8 – Price control obligations of retail services

	Retail mobile voice		Retail fixed voice		Fixed data		Mobile data	
	CA(1): Yes/No	Costing tool: N, BU, TD, B (2)	CA(1): Yes/No	Costing tool: N, BU, TD, B (2)	CA(1): Yes/No	Costing tool: N, BU, TD, B (2)	CA(1): Yes/No	Costing tool: N, BU, TD, B (2)
Botswana	Yes	-BU	yes	-BU	Yes	-BU	yes	-BU
Lesotho	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Mozambique	No	N/A	yes	TD	Yes	TD	yes	TD
Namibia	Yes	TD	yes	TD	Yes	TD	yes	TD
South Africa	No	N/A	No	N/A	No	N/A	No	N/A
Swaziland	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Zambia	Yes	hybrid	yes	hybrid	Yes	hybrid	yes	hybrid
Zimbabwe	Yes	TD	yes	TD	Yes	TD	yes	TD

(1) CA: cost accounting
(2) N: No, BU: bottom-up, TD: top-down, B: benchmark

Table 9 – Price control obligations of wholesale services

	Fixed interconnection		Bitstream access		Local loop unbundling		Leased lines		Access to IGW		Access to IXP	
	CA(1): Yes/No	CT(2): N, BU, TD, B (3)	CA(1): Yes/No	CT(2): N, BU, TD, B (3)	CA(1): Yes/No	CT(2): N, BU, TD, B (3)	CA(1): Yes/No	CT(2): N, BU, TD, B (3)	CA(1): Yes/No	CT(2): N, BU, TD, B (3)	CA(1): Yes/No	CT(2): N, BU, TD, B (3)
Botswana	yes	BU	yes	BU	Yes	BU	Yes	BU	yes	BU	yes	BU
Lesotho	yes	BU	No	N/A	No	N/A	Yes	B	No	N/A	No	N/A
Mozambique	No	BU	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A
Namibia	yes	TD and B	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A
South Africa	yes	TD	No	N/A	NO	N/A	No	N/A	No	N/A	No	N/A
Swaziland	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A	No	N/A
Zambia	yes	BU	yes	BU	Yes	BU	Yes	BU	yes	BU	yes	BU
Zimbabwe	yes	TD	yes	TD	No	N/A	Yes	TD	yes	TD	Yes	TD

(1) CA: cost accounting
(2) CT: costing tool
(3) N: No, BU: bottom-up, TD: top-down, B: benchmark

2.4.2 Foreseen changes in regulatory framework

Table 10 – Telecom law or regulatory framework review

	Status: No, Pl, Uw (1)	Target date	Main objectives
Botswana	Underway	N/A	– Broadband strategy. – Harmonization of roaming charging principles.
Lesotho	planned	N/A	– Framework for regulating the services.
Malawi	Planned	N/A	– To develop a hybrid costing model for interconnection. – Participate in World Bank regional infrastructure project. – To develop a broadband strategy. – To align the Law to technology changes; e legislation; technology neutral licensing.
Mozambique	Underway	N/A	– To align ICT strategy with convergence. – To develop broadband infrastructure.
Namibia	Underway		– To come up with cost accounting regulations.
South Africa	Underway	2012	– To develop cost accounting separation regulations
Swaziland	Planned	End of 2012	– Establishment of independent regulator; – BU costing tool.
Zambia	No	N/A	N/A
Zimbabwe	Underway	2012-2013	– Converged licensing regime. – Migrate to LRIC based model for interconnect rates. – Review tariffs for all retail services using cost models that accommodate convergence and broadband infrastructure. – Regional harmonization of roaming tariffs.

(1) No: no, Pl: planned, Uw: under way

2.4.3 Regulatory strategies for new services and associated challenges

Table 11 – Anticipated regulatory strategies for new services and associated challenges

	Service (1)	Considered: Yes/No	Legal / regulatory basis	Regulatory models / strategies being	Challenges
Botswana	Roaming charges	yes	Regional harmonization	Regional harmonization	
	Broadband services	yes	N/A		
Lesotho					
Malawi	Broadband services	yes	N/A	Cost based interconnection services	Lack of skills and resources and insufficient legal framework.
Mozambique	Broadband and fixed services	yes	N/A	Regulate fixed retail services	
South Africa	N/A	N/A	N/A	N/A	N/A
Swaziland	All services	yes	N/A	Cost orientation	No regulator or regulatory framework in place.
Zambia	N/A	N/A	N/A	N/A	No cost accounting framework in place. Limited skills and data collection challenges.
Zimbabwe	Broadband services	Yes	Law; License conditions	Cost orientation	Limited skills and data collection challenges.
	Roaming charges	Yes	Yes	Cost orientation	Regional harmonization.

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

Part 3 – Cost accounting and regulatory auditing

Part 3 – Cost accounting and regulatory auditing

3.1 Cost accounting

3.1.1 Data collection process

Table 12 – Cost accounting – data collection process

	Process				Implementation	
	Frequency	Deadline	Actual (present and past) figures and period covered	Forecasted figures and period covered	Number of occurrences	Latest collection
Botswana	As and when cost model is reviewed	N/A	Current	5 years	2	2010
Mozambique	Every two years	N/A		2	1	2009
South Africa	Annual	-	Actual	1 year	1	2011
Zambia	As and when cost model is reviewed	N/A	N/A	N/A	1	2010
Zimbabwe	As and when there is need for a tariff review	N/A	Latest monthly Annualized figures	1 year	As and when there is need for a tariff review	February 2009

3.1.2 Scope of costs and cost preparation

Table 13 – Cost accounting – Degree of regulatory prescription regarding cost preparation

	Costs & revenues nomenclature: Yes, No	Specifications imposed: Yes, No	When specifications are imposed, please specify the specs (please delete the non relevant specifications and add any complementary specification):
Botswana	yes	Yes	– Principles of cost causality. – Cost preparation methodologies e.g. reference to cost base and standards, valuation and allocation methodologies, identification and treatment of shared and common costs. Basis on which assets are valued: asset lives and depreciation methods. – Attribution methodologies used to attribute revenues, costs, assets, capital employed… – Basis used to set internal transfer charges. – Handling of the costs that are not attributed to the valuated services.
Mozambique	yes	Yes	– Cost causality; Cost preparation methodologies e.g. reference to cost base and standards, valuation and allocation methodologies, identification and treatment of shared and common costs. – Handling of the costs that are not attributed to the valuated services.
South Africa	yes	Yes	– Principles of cost causality – Cost preparation methodologies e.g. reference to cost base and standards, valuation and allocation methodologies, identification and treatment of shared and common costs. – Basis on which assets are valued: asset lives and depreciation methods. – Attribution methodologies used to attribute revenues, costs, assets, capital employed… – Basis used to set internal transfer charges. – Handling of the costs that are not attributed to the valuated services.
Zimbabwe	yes	yes	– Principles of cost causality. – Cost preparation methodologies e.g. reference to cost base and standards, valuation and allocation methodologies, identification and treatment of shared and common costs. – Basis on which assets are valued: asset lives and depreciation methods. – Attribution methodologies used to attribute revenues, costs, assets, capital employed. – Handling of the costs that are not attributed to the valuated services.

3.1.3 Valuation and allocation methodologies

Table 14 – Main principles used to allocate costs categories between voice and data

	Network costs	License cost	Other costs (please specify)
Botswana	bottom-up demand parameters traffic and network design	cost of regulation	
Mozambique	traffic	OPEX	Separation of Accounts
Zimbabwe	traffic	Traffic	Capacity utilization

Table 15 – Accounting system/allocation methodology used and relevant increment size

	Allocation methodology: LRIC, FDC, other (please specify)	Size of the relevant increment: Marginal, Service increment, Average increment, other (please specify)
Botswana	LRIC	Average increment
Mozambique	LRIC	Average increment
South Africa	FDC	Average increment
Zimbabwe	FDC	Average cost

Table 16 – Cost base and assets valuation methodology

	Cost base: HCA, CCA, other (please specify)	Capital maintenance concept used: OCM, FCM	Please specify per type of asset (building/civil works, telecom equipments…) the valuation methodology used: Absolute valuation, indexation or MEA
Botswana	HCA	OCM	
Mozambique	CCA	FCM	
South Africa	HCA	N/A	
Zimbabwe	CCA/HCA	N/A	Buildings: Indexation Telecom equipment: MEA Absolute valuation used for assets that have stable prices and are not affected by technological changes.

Table 17 – Depreciation method and assets lifetime

	Depreciation method: SL, TSL, AN, TAN, other (please specify)(1)	Lifetime (in years)					
		Civil works	Power equipments	Access equipts	Core network	Backhaul/ backbone	License
Botswana	SL	20	5	5	5	10	15
Mozambique	AN	-	5	10	10	25	15
Zimbabwe	SL	40	5	10	10	10	15

(1) SL: Straight-line, TSL: Titled straight line, AN: Annuity, TAN: Titled annuity

3.1.4 Cost of capital

Table 18 – Cost of capital allowed and calculation methodology

	Rate of return (value in %)	Methodology: WACC, other	Cost of equity estimation: CPAM, other
Botswana	12.75%	WACC	CPAM
Mozambique	28-30%	WACC	CPAM
South Africa	Operators do their own calculations which are verified by the NRA	WACC	CPAM
Zimbabwe	15-20%	WACC	Based on cost of equity of countries where off-shore funds are sourced based on CPAM

3.1.5 Scope of regulatory audit and issues addressed

Table 19 – Scope of regulatory audit

	Reconci-liation with statutory accounts	Scope of costs & costs allocated	Cost valuation and allocation	Cost capitalization, assets valuation and amortization	Transfer charges	Other (please specify)
Mozambique	yes	yes	yes	yes	yes	N/A
Zimbabwe	No	yes	yes	yes	yes	Network assets

3.1.6 Operators obligations

Table 20 – Regulatory auditing – Operators obligation and legal/regulatory basis

	Access to all internal supporting data	Respond in a predefined timeframe to any question	Other	Legal/Regulatory Basis
Mozambique	Yes	Quarterly	N/A	Law
Zambia	Yes but not yet in practice, but provided for in the law.	Yes	All operators obliged but SMPs are a priority.	Section 91 of ICT Act
Zimbabwe	Yes	Yes	All operators are obliged.	Law

3.1.7 Overall regulatory auditing process

Table 21 – Regulatory auditing implementation

	Occurrence	Body in charge of conducting the audit:	Who pays?
Mozambique	Annual	Independent auditors	Operators
South Africa	Annual	Regulator	Regulator
Zimbabwe	As and when necessary and when a tariff application is received.	Regulator / external auditors	Regulator

Table 22 – Outcome and cost of the latest audit conducted

	Date of latest audit	Outcome and corrective actions taken	Cost	Who paid?	NRA internal human resources mobilized
Mozambique	2010				
Zimbabwe					

Part 4 – Costing tools and cost model development

Part 4 – Costing tools and cost model development

4.1 Cost Accounting

4.1.1 Strategy for implementation

Table 23 – 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
Botswana	No	Confidentiality issues	Shared with operators.	No
Mozambique	No	Confidentiality issues	Shared with operators	No
Zambia	No	Confidentiality issues	Shared with operators upon request.	No

Table 24 – 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)
Botswana	Consultants developed a bespoke one.	yes	Specific requests.
Mozambique	Consultants developed a bespoke one.	yes	Specific requests.
Zambia	Consultants developed a bespoke one.	Yes	Specific requests.

(1) CA: Data from cost accounting obligation, SR: Specific request, Cn: Consultation
(2) Sh: From the shelf (ITU, WBG, etc.), Co: Consultants to develop a bespoke one, EE: Evolution of an existing model, DI: Developed internally (from scratch)

Table 25 – Experience on latest audit conducted

	The model was implanted internally (from scratch of evolution of an existing model)	Consultants were commissioned to implement the model		
	Internal human resources required (number of people and duration)	Consultant fees	Name of the consultant	Internal human resources required (number of people and duration)
Botswana	N/A	USD372,000	Analysis Consulting UK and McCarthy Tetrault LLP of Canada	4 people (9 months)
Mozambique	N/A	USD85,000	Matthias Haffmann	4 months
Zambia	N/A	USD1 million	Price Water House and Coopers	N/A

4.1.2 Model assumptions and parameters

Table 26 – 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 (nb of years)	Why (rationale)?		Value (%)	Why (rationale)?
Botswana	EO/HE	5 years	To take into account technological changes.	CL and FL based on extrapolation.	33%	Divided equally among existing operators
Mozambique	EO	10 years	N/A	CL	Existing corresponding values for each operator	N/A
Zambia	HE	3	-	FL-	Existing one-	N/A

(1) EO: Existing one, HE: hypothetical efficient operator, if other please specify
(2) CL: current level, FL: future level based on extrapolation, if other please specify

Table 27 – Parameters of the model

	Key cost drivers: Yes, No				Coverage assumed		
	Nb of subs	Traffic	Coverage	Other (please specify)	Basis: AE, CC, TC, PC, other (please specify) (1)	In % of population?	In % of territory?
Botswana	yes	yes	yes	-	PC	100	100
Mozambique	No	yes	yes	-	AE	65.7%	-
Zambia	yes-	yes-	yes-	-	PC-	-	-

(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 licenses), if other please specify

4.1.3 Methodology used to design network and to model OPEX

Table 28 – Strategy of implementation and data used

	Network design		Operational expenditure		
	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 was the figures used to calculate OPEX derived:B, OD, VD, other (please specify) (4)
Botswana	SN	To take into account geographical situation.	MU on costs	SA	OD
Mozambique	SN	Gives good understanding of cost volume relationships.	MU on costs	DT	OD
Zambia	1. SN for core network and SE for access network	SN to capture actual core network topology. SE to allow for efficient radio network access.-	Mark up on network assets.	DA-	OD and VD

(1) SN: scorched node, SE: scorched earth
(2) MU: mark up on network assets, if other please specify
(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, if other please specify

4.2 Top-down

4.2.1 Strategy for the treatment of operators' data

Table 29 – 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
South Africa	No	Confidentiality issues	Shared with operators	No
Namibia	Yes	N/A	Shared with operators	N/A
Zimbabwe	No	Confidentiality issues	Shared with operators	No

Table 30 – Operators' data collection and retreatment strategy

	Data collection: CA, SR, Cn, other (please specify)? (1)	Elimination of potential inefficiencies			
		Done: Yes, No	If yes, key data checked: NT, CE, OE, BO, other (please specify) (2)?	If yes, basis used to check: B, CC, other (please specify) (3)?	If MNOs data are not checked to eliminate inefficiencies, please explain why
South Africa	CA	yes			N/A
Namibia	SR	No	N/A	N/A	Lack of information
Zimbabwe	SR/CA	yes	CE;OE; busy hour erlang and spectrum use	CC	N/A

(1) CA: Data from cost accounting obligation, SR: Specific request, Cn: Consultation
(2) NT: network topology, CE: capital expenditures, OE: operational expenditures, BO: business overhead, if other please specify
(3) B: Benchmark with international operators, CC: Cross-check between MNOs, if other please specify

4.2.2 Cost/volume relationship and key cost drivers

Table 31 – Parameters of the model

	Key cost drivers: Yes, No				If LRIC is used in the top-down model, how are cost/volume relationships (CVR) derived
	Nb of subs	Traffic	Coverage	Other (please specify)	
South Africa	No	yes	yes		Not prescribed. Operators have to indicate and justify how they derive their CVRs
Namibia	No	yes	yes		N/A
Zimbabwe	No	yes	yes		N/A

(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 licenses), if other please specify

4.2.3 Routing factors determination

Table 32 – Principles underlying the determination of the routing factors

	What are the principles underlying your determination of the relative usage of network by the different services (routing factors)?
South Africa	N/A
Namibia	N/A
Zimbabwe	Network elements utilization

4.3 Benchmark

4.3.1 Benchmark scope

Table 33 – Strategy of implementation and data used

	Purpose of the benchmark: PT, CT, other (please specify) (1)	Nb of countries included in the benchmark
Botswana	Primary costing tool for the period 2003-2007; 2008-2011,benchmarking used as a complimentary tool	
Mozambique	Primary costing tool for the period 2003-2007; 2008-2011,benchmarking used as a complimentary tool	Countries that set rates based on costs
Namibia	Primary costing tool	1 (Australia)

	Purpose of the benchmark: PT, CT, other (please specify) (1)	Nb of countries included in the benchmark
Swaziland	Primary costing tool	3-5 countries
Zambia	Complimentary tool to check the outcome of the costing tool used.	International benchmarks based on LRIC
Zimbabwe	Complimentary tool to check the outcome of the costing tool used.	Southern African Countries (SADC)

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

4.3.2 Countries selection process

Table 34 – Basis/methodology used to select the benchmarked countries

	'Similar' countries					Only countries using a cost model (yes, no)	Other selection criteria/ metho-dology (please specify)
	Population size (yes, no)	Population density (yes, no)	Topog-raphy (yes, no)	Similar market (yes, no)	Other similarity criteria (please specify)		
Mozambique	No	No	No	No	Countries using LRIC models	yes	N/A
Namibia	No	yes	No	No	Efficient operator	yes	Technology and service neutrality
Swaziland	N/A	N/A	N/A	N/A	SADC countries	No	3 – 5 countries
Zimbabwe	No	No	No	No	SADC countries	No	Other countries that have a vibrant telecommu nications markets

4.3.3 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: 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)
Mozambique	N/A	N/A	Countries that use BU LRIC	Countries that set prices base on cost orientation	Latest rate
Namibia	N/A	Efficient operator	Population density		Latest rate
Swaziland	Best 3 – 5 countries	N/A	N/A	Regional harmonization	Latest rate
Zimbabwe	Average of best 3		N/A	Harmonization with best 3	Latest rate

(1) Please specify which prices are selected to calculate the average: 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

Glossary

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

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