



Review of the Regulatory, Policy and Competitive Framework of the ICT Sector In Rwanda

Strengthening Legal and Regulatory ICT Framework and Governmental Institutions

Section 2 Policy and Regulatory Diagnostic

By

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Glossary of Terms and Abbreviations

TERM	FURTHER EXPLANATION
ATU	African Telecommunications Union
CCK	Communications Commission of Kenya
EAP&T	East Africa Posts and Telecommunication Company
EASSy	East African Submarine Cable System
GM	General-Managers
GOK	Government of Kenya
GOR	Government of Rwanda
GOU	Government of Uganda
ICT	Information Communication Technologies
IMF	International Monetary Fund
IP	Internet Protocol
ISP	Internet Service Provider
ITU	International Telecommunication Union
KP&TCo	Kenya Posts and Telecommunication Company
MIGA	Multilateral Investment Guarantee Agency
MININFRA	Ministry of Infrastructure of Rwanda
MoWTC	Uganda Ministry Works Transport - Communication
NICI II	National Information Communications Infrastructure Plan
ONATEL	National Telecommunications Office Burundi
PCK	Kenya, Postal Corporation of Kenya
PDNO	Public Data Network Operators
PRGF	Poverty Reduction and Growth Facility
PSTN	Public Switched Telephone Network
RFS	Radio Frequency Spectrum
RITA	Rwanda Information Technology Authority
ROI	Return on Investment
RURA	Rwanda Utilities Regulatory Authority
TA	Technical Assistance
TCC	Tanzania Communications Commission
TCO	Total Cost of Ownership
TKL	Telkom Kenya Limited
TPTC	Tanzania Postal and Telecommunication Company
TTCL	Tanzania Telecommunications Company Limited
UAF	Universal Access Fund
UCC	Uganda Communications Commission
UTL	Uganda Telecommunications Limited
VOIP	Voice over IP
VSAT	Very Small Aperture Terminal

Appreciation

The Consultant would like to record his sincere appreciation to the many people who have assisted him following mobilization for this assignment. In particular, thanks are due Hon Albert Butare, Minister in State in charge of Energy and Communications, Hon. Romain Murenzi, Minister of Science Technology and Research, the many officers of RITA including Dr Raphael Mmasi, Director of the e-Rwanda Project, Peter Fullarton, the Acting Executive Director, the staff of the e-Rwanda project, officers of MININFRA and those man other in both the state and private sectors who have been generous with their time.

David Butcher
(Consultant)

Summary of Recommendations

Section 1: Inception Report (Refer to Inception Report)

Section 2: Policy and Regulatory Diagnostic

RECOMMENDATIONS 1

RECOMMENDATION	REASONING
<p>Regulatory Policy</p> <p>The three critical goals of regulatory policy should be:</p> <ul style="list-style-type: none"> widespread availability of service, cost-effective delivery, of quality products and services. 	<p>Telecommunications is an intermediate Good and the three policy objectives listed are designed to ensure that it can play a constructive role in fostering the development of all other sectors in the economy.</p>
<p>Policy Review</p> <p>A number of e-Commerce provisions, mentioned briefly in the current law, will soon need elaboration, are the subject of DBA Report 5 and a review of the suggestions contained therein this would be a highly relevant policy focus for MININFRA's policy work.</p>	<p>Drafting the law should be the "icing on the cake," when all policy decisions of substance have already been resolved. Substantial work is required in the areas of e-Commerce.</p>

RECOMMENDATIONS 2

RECOMMENDATION	REASONING
<p>Law 44/2001</p> <p>Law N° 44/2001 Governing Telecommunications, is adequate for all immediate regulatory and competition functions.</p> <p>The biggest problem with telecommunications regulation in Rwanda is structure of Law N°39/2001 Establishing RURA, which causes it to be dysfunctional.</p>	<p>In addition to the law itself in 2000 and 2004 a number of Ministerial Orders were issued that supplemented critical aspects of the law.</p> <p>There is a need for additional elaboration of rules and processes, but at the present this is not taking place.</p>
<p>Improving Operations: Temporary Measures:</p> <p>The following temporary measures should be adopted to improve the operation of RURA:</p> <ul style="list-style-type: none"> the Prime Minister could announce that in future he will appoint the GM the Board recommend, the Board should have clear policy objectives, as described in paragraph 2.1, RURA's Board should delegate staffing powers to GM - allow him to "act and report" on all routine and administrative matters, The Government should resolve to put revisions to the RURA Law on the legislative programme and pass the a law within three years containing the changes suggested above,. 	<p>An announcement by the Prime Minister that in future he will appoint the GM the RURA Board recommend will give the Board added confidence that it can act. Clear policy objectives, such as those suggested in paragraph 2.1 will RURA's work a clear focus.</p> <p>The Board need to delegate more authority, particularly staffing powers to its GM. If they allow him to "act and report" in administrative and staffing matters this will help give him the authority he needs to ensure that the needs of the telecom sector are addressed. The Sector is the main funder of RURA, but gets inadequate service at present.</p>

RECOMMENDATIONS 3

RECOMMENDATION	REASONING
<p>Incentives to Focus</p> <p>Recognising that expansion into related fields is a natural tendency for any bureaucracy, RITA will benefit from incentives to focus on its core role.</p>	<p>The relevant paragraph has outlined the need for assistance in these areas. The primary requirements are: more people and expertise transfer.</p>
<p>Core Incentive</p> <p>RITA's client focus should be sharpened by requiring it to obtain a progressively rising proportion of its budget from fees earned by providing IT advisory services to other agencies.</p>	<p>All immediately required powers are in the current law. The missing ingredient is effective implementation. This recommendation suggests that RURA should seek the views of the private sector on how best to implement the current law.</p>

RECOMMENDATIONS 4

RECOMMENDATION	REASONING
<p>Focus on Implementation</p> <p>MINIFRA should place a high priority on researching and proposing substantive revision of the e-Commerce provisions of the Telecommunications Law with a view to ensuring that Rwanda e-Commerce can play the role allocated to it in the NICI process.</p>	<p>The required e-Commerce provisions are discussed in Report 5 on Rwanda and ICT Law.</p>

RECOMMENDATIONS 5

RECOMMENDATION	REASONING
<p>Tariff Policy</p> <p>Rwanda has been well served by its relatively light-handed regulatory regime and this should continue,</p> <p>Tariff policy should focus on easing the entry to the sector by new competitors and on creating incentives for companies to share facilities, thereby increasing traffic over existing infrastructure and reducing unit costs.</p>	<p>The tariff shows that Rwanda's tariffs in 2004 were on the high side of the regional average. To counter balance that, services and coverage are probably high by African standards.</p> <p>Tariff reductions have taken place since 2004 and more were signalled in June 2006.</p> <p>This analysis supports the contention that increasing competition and better utilisation of capacity will be more effective than price controls in ensuring ongoing downward pressure on tariffs.</p>

RECOMMENDATIONS 6

RECOMMENDATION	REASONING
<p>Rwanda Should Note</p> <p>Rwanda should note the trends in its neighbouring countries, including moves towards:</p> <ul style="list-style-type: none"> • technology neutral horizontal licenses, • incentives to move to a wholesale / retail distinction, allowing increased competition and better use of facilities • the viability of public data networks. • potential benefits to be obtained by mutual roaming 	<p>Rwanda’s policy of competition has been most beneficial in terms of a rapid increase in the availability and quality of service.</p> <p>It is also regionally compatible and should it move in the direction of horizontal, technology neutral licences and wholesale networks, it will be acting in conformity with some of its neighbours.</p>

Section 3: Access to Backbone Infrastructure (some recommendations are commercially sensitive)

Section 4: Capacity Building and Knowledge Management Strategies for RURA and MINIFRA

RECOMMENDATIONS: 1

RECOMMENDATION	REASONING
<p>Capacity Building</p> <p>Capacity building in RURA and MINIFRA should be based on an annual Strategic Plan for the Medium Term, It should be based on:</p> <ul style="list-style-type: none"> • governance: ensuring clear rules conditions and boundaries within which managers or leaders work; • leadership: defining direction,. • management: enhancing skills of managers and workers to undertake their tasks, • skills acquisition: adequate background knowledge followed by supervised practice of the task. 	<p>Capacity Building means nothing unless it is focused on gaining practical experience. Experience can only be obtained in a structure that has clear governance arrangements, leadership that can point a direction, management with sufficient experience of managing people and a process of acquisition of the skills that are required for the job.</p>
<p>Planning Process</p> <p>Strategic Planning, for the medium term should comprise the following elements:</p> <ul style="list-style-type: none"> • clarity of the roles of the Minister, Board, General-Manager, functional managers, • a vision of the organisation, its role and performance in 5 years time, • functional Plans for: deliverables, operations, human resources, finance and knowledge management, • devolved responsibility for writing and implementing the plans combined with a rigorous process of review and revision. 	<p>Capacity Building is a process of stretching skills and experience and in the process acquiring practical experience. It cannot be bought off a shelf; training and education are only part of it.</p> <p>The principal focus of Capacity Building should be requiring the people in an organisation to assess their allocated tasks and responsibilities, having the opportunity to perform them and with the assistance of mentors and technical advisers, to make and correct their own mistakes.</p>

RECOMMENDATIONS: 2

RECOMMENDATION	REASONING
<p>Knowledge Management</p> <p>A KM should arise out of the Strategic Planning process and focus on:</p> <ul style="list-style-type: none"> • information the organisation wanted, but did not possess, when planning began, • issues that have arisen in the course of the planning process that revealed gaps in knowledge, • investigations in the course of plan implementation that have created knowledge about the entity, • knowledge shared that has extended the knowledge base, • matters that will require the entity's vision to be reshaped in the next iteration of planning and create a demand for more knowledge. 	<p>Well-organised knowledge management can be a powerful tool for improving the effectiveness of an organisation. However, its contribution is very difficult to measure or control unless it is related to the basic operations of the organisation.</p> <p>By placing knowledge management as a clear and focused step in the planning process all employees can see the usefulness of the practical measures that have been proposed.</p>
<p>Practical Focus</p> <p>There should be a strong practical focus for knowledge management in RURA and MININFRA,</p> <ul style="list-style-type: none"> • it should be based on strategies that concentrate on ensuring that basic tasks are done well, • including internalisation of and interpretation to the entity's benefit of knowledge acquired before and during employees careers in the respective organisations. 	<p>The knowledge management literature is highly theoretical and focused on the use of software to perform basic tasks. Before investments are made in sophisticated software, there should be an intensive focus on practical improvements is the skills of researching, filing and sharing.</p>

Section 5: RWANDA AND ICT LAW

RECOMMENDATIONS 1.

RECOMMENDATION	REASONING
<p>Intellectual Property Law</p> <p>Knowledge based growth industries in Rwanda will require laws on Copyright, Patents and Trademarks and MININFRA should take the lead in the GOR in preparing draft laws appropriate to facilitate Rwanda as a knowledge based economy.</p>	<p>This study does not have the resources or expertise to research IP laws, but basic work in this area is a realistic goal for MININFRA with a view to having a law in place in the medium term, say 3 years.</p>

RECOMMENDATIONS 2.

RECOMMENDATION	REASONING
<p>Privacy</p> <p>The provisions of the Rwandan Telecommunications Law that protect privacy of communicated information need review and elaboration and MININFRA should take the lead in encouraging a review and elaboration of the law in this field.</p>	<p>The provisions of the existing Telecommunications Law that protect privacy need review and elaboration and MININFRA should take the lead in encouraging a review and elaboration of the law in this field.</p>

RECOMMENDATIONS 3.

RECOMMENDATION	REASONING
<p>Commercial Communications</p> <p>To foster electronic commerce Rwandan Laws must ensure the free movement of information services between parties that may be geographically distant, and matters that the law should address include:</p> <ul style="list-style-type: none"> • unsolicited commercial communications enable the identification of the sender, • recognition of electronic contracts, • placing orders by electronic means and prompt acknowledgement of orders, • indemnification of intermediary service providers against liability where they are the conduit for communications, • indemnification of ISPs against liability for caching, or hosting information, • clarification of the existing laws relating to contracts and recognition of e-signatures and documents • information that must by law be retained or produced, to be provided in electronic form, • defamation laws should apply to communications on line, • electronic signatures must be defined to apply only to documents where signatures can be authenticated, • authorisation of electronic signatures, for encryption, or sealing documents, • authentication of communications by validation keys from mathematically generated digital signatures, • rules for interconnection and price setting and conditions of service, • a clear and speedy procedure with the fair and objective criteria that applied in interconnection dispute resolution. <p>MININFRA should take the lead in promoting the necessary law changes.</p>	<p>The law should authorise all modern forms of commercial communications. This includes</p>

RECOMMENDATIONS 4.

RECOMMENDATION	REASONING
<p>Commercial Communications</p> <p>To foster electronic commerce Rwandan Laws must ensure the the defamation regime is comparable with that in other knowledge based economies.</p> <p>At the minimum anyone in Rwanda involved in publishing the defamatory statement should be liable for defamation.</p> <p>It should be illegal for anyone in Rwanda to host a sites that make defamatory claims,</p>	<p>Defamation law needs to be clarified in Rwanda as a facilitation of the knowledge based economy.</p> <p>Rwanda should take this step to avoid the reputation of being the host to sites that make defamatory claims.</p> <p>Rwandan rules should be no less stringent that those in Europe.</p>

RECOMMENDATION	REASONING
MININFRA should take the lead in promoting the necessary law changes.	

RECOMMENDATIONS 5.

RECOMMENDATION	REASONING
<p>Domain Names</p> <p>In disputes arising from registrations where allegations of cyber-squatting and cyber-piracy are involved, Rwanda will need an expedited administrative procedure to allow the dispute to be resolved without the cost and delays encountered in litigation.</p>	<p>Informal process are preferable. However, where big sums of money are involved, it is probable the government will become involved</p>
<p>Government Role</p> <p>The role of the GOR in domain names is to ensure that the system is working well and it should not become involved in day to day administration.</p>	<p>The current system seems to be working well and if there are no major problems it should not be interfered with.</p>

RECOMMENDATIONS 6.

RECOMMENDATION	REASONING
<p>Domain Names</p> <p>The Australian Officers Committee of the Standing Committee of Attorneys-General model criminal code should be a starting point for the development of computer crime in Rwanda.</p>	<p>The Australian Officers Committee of the standing Committee of Attourney-Generals have undertaken a thorough study of computer crime. It provides a good starting point for Rwanda.</p>

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1. Background to Report

This report satisfies the TOR requirement for a Report to review the legal and regulatory framework currently in place in the Rwanda for Information Communication Technology (ICT) sector. It will identify regulatory gaps and bottlenecks and propose changes. There were four parts to the report as proposed:

- **Policy and Regulatory:** a clear analysis and understanding of the policy and regulatory processes in Rwanda, any overlap among the various institutions, measures that should be taken to avoid overlap, including an analysis of functions, mapping Rwanda Utilities Regulatory Authority (RURA) and MININFRA functions, practices that prevail in formulation of policy directions by the MININFRA and regulatory functions of the RURA;
- **International Comparison:** comparisons, to benchmark regulatory activities in the ICT sector of Rwanda, with trends in comparable countries to serve as a readily available benchmark for fresh policy thinking in Rwanda.
- **Access to Infrastructure:** ensure policy allows open access to the national backbone infrastructure, working towards guidelines for appropriate regulation of interconnection / infrastructure unbundling, licensing conditions, numbering plans, access to radio frequency spectrum,

Given the presence in Kigali of a World Bank mission and the urgency of advising the mission, the Inception Report covered many of these issues. The focus of this section will be on matters that were not covered fully earlier report and matters investigated since the inception report was completed. In addition, the consultant has provided:

- **e-legislation package:** define principles and philosophy of e-legislation to create an enabling environment for ICT/ knowledge-based growth. Reviews e-legislation available, identify in principle the most helpful role governments can play. Identify the systems the government will need to cope with e-commerce, governance and government processes.
- **capacity building and knowledge management:** prepare implementation plans for MININFRA and RURA, recommending implementation appropriate measures to improve capacity building and knowledge management seek a consensus on appropriate measures.

Given the importance of the access to infrastructure issue and the self-contained nature of the e-legislation package and the reports on capacity building, knowledge management are separate reports.

2. Policy and Regulatory

2.1 Policy

The inception report suggested that underlying all policy for telecommunications must be the realisation that telecommunications are a means to an end. They enable people to communicate quicker and more cost effectively, but are seldom final products in themselves. This means that future policy papers should emphasise more strongly that all implementation of policies should focus on:

- widespread availability of service,
- cost-effective delivery, of

- quality products and services.

Cost effective telecommunications reduce the cost of doing business and make it easier to start and expand successful businesses. A clear focus of policy on availability, cost-effectiveness and quality will give strong operational guidelines to the private sector and to regulators implementing government policy, laws and regulations. The Inception report recommendation has not been questioned.

2.2 Second NICI Plan

Implementation of the National Information Communications Infrastructure Plan 2 (NICI Plan II) is the target of the e-Rwanda project. Rwanda Information Technology Authority (RITA) has a clear mandate for implementation of NICI II and is accountable for achieving plan targets. It also means that there is a need for RITA to carry out its coordination mandate.

The Inception report stressed the importance of ongoing close cooperation and coordination between the various stakeholders for the implementation of NICI II and e-Rwanda and pointed out that the programme is dependent on the cooperation of many parties. This recommendation is widely accepted.

2.3 Rwanda Law and WTO

Table 1 repeats Table 3 of the Inception Report and demonstrates how core provisions of the Rwandan Law N° 44/2001 (Governing Telecommunications) dovetails with the WTO basic Agreement on Telecommunications. Ongoing work has confirmed that almost all necessary regulatory interventions can be achieved within the current law.

The Inception Report pointed out that the law imposes no upper limit on the number of licences (Article 5), so there is no legal limitation to the scope for competition. Article 15 guarantees connection to the Public Switched Telephone Network (PSTN). In practice, the availability of lines is the limiting factor.

Access to infrastructure is guaranteed in Article 23 and Tariff dumping is prohibited (Article 29), making anti-competitive conduct illegal. Price controls are currently limited to dominant organisations (Article 30) and none is designated as dominant at present¹.

The law provides for fair Allocation of Numbers (Article 45). Rwanda's Law also provides for for obligatory facilities sharing (Article 48), for the regulator to lay down appropriate Accounting Standards (Article 51) and this can include accounting separation between infrastructure operation and telecom services.

The existing ban on cross shareholding (Article 53) is a potential weapon against anti-competitive conduct. The guarantee of access (Article 23), obligation to Lease Lines (Article 37) and mandatory interconnection (Article 39) are all tools to ensure ongoing competition in the sector. Similarly, standard Reference Interconnection Offers (Article 40) make it easier for new entry to the sector as is the regulation of effective Interconnection (Article 41).

Accordingly, the inception report recommended that the focus of all agencies should be the effective implementation of the existing law, rather than its replacement. A number of e-Commerce provisions, mentioned in passing in the current law will soon need elaboration and this would be a highly relevant focus for MININFRA's policy work.

¹ It is noted in the inception report that the RURA Annual Report (2004 (section II), reported RURA Decision n° 02/2004 of 9 September 2004 that declared RWANDATEL dominant operator in the field of fixed telephony and RWANDACELL in the field of mobile telephony, however, an unpublished decision a few days later rescinded this decision.

Table 1: Rwanda and WTO Basic Agreement

WTO Agreement Principles and Application	LEGAL PROVISION	ISSUE	CURRENT STATUS
1. prevent anti-competitive practices, to facilitate entry of new competitors and ensure fair competition			
no limit on the number of licences	Article 5	Generally, the market is best equipped to determine the appropriate number of licences. After 3-4 have been issued, examining the new features on offer may be appropriate.	Not a problem at present. The importance of facilities sharing for new licences in Rwanda cannot be overemphasised. Separate FACILITIES licence and SERVICES licence are possible.
PSTN connection guaranteed by law	Article 15	Interconnection is accepted. The price and conditions of interconnection can determine the effectiveness of competition.	No model in Rwanda. Singapore offers a good case of interconnection process that allows negotiations the major role with arbitral and regulatory backup
access guaranteed	Article 23	Access to networks is essential. The article lays down conditions where access may be restricted for legitimate reasons.	As this article relates mainly to catastrophic conditions situations of maintenance, safety etc, it is a reserve power only to be used when needed
tariff dumping prohibited	Article 29	An incumbent cuts prices so that new entrants that depend on cash flow to finance network roll out, is put out of business. When the new entrant has gone, prices are raised again.	Currently, prices are high and should be high enough to attract new companies to the sector. If there is not a lot of interest, there must be problems other than the incumbent pricing.
controls confined to dominant organisations	Article 30	Competition is the most efficient regulator of prices. In highly competitive locations (e.g. Hong Kong) prices may be so low they are uneconomic.	Currently prices controls are confined to dominant organisations. However, neither company is currently designated as a dominant organisation.
fair allocation of numbers	Article 45	Fair numbering is a critical element of competition. If new entrants cannot get good numbers, easily this serves to keep them out.	So far this has not been raised as an issue. When more providers enter the market a good numbering plan is essential.
obligatory facilities sharing	Article 48	Facilities sharing helps keep down the investment in capital. Capital is critical to costs. If capital costs double unit costs double.	Prices are high in Rwanda because at the moment critical infrastructure is under the control of one company or the other.
regulation of accounting standards	Article 51	Company accounts kept on a comparable basis makes comparisons possible. Separate accounting for network operation and service provision makes regulation simpler.	Currently, no standards are mandated in Rwanda. Terracom and MTN are both international companies and use international standards.

WTO Agreement Principles and Application	LEGAL PROVISION	ISSUE	CURRENT STATUS
ban on cross shareholding	Article 53	This provision is designed to make it more difficult to evade regulatory controls by setting up paper companies.	So far has not been raised as an issue. Could be important in takeover battles in the future.

2. allow non-discriminatory interconnection, to facilitate new entry

access guaranteed	Article 23	Mandatory to interconnect. Interconnection is also in the best interests of all players. Problems relate to cost of interconnection.	This Article mainly relates to circumstances when denial of access may be appropriate.
obligation to lease lines	Article 37	The law is designed to facilitate new entry by making ensuring new entrants can enter the market.	Despite the law, the incentive that operates is for the incumbent to make excuses to refuse to lease.
mandatory interconnection	Article 39	Interconnection is in the interests of both companies but the price of interconnection is critical.	RURA tried to resolve a dispute, but issues remain unresolved.
standard reference interconnection offer	Article 40	Makes the terms of interconnection transparent; required by law as a means to facilitate new entry.	No indication of offers being advertised but may be available on request.
standard charges	Article 41	Requires that all operators charge themselves the same as they would charge another operator.	No information available. The ongoing interconnection dispute suggests that this provision is not effective.

3. apply universal service obligations neutrally, and be imposed non-discriminatorily, to ensure fair competition

universal access fund (UAF)	Article 40	Existing operators are levied to provide a fund for universal access, rather than one company being obliged to provide it. Funds should be used fairly.	Currently the fund is accumulating but it is not being used because policy decisions still have to be made. The law is silent on distribution rules.
effective interconnection	Article 41	Requires that all operators charge themselves the same as they would charge another operator.	Would be essential to a UAF but so far no action.

4. make licensing criteria publicly available, (so that everyone knows what new entrants need to do to obtain a licence, customers know their rights and service standards

licensing	Article 5	The idea is to make it clear to potential new entrants what they must do if they wish to enter the sector and which rules they must comply with.	Law requires that all licenses must be granted on an open and objective basis, without discrimination. So far not a large number of applications to judge if this is complied with.
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greement	LEGAL PROVISION	ISSUE	CURRENT STATUS
standard format	Article 33	Requires that all licences be in a standard form	Licences are standard when issued. Vary over the years.

5. ensure that regulation separated from incumbent enterprises, to minimise conflicts of interest and

independent regulation	RURA Law N° 39 / 2001	Independent regulation with the regulator separated from the formerly bundled enterprise (with regulation, policy, business and ownership all in the same entity).	This aspect of the WTO principles has been fully complied with.
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6. Ensure the allocation of scarce resources, objectively, promptly, transparently and without discrimination

fair allocation of spectrum	Article 32	Requires the development of a Frequency Spectrum Allocation Policy.	Article 33 carries penalties for the misuse of the spectrum but there is no policy specified in the law. RURA indicates that it does not have the time or expertise to develop the policy unaided.
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Areas where RURA should be active but currently lacks capacity.

2.3.1 RECOMMENDATIONS 1.

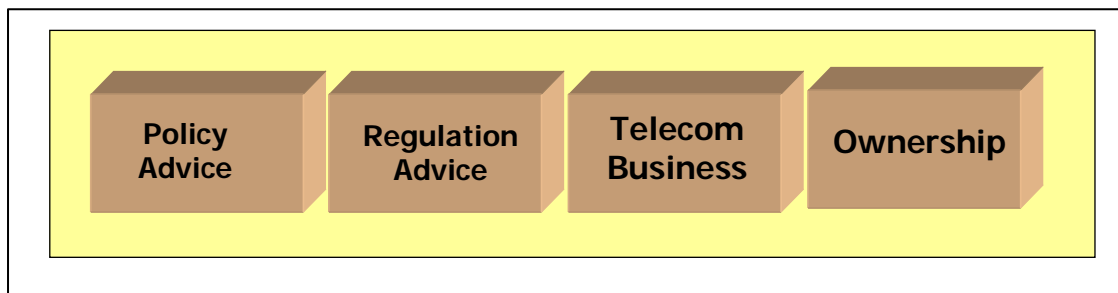
RECOMMENDATION	REASONING
<p>Regulatory Policy</p> <p>The three critical goals of regulatory policy should be:</p> <ul style="list-style-type: none"> widespread availability of service, cost-effective delivery, of quality products and services. 	<p>Telecommunications is an intermediate Good and the three policy objectives listed are designed to ensure that it can play a constructive role in fostering the development of all other sectors in the economy.</p>
<p>Policy Review</p> <p>A number of e-Commerce provisions, mentioned briefly in the current law, will soon need elaboration, are the subject of DBA Report 5 and a review of the suggestions contained therein this would be a highly relevant policy focus for MININFRA's policy work.</p>	<p>Drafting the law should be the "icing on the cake," when all policy decisions of substance have already been resolved. Substantial work is required in the areas of e-Commerce.</p>

In some cases the law will need to be supplemented by the adoption, and publication of operational procedures and practices, particularly by RURA. The paragraph 2.5 suggests how this may be done.

2.4 Institutions

As recently as the early 1980s most telecommunications sectors in the world were bundled together, with Policy Advice, Regulatory Advice, the Telecommunications Business and the Ownership of Assets all in the same entity. Each of the countries in East Africa has moved away from this model. The reason is that bundling is not transparent: an organisation failing in business (for example) can conceal its failure by modifying regulations in favour of the government owned business and against the interests of consumers.

Figure 1: Traditional Bundled Telecommunications Sector

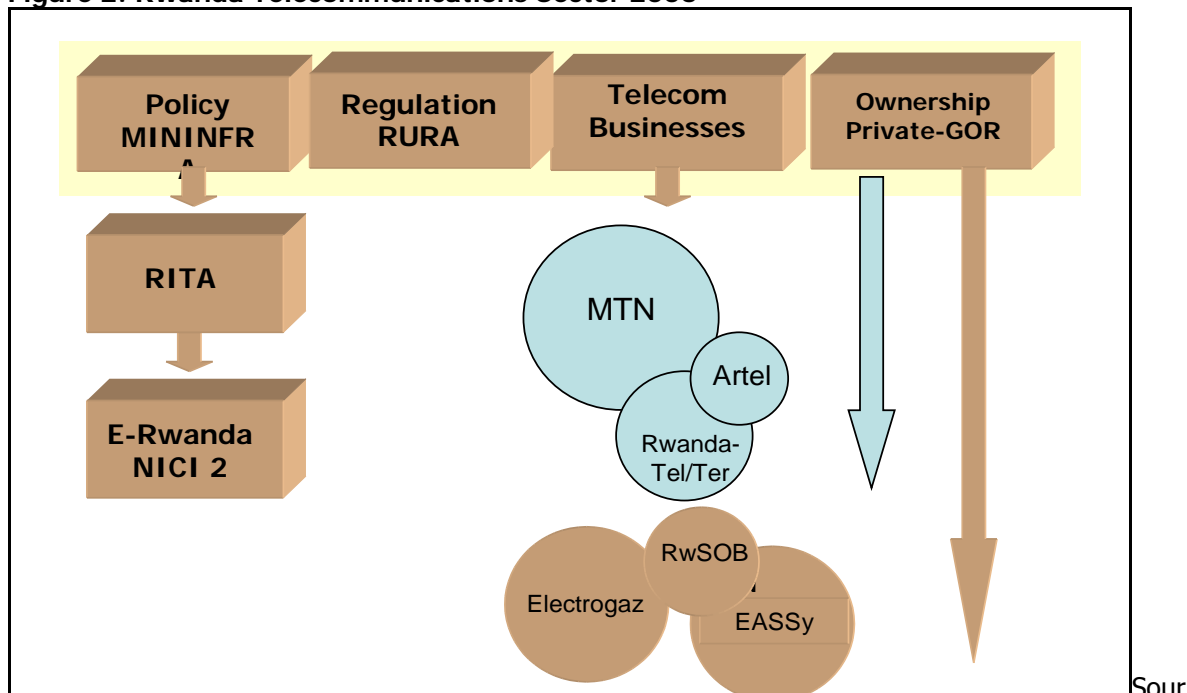


2.4.1 Functional Separation

In Rwanda, as in most countries around the World, the telecommunications sector has been functionally separated. Each of the functions in Figure 1 is now in a separate institution. Each separate entity has the responsibility to offer advice to the government. Instead, of receiving one recommendation from a bundled agency that has reached trade-offs and compromises behind closed doors, each agency has a single job and advises the minister separately.

Functional Separation gives greater transparency of operation to ensure that the government receives several policy options instead of one bureaucratically determined option. Ministers make the strategic decisions. That is their job. The agencies are checks and balances on each other. This model has an additional advantaged in a deregulated sector in that it can cope with one business or many.

Figure 2: Rwanda Telecommunications Sector 2006



Source: Project

Source

2.4.2 Institutional Configuration

Figure 2 shows the current configuration of the Telecommunications Sector in Rwanda. Policy is the responsibility of MINIFRA, regulation is the task of RURA, the telecommunications businesses are largely in the private sector although the proposed Electrogaz investment in fibre, RwSOB and any government contribution to the East Africa Submarine System (EASSy) will bring the state back in, albeit in a passive role. Under MINIFRA is RITA in effect a departmental agency and authority and the e-Rwanda project is an offshoot of RITA with specific implementation roles.

2.5 RURA

In Table 1 the current status of the regulatory issues raised by the WTO basic agreement are mentioned. Many of these require action by RURA but currently it does not have the capacity to address them. The inception report discussed these issues and in effect spelled out the critical work programme for RURA. The discussion of regulatory issues is not repeated here. The discussion will focus on impediments to action.

2.5.1 RURA Law

As mentioned in paragraph 2.3 above RURA has an adequate Telecommunications Law with which to regulate. In 2004 it also passed a number of Ministerial Orders laying down some more detailed regulatory guidance. However, as an organisation with an important role to play in the telecommunications sector it has become increasingly dysfunctional. The way the Law² is written and the effect this has on the management of the organisation, seems to be the problem.

2.5.2 Disempowered

Since the Inception Report, it has been possible to analyse RURA's situation and Law N°39/2001 of 13/09/2001 in more detail. RURA has had three General-Manager (GM)s in the last 3 years. GMs, when appointed in effect have two bosses (the Minister who makes the appointment and the Board). However, the GM has no authority to manage.

² N°39/2001 OF 13/09/2001 Establishing an Agency for the Regulation of Certain Public Utilities.

The critical role of any GM is selecting the staff that he wants to work for him, but in RURA these are appointed by the Board. The current structure also disempowers the Board. It is autonomous, but does not appoint its own GM. The current board did not meet once between February and July 2006.

2.5.3 Best Practice

The RURA Board is appointed by the Prime Minister and Cabinet. This is customary and appropriate (although in some jurisdictions the President appoints the Board of a Regulatory Authority on the recommendation of the Minister).

The real problems begin with the relationships created by the Law. According to Article 27, the Prime Minister appoints the RURA GM, but in regulatory and management best practice the Board should be responsible for the appointment of their own GM. In a further curious twist, RURA's staff are appointed by the Board (Article 14 (3)) whereas normally staffing is a responsibility of the GM.

In a further curious provision, Article 31, requires the appointment of a Supervisory Board to oversee the activities of the RURA. Three persons are appointed by the President to supervise the work of the Board.

To disempower RURA further, Article 24 provides the Minister power to rescind any decision of the Regulatory Board. The Minister has the power if the security of Rwanda or relations with any foreign country may be adversely affected (the Regulatory Board has the right to have recourse to the relevant courts as far as the nullified decision is concerned).

Findings on the ground are that RURA is staffed with high calibre people with the desire to do a good job. They are good people, but there are not enough of them; they are overworked and key appointments are vacant. Accordingly, the Recommendations in the Inception Report (that dealt with things that RURA should be doing) are endorsed and the following recommendations designed to improve the functioning of the organisation are added.

2.5.4 RECOMMENDATIONS 2.

RECOMMENDATION	REASONING
<p>Law 44/2001</p> <p>Law N° 44/2001 Governing Telecommunications, is adequate for all immediate regulatory and competition functions.</p> <p>The biggest problem with telecommunications regulation in Rwanda is structure of Law N°39/2001 Establishing RURA, which causes it to be dysfunctional.</p>	<p>In addition to the law itself in 2000 and 2004 a number of Ministerial Orders were issued that supplemented critical aspects of the law.</p> <p>There is a need for additional elaboration of rules and processes, but at the present this is not taking place.</p>
<p>Improving Operations: Temporary Measures:</p> <p>The following temporary measures should be adopted to improve the operation of RURA:</p> <ul style="list-style-type: none"> • the Prime Minister could announce that in future he will appoint the GM the Board recommend, • the Board should have clear policy objectives, as described in paragraph 2.1, • RURA's Board should delegate staffing powers to GM - allow him to "act and report" on all routine and administrative matters, • The Government should resolve to put revisions to the RURA Law on the legislative programme and pass the a law within three years containing the changes suggested above,. 	<p>An announcement by the Prime Minister that in future he will appoint the GM the RURA Board recommend will give the Board added confidence that it can act. Clear policy objectives, such as those suggested in paragraph 2.1 will RURA's work a clear focus.</p> <p>The Board need to delegate more authority, particularly staffing powers to its GM. If they allow him to "act and report" in administrative and staffing matters this will help give him the authority he needs to ensure that the needs of the telecom sector are addressed. The Sector is the main funder of RURA, but gets inadequate service at present.</p>

2.6 RITA

RITA is a special purpose agency to implement the NICI programme. It is a semi-autonomous departmental agency, responsible to MININFRA, with the task of coordination of activities and offering services to agencies. The current problem with RITA is that when mapped against Figure 2 it is not a ministry, regulator, business or owner. For the last 15 years, International practice in telecommunications has been to encourage the separation of policy, regulation, business management and ownership. RITA, at various times, has been involved in each.

Another concern was the tendency for RITA to expand its role not only into the preserve of MININFRA but also into some roles of RURA. Expansion into related fields is a natural tendency for any bureaucracy. It is appropriate to be aware of the tendency and try and set it up to create countervailing incentives.

Its role of coordination of government actions and its expertise in the field of organising and implementing electronic solutions in government agencies are roles most commonly understood by officials from other agencies. However, some private parties can handle the ICT advisory functions adequately. Questions arise as to the value added by having a government agency to perform similar tasks.

The best test of the need for services is the willingness of clients to pay for them. There is an interesting parallel with SITA in South Africa³. It was an agency designed to promote and lead ICT solutions in the South Africa government sector. However, as it focused on its clients, it evolved into a government owned consulting firm, with some public functions.

Managing NICI projects is a core government policy. RITA will not handle them all itself. Its medium term role is ensuring that someone is managing them and managing the specific projects it is operating. Like SITA, it could in the long-term evolve into a consulting firm specialising in government business.

If it charges other ministries for advisory services, it would have an incentive to retain a client focus. These fees could progressively represent a rising proportion of its budget. For example, should RITA be given five years to reach 40 percent of its budget obtained from fees, it would have a strong incentive to perform its functions well and retain focus.

Like SITA in South Africa it has to think of the long-term. In the future:

- it can remain a departmental agency, or
- its service delivery functions can be performed by private sector organisations as they develop sufficient capacity, with RITA becoming more and more a contract manager,

Alternatively, RITA can evolve into a business organisation, with public interest functions performed under a contract with MININFRA.

2.6.1 RECOMMENDATIONS 3.

RECOMMENDATION	REASONING
<p>Incentives to Focus</p> <p>Recognising that expansion into related fields is a natural tendency for any bureaucracy, RITA will benefit from incentives to focus on its core role.</p>	<p>The relevant paragraph has outlined the need for assistance in these areas. The primary requirements are: more people and expertise transfer.</p>

³ I am grateful to Dr Mmasi for this observation.

RECOMMENDATION	REASONING
<p>Core Incentive</p> <p>RITA's client focus should be sharpened by requiring it to obtain a progressively rising proportion of its budget from fees earned by providing IT advisory services to other agencies.</p>	<p>All immediately required powers are in the current law. The missing ingredient is effective implementation. This recommendation suggests that RURA should seek the views of the private sector on how best to implement the current law.</p>

2.7 MININFRA

MININFRA is the principal advisory body on telecommunications policy to the Minister of Infrastructure. MININFRA's Communications Section comprises recently recruited, able and committed people. While the section is finding its feet, there was a tendency for RITA to take over some of its functions. Given the potential degree of overlap in functions recorded in Table 2, this is not surprising.

It must be clear to all parties that RITA is answerable to the Minister directly on certain issues, as MININFRA is the Minister's principal advisor, communication should be through and with MINIFRA rather than bypass it. MINIFRA should monitor RITA and work with it. The extent to which authority is delegated should be clarified between the two institutions⁴. Two way communications and regular, comprehensive reporting is essential.

At this time revision of the e-Commerce provisions of the telecommunications law is the highest priority for MININFRA. The latter stages of the NICI process will be dependent on good quality laws to govern e-Commerce. The Telecommunications Communications Section concur with the need for work in this area.

2.7.1 RECOMMENDATIONS 4.

RECOMMENDATION	REASONING
<p>Focus on Implementation</p> <p>MINIFRA should place a high priority on researching and proposing substantive revision of the e-Commerce provisions of the Telecommunications Law with a view to ensuring that Rwanda e-Commerce can play the role allocated to it in the NICI process.</p>	<p>The required e-Commerce provisions are discussed in Report 5 on Rwanda and ICT Law.</p>

⁴ To organise a relatively minor event in the RITA building, organised at the request of the Hon Minister, it was necessary to write a letter to MININFRA seeking permission to use the large conference room!

Table 2: Mapping Regulatory Functions of Rwandan Agencies

Regulatory Issues	MININFRA	RURA	RITA
POLICY AND LEGISLATION			
Sector Policy Analysis	policy– principal adviser to the minister	can give advice on policy, or be asked to	policy coordination
Sector Legislation	policy papers and prepares legislation		policy coordination
Sector Law Application Monitoring		principal monitoring agency	monitoring of programmes
LICENSING – Property Issues			
Issuing Licences	GOR issues licences through MOI and MOJ	RURA issues ISP licences	
Policing of Licences		license monitoring agency	
Radio Frequency Spectrum Allocation	policy advice	research and allocation method	policy comment
Numbering Plan		responsible agency	
Domestic Project Management (e.g. ER)	projects with policy implications		e-Rwanda project
International Project Management	No relevant projects identified	No relevant projects identified	No relevant projects identified
TRANSPARENCY + Consumer			
Accounting Separation	policy advice	policy implementation	
Structural Separation	policy advice	policy implementation	
Publicity ad a Regulatory Tool		policy implementation	policy coordination
Emergency Numbers	policy advice	policy implementation	
Type Approval	policy advice	policy implementation	
Information Gathering		information requirements of licenses	
Publication Requirements	policy advice		
Consumer complaint investigation		no other body available	
Justified complaint enforcement		enforcement powers weak / draconian	

Regulatory Issues	MININFRA	RURA	RITA
Number Portability	policy advice	policy implementation	policy coordination
Consultative Processes		responsible	

ACCESS ISSUES – Availability

Universal Access Policy	strong government policy		e-Rwanda project / computers schools
Universal Access Administration		Usually the regulator is administrator	

ACCESS to FACILITIES; Competition

Access to shared facilities	policy decision	policing and enforcement	policy coordination
Access to outside plant	policy decision	policing and enforcement	
Access to proprietary lines	policy decision	policing and enforcement	
Domestic Roaming	policy decision	policing and enforcement	policy coordination
International Roaming	No responsibility - Commercial matter	No responsibility - Commercial matter	No responsibility - Commercial matter
Anti-competitive investigation	conduct	policy advice to minister	investigation and recommendation
Anti-competitive enforcement	conduct		recommendation and action

MARKET SUPERVISION

Performance Standards	policy advice	policing and enforcement	policy coordination
Private Sector Monitoring	policy related monitoring	major regulatory function	policy coordination
Interconnection Negotiations	advice to government role	mediation and arbitration role	
Incumbent Tariff Investigation		investigation function	
Incumbent Tariff Determination		determination function	

	Potential For Overlap
	No Clear Responsibility

3. Bottlenecks and Overlap

Table 2 was included in the inception report to illustrate the functions of the institutions with telecommunications regulatory responsibilities. The discussion of the respective institutions has shown that there are a number of potential overlaps and sources of institutional conflict and confusion. A seminar of officials⁵ of RITA, e-Rwanda, RURA and MTN discussed these issues on 24 May and the table has been updated to incorporate their suggestions.

All present agreed that the current law is adequate and most of what is needed can be accomplished under the law. It was noted, that most African regulatory agencies are not fully independent because the minister has the final say. The group discussed the Malaysian example of making all regulatory agency decisions enforceable in the name of the Minister as a way of getting around the problem. Rwanda's RURA is relatively independent, although the Minister has substantial reserve powers.

All agreed that RURA could make more use of its judicial status and management autonomy to seek more guidance from the stakeholders. This would speed and reduce the cost of proceedings. There is a resource shortage in RURA. RURA people make the point that there is no shortage of money in the sector. There is a problem with the frequency of RURA's meetings and ministerial approvals slows the process up.

RURA needs to develop its ability to deal quickly with accusations of anti-competitive conduct. In many instances RURA has the power, but simply needs to use it. All companies, particularly the most successful ones, expect accusations of anti-competitive conduct from time to time. If these are investigated quickly, and dealt with, it is a normal part of sector management and does not disrupt the work of the sector.

There was substantive discussion about ISPs, need to get access to their customers. RURA using existing law against anti-competitive conduct is one approach. It was agreed, there is no need for regulation of prices of ISPs. Easier entry to the business will promote competition.

In respect of the overlap of roles, it was suggested that Figure 2 should be redrawn to emphasise that RITA is an agency of MINIFRA. MTN noted that roaming is a commercial issue not regulatory⁶. RITA is adopting a much more focused approach than before and this is reducing the scope of the possible overlaps. In respect of ISPs and Radio Frequency Spectrum (RFS) regulation there was no argument with the recommendations in the Inception Report.

4. Tariffs

In the inception report there were several references to tariffs. Paragraph 2.3 above, notes Article 29 of the Telecommunications Law prohibits tariff dumping. Under Article 30 price controls are currently limited to dominant organisations. No organisation is designated "dominant" at present⁷.

4.1 World Bank Figures

To test the effect of lack of controls on prices the World Bank ICT at a Glance affordability data is tested against the figures for other parts of Africa and the policies of the individual companies are reviewed. The affordability data produces the following results:

⁵ Other meetings are listed in Appendix 2

⁶ See the discussion of roaming on page 45.

⁷ See footnote 1.

These figures show that between 2000 and 2004 Rwanda's basket for fixed line has come down from US\$ 8.4 to \$ 7.9, placing it 19.6 percent above the Low-Income Country Group average of US\$ 6.6 but below the Sub-Saharan African Region level of US\$ 8.5.

For Mobiles the Rwanda Basket was US\$ 24.8 per month, 112 percent above the Low-Income Country Group average of US\$ 11.6 and the 84 percent above the Sub-Saharan African Region level of US\$ 13.5. A similar pattern existed for the internet where Rwanda was at US\$ 66.8 per month 47 percent above the low-income country group average of US\$ 45.5 and 22 percent above the Sub-Saharan African Region level of US\$ 54.8.

Figure 3: Affordability of Telephone Services

Affordability	Rwanda		Low-Income Group	Sub-Saharan Africa
	2000	2004	2004	2004
Basket for fixed line (US\$ per month) residential	8.4	7.9	6.6	8.5
Basket for Mobiles (US\$ per month)		24.8	11.6	13.5
Basket for internet (US\$ per month)		66.8	45.5	54.8
Price, 3 minute call to the United States (US\$)	11.23	2.45	1.95	2.43

Source: World Bank ICT at a Glance

For a 3 minute call to the United States there was a dramatic fall in prices between 2000 and 2004. The price fell by 78 percent and is now comparable with the prices in the Low-Income Group, US\$ 2.45 compared with US\$ 1.95 (26 percent above) and virtually equivalent to the Sub-Saharan level of US\$ 2.43.

The absence of price controls has not prevented the prices of calls to the US falling by 78 percent. Fixed line charges have fallen, by six percent placing them just above the Low-Income Group average and just below the Sub-Saharan Average.

The table contained no prices for the internet in 2000. In 2004, internet prices in Rwanda were well above the average for both of the other groups. However, it should be noted that prices in Rwanda have fallen since 2004, but this has probably been true elsewhere too.

4.2 Advertised Tariffs

Prices were not a primary focus of the study. It has not been possible to do a comprehensive analysis. Also, working from published tariffs it is possible that only the combination of prices most favourable to the customer have been listed⁸. However, it is possible to discern some clues as to the strategies of the respective companies. As with the inter-country analysis later in the report, attention is focused on the all important mobile sector. Each company's supplied information determined the cost of a 3 minute call to MTN (the dominant operator with 90 percent of subscribers), a 3 minute prepaid mobile call to Nairobi and a 3 minute call from a prepaid mobile to a fixed telephone.

Table 3: Selected Tariffs Rwanda

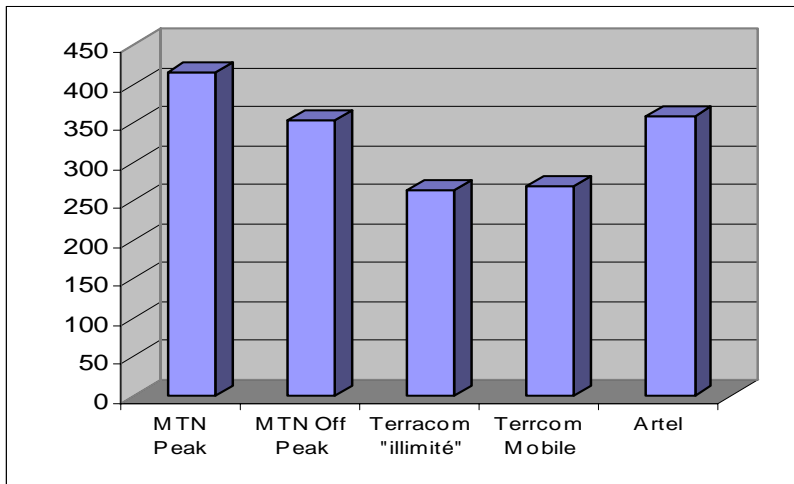
	Prepaid Mobile to MTN 3 Minute	Prepaid Mobile to Nairobi 3 minute	Prepaid Mobile to Fixed 3 minute
MTN Peak	417	885	417
MTN Off Peak	354	885	354
Terracom "illimité"	264	1125	264
Terracom Mobile	270	1125	270
Artel	360	1140	360

Source: MTN (message), Terracom (web site), Artel (interview)

⁸ In a recent speech the head of Telecom New Zealand attracted a lot of unfavourable comment because she admitted publicly what everyone knew already, Telecommunications company tariff schedules are meant to confuse the customer.

It can be seen that MTN offers substantial discounts for local off peak calls. It compensates for this by having by far the most expensive peak hour calls. This is a good strategy for an incumbent, with inelastic demand during peak hours and underused infrastructure during off peak hours.

Figure 4: Prepaid Mobile to MTN 3 Minute



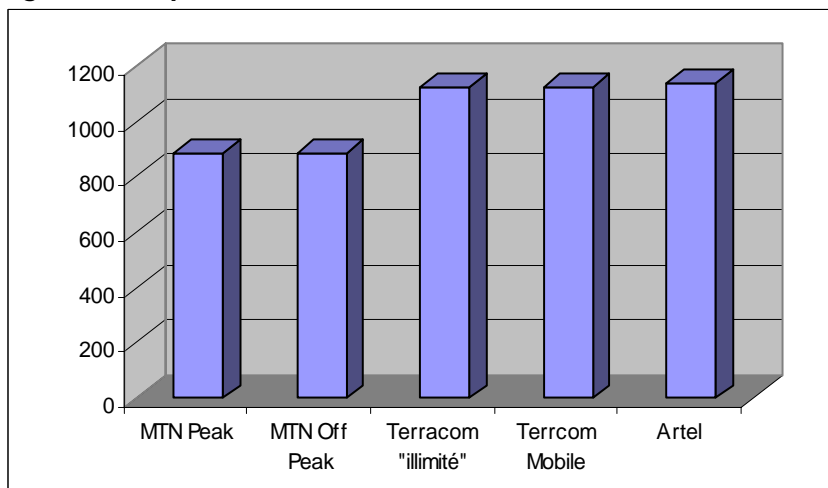
Teracom, by contrast, offers a smaller discount from the mobile price for its "illimité" service.

Artel offers service for prices similar to MTN despite the fact that it uses the most expensive technology. Terracom, in addition offers substantially cheaper calls, mobile to mobile for subscribers within its own network.

However, as Terracom currently has a miniscule market share this is of limited use and is a device to try and boost subscriber numbers.

MTN's prices for international calls to Nairobi are substantially cheaper than those offered by Terracom. This is a logical strategy given MTN's strong international connections. What can be seen is that it is no advantage for a mobile subscriber to call a fixed line in terms of prices.

Figure 5: Prepaid Mobile call to Nairobi 3 Minutes



There is no compelling evidence to suggest that prices controls will have produced a better result to that achieved without.

There is no doubt that Rwanda's relatively high tariffs for mobile calls are an impediment to increasing the subscribers.

However, on the other hand many developed countries cannot match the quality of service that is and will soon be available in Rwanda.

In 2004 the World Bank reported that 65 percent of the population were covered by mobile telephones, compared with a low-income country average of 33 percent. MTN and Terracom-Rwandatel both have plans to extend coverage (about 80 – 90 percent of the population will soon have access to mobile phones as well as up to three wireless broadband options). There is an inevitable trade off between prices and quality and availability of service.

If the authorities consider reducing prices is a high priority then the suggestions made in this report and in Section 3, concerned with access to the Backbone infrastructure, will encourage the low cost entry of new competitors and create incentives for economising on infrastructure.

4.2.1 RECOMMENDATIONS 5.

RECOMMENDATION	REASONING
<p>Tariff Policy</p> <p>Rwanda has been well served by is relatively light-handed regulatory regime, in terms of quality and coverage and this should continue,</p> <p>To tackle the problem of high tartiffs, policy should focus on easing the entry to the sector by new competitors and on creating incentives for companies to share facilities, thereby increasing traffic over existing infrastructure and reducing unit costs.</p>	<p>The tariff shows that Rwanda’s tariffs in 2004 were on the high side of the regional average. To counter balance that, services and coverage are probably high by African standards.</p> <p>Tariff reductions have taken place since 2004 and more were signalled in June 2006.</p> <p>This analysis supports the contention that increasing competition and better utilisation of capacity will be more effective than price controls in ensuring ongoing downward pressure on tariffs.</p>

5. Access to Backbone

Several critical regulatory and policy issues to ensure open access to the national backbone infrastructure have already been identified. Section 3, Access to Backbone Infrastructure, discusses access issues in detail and does not deviate from the Recommendations in the Inception Report.

Paragraph 2.1 above highlights the three critical goals of regulatory policy:

- widespread availability of service,
- cost-effective delivery, of
- quality products and services.

Apart from a need to upgrade the e-legislation aspects of law N° 44/2001 Governing Telecommunications, it is adequate for all other immediate regulatory and competition functions. The biggest problem with telecommunications regulation in Rwanda is structure of Law N°39/2001 Establishing RURA. Paragraph 2.5 describes these problems and suggest the way forward.

Despite the ongoing regulatory problems in RURA, the brief analysis of existing tariffs support the existing light-handed approach to regulation of tariffs, but notes that measure to increase competition (by the entry of more competitors), but also measures to economise on the investment in infrastructure will have a more beneficial effect on tariffs that regulatory intervention.

6. Regional Regulatory Comparison

This section makes comparisons that benchmark telecommunications activities in the ICT sector of Rwanda with its neighbouring countries. The principal objective is to ensure that the approach to Rwanda’s telecommunications regulation not only continues to base itself on good economics, addresses issues of access, coverage, affordability and economising on capital, but is also compatible with policies in important neighbouring countries.

The first task was to identify a set of countries, mostly in East and West Africa and obtain information about their telecommunications policies and statistics. The countries chosen were

selected initially because of their comparable income levels. To this list was added Kenya, an important near neighbour. This information when analysed provided the evidence necessary to Ensure Rwanda's approach is in harmony with regional best practice. It also helped identify regulatory principles, not currently used in Rwanda, that can enhance its regulatory and policy regime.

6.1 Regional Population Data

	Total (M)
	2005
Guinea-Bissau	1.34
Gambia, The	1.52
Liberia	3.28
CAR	4.04
Eritrea	4.40
Sierra Leone	5.35
Togo	6.14
Burundi	7.55
Rwanda	9.04
Chad	9.75
Malawi	12.88
Niger	13.96
Madagascar	18.61
Mozambique	19.79
Uganda	28.82
Kenya	34.26
Tanzania	38.33
Ethiopia	77.43
Congo, Dem. Rep.	314.55

Source ITU

	Density (per km)
	2005
CAR	6
Chad	8
Niger	12
Mozambique	25
Liberia	29
Madagascar	31
Eritrea	36
Guinea-Bissau	37
Tanzania	41
Kenya	59
Ethiopia	63
Sierra Leone	76
Togo	108
Uganda	120
Congo, Dem. Rep.	134
Malawi	137
Gambia, The	142
Burundi	271
Rwanda	343

Source ITU

6.2 General

The statistics used in this section are from the International Telecommunications Union (ITU) statistical database as made available on its web page⁹. The statistics in italics are either not for the year in which they are listed or reflect some other data incompatibility. The statistics are subject to widely varying degrees of accuracy given that some of the countries concerned are in a disorganised or lawless state.

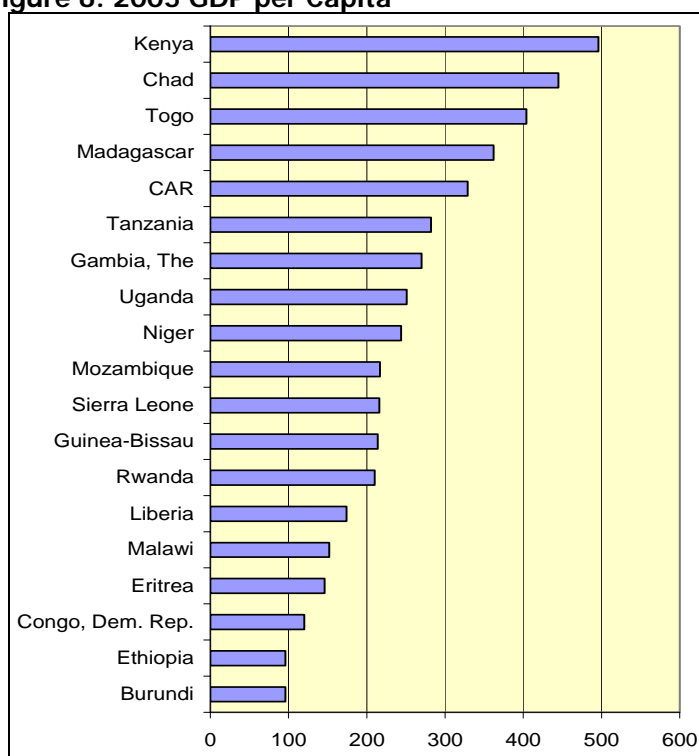
6.3 Population

Table 4 and Table 5 show that Rwanda is the ninth smallest country in terms of population and is the most densely settled country of all those analysed. Traditionally a small population is considered a disadvantage in telecommunications, in that the costs of rival networks in a small market may limit the number of competitors. However, in the case of Rwanda this disadvantage is offset, by the compactness of the country. This means that a relatively small network can meet the needs of a large number of people.

⁹ <http://www.itu.int/osg/spu/statistics/index.html>

6.4 Income Levels

Figure 6: 2005 GDP per Capita



Source ITU

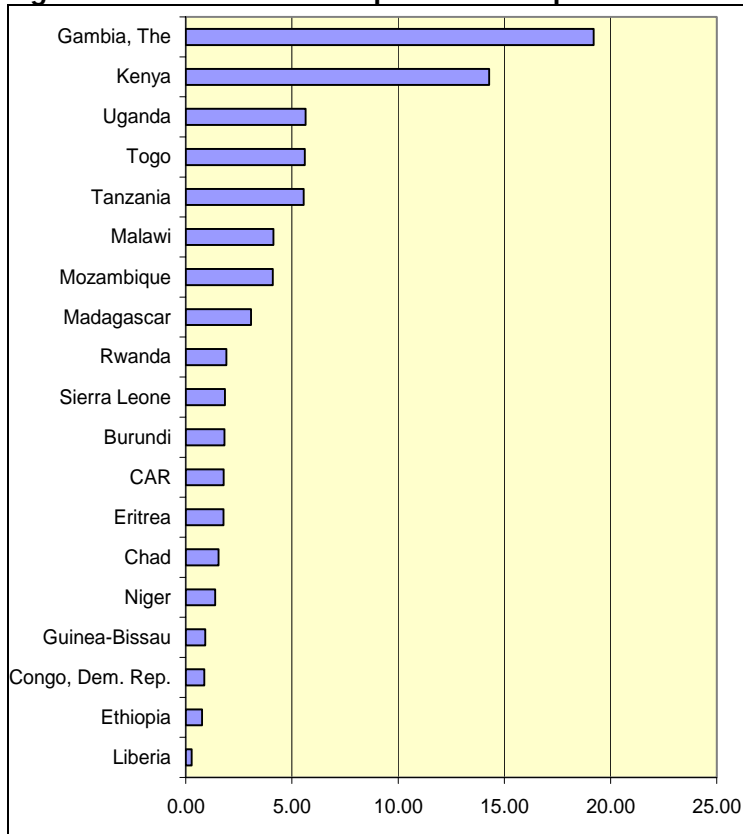
From Figure 6 it is clear that in terms of income levels, as measured by reported GDP, Rwanda is seventh from the bottom among the countries analysed. However, as noted earlier, there are large disparities in the quality of the data. For example, several of the countries listed have a large "black economy" of unreported income and the possible effect of this on international comparisons will be evident later.

6.5 Total Subscribers – Cellular Subscribers

The figures for total subscribers are very suspect. The most obvious example is the case of Burundi. From the IT figures the total subscribers in 2005 were 128,300. However, the same data set provides information that the number of mobile subscribers is 153,000. They also show that the number of main telephone lines in Burundi that year were 27,700. These figures are clearly not compatible, but the accompanying explanatory note contains no satisfactory explanation. The ITU is dependent upon the statistics provided by the respective countries so cannot necessarily explain data inconsistencies.

It is probable that the data for mobiles is more accurate than for fixed lines. These tend to be prepaid phones, operated by private companies. Fixed line phones often are in government owned companies. Using political influence over the company, it is common for leading figures in the society to avoid paying for service. For this (and other reasons) there is an incentive to obfuscate the true position. However, as the ITU data is the best available it is used in Figure 7 and Figure 8.

Figure 7: 2005 Subscribers per 100 of Population



Source: ITU

Figure 8: 2005 Cell Subscribers as a percentage of all Subscribers

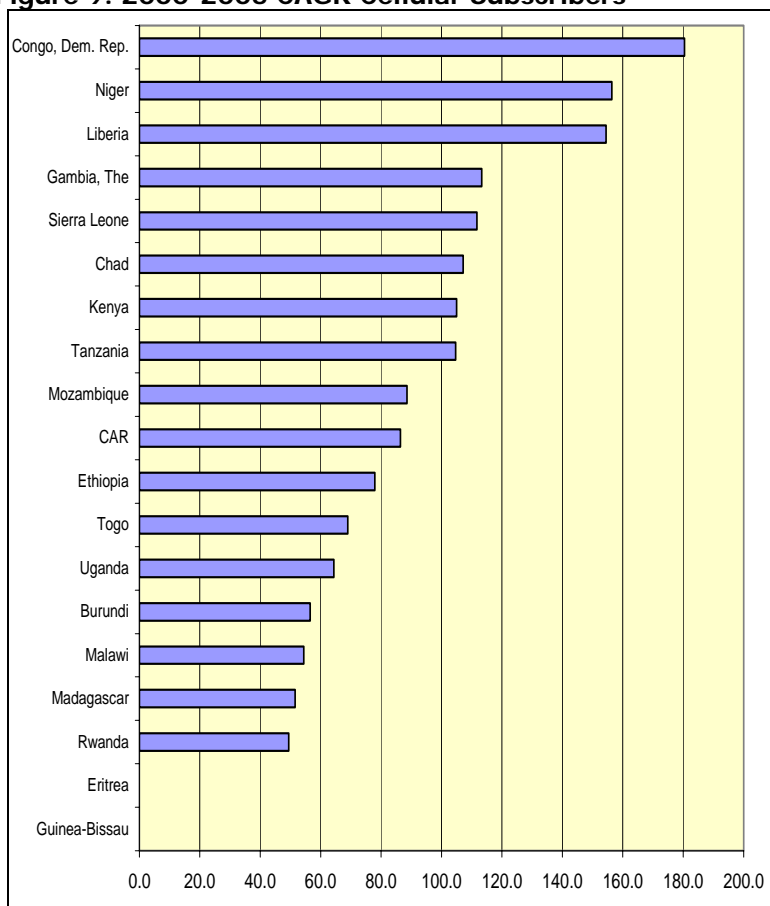


Source: ITU

In respect of the cellular subscriber figures, taken from the data in Appendix 1 and reproduced graphically as Figure 8, for Sierra Leone, the DRC and Liberia the ITU did not offer a

percentage figure for the proportion of cellular subscribers, indicating that the two series are not compatible.

Figure 9: 2000-2005 CAGR Cellular Subscribers



6.6 Growth Rates

Figure 9 shows one of the more interesting results obtained from the analysis of the ITU data. It shows the Compound Annual Growth Rate of the number of cellular subscribers in the various countries. The most surprising factor is that notwithstanding the dynamism of its IT sector, Rwanda is the third to lowest in terms of growth rates of cell usage over the period. There are many possible explanations for this.

- because Rwanda has a relatively high number of subscribers (Figure 7) compared with other countries it is possible that cell phone services began several years earlier in Rwanda¹⁰ than elsewhere,
- countries beginning from a low base are likely to record very high percentage increases in the early years of service availability, and
- it is also possible that there is some over-reporting in some of the other countries, due to churn figures counting non-operational phones as ongoing subscribers.

However, the figures do suggest that the virtual monopoly enjoyed by MTN in its early years may have led to a lower rate of increase in subscribers than if there had been vigorous competition for the consumer Franc. These factors should be borne in mind when considering the following estimates of market potential.

¹⁰ MTN began business in 1998 but cell phones did not come to Burundi until 2000-2002

6.7 Potential Market

A discussion of the telecommunications market would not be complete without an estimate of the size of the potential market. In a comparable study in Cambodia in 2001, four different historic estimates were tested. Some involved elaborate field surveys and statistical analysis. The simple methodology, in Table 6, applied to national data, was the only one that came near the actual situation, with the estimates from field work lagging far below the actual.

No uniquely reliable means exists to estimate demand for telephone services. Estimates may differ considerably, depending on the methodology used. Table 6 describes a top down technique¹¹ for estimating demand for telecommunications services. Table 7 and Table 8 use the same methodology applied to the ITU data for the sample countries.

Table 6: Sample Calculation of Demand

	Low	High
GDP	US\$ 5 billion	US\$ 5 billion
Portion of GDP used on telecoms	3 percent US\$ 150 million	6 percent 300 million
Billing per customer (assume around US\$300)	US\$ 400	US\$ 250
Subscriber forecast (divide telecoms spending by billing per customer)	375 000	1 200 000

Because of the data discrepancies described in paragraph 6.5 above, the figures were applied to cell phone data only (not an unreasonable assumption given the results in Figure 8). The assumptions made were that the percentage of GDP used on telecoms was 3 percent of GDP for the low estimate and 6 percent for the high. The annual expenditure per customer was US\$ 200 per customer in each case (rather than the differing figures used in Table 6).

Table 7: Unsatisfied Demand Cell Phone, Low % GDP

Country	Demand low % GDP Cell
Ethiopia	-767000
Madagascar	-380300
Chad	-375000
Niger	-222000
CAR	-135000
Sierra Leone	-51800
Eritrea	-49600
Rwanda	20000
Guinea-Bissau	22000
Burundi	48000
Liberia	70000
Malawi	144300
Gambia, The	187500
Togo	390000
Tanzania	487000
Uganda	565100
Mozambique	635000
Congo, Dem. Rep.	1625000
Kenya	2197000

¹¹ See for example the analysis in: *Workshop on Telecommunications Regulations*, Phnom Penh, the Ministry of Posts and Telecommunications 2001, Arno Wirzenius, for the International Telecommunication Union, (arnow@iki.fi, www.iki.fi/arnow)

Table 8: Unsatisfied Demand Cell Phone, High % GDP

Country	Demand high % GDP Cell
Ethiopia	-1712000
Madagascar	-1265300
Tanzania	-968000
Chad	-960000
Niger	-672000
Uganda	-394900
CAR	-330000
Rwanda	-250000
Kenya	-218000
Sierra Leone	-216800
Malawi	-140700
Eritrea	-139600
Burundi	-57000
Guinea-Bissau	-23000
Liberia	-20000
Mozambique	50000
Togo	90000
Gambia, The	127500
Congo, Dem. Rep.	650000

Table 7 shows that Rwanda has cell operational phones above the low estimate of total demand, of 20,000. Table 8 shows an unsatisfied demand of nearly 250,000 phones on the high demand estimate. Given current tariffs, costs and penetration, these represent a reasonable range of possible demand estimates on the stated assumptions.

The tables show that societies that are either not well organised (Ethiopia) or very poor (Chad) have a large unsatisfied demand. This is to be expected. However, the surprising feature of the table is the large number of countries with an estimated demand is significantly below actual demand, particularly when the low percentage of GDP spent on telecommunications is used. This result can mean one of several things:

- GDP estimates are too low (reflecting a large black economy),
- 3 percent as a figure for the proportion of GDP spent on telecommunications is too low,
- the percentage of GDP spent on telecommunications is significantly higher in some countries than in others (resulting in higher numbers of phones in use), or
- there are large differences in costs of service between countries (making the \$200 estimate too low in some and too high in others),

In addition, with all estimates for utility services, there is probably a significant downward bias in estimates. The reason for this is that a new service like a mobile phone can significantly reduce costs when time is valued. If the cost of taking a message to the next village or town includes the time of the person delivering the message a few seconds on the telephone can save one or two days work. Estimates frequently overlook this effect.

Another forecasting technique is to make international comparisons. In the case of Cambodia in 2001, it was discovered that Vietnam, with a lower GDP per capita, had around 3 subscribers per 100 inhabitants and significant unmet demand. If a figure of 5 subscribers per 100 inhabitants was a realistic estimate for in 2001 Cambodia with 12 million inhabitants, the forecast would be 0.6 million subscribers, almost half way between the low and the high estimates in Table 6. Assuming 4 subscribers per 100 for Rwanda this methodology gives an

estimated total market of 720,000 subscribers, very close to the actual number of subscribers, plus the high estimate of unsatisfied demand.

6.8 Summary of Analysis

While Rwanda's Relatively small population is a disadvantage in terms of encouraging new competitors, its small land areas (despite its high and undulating topography) mean that entry is relatively less expensive than in large countries. Rwanda has a relatively low income level for the region but this is attributable to the civil war of the early nineties (GDP did not recover to the 1990 level for nearly 10 years). This catch up effect may be seen in that its penetration rate of total and cellular subscribers are ahead of other countries such as Sierra Leone, Guinea-Bissau and Mosambique that had slightly higher recorded income levels in 2005. Rwanda's proportion of cellular subscribers is more than 80 percent, but this is not extraordinary in a part of the World where mobiles typically represent more than 90 percent of all subscribers.

The strangest figure to emerge from this analysis is that for the Compound Annual Growth rate in the take up of mobile phones between 2000 and 2005, Rwanda was the lowest of all the countries with figures calculated. The main explanation of this is that Rwanda's mobile sector began relatively early and its fixed line phones business remains a relatively substantial proportion of the total. Similarly, the estimate of unsatisfied demand shows Rwanda has a market available almost as large as one third of currently met demand.

Should prices continue to fall, as they should with enhanced competition, this market can only expand. Regulatory policies and competition will be critical elements in the trends in each country and they will be analysed next.

7. Neighbours

7.1 Tanzania

7.1.1 Comparison

Tanzania's income per capita is significantly larger than that in Rwanda, US\$ 282 compared with \$210. In 2005 Tanzania had 5.16 cellular subscribers per 100 inhabitants compared with Rwanda's 3.21. Tanzania's previous year figure for the proportion of cell phones was 92.9 compared with 92.3. Between 2000 and 2005 Tanzania's reported consolidated annual growth rate of cellular telephone uptake was 104.7 compared with Rwanda's 49.4 percent. Using the high estimate of the top down formula outlined above Tanzania's estimated unsatisfied demand for phones is 968,000.

7.1.2 Background

The Communications sector in Tanzania¹² has undergone policy changes, including partial liberalization and privatization that brought in several private operators and a new regulatory framework. The number of customers accessing communication services increased dramatically from around 100,000 in 1993 to about 2,100,000 by January 2005. This is attributed to spread of services covering more geographical areas and the gradual fall of tariffs and prices subsequent to the policy changes.

In March 2003 the Government of Tanzania (GOT) launched the National Information and Communications Technologies Policy. The ICT Policy vision aims at making 'Tanzania the hub of ICT Infrastructure and ICT solutions that enhance sustainable socio-economic development

¹² The data in this section was largely obtained from secondary sources, in particular the *African Regulatory Index Report*, for Tanzania, June 2005, prepared by the African Internet Service Provider's Association

and accelerated poverty reduction both nationally and globally'. Tanzanian National ICT Policy objectives aim at:

- providing a national framework that will enable ICT to contribute towards achieving national development goals, and
- transforming Tanzania into knowledge-based society through the application of ICT.

The needs of Tanzania's citizens, about 35 million people and its economy are still not met. This is due to the size of the country, high tariffs and poverty. Universal service, of high quality and affordable is still a long way away. Like Rwanda Tanzania needs to focus on increasing competition in its sector, ensuring sufficient profitability to sustain the introduction of new services and also economising on investment in infrastructure, with incentives for companies to move out of the major population centres.

7.1.3 Legislation

Until 1993 for all telecommunications and postal services were delivered exclusively by the government owned Tanzania Postal and Telecommunication Company (TPTC), which was also responsible for regulation. Following enactment of the Tanzania Communications Act 1993 that formed the Tanzania Communications Commission (TCC), the Tanzania Posts Corporation Act of 1993 and the Tanzania Telecommunications Company Limited (TTCL) Act of 1993, the functions of regulatory the sector and provision of services were separated.

These reforms introduced partial liberalization of the sector with competition in some market segments. TTCL the incumbent telecommunication operator had monopoly on the provision of infrastructure used for voice services, on the provision of national fixed voice services and on the supply of all international voice services. In 2001, the incumbent telecom service provider TTCL was partially privatized through a sale of 35 percent to a strategic investor. The company had exclusivity of a four year period until February 2005.

The regulatory environment has changed following the enactment of the Tanzania Communications Regulatory Authority Act 2003 that merged the Tanzania Communications Commission and Tanzania Broadcasting Commission to form the Tanzania Communications Regulatory Authority (TCRA) to regulate the telecommunications, broadcasting, ICT applications, provision of postal services and management of radio spectrum in Tanzania.

The policy now is the implementation of full liberalisation. A converged licensing framework is the critical strategy to liberalise the sector. The principle of technology and service neutrality is the base of the licensing framework. The framework allows leasing of excess communications infrastructure capacity owned by other institutions. The electric supply company, railways corporation, the gas company and Tanzania Zambia Railways Authority can now provide data transmission services.

7.1.4 Institutions

The Tanzanian Ministry of Communication and Transport oversees the ICT sector. Its mandate, is to extend the coverage of communications services in the country and improve the quality of local and international postal and communications services. TCRA is responsible for enhancing the welfare of Tanzanians through:

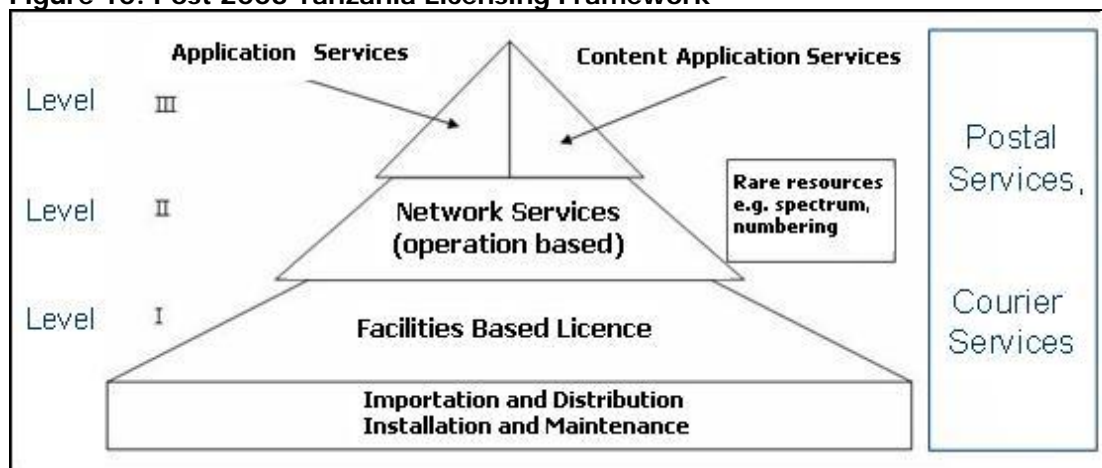
- promoting of effective competition and economic efficiency,
- Protecting of the interests of consumers,
- Promoting of the availability of regulated services,
- Licensing and enforcing licence conditions of broadcasting, postal and Telecommunications operators,

- establishing standards for regulated goods and services,
- regulating rates and charges (tariffs),
- managing the radio frequency spectrum,
- monitoring the performance of the regulated sectors, and
- monitoring the implementation of ICT applications.

The minister of Information and Communication Technologies appoints the TCRA Board members. The independence of the regulatory body is not absolute; as in most countries provisions in the law require the authority to take note of government policy.

The licensing framework allows licenses for infrastructure development, network and applications as illustrated in Figure 10. The licensing framework is converged technological and service neutral where a licensee have freedom to choose technology which is most efficient and cost effective is free to take signals from the market as to which services are most in demand. A licensee may provide several different services under a single license.

Figure 10: Post 2003 Tanzania Licensing Framework



Source: African Regulatory Index Report for Tanzania, June 2005

7.1.5 Operators

Two operators are licensed to provide basic telephony and international gateway services. These are TTCL in the mainland and Zantel in Zanzibar. The TCRA has provided public data communications licences to six companies and an additional private data communications licence to ten companies (for private use). There are twenty-one licensed internet service providers and four mobile operators (Mobitel, Celtel, Vodacom and Zantel).

7.1.6 Evaluation

Tanzania has been one of the boldest countries in East Africa in terms of liberalisation and the growth in the number of service providers suggests that this policy is having beneficial effects. The ITU data suggest that there remains an unsatisfied demand of close to a million subscribers, but this may reflect both the novelty of the liberalisation and the age of the data. So far there has not been any fixed line competition but with the more widespread introduction of Internet Protocol (IP) technology and the presence of several independent data carriers, this could change.

7.2 Uganda

7.2.1 Comparison

Uganda's reported income per capita is also larger than Rwanda's, US\$ 251 against \$210. In 2005 Uganda had 5.29 cellular subscribers per 100 inhabitants compared with Rwanda's 3.21 and Tanzania's 5.16. Uganda's figure for the proportion of cell phones in the total was 93.8 larger than Tanzania's 92.9 and Rwanda's 92.7. Between 2000 and 2005 Uganda's reported consolidated annual growth rate of mobile telephone uptake was 64.4 percent compared with 104.7 in Tanzania and Rwanda's 49.4 percent. Using the high estimate of the top down formula outlined above Uganda's estimated unsatisfied demand for phones is 394,900 compared with nearly a million in Tanzania and 250,000 in Rwanda.

7.2.2 Background

Telecommunications in Uganda¹³ can be traced from the extension of the Kenyan telegraph network to the interior from 1896 in conjunction with the construction of the railway line from Mobassa inland. In 1933, postal and telegraph services of Kenya, Uganda and Tanzania, were merged under the control of one Postmaster General. From 1963 the East Africa Posts and Telecommunication Company (EAP&T Co) managed the telephone network of the three countries. With the break up of the East African Community and civil strife in Uganda each of the three countries went its own way.

The Government of Uganda (GOU)'s policy is in the Telecommunications Regulations, 2003, and based on five principles:

- telecommunications services are a basic necessity and accordingly, its pricing should be set at the lowest affordable and reasonable price possible so that access to services is not denied on account of ability to pay for the services,
- universal service is achieved through making prices affordable and reasonable to the public,
- optimum efficiency through efficient resource allocation leads to reasonable prices through attracting capital, transfer of resources and lowering of prices,
- price regulation is a check to monopolistic pricing and anti-competitive acts of dominant operators, and
- accounting separation is a competitive safeguard to separate various business activities of each operator to identify cross-subsidisation or predatory pricing.

7.2.3 Legislation

The current laws governing communications in Uganda include the Uganda Communications Act of 1997, The Communications (Establishment and Management of the Rural Communications Development Fund) Regulations of 2002, The Electronic Media Statute, the Uganda Communications (Enforcement Procedures) Regulations of 2004 and the Uganda Communications Act of 1997.

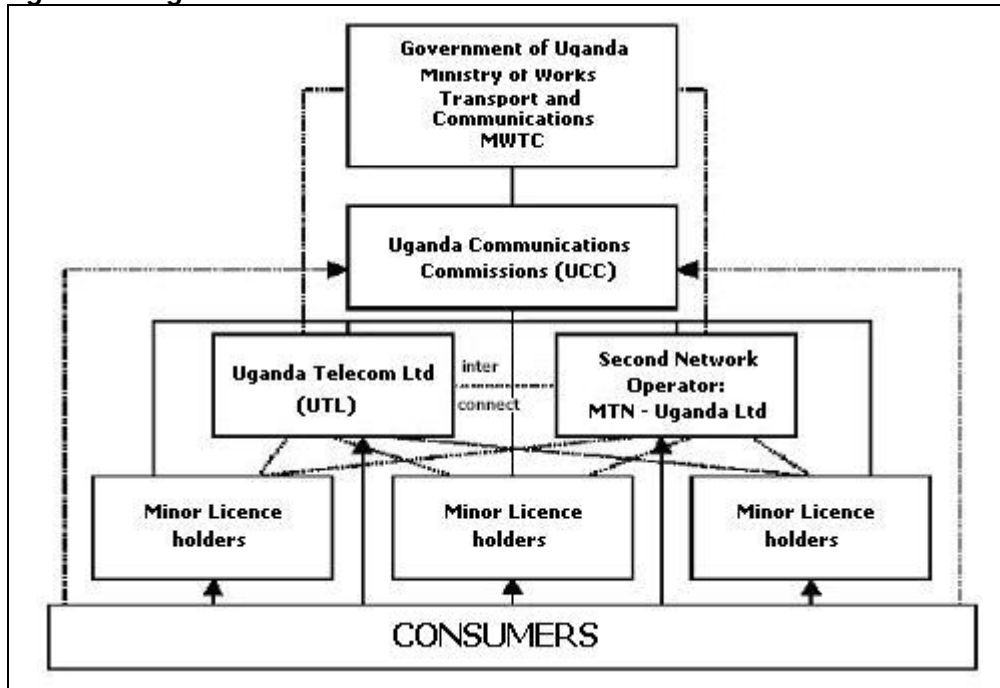
The Communications (Establishment and Management of the Rural Communications Development Fund) Regulations of 2002 outline the Rural Communications Development Policy, adopted in 2001 "to support the development of communications infrastructure in rural Uganda and ensure that people in rural areas have reasonable and affordable access to communications services." The initiative receives funding from the World Bank and 1 percent of the gross operating revenues from licensed operators.

¹³ The data in this section was largely obtained from secondary sources, in particular the *African Regulatory Index Report*, for Uganda, June 2005, prepared by the African Internet Service Provider's Association

7.2.4 Institutions

The Ministry of Works, Transport, and Communication (MoWTC) is responsible for telecommunications policy in Uganda. It is responsible for sector policy. The regulator for the telecommunications sector is the Uganda Communications Commission (UCC) established in 1998 under the Communications Act of 1997. The structure of the sector is illustrated in Figure 11.

Figure 11: Uganda Telecommunications Sector



Privatisation of Uganda Telecom, Information Memorandum, From AfriSPA 2005

The main functions of the UCC are to:

- set the standards for national communications,
- improve communications services and ensure equitable distribution of services throughout the country,
- license, regulate and monitor communications services,
- allocate and license the use of radio frequency spectrum,
- establish a tariff system to protect consumers from excessive tariff increases,
- encourage competition,
- regulate interconnection between operators and users of services,
- provide for dispute resolution mechanisms for communications services; and
- make recommendations on policy and on the awarding of major licenses

MoWTC appoints by the UCC's executive director and seven commissioners. UCC's funds are from a budget allocation, license fees and lease income (giving partial financial independence). There are two primary license categories, major and minor. The Ministry issues licenses for the major license holders who can provide full telecommunication services. UCC issues licenses for the Minor license holders. Major License allow and operator to offer:

- basic telephony including local, national and international telephony services,
- cellular telecommunication services,
- trunk capacity resale services including the provision of leased lines and circuits,
- satellite telecommunications services, and
- third party private networks.

Minor Licenses allow operators to provide:

- paging services,
- store and forward messaging services,
- telex services,
- telegraph services,
- value-added services,
- the sale, lease and maintenance of subscriber premise wiring and terminal apparatus, and
- private telecommunications services.

7.2.5 Operators

The Communications Act of 1997 began the process of liberalisation by establishment of UCC and the Uganda Telecommunications Limited (UTL). The Act provided for privatisation of UTL in 1998 and after two cancellations, the GOU sold 49 percent of its shares to a private consortium. Detecon (Germany), Telecel Intl. (Swiss/Congo) and Orascom (Egypt) paid US \$33.5 million for their shares. UTL offers fixed line service, Telecell a Global System of Mobile Communication (GSM) mobile network (from 2001) and dial up ISP, DSL, leased line and Very Small Aperture Terminal (VSAT) services.

Mobile Telephone services are also provided by MTN, a local subsidiary of the South African telecommunications firm. MTN became operational in October 21 1998 and has a GSM mobile phone network and a CDMA digital wireless local loop (WLL) network offering fixed line services. By 2005, MTN had 400,000 customers covering 90 percent of Uganda's urban population.

Celtel obtained a mobile phone services license in September 1994. It was the first private telecommunications firm offering services in Uganda. Celtel is not licensed as major license holder and can only offer mobile phone services. UCC has also licensed 8 VSAT operators, the market leader is AFSAT Communications. 17 ISPs are licensed, however only 8 are significant players.

7.2.6 Evaluation

Uganda's initial liberalisation was more far reaching than in Tanzania and privatisation occurred earlier than in Tanzania or Rwanda. However, for a country with a about three quarters of the population of Tanzania Uganda still has a large unsatisfied demand for service (if the top down formula is a reliable guide). The only fixed line competition is from MTN's wireless local loop CDMA service. Accounting separation provides the basis for both retail and wholesale service operation.

7.3 Kenya

7.3.1 Comparison

Kenya's reported income per capita is US\$ 496, nearly double Uganda's US\$ 251 and more than double Rwanda's US\$ 210. Kenya is only included in the comparison because of its proximity to Rwanda and its importance as both a communications hub and source of imports. In 2005, Kenya had 14.29 total subscribers per 100 of population compared with 5.29 in Uganda, Rwanda's 3.21 and Tanzania's 5.55. Kenya's figure for the proportion of cell phones in the total was 94.2, a larger proportion than in Uganda, Tanzania's and Rwanda. Between 2000 and 2005 Kenya reported consolidated annual growth rate of mobile telephone uptake at 105 percent compared with 64.4 percent in Uganda, 104.7 in Tanzania and Rwanda with 49.4 percent. Using the high estimate of the top down formula outlined above Uganda's estimated unsatisfied demand for phones is a relatively small 218,000 (considering its much larger market) compared with 394,900 in Uganda, a million in Tanzania and 250,000 in Rwanda.

7.3.2 Policy

A submarine telegraph cable linking Mombasa, Zanzibar and Dar-es-Salaam, constructed in 1888, by the East and South Africa Telegraph Company is the earliest recorded telecommunications service in Kenya¹⁴. The first telephone networks began in Nairobi and Mombasa in 1908.

The Kenya Posts and Telecommunication Company (KP&T Co.) managed internal telecommunication services in Kenya following the break up of the East Africa community during 1977. In 1982 Government of Kenya (GOK) merged EXTELCOMS (an international operation) and KP&T Co. one company KP&T Co. Only Telkom Kenya has the license to operate a commercial International VSAT service.

By 1980, the PSTN network comprised of 73,932 direct exchange lines and by 1992 had increased to 207,328, partly funded by the World Bank. In 1998, the Kenya Telecommunications Act established a modern regulatory regime setting up the Communications Commission of Kenya (CCK) an independent industry regulator¹⁵.

GOK created Telkom Kenya in 1999 as a separate legal entity from the previous postal and telecommunications statutory body and is scheduled for privatisation, but this has been a very slow process. In January 2006, the GOK cancelled the tendering process to licence the Second National Operator. The process began in November 2003.

7.3.3 Legislation

Regulation was originally the responsibility of a regulatory department within KP&T Co. It acted like an internal auditor that ensured compliance with the ITU and the African Telecommunications Union (ATU) regulations and guidelines. The GOK's 1998 Kenya Telecommunications Act repealed the Kenya Posts and Telecommunications Act and separated the role of the regulator and the operators. KP&T Co. was split into the three distinct entities: Communications Commission of Kenya, Postal Corporation of Kenya (PCK) and Telkom Kenya Limited (TKL). The Act also established the National Communications Secretariat and an Appeals Tribunal.

The Kenya Communications Regulations, 2001 regulates the telecommunications market with operating procedures, financial provisions, competition, licensing, interconnection, type approval of equipment, numbering, tariffs, reporting and postal services. The CCK December 2001 Licensing Procedure groups the 46 different license types into 9 license market groups. It also outlines the licensing requirements for each license category.

¹⁴ The data in this section was largely obtained from secondary sources, in particular the *African Regulatory Index Report*, for Kenya, June 2005, prepared by the African Internet Service Provider's Association

¹⁵ <http://www.american.edu/initeb/en6343a/Telecommunication.htm> (accessed June 2006)

The 2004 document reflects changes in the regulatory environment following the end of the 5 year exclusivity period (1999 – 2004) for TKL and the convergence of technologies in the sector. It also outlined the licensing requirements for each license category.

7.3.4 Institutions

The Ministry of Information and Communications is responsible for the telecommunications sector. It was created in July 2004 and it is the first time that there is one parent ministry for ICTs in place of the previous situation where regulation was by a number of different departments in three different ministries.

CCK's is the regulator and its objectives are to licence and regulate telecommunications, radio-communications and postal services. The relationships between CCK and MoIC were disrupted in March 2005, when the Minister in charge dismissed the board of CCK before its term expired and appointed another board in its place¹⁶.

7.3.5 Operators

From 1998 Telkom Kenya Ltd TKL was incorporated under as a limited liability company with the GOK as the shareholder. It is required to provide telecommunication services including: voice, covering international, national, local and wireless, data, including an international gateway and broadcast channels.

TKL has been upgrading its exchanges to the modern digital ones to enable it to provide a wider array of services like ADSL and ISDN. It has also begun offering service level agreements to its customers. These changes indicate TKL's efforts to improve services and to compete effectively in a liberalized market. It is widely reported that TKL has not been profitable since the end of the monopoly era. There were two attempts to privatise TKL, but both failed due to disagreements in the tendering process¹⁷. Other market players (including ISP) face a monopoly international gateway service provider through TKL.

Safaricom and Celtel are the two mobile network operators running Global System for Mobile Phones (GSM) networks. Safaricom was wholly owned by Telkom Kenya, however Vodaphone Group acquired a 40 percent stake in May 2000. Safaricom is currently the leading mobile network operator in Kenya in terms of total number of subscribers and revenue. Safaricom launched GPRS services in 2004 and it provides Internet connectivity to post-paid customers.

Celtel Kenya was officially launched in November 2004. Kencell was initially launched as a joint venture between Sameer Investments Group and Vivendi International (France). This followed the acquisition of Vivendi's shareholding in Kencell by Sameer and the subsequent sale of 40 percent of the shareholding to Celtel International. By the second quarter of 2004, Celtel had 950,000 subscribers, a 35 percent market share. Celtel was the first to introduce WAP Internet access.

In May-September 2002 there was a dispute between TKL and Kencell on their interconnect agreements. TKL was dissatisfied by the CCK ruling and appealed to the Appeals Tribunal. This was the first time the Tribunal ruled on any dispute in this industry. It marked the first occasion when a process and recourse for disputes in the industry resolved a dispute.

CCK began licensing Public Data Network Operators (PDNO)s in 2003 to provide the infrastructure to carry data in the country. PDNOs such as Kenya Data Networks, Telkom Kenya Ltd., SimbaNet Com. Ltd. and Broadband Access Ltd., complement ISPs barred from developing infrastructure to carry traffic. Until now, the PDNO's have mainly used leased lines.

¹⁶ This incident arose from allegations of corrupt practices in issuing a licence to Mobile Licence to the Zimbabwe based Econet despite its bid being more than US\$ 20 million below the bid of a competing Kenyan based company.

¹⁷ The process to license a Second National Operator (SNO) also failed due to disputes about the tendering process.

Telkom Kenya Limited, owns 60 percent of Safaricom, while the remaining 40 percent is owned by Vodafone AirTouch. Individually, Safaricom serves about 600,000 customers. Quality of service has improved. AFSAT Communications Ltd., Gilat Alldean (Africa) Limited and TKL were the licensed VSAT operators in 2005. The main ISP's in Kenya include Africa Online, ISP Kenya, Jambo Telkom (TKL), Kenyaweb, NairobiNet, Net Two Thousand, Today's Online, UUNet and Wananchi Online. Most service providers, Mobile and ISPS, have the VSAT gateways.

7.3.6 Evaluation

Following the entry of mobile operators, the number of telephone subscribers has risen rapidly over the past six years. In June 1999, Kenya had 15,000 mobile phone subscribers. By the end of 2005, ITU figures indicate there were more than 4.6 million¹⁸. Enormous further potential remains, with mobile penetration at less than 12 percent. Top down calculations of potential demand show that Kenya has a potential unsatisfied demand of at least 200,000 additional phones.

The findings of a 2003 study¹⁹ indicate that between 1999 and 2003, the redefinition and clarification of roles for policymaking, market regulation, dispute resolution and operation of services among multiple players had beneficial effects. In fixed line service the government thought that national interest was best secured through a monopoly. All other services are now competitively supplied through private sector investment. The argument for a fixed line monopoly was that the operator needed 5 years to reorganise itself, pay off huge loans taken earlier, and build network infrastructure to the rural areas. None these goals were achieved. Services did not improve either in quantity or in quality. There was no significant investment except in those areas with competition – cellular and the Internet. It is clear that competition was the best tool to serve the consumer interests.

The licensing system seems to be unnecessarily complex and is still technology focused. Reducing the number of licence categories from 46 to 9 is an improvement, but the simple Tanzanian system of only four would be more appropriate. Kenya has made little progress with either privatisation or fixed line competition.

7.4 Burundi

7.4.1 Comparison

Burundi's reported income per capita is US\$ 96, the lowest of any of the group of countries analysed. In 2005, Burundi had 2.03 subscribers per 100 of population compared with Rwanda's 3.21. Burundi's proportion of cell phones in the total was 84.7 compared with 94.2 in Kenya, 93.8 in Uganda, 92.9 in Tanzania and 92.7 in Rwanda. Between 2000 and 2005 Burundi reported consolidated annual growth rate of mobile telephone uptake at 56.5 percent, which is higher than Rwanda but lower than the other neighbouring countries. Using the high estimate of the top down formula outlined above Burundi's estimated unsatisfied demand for phones is 57,000 compared with 250,000 in Rwanda, a comparably sized country with double the average income and a third more subscribers per 100 of population.

7.4.2 Background

In 2004, Burundi was the fourth least developed country in the world, ranked 173 of 177 countries by the United Nations Development Program - Human Development Index. Its social indicators are among the weakest of Sub-Saharan Africa, and the percentage of people living with less than a dollar a day has nearly doubled, from 35 percent in 1992 to 68 percent in 2002. Real GDP declined by 25 percent over 1993-1996. As a result, just to reach the 1993 pre-war GDP per capita of US\$ 210 (constant 1995) by 2015, Burundi's economy would

¹⁸ <http://www.totel.com.au/african-telecommunications-research.asp> (accessed June 2006)

¹⁹ *Kenya Telecommunications Sector Performance Review, 1999-2003*, Muriuki Mureithi Summit Strategies Ltd, Nairobi, Kenya.

need to grow by an average annual rate per capita of 8 percent (assuming a population growth rate of 3 percent).

Burundi²⁰ obtained political independence in 1962, after about seventy years of colonization. Colonialism exacerbated tensions between the two dominant ethnic groups, the Hutus (more than 80 percent of the population) and the Tutsis (around 15 percent) that has fuelled political instability and civil conflict. This culminated in a decade of political instability and conflict during 1993-2003. In the latest wave of conflict in 1993, over 300,000 people have lost their lives. By 2003, about 1.2 million (16 percent of the population) were refugees and internally displaced. War had a devastating impact on Burundi's economy, not the least on its telecommunications sector. Following the assassination of the elected President in 1993, Rwanda, the DRC, Uganda, and Tanzania instituted an economic embargo against Burundi from 1996 and 1999. Civil strife, the trade embargo and several episodes of drought caused GDP per capita to fall by almost 40 percent, from US\$ 180 in 1993 to US\$ 110 in 2003.

The international community sponsored a framework for national reconciliation and lasting peace among Burundians. Negotiations towards a comprehensive peace agreement took place in Arusha, Tanzania in August 2000. Signatories included seventeen political organizations. However, several rebel groups, including the largest, did not participate in these talks. The parties adopted a transitional constitution in October 2001. They appointed a thirty-six-month Transitional Government in November 2001, based on the principle of power-sharing among the country's two main ethnic groups. This led to the installation of a transitional parliament in January 2002.

By the end of 2003, the TG had signed new peace and cease-fire agreements with all armed political parties, with the exception of a fringe faction. Since December 2003, major fighting has halted in all but one province, Bujumbura Rural, where sporadic activity remains. Progress in the political transition has also taken place. A referendum for the adoption of the new post-transition constitution passed peacefully in February 2005 and general elections ended successfully in July 2005. On 1 July 2006, Burundi media²¹ reported that the U.N. Security Council voted unanimously to end its peacekeeping mission in Burundi on 31 December 2006 and to replace it with a U.N. office to promote development and democratic government.

7.4.3 Policy

The TG has been implementing an ambitious program of economic reforms supported by the International Monetary Fund (IMF)'s Poverty Reduction and Growth Facility (PRGF) covering 2004-2006. Macro reforms, together with progress in the peacemaking, have encouraged increased international assistance.

During a forum of donors in January 2004, Burundi received pledges totalling more than US\$ 1 billion equivalent. The Government seeks to disengage the State from the productive economy through privatization, and to establish a regulatory environment that is more conducive to private sector development.

7.4.4 Institutions and Legislation

The Ministry responsible for telecommunications is the Ministere des Transports, Postes et Telecommunications²² however, the Telecommunications Database Web Page provides little information on either policy or regulation. The National Telecommunications Regulator is the Agence de Regulation et de Controle des Telcommunications, and the relevant statute is the Ordonnance Ministerielle de 1999, and Presidential Decree No 100/182 also of 1999.

²⁰ Interim Strategy Note, The Republic of Burundi, 2005, The World Bank

²¹ http://www.burundirealite.org/burundi/news_e.cfm (accessed 2 July 2006)

²² <http://bi.acreg.org/> (accessed July 2006)

7.4.5 Operators

In 2002 the Transition Government has affirmed a commitment to privatization by creating a Ministry of Good Governance and Privatization. This quickly committed to completing the privatization of public enterprises, including ONATEL (the National Telecommunications Office)²³. In 2003, the Multilateral Investment Guarantee Agency²⁴ (MIGA) provided Mauritius Telecom Ltd with a guarantee for \$910,612 to provide coverage for its equity investment of \$1.01 million in Africell S.A. (Africell) in Burundi²⁵.

The project had a positive demonstration effect on other foreign investors as the improvement in the telecommunications infrastructure will help make the country more appealing to investors in other sectors of the economy. The Wikipedia²⁶ lists current operators as follows:

Table 9: Burundi Telephone Companies

Rank	Operator	Technology	Live Operation ²⁷	Subscribers (in millions)	Ownership
1	Safaris	GSM	June 2000	Not available yet	Africell PLC Company
2	ONATEL	GSM 900	March 2006	Not available yet	ONATEL
3	Spacotel (Econet)	GSM	November 2000	Not available yet	Spacotel - Burundi
4	Telecel	GSM 900	February 2000	Not available yet	Telecel-Burundi Company

Wikipedia: http://en.wikipedia.org/wiki/List_of_mobile_network_operators#Burundi

Safaris has very limited coverage in Bujumbura and Gitega. Spacotel covers these areas, also two areas in the North (Colline Gwanira and Bwegura), Muramvya (half way between Bujumbura and Gitega) and around Rumonge in the South. By contract Telecel covers all of the above areas, plus the shore of lake Tanganyika to Rumonge, populated areas in the North from Mutwenzi to Musinga and an arc of territory running south from Ktega to Kayugoro²⁸.

7.4.6 Evaluation

Burundi has seen a similar process of ethnic, civil unrest as that experienced by Rwanda. It is at a much earlier stage of the recovery process and its telecommunications sector reflects this. Its current system is rudimentary with limited coverage by the GSM mobile companies and VSAT and other older technologies filling in the gaps. Currently, it has four mobile companies all using GSM 900 technology and these are tending to cluster in the main population centres. This leads to duplication of infrastructure in the densely settled areas and a lack of service in the rest of the country.

Regulators will be interested in how they can speed up the move into less densely settled areas. One option is mandatory roaming between the respective companies. Requiring companies to deliver each other's calls (for a fee) would effect some considerable economies in the use of infrastructure. This is particularly vital in countries like Rwanda and Burundi are recovering from years of conflict and under investment in infrastructure. In addition, it would

²³http://www.wds.worldbank.org/servlet/WDSContentServer/WDSP/IB/2002/08/23/000094946_02082304080933/Rendered/INDEX/multi0page.txt (accessed July 2006), Document of The World Bank, Report No. 24611-BU, International Development Association Program Document, for an Economic Rehabilitation Credit of SDR 40.8 million (US\$ 54 million equivalent) to the Republic of Burundi, July 29, 2002, Poverty Reduction and Economic Management Africa Region

²⁴ An agency of the World Bank Group

²⁵ <http://www.miga.org/sitelevel2/level2.cfm?id=1074> (accessed July 2006)

²⁶ http://en.wikipedia.org/wiki/List_of_mobile_network_operators#Burundi (accessed July 2006)

²⁷ From <http://www.gsmworld.com/cgi-bin> (accessed July 2006)

²⁸ See the coverage maps in GSM World, <http://www.gsmworld.com/cgi-bin/ni-map>

substantially reduce the cost of expanding services into areas currently not serviced. With mandatory roaming, any operator that erects a tower in a low traffic area will immediately and for the foreseeable future benefit from traffic from all operators whose customers visit the area. This will speed up the process of taking service to remote areas.

However, the ongoing process of political accommodation and the example of Rwanda in the North that has experienced 12 years of relative peace and stability are hopeful signs that the investment necessary to bring Burundi's telecommunications into line with its neighbours is in sight.

8. Other Trends

8.1 Data to Wire

East Africa like the rest of the world is experiencing the transition of data moving to wires and voice traffic moving in the other direction, from wire transmission to wireless. This transition is being driven by the exponential increase in data transmission as more and more sophisticated applications comprise digital signals and need uninterrupted service.

8.2 Voice to Wireless

Voice, by contrast is less demanding and wireless provides a convenience that wire transmission cannot match. Because wireless traffic is personal to the other party the chances are much improved that the subscriber calling a person on wireless will actually talk to that person, rather than a network of secretaries and operators.

While this is an expensive transition, there is no shortage of private money to invest, provided the regulatory environment offers a degree of stability and respect for property.

8.3 Technology Neutrality

Regulatory trends include the move to technology neutral licensing systems and Tanzania has gone further in this direction than any of the other countries in East Africa. Technologically neutral licences allow the operator without any additional permission to install the technology that is most appropriate and cost-effective.

8.4 Wholesale and Retail

Combined with the move to technology neutrality is the move to distinguish wholesale and retail operations. There are two motivations for this. On the one hand, separation creates the transparency that regulators seek (by placing origination, transmission and termination in separate organisations connected only by public contracts). On the other hand, separation creates an incentive to maximise the utilisation of capacity. The wholesale division of the operator (or the dedicated transmission business) will increase its revenue by maximising the traffic flow across its wires. For countries, like those in Africa, with capital scarcity, this is an enormous advantage.

8.5 Reliance on Competition

In East Africa, as in the rest of the world more and more reliance is being placed on competition, as regulators move away from price controls. Not only is price regulation a difficult task (given the wide variety of plans on offer), with several providers in the market there is ample scope for competition to put downward pressure on prices.

8.6 Mutual Roaming

Particularly in countries such as Burundi where all the operators use GSM 900 technology there is a parallel move in some jurisdictions to encourage mutual roaming by the competing

enterprises. This will also increase capacity utilisation and place a premium on popular and well placed cell towers.

A further issue that has arisen in the case of Burundi is the possibility of mandatory roaming. The irony that exists in many countries is that visitors may roam their GSM handset into the network that is available most conveniently in the country there are visiting. In effect, the visitor will have access to several networks. However, a citizen of the home country is obliged to use only their service providers' network. The visitor obtains better service than the local resident. This is neither sensible nor desirable.

Mutual roaming is a novel feature of telecommunications, but it has been advocated by practitioners for a long time²⁹. It is an extension of the principle of facilities sharing, which is currently required by law in Rwanda and in most other jurisdictions.

8.6.1 RECOMMENDATIONS 6.

RECOMMENDATION	REASONING
<p>Rwanda Should Note</p> <p>Rwanda should note the trends in its neighbouring countries, including moves towards:</p> <ul style="list-style-type: none"> • technology neutral horizontal licenses, • incentives to move to a wholesale / retail distinction, allowing increased competition and better use of facilities • the viability of public data networks. • potential benefits to be obtained by mutual roaming 	<p>Rwanda's policy of competition has been most beneficial in terms of a rapid increase in the availability and quality of service.</p> <p>It is also regionally compatible and should it move in the direction of horizontal, technology neutral licences and wholesale networks, it will be acting in conformity with some of its neighbours.</p>

9. Conclusion

The essential message from this review of the operators in Rwanda's neighbouring countries is that should it move towards technology neutral horizontal licenses, with incentives to move to a wholesale / retail distinction. If it does, it will not be moving dramatically beyond its neighbours. Mandatory roaming could add a further aspect of increased capacity utilisation, for operators using compatible technologies.

All the countries of the region have benefited from the effects of increased competition. Kenya is the only country that keeps a fixed line legal monopoly and this policy failed in its objectives. Uganda and Tanzania may have effective monopolies in fixed services other than Wireless Local Loop due to the cost of new entry. Kenya, has also been the most timid reformer and has seen privatisation hampered by allegations of corrupt practices. It does, however provide evidence of the viability of public data networks.

Tanzania has moved the furthest towards horizontal licensing. Uganda's system of major and minor licences was designed to simplify the applications for the smaller services, but Tanzania's technology neutral system offers more and longer-lasting benefits.

Rwanda's policy of competition has been most beneficial in terms of a rapid increase in the availability and quality of service. It is also regionally compatible and should it move in the direction of horizontal, technology neutral licences and wholesale networks, it will be compatible with its neighbours. In addition, Rwanda and all its neighbours should be encouraged that they are moving in the direction of more sophisticated systems³⁰:

²⁹ See for example: Draft Telecommunications Law of Cambodia, Article 55 (1) recommended by the ITU Project in Cambodia.

³⁰ *Why a light touch is best*, The Economist, May 26th 2005.

“On May 19th, America's Federal Communications Commission (FCC), moved to address the gap by requiring that voice over internet protocol (VOIP) providers also handle emergency calls (see article). It was a necessary move. The internet has grown up, and regulators must ensure it offers the same social safeguards that the public expects from any critical infrastructure — reliability mostly, but also the ability of law-enforcement authorities and courts to monitor or intervene when necessary. But beyond these minimal requirements, regulators must be cautious, for fear of smothering a vehicle that continues to revolutionise not only communications, but lots of other aspects of society and the economy as well.

Unfortunately, too many regulators around the world are itching to do much more. The problem is that the current philosophies of most regulators are predicated on three assumptions that no longer hold true:

- First, that telecommunications mainly concerns voice calls.
- Second, that telecoms networks are in effect natural monopolies.
- And third, that in most cases the firm that owns the network also provides the service.

However, broadband technology has overturned all three assumptions. Around the world, new networks are being built at huge expense and existing networks are being upgraded. Most will carry voice, video, data and who knows what else. They will also provide most customers with a choice of ways to get on to the network — i.e., the internet itself. The age of monopoly telecoms networks is passing quickly. Moreover, there has been a rapid decoupling of the firm that owns the physical network from the company that supplies the services atop it.

Regulators everywhere need to take into account these shifts in business and technology when they write new rules. As the traditional telecoms networks fade into obsolescence and new broadband-internet connections become the norm, the best way to regulate is to dust off the classic telecoms principle of non-discrimination and adapt it to modern times. In the past, this referred to the rule that phone companies would not interfere with or degrade service for customers of rival operators. Today non-discrimination should mean regulators must treat all networks equally, rather than distinguishing between the different sorts of technologies that provide access, be it cable, fibre, wireless, power-line or DSL over copper wires. This is something America's 1996 Telecoms Act failed to do, and requires fixing now that Congress has signalled an interest in revising the law. This approach of non-discrimination among access technologies will provide an environment that will aid investment and enable competition to flourish.”

Rwanda will soon have available three networks with almost complete nationwide coverage, offering mobile, Broadband and in two cases fixed line coverage.

Appendix 1: ITU Data

	Population		GDP		Total Telephone Subscribers		Cellular mobile subscribers					Main Telephone Lines			Main Telephone Lines per 1000 inhabitants		
	Total (M)	Density (per km)	Total GDP (B US\$)	Per Capital (US\$)	Total (k)	Per 100 Inhabitants	k	k	CAGR (%)	Per 100 inhabitants	As % of total subscribers	(000s)		CAGR (%)			CAGR (%)
												2005	2005				
Burundi	7.55	271	0.7	96	128.3	1.82	16.30	153.0	56.5	2.03	84.70	20.00	27.70	8.50	0.30	0.39	7.20
Congo, Dem. Rep.	314.55	134	6.5	120	2756.6	0.88	15.00	2600.0	180.4	0.83	-	9.80	10.00	1.00	0.02	0.02	-
Ethiopia	77.43	63	6.3	96	532.8	0.77	17.80	178.0	77.9	0.25	29.00	231.90	435.00	23.30	0.37	0.63	19.70
Liberia	3.28	29	0.6	174	8.8	0.28	1.50	160.0	154.5	4.87	-	6.70	6.90	1.50	0.21	0.21	0.20
Guinea-Bissau	1.34	37	0.3	214	11.8	0.92	-	67.0	-	5.01	86.40	11.10	10.60	-1.70	0.93	0.82	-3.80
Malawi	12.88	137	1.9	152	532.0	4.13	49.00	429.3	54.4	3.33	80.70	46.40	102.70	17.20	0.45	0.80	12.20
Eritrea	4.40	36	0.6	146	78.2	1.78	-	40.4	-	0.92	51.70	30.60	37.70	4.30	0.84	0.86	0.50
Niger	13.96	12	3.0	244	172.4	1.39	2.10	228.0	156.4	1.63	90.40	20.00	24.10	4.80	0.19	0.19	1.10
Rwanda	9.04	343	1.8	210	161.7	1.91	39.00	290.0	49.4	3.21	92.70	17.60	23.00	6.90	0.23	0.27	4.50
Sierra Leone	5.35	76	1.1	216	91.0	1.84	11.90	113.2	111.7	2.28	-	19.00	24.00	12.40	0.39	0.48	11.30
Chad	9.75	8	3.9	445	136.0	1.54	5.50	210.0	107.2	2.15	94.20	10.30	13.00	6.10	0.14	0.15	1.70
Uganda	28.82	120	6.4	251	1625.9	5.64	126.90	1525.1	64.4	5.29	93.80	61.70	100.80	10.30	0.27	0.35	5.50
Mozambique	19.79	25	3.9	217	777.7	4.10	51.10	1220.0	88.6	6.16	94.60	85.70	69.70	-5.00	0.50	0.37	-7.30
Gambia, The	1.52	142	0.4	270	291.5	19.21	5.60	247.5	113.3	16.31	84.90	33.30	44.00	5.70	2.65	2.90	1.80
Madagascar	18.61	31	5.9	362	571.6	3.07	63.10	504.7	51.6	2.71	88.30	55.00	66.90	4.00	0.36	0.36	-0.30
CAR	4.04	6	1.3	329	70.0	1.79	5.00	60.0	86.4	1.53	85.70	9.50	10.00	1.40	0.26	0.26	-0.60
Togo	6.14	108	2.0	404	280.6	5.61	50.00	690.0	69.0	11.23	91.90	42.80	60.60	12.30	0.92	1.21	9.50
Tanzania	38.33	41	9.7	282	2090.4	5.55	110.50	1942.0	104.7	5.16	92.90	173.60	148.40	-3.90	0.53	0.39	-7.20
Kenya	34.26	59	16.1	496	4893.7	14.29	127.40	4612.0	105.0	13.46	94.2	291.7	281.8	-0.7	0.95	0.82	-2.9

Appendix 2: List of Principal Meetings

Date	Person	Position	Organisation
02-05-2006	Peter Fullarton	Acting Executive Director	RITA
02-05-2006	Innocent Muhizi	Deputy Executive Director	RITA
02-05-2006	François Zimulinda	Managing Director	RURA
02-05-2006	Raphael Mmasi	Director	e-Rwanda
02-05-2006	Jean Baptiste Mutabazi	Director of Communications	RURA
03-05-2006	RURA and RITA	Abortive	
08-05-2006	Jean Baptiste Mutabazi	Director of Communications	RURA
08-05-2006	RURA and RITA	Abortive	
09-05-2006	Baloko Makala	ICT	MININFRA
09-05-2006	Peter Mardadi	CEO	ISPA
10-05-2006	Jerome Bezzina	CITPO Global	World Bank
11-05-2006	Andrew Rugege	Manager	ASRTEL
11-05-2006	George Mulamula	Director	KIST ICT Center
12-05-2006	Gary Clark	COO	TERRACOM
12-05-2006	World Bank Mission		
15-05-2006	François Zimulinda	Managing Director	RURA
17-05-2006	Per Erikson	CEO	MTN
18-05-2006	John Mirenge	CEO	Electrogaz
19-05-2006	Peter Fullarton	Acting Executive Director	RITA
22-05-2006	Jean Baptiste Mutabazi	Director of Communications	RURA
24-05-2006	ISPA Seminar	RITA	Kigali
24-05-2006	Round Table	Inception Report	Kigali
25-05-2006	Baloko Makala	ICT	MININFRA
25-05-2006	Salvator Niyibizi	e-Government Manager	RITA
26-05-2006	Alloys Kanamugire	Lines Manager	Electrogaz
27-05-2006	Hon Albert Butare	Minister Communications	MINIFRA
29-05-2006	Baloko Makala	ICT	MININFRA
01-06-2006	RETREAT		
06-06-2006	Peter Mardadi	Manager	ISPA
07-06-2006	Jean Baptiste Mutabazi	Director of Communications	RURA
07-06-2006	François Zimulinda	Managing Director	RURA
09-06-2006	François Zimulinda	Managing Director	RURA
09-06-2006	Lamin Jabbi	Consultant	RURA
12-06-2006	Prof. Romain Murenzi	Minister of Technology etc	President's Office
13-06-2006	Seminar Presentation	For Minister Communications	RITA
13-06-2006	Roger Munyampenda	Managing Director	SIMTEL