2007 Uganda
Telecommunications
Sector Performance Review
a supply side analysis of policy outcomes

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Disclaimer: The views expressed in this document are those of the authors, not the organisations they are attached to or work for.

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<td>CDMA</td>
<td>Code Division Multiple Access</td>
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<td>COMESA</td>
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<td>National Telecommunications Operator</td>
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<td>OECD</td>
<td>Organisation for Economic Co-operation and Development</td>
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<td>PABX</td>
<td>Private Automatic Branch eXchange</td>
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<td>Poverty Eradication Action Programme</td>
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<td>Point of Presence</td>
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BACKGROUND
The Uganda Telecommunications sector has been in a state of policy and regulatory flux since the beginning of 2005, due to the impending end of the duopoly period. This review, building on two earlier reviews, examines and critiques sector performance during the period from late 2005 to the end of 2006.

- In June 2006, the Ministry of Information and Communication Technology was set up;
- Ministerial Policy Guidelines issued on 13 October 2006 ushered in full liberalisation of the Telecommunications Sector in Uganda;
- Uganda has embarked on an ambitious US$100 million programme of establishing a national data transmission backbone as well as e-government infrastructure;
- Two groups of companies are now offering regional roaming (Kenya, Tanzania, Uganda) at no cost: local rates apply to calls.

POLICY AND REGULATORY ENVIRONMENT
Current reforms were motivated by the realisation that the development of the sector, especially the establishment of the core backbone infrastructure, cannot be left solely to the private sector. Public Private Sector Partnerships (PPPs) are now recognised and accepted as vital for an acceptably fast permeation of infrastructure, and affordable access. Additionally, the distinctive elements of ICT are now recognised by most of the key players, who realise that they will not be marginalised. The reforms culminated in the setting up of the Ministry of Information and Communication Technology, providing unified policy oversight.

Whereas steps towards convergence have been taken at political and policy levels, legislation and regulation remain discreetly distributed, with the Uganda Communications Commission (UCC) being the independent regulator for telecommunications, The Uganda Broadcasting Council (UBC) for broadcasting, and the Media Council for the print media. This needs to be addressed through the establishment of a single united regulator for the ICT sectors. The Uganda Communications Tribunal provided for in the 1997 Act has still not been appointed. This defeats the objective of fast decisions about appeals, disadvantaging the sector.
On 11 May 2006, the Minister responsible for telecommunications issued guidelines to UCC as an interim response to the end of the duopoly. This was followed on 13 October 2006 by further guidelines to UCC by the new Minister of ICT, giving policy direction for the full liberalisation of the telecommunications sector by 1 November 2006, opening up competition in all aspects of telecommunications.

The new policy goals focus on the ubiquity of telecommunications infrastructure and services to enable planned human development, the equitable delivery of information and service needs to all sectors of society, addressing availability, accessibility and affordability, and growth of the production sector that, hitherto, have not been key considerations.

Specific targets focus on delivering broadband access to all units of local government as well as all educational institutions at all levels, and to all government health units. These targets will be achieved by implementing a national data backbone through a PPP, thus enabling private sector operators to achieve nationwide coverage with minimum investment. Parallel with this is the targeting of the more affluent sections of society through the private sector to achieve a universal service level of 20% (currently 4.2%) and data connectivity of at least 64KBps to 10% of households (currently less than 1%).

Following the 13 October 2006 Ministerial Guidelines, UCC established a new licensing regime becoming effective on 2 January 2007. The new licence categories are:

**Infrastructure Licences**
The Infrastructure licences permit holders to establish and operate telecommunication infrastructure, with a requirement to permit service providers access on a non-discriminatory commercial basis.

**Service Licences**
Service Licences permit holders to provide services, using infrastructure provided by infrastructure licensees. They can also establish their own infrastructure if licensed to do so.

**Performance of the Telecommunications Sector**
During 2005, the level of investment declined as operators waited to hear Government’s decision on the structure of the market after the duopoly. The 2004 sector review noted that this was expected. Another upsurge in investment levels is expected with the latest opening-up of the sector to further competition under the new regime.

Growth has continued to be dominated by the mobile sector, but with a reducing rate of growth. The reducing rate of growth can be attributed to price-based saturation effects under the current marketing regime,
compounded by the increasing taxation on mobile services. Initiatives and innovations, including near free handsets, public investment in the roll-out of basic connectivity, increased competition that forces increased market efficiency, and delivery of voice services through data, will be major factors in pushing access and utilisation to a new and higher price-based saturation level.

The Rural Communications Development Fund (RCDF), raised through a levy of 1% on operators’ gross annual revenues, has continued to contribute significantly to the increased penetration of pay phones around the country. RCDF has partnered with bodies such as the World Bank and the International Telecommunications Union (ITU). By the end of 2006 the Fund had supported the establishment of or supported Internet cafes, ICT Training Centres, Internet points of presence, and a modest number of payphones in 56 districts. A major part of the RCD programme was implemented during 2006, and it is difficult to evaluate impact at this point in time.

By the end of 2005 there was coverage in all the 56 districts of Uganda, even if in many cases, this was confined to a small area of the entire district. There are now 80 districts and, some of these may not be covered, especially since re-districting has occurred exclusively in the rural areas. With the recognition by Government and the public of the value of ICT, and the desire to deploy e-government and e-governance, a formal decision to implement the National Backbone Infrastructure (NBI) and the E-government Infrastructure (EGI) as public funded projects was taken in the second half of 2006, with one of the objectives being the establishment of high capacity links to all districts. The estimated cost of the NBI and EGI is about US$100 million. A related policy decision aimed at international connectivity is remaining open to and supporting all initiatives that will provide access to the global information infrastructure (GII). This includes the EASSy cable.

The increasing number of subscribers, increasing efficiency of operations resulting from the introduction of competition in the sector, and the increasing numbers of operators have led to a continued growth in sector turnover and increasing contribution to GDP. Direct or full-time staff and total staff now stand at just under 6,000, while those working in related industry/businesses generated by the sector stand at about 300,000. This number is expected to increase with the full liberalisation of the sector.

With regard to tariffs, the general trend has been a decrease, with the exception being calls from or to fixed lines in East Africa whose costs have shown an upward trend. It should be noted that, specifically for the pre-paid market, the imposition of excise duty has had a negative impact on tariffs and usage. Celtel, operating in each of the countries, intro-
duced a new competition frontier by eliminating charges for receiving calls when roaming, and allowing the customers to make calls at local rates of countries visited within East Africa. A consortium of MTN in Uganda, Safaricom in Kenya, and Vodacom in Tanzania rapidly followed suit. This is an international first.

Internet usage remains very low. The number of subscriber accounts stood at 11,000 in June 2006. Total incoming and outgoing international Internet bandwidth is less than 200MBps - extremely low for the size of the population and the economy. Most users of the Internet in Uganda are in the capital, Kampala. It is expected that the full liberalisation of the sector and the national backbone will increase the penetration of Internet around the country.

**Government ICT Usage**

From a survey of 18 ministries and 4 statutory bodies, it was established that there are generally inadequate ICT infrastructure and access, limited competent technical staff and insufficient budgetary allocations to sustain ICT services. Government ICT-usage, based on statistics, looks good, but the reality is that facilities are used largely for email and document processing. The real value that comes from an effective intranet, offering services to citizens on line and running information systems has not been realised. It was also noted that there are several uncoordinated initiatives at various levels, mainly focused around e-government and improvement of service delivery.

A service delivery approach that is in line with the decentralisation policy, with a holistic strategy that takes into consideration other non-technology issues like business process re-engineering, a focus on staff re-training to optimally utilise these new technologies, changing people’s mindsets and putting in place enabling policies, are strongly recommended.

**Regulatory Perception**

Lack of easily accessible, complete and understandable information appears to be a major contributing factor to regulatory perception. While the regulator has invested considerable resources in availing information about various regulatory processes on its website, the majority of people lack Internet access or literacy.

Most respondents perceive the licensing process to be satisfactory, but the monitoring of anti-competitive behaviour as poor or unsatisfactory. This was especially so in the aspect of interconnection where, in addition to perceived anti-competitive behaviour, consumers believe that operators have been given too much leeway.
The dominant perception regarding regulatory independence is neutral. The regulator is perceived to be doing a very good job in the allocation of scarce resources, and an excellent job of providing information and application guidelines online. Conversely, the majority of respondents felt that the regulator’s performance was unsatisfactory or poor with respect to tariff regulation. Indeed most respondents assume that tariffs charged in Uganda are some of the highest in the region.

About 40% of the respondents thought that progress towards universal access is poor or unsatisfactory, 40% gave a neutral response, and 20% thought it is satisfactory or excellent. The limiting factor here is in reality affordability rather than the coverage aspect of universal access.

The purpose of the telecommunications regulatory survey methodology is not to assess only the regulator but also the entire telecommunications regulatory environment which includes the policy framework and regulatory effectiveness. In comparison, Uganda fared badly, with the third most negative perception of the eight countries surveyed, of which only two countries, Nigeria and Côte d’Ivoire were viewed positively.

FIGURE 1. TRE RESULTS FOR AFRICA

[Diagram showing TRE results for Africa]

Esselaar, Gillwald and Stork (2007)
CHALLENGES AND RECOMMENDATIONS

This review has brought out the continuing dynamism of the ICT sector in Uganda, responding at policy and regulatory levels to observed policy and implementation failures. Government has responded to most policy challenges identified in the earlier reviews (up to 2005). While not directly related to this review, government has also moved to increase the profile and content related to ICT in major national documents, including Vision 2035 (the planned successor to Vision 2025) and the Poverty Eradication Action Programme (PEAP). Challenges to the success of the new policy initiatives that need to be recognised and addressed include:

- Regulation. Uganda Communications Commission has been required to rapidly transform from a market structure dominated by the duopoly to a fully liberalised market. New approaches and appropriate capacity-building are required to ensure that regulatory failure does not negate the policy objectives of government. Secondly, Uganda needs to look into establishing a single unified regulator responsible for all the ICT sectors;
- Laws. As noted in the detailed discussion, many laws (eg competition law) that are required to enable a fully liberalised data-centric sector are not yet in place;
- Public infrastructure. Investments like the National Data Backbone will need proper governance and operation to ensure that they do not destructively distort the market;
- Government re-engineering. The service delivery approach that is core to the e-government initiative will only be achieved if it goes hand in hand with a holistic strategy that takes into consideration non-technology issues like business process re-engineering, government restructuring to match new processes, and a focus on staff retraining to optimally work in an ICT-enabled environment.

It remains to be seen, over the next two years or so, how the new policy directions will impact on access, affordability and, at the higher level, development.

3 It should be stated that the current official minimum wage is above US$4 per day.
Background

The Uganda Telecommunications sector has been in a state of policy and regulatory flux since the beginning of 2005. This was caused by the impending end of the duopoly period, the defining pillar of the market structure since reform started, and the consequent assessment and review of the policy.


- Ministerial Policy Guidelines issued on 11 May 2006 opened up the service market of the Telecommunications Sector in Uganda to full competition;
- In June 2006, Uganda recognised the importance of ICT to national development by setting up a Ministry of Information and Communication Technology;
- Ministerial Policy Guidelines issued on 13 October 2006 ushered in full liberalisation of the Telecommunications Sector in Uganda by opening up all aspects to unlimited competition;
- Uganda has embarked on an ambitious US$100 million programme of establishing a national data transmission backbone as well as e-government infrastructure;
- Two groups of companies are now offering regional roaming (Kenya, Tanzania, Uganda) at no cost: local rates apply to all calls.
**Policy and Regulatory Environment**

**HISTORICAL MOTIVATION FOR REFORM AND THE REFORM PROCESS**

As discussed in the earlier reviews cited, the primary motivation for the initial reform was not improved sector performance, but elimination of the high recurrent subsidy for the government-owned monopoly, Uganda Posts and Telecommunications Ltd (UP&TC). The appreciation that poor telecommunication services are an impediment to investment and the socio-economic benefits of ensuring universal access were secondary issues at the time this reform started. Although this resulted in the establishment of one of the most liberal regulatory environments on the African continent at the time, and the creation of a regulatory agency that is markedly independent, the emergent sector policy was not conceived holistically as a means of responding to the greater challenge of sustainable human development.

Subsequently, the sector was opened up to competition initially through the licensing of CelTel in September 1993 to provide nationwide mobile services and other “value added” services. MTN (U) Ltd was licensed in 1998 as a second national telecom operator, Uganda Telecom Limited - UTL, to compete with the successor to UP&TC. UTL was privatised in June 2000 and its licence became effective 25 July 2000, which began the five year exclusivity granted to the two National Telecom Operators (NTOs). This period of limited competition in basic telephony service, cellular telecommunications services and satellite services was over time blamed for stifling innovation and development of the telecom sector, as well as hindering uptake of ICT in other sectors.

Before the end of the exclusivity period, the Minister responsible for communications asked the Uganda Communications Commission (UCC) to spearhead the review of the Telecommunications Policy. The weaknesses in the first policy having been noted, a holistic approach, seeking to create a telecommunications environment that is responsive to the development needs of the country, was taken. Extensive consultations with the various stakeholders (private and public sector included) were undertaken during this review process, giving it national ownership among the various stakeholders.

**MOTIVATION AND CONTEXT FOR CURRENT REFORMS**

Various factors have shaped the motivation and thinking around the current process of sector reform.

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2 *The Uganda Telecommunications Sector Review*, FF Tusubira, Irene Kaggwa and Fred Mukholl, 2004

3 This was an explicit recognition of the capacity limitation within the Ministry, which is responsible for policy, to carry out a review.
The realisation that the development of the sector, especially the establishment of the core backbone infrastructure, cannot be left solely to the private sector, was the first concern. This was based on a key finding of the 2005 ICT Access and Usage Survey that contained results of an E-Usage survey funded mainly by the Uganda Communications Commission. Public Private Sector Partnerships (PPPs) are now recognised and accepted as vital for an acceptably fast penetration of telecommunications infrastructure as well as affordable access.

The second has been a territorial factor; the proponents of Telecommunications, Information Technology, and Broadcasting in Uganda were over a long period driven by divergent agendas. There has more recently been a gradual resolution of differences and acceptance of the mutual interdependence of the sectors and the players. This meant that even when the sectors were under different political guidance, the players established informal, semi-formal, and sometimes formal methods of collaboration. The distinctive elements of ICT are now recognised by most of the key players who do not feel that they will be marginalised. This has led to a coalescing of various stakeholder interests, ranging from the private sector to government, arguing against the marginalisation of ICT at the political level. Two key fora were:

- the stakeholder forum, chaired by the National Planning Authority, that proposed the consistent integration of ICT into the Poverty Eradication Action Plan (PEAP) III, and into Vision 2035 (successor to Vision 2025);
- the Presidential Investment Roundtable (PIRT), ICT sub-sector, a largely private sector forum that made recommendations to the President on key ICT initiatives.

The political profile of ICT has consequently been raised, culminating in the formal adoption by Government of ICT as a key priority, and the setting up of a Ministry of Information and Communication Technology, bringing, for the first time, political-level convergence in the sector. A last frontier here is the continuing exclusion from the new Ministry of the technical aspects of broadcasting: These are still under the authority of the Ministry of Information, the main propaganda arm of Government.

Finally, there is the national experience of Ugandans, always strongly voiced, of the benefits of full liberalisation in terms of greater choice and fairer prices in all sectors.

On 11 May 2006, prior to the formal adoption of the new sector policy and eleven months after the end of the duopoly (which was therefore de facto extended), the Minister responsible for telecommunications, driven by a public outcry, issued guidelines to UCC as an interim response to the end
of the duopoly. These guidelines were a formalisation of some recommenda-
tions in the proposed revised sector policy. This was followed on 13
October 2006 summary, by further guidelines in summary from the new
Minister of ICT, giving policy direction to UCC for the full liberalisation
of the telecommunications sector by 1 November 2006, opening up unlimited
competition in all aspects of telecommunications.

It must be noted that the key features of the current reform have all come
into effect at the time of review, and will not impact on performance as
presented in this discussion.

**Sector Policy and Policy Objectives**

In the formal proposition of the new policy, it was noted by Government
that while the first policy more than achieved its objectives, and despite
the good regulatory environment in Uganda, many shortcomings still
remain. The most telling weakness in the earlier policy was the purely
infrastructural focus that was not in any way related to the national
development goals and plans. Consequently, while what was planned
was achieved, the level of penetration of telecommunication services
still remains too low to provide the necessary efficiency in service
delivery as well as social and economic transactions to support develop-
ment plans. Levels of availability, accessibility and affordability of
telcom services still remain low, with hardly any integration of ICT in
the daily activities or the service delivery in areas such as education,
health, agriculture, governance, and business. This is compounded by
inadequate consumer awareness and empowerment, resulting in a lack
of understanding of benefits, rights and opportunities presented by
telecommunication services.

With this background, government has adopted a policy framework that
takes as its central pillar the crucial roles that easy access to relevant
information, and efficient communications, play in supporting human
development and underscoring the necessity of ensuring equitable
access to telecommunication services for all the citizens of Uganda
through an enabled and competitive private sector. In the policy frame-
work, government recognises through the experience of the previous ten
years that a purely commercial approach would marginalise the major-
ity of citizens, and has therefore made universal access supported by
appropriate Public Private Partnerships (PPPs) a key policy objective.

The policy goals focus on the ubiquity of telecommunication infrastruc-
ture and services that will enable sustainable human development
through ease and affordability of access to relevant, accurate and timely
information. Such infrastructure is planned to provide the platform for
the delivery of the high-level information and service needs to all sectors
of society. E-government and e-governance are therefore necessarily key
objectives of the policy.

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4 This position is encapsulated from the original policy proposals as well as from the Ministry of ICT
synthesis of the issues.
For the first time, and recognising that it is not sustainable for a country like Uganda to rely on imports for all hard and soft ICT resources, the policy also aims at promoting the growth of the production and service export sectors. This will include stimulating and supporting research and development, fabrication and manufacturing, training, consultancy, outsourcing services, etc.

There are two categories of specific objectives, all to be achieved by 2010:

- **Category 1** provides for Institutional Data Access Points of speeds not less than 256KBps for all government-aided educational institutions at all levels, all government health units, population centres in units of 1,000 people, agricultural extension units and other public institutions, and all sub-counties. Public voice will be even more extensive, as far down as village level. To enable all these, a National Data Transmission Backbone is planned to connect to all the administrative districts of Uganda, providing a data-centric route for data, voice and multi-media communication. This category has the purpose of achieving universal access objectives aimed at enabling the human development plans and supporting various government service delivery sectors. These will be realised through fulfilment of licence obligations, the Rural Communications Development Fund; and major PPPs such as the implementation of the National Data Backbone.

- **Category 2** is intended to address sectors of the population that can afford commercial services. The specific objectives here of achieving a universal service target of 20% of the projected population, up from the current 4.2%; and Internet connection at greater than 64KBps to at least 10% of households in the country, up from the current figure that is less than 1%, are planned to be achieved largely through market liberalisation, fair competition and tariff regulation.

**Market Structure**

Until mid-2006 the market consisted of two types of providers: the major operators (UTL, MTN and Celtel) providing the voice services and related functions, and the minor licensees consisting of ISPs as well as block wiring and equipment vending companies. The numbers of companies licensed respectively by September 2006 are shown in Table 1.
Despite the restriction on satellite access, the number of ISPs licensed increased particularly in 2004 and 2005, due to speculation on the lifting of restrictions. Many of these speculators were not able to start operations, particularly because of the delay in the pronouncement of a new policy and therefore the de facto extension of the duopoly. One of the requirements of the licence was commencement of operations within 12 months of execution of the licence. Failure to achieve this was grounds for revocation of licence. The enforcement of this provision explains why the actual number of ISPs in Table 1 decreased. Some of the ISPs that acquired licences prior to the commencement of the duopoly did manage to begin operations, although they felt that there were significant barriers to effective competition arising from the restrictions on satellite access. It was their perception that the lack of their own international data gateways disadvantaged them immensely by preventing them from taking advantage of cheap offers of bandwidth on the international market.

\footnote{See \url{http://www.uce.co.ug/marketInfo/about.html}}
The May 2006 Ministerial Guidelines permitted UCC to open up the provision of communications services (voice and data) to full competition while still maintaining restrictions on provision or ownership of infrastructure. After stakeholder consultations, UCC designed a new licensing regime that came into effect on 14 August 2006. This new regime is technology neutral in that licences are not issued based on the technology or mobility of the service but on the recognition that voice and data can now be provided over the same transport platform. All already existing ISPs have been permitted to move to this regime, enabling the full utilisation of their networks and providing them with the flexibility to embrace the benefits of development through the capabilities of technologies associated with the Internet.

The market has also been opened up to providers of calling card services, accepting provision of services by providers outside Uganda. This is a service in which there has been a lot of interest shown but that was restricted by the provisions of the duopoly arrangement. The launch of the Ulaya International Calling shop was certainly welcomed, especially by the Asian community, for international calling. The effect of these services on the international tariffs in the sector remains to be seen.

Following 13 October 2006 Ministerial Guidelines, UCC defined a new licensing regime to become effective on 2 January 2007. Under the new licensing regime the market is shaped through the following licence categories and provisions:

**Infrastructure Licences**
The Infrastructure licencees permit holders to establish and operate telecommunication infrastructure. Public infrastructure licensees are required to permit service providers access to their infrastructure on a non-discriminatory commercial basis. Within this category, PPPs will be used to establish nationwide infrastructure, eliminating the need for direct roll-out obligations.

**Service Licences**
Service licencees permit holders to provide services, using infrastructure provided by infrastructure licencees. Service providers can also establish their own infrastructure upon acquiring an infrastructure licence. As part of the licensing regime, operators who achieve dominant market share in infrastructure or services will be subject to price regulation. In addition, operators who, for historical or other reasons offer both infrastructure and services, will be required to have separation in accounting between the infrastructure and services sides of their operations, with a clear distinction between wholesale and retail operations.
INSTITUTIONAL ARRANGEMENTS

Figure 2 shows the institutional arrangement in place for the governance of the telecommunications sector.

FIGURE 2. INSTITUTIONAL ARRANGEMENTS FOR SECTOR GOVERNANCE

POLICY OVERSIGHT
The Ministry of Works, Housing and Communications was previously responsible for the sector’s oversight and policy direction. The sector was therefore marginalised by the priorities of roads, airports, and housing. As pointed out earlier in the discussion, the new Cabinet structure has addressed this challenge, with the exception of the technical side of broadcasting that still falls under the Ministry of Information. This needs to be addressed, especially in the interests of effective spectrum management for the benefit of the entire ICT sector.

REGULATORY FRAMEWORK
Whereas steps towards convergence have been taken at ministerial level with the creation of the unified ministry, legislation and regulation remain discreetly distributed, with UCC being the independent regulator for Communication, the Broadcasting Council (BC) for broadcasting and the Media Council for the media. There is no clear direction as to which body is responsible for Internet content. This arrangement greatly disadvantages broadcasters as they have to deal with two bodies, BC for permission to broadcast and UCC for the spectrum to set up the required broadcast network. This needs to be addressed through the establishment of a converged regulator.

In the absence of a Competition Law, the promotion of fair competition in the communications sector is being handled by UCC under the provisions of the Communications Act.
APPEAL PROCESS
The Uganda Communications Tribunal provided for in the Act has still not been appointed. Complaints and disputes against or not satisfactorily handled by UCC are often taken to the ordinary courts of Law. This defeats the objective of fast decisions about appeals, a disadvantage for the sector.
PERFORMANCE OF THE TELECOMMUNICATIONS SECTOR

In this section, the performance of the telecommunications sector is discussed within the macro context of the national economy.

INVESTMENT

Investment trends in the communications sector in Uganda generally showed an increase after the introduction of competition in 1995 and until 2003. There was a decrease during 2003 as illustrated in Figure 3, and an increase in 2004 with the expansion of Code Division Multiple Access (CDMA) technology in the provision of fixed telephony (in an effort to fulfil licence obligations).

During 2005 the level of investment declined again as operators waited to hear Government’s decision on the structure of the market after the duopoly. This expectation was reflected in the 2004 sector review. The decrease was compounded by increased costs of offering the services arising out of the increased electricity shortages that have plagued industry in Uganda, necessitating increased dependence on diesel generators in an environment of increasing fuel costs, and the continuing and increased tax on airtime for mobile phones (12% excise duty and 18% Value Added Tax).

FIGURE 3. COMMUNICATION SECTOR INVESTMENT IN UGX, 2001 - 2005

Another upsurge in investment is expected with the latest opening up of the sector to further competition under the new regime.
NUMBER OF SUBSCRIBERS

The benefits of introducing competition in the communication sector in Uganda, and the resulting greater coverage and lower prices, are seen through the increased number of subscribers. The number of phones (fixed plus mobile)\(^6\) per 100 inhabitants continued to grow, reaching a penetration of 5.98 in 2004, with most growth occurring in the number of mobile subscribers as shown in Figure 4.

Although the number of mobile subscribers grew, the rate of growth has declined since 2003. This can be attributed to price-based saturation effects under the current marketing regime: firstly, the cost of mobiles (about US$30 for the lowest priced units) is a barrier, and secondly, the actual cost of services remains well above the disposable income of the major percentage of the population, especially those in the rural areas. This is compounded by the increasing taxation on pre-paid mobile services - the basic access platform for the majority of the poorer section of society. New approaches and initiatives, for example nearly free handsets, public investment in the roll-out of basic connectivity, increased competition that forces increased market efficiency, and delivery of voice services through data, will be major factors in pushing access and utilisation to a new and higher price-based saturation level. Communal forms of service access such as pay-phone facilities remain of significance in achieving universal access.

It is observed that the fixed-line market that for a long time had been almost stagnant, started growing again after 2003. This was boosted by the introduction of wireless fixed-line services using CDMA, which helped overcome the traditional barrier of time to obtain a line, for long a deterrent to many and therefore a strong incentive for mobile use. Although the connection fees associated with CDMA are slightly higher than those associated with traditional copper line, the call tariffs are the same.

**FIGURE 4. GROWTH TRENDS IN TELEPHONE LINES (FIXED WIRE LINE AND CELLULAR) IN UGANDA**

\(^6\) The authors must observe that while they combine the numbers of fixed and mobiles as is now common, it is intrinsically incorrect to do so, since each has advantages and disadvantages distinct from the other.
With similar payphone obligations placed on the three voice operators, innovation to achieve these while making a profit was stimulated. Learning from the success of the private phone kiosks, which had an added attraction of a human interface to assist the user, the conventional wired coin-operated payphone has been largely replaced by fixed wireless phones mounted in offices or kiosk boxes with a human attendant or mediator. Even the old wired payphones now have attendants at hand with phone cards that allow persons to utilise the phone for as long as they need, without having to buy a phone card. Power is still an issue for fixed wireless phones, and the option of using solar panels is not attractive to the operators due to cost.

Competition in payphone installation has also resulted in innovative pricing. The common language in phone use within Uganda refers to call time in terms of units. Previously, a unit would be understood to be one minute. However, UTL decided to market its call time on pay phones in units of 15 seconds at UGX100 per unit. While it is inherently more expensive to buy 15 seconds, it easier for many people to raise the UGX100 than the UGX200 charged by competitor MTN for a full minute, especially since the 15 seconds are sufficient to pass a message. From a social perspective, it is also interesting to see the transformative nature of the use of shorter units on communication; the traditional extended greeting is being increasingly forgotten.

**Rural Communications Development**

The Rural Communications Development Fund (RCDF), raised through a levy (currently 1% and limited by law to 2.5%) on gross annual revenues of operators (major and minor), has continued to contribute significantly to the increased penetration of payphones around the country.

The RCDF has been used to establish basic communications (at least one voice access point for units of 2,500 people) nationwide, provide an Internet point of presence in the capital of each administrative district, support an ICT training institution in each such district, and generally promote the provision of communications services in rural areas as a profitable business. RCDF-supported projects have been implemented through a PPP approach, with additional funding and support from bodies such as the World Bank and the International Telecommunications Union (ITU). By the end of 2006, the Fund had supported the establishment of 55 Internet cafes, 55 ICT training centres, 13 multi-purpose telecentres, 820 payphones, district web portals for 54 districts, and 52 district Internet PoPs. Twenty-four new administrative districts have been recently created, and these must also now be addressed.

A major part of the RCD programme was implemented during 2006, and it is difficult to evaluate impact at this point in time. It must also be appreciated that with multiple development initiatives, the passage of
time will increase the challenge of attribution. However, the following qualitative remarks can be made about the project:

- The payphones established have contributed to improving access to the population in terms of average distance to facilities. However, in many cases, the installation of these facilities has followed the presence of network signal, implying that a significant portion of Ugandans in rural areas still do not have access to telephony services within reasonable distance;

- The size of a district in Uganda ranges from 1,827 km$^2$ to about 10,000 km$^2$. Therefore one café or ICT training centre, in most cases located in the district capital, is a drop in the ocean.

- The use of facilities for Internet access and email is still very low due to a multiplicity of reasons that will be discussed later in this study;

- The limited distribution network, coupled with the current acute shortages that have plagued the nation despite having a wide reaching national power grid, severely impact on the performance of the RCDF, due to dependence of systems on mains power. The use of alternatives such as solar power and generators needs to be integrated into the programme; they pose a significant capital cost and, in the case of generators, recurrent cost challenges that need to be taken into account as part of project design.

- The creation of district web portals has been one of the successes of the RCDF. The web portals contain information on various sectors (education, agriculture, etc) as they relate to each district, and have even been translated into three dominant local languages/dialects. There is, however, no indication of the extent of usage and utilisation of the online information. Secondly, the responsibility for content update and management falls on districts that in most cases ignore this responsibility; making the portals more cosmetic than a useful aide to development.

- One of the initial challenges to the growth of Internet in Uganda was highlighted as being the significant disadvantage of users outside of Kampala who had to pay a lot more for access. The establishment of Internet PoPs in districts was expected to alleviate this situation, but access policies and limited availability of the PoPs to other providers has reduced the expected benefit. Available bandwidths have also been generally low. This was realised from the mid-term review, and subsequent subsidy agreements have been refined to prescribe minimum bandwidths at PoPs.
One of the major challenges to provision of services in rural areas has always been sustainability. In light of some of the challenges mentioned above as well as low demand for the services, the likelihood of survival or sustainability of some of the activities supported is reduced.

RCDF has also met with market challenges in terms of ensuring that competition is not distorted by subsidies offered under the program.

**Coverage**

By the end of 2005, there was coverage in all the 56 districts of Uganda, even if in many cases, this was confined to a small area of the entire district. At the time of writing this paper, the number of districts had been increased to 80, and inevitably some of these are not covered, especially since re-districting has occurred exclusively in the rural areas.

Coverage relies on a mix of backhaul and distribution technologies, all being the choice of the service providers: GSM, CDMA, VSAT, copper wire, and optical fibre cables.

The map in Figure 5 shows the existing cellular base stations as well as the existing optical fibre backbone.

**FIGURE 5. OPTICAL FIBRE LAYOUT AND DISTRIBUTION OF CELLULAR SITES**
During the review of the Telecommunications Policy, it was noted that the current infrastructure was not sufficient to drive development to the desired levels and meet the targets for penetration. Not much investment was expected in the area of infrastructure even if the market were to be opened up to competition. With the recognition by government and the public of the value of ICT and the desire to deploy e-government and e-governance, the need for intervention to ensure sufficient infrastructure nationally was accepted: Reform was originally focused on reducing government intervention, but the obvious market failure in achieving national coverage fast enough necessitated this change in approach. A strong statement was needed that government would not get involved in operations.

The formal decision to implement the National Backbone Infrastructure (NBI) and the E-government Infrastructure (EGI) as public funded projects (estimated cost US$100 million) was taken in the second half of 2006, with one of the objectives being the establishment of high capacity links to all districts.

This decision necessitated the formulation of specific policy to provide a framework for implementation. The task team that was set up to define scope, context, feasibility and strategy came up with policy and governance proposals that will be released for public consultation and input before formal consideration by government.

The key pillars of the policy include the implementation of e-government, making government itself more efficient and more integrated, the implementation of e-governance and the requirement for one-stop service centres for citizens in all districts and municipalities to be established, and the facilitation of access by all citizens to communications services through the implementation of the NBI that will provide carrier services extending to all districts by the year 2010 (with a provision for non-discriminatory and open access for all commercial operators so that they are enabled in supporting and achieving the universal access and universal service objectives of government).

A completely new initiative for Uganda, following the example of other countries, is the proposal for special tariffs to enable affordable access to the Internet in schools, educational institutions and health centres. If this is formally adopted by government, it will have a major impact on Internet access and use, and will ensure that the young population is Internet aware and uses this facility.

International access to the global information infrastructure (GII) remains a key challenge for a landlocked country like Uganda, and the recommended policy would promote a competitive and non-exclusive basis for such access, in recognition of the fact that competition in connecting to GII will lead to lower prices.

7 A current priority project to which the Government of Uganda is committed is the EASSy project.
There has been a mixed reaction to the government initiative, with the majority welcoming it, but with some reservations from the private sector based on protecting their investment and fear of market distortion and operational modalities. There are, however, provisions integrated into the overall proposal that should, if formally adopted, address such concerns. While the proposed governance structure places EGI under the National Information Technology Authority-Uganda, and recognises that NBI is a national strategic resource that must always be owned by government, it places emphasis on keeping government out of operations. It is proposed that the excess capacity of the NBI (ie capacity not required for e-government) will be operated commercially through a Board, and will be subject to regulation by UCC. This Board will be fully responsible for defining all structures under its authority, as well as for modalities for outsourcing services and operations to the private sector. It is recommended that the Board, consisting of at most seven members, will include representation from:

- Government;
- The Private Sector;
- Consumers;
- Civil Society Organisations;
- Selected Professional Associations.

**GROSS REVENUE**

Despite the constraints arising out of the power shortages and increased taxes, increased efficiency in operations resulting from the introduction of competition in the sector as well as the increased numbers of operators has led to a continued growth in sector turnover as shown in Figure 6.

**FIGURE 6. TOTAL GROSS REVENUE OF THE TELECOMS INDUSTRY IN UGX**

Innovations around sms (short messaging service) content and adoption of new technologies like CDMA have boosted the uptake of services and increased revenue in the sector, assisted by an increased appreciation and use of services in the sector. Micro finance schemes specific to provision of community payphone services such as the MTN Village Phone (modelled on the Bangladesh Grameen Project) and the Uno
Phone Project have served to increase access to services, especially in the rural areas.

**Impact on GDP**

The communications sector has demonstrated the highest growth rate since the introduction of competition, especially in the mobile industry as shown in Table 2. The contribution of the sector to overall GDP has exhibited continued growth over the years. The rate of growth is similar to that of sector turnover, as shown in Figure 7, and can therefore be attributed to the increased competition in the sector.

**Table 2. GDP Growth Rates at Factor Cost (Constant 1997/98 Prices)**

<table>
<thead>
<tr>
<th>Year</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
</tr>
</thead>
<tbody>
<tr>
<td>GDP growth rate (%)</td>
<td>6.5</td>
<td>4.7</td>
<td>6.5</td>
<td>5.6</td>
<td>6.5</td>
</tr>
<tr>
<td>GDP at 1997/98 (million UGX)</td>
<td>9,399,801</td>
<td>9,840,566</td>
<td>10,480,183</td>
<td>11,062,483</td>
<td>11,780,848</td>
</tr>
</tbody>
</table>

**Figure 7. Comparison of Sector Turnover and Percentage Sector Value Added to GDP at Constant Prices of 1997/98**

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8 Source: Uganda Bureau of Statistics
EMPLOYMENT
Currently, the communications industry is one of the most sought-after employers in Uganda, by members of a number of professions; engineers, technicians, accountants, lawyers, marketing persons and even pay-phone attendants. Figure 8 shows the direct or full time staff and the total staff (full time plus those working in related industry/businesses) in the sector. The introduction of competition in this sector has increased available employment opportunities by increasing the number of potential employers (operators, service providers, and application providers). Self-employment opportunities were created as more individuals discovered low capital business avenues like phone kiosks and Internet cafés. With operators carrying out a lot of outsourced activities like construction work and non-core services, further employment opportunities have been created.

FIGURE 8. EMPLOYMENT IN THE COMMUNICATIONS SECTOR

These job opportunities are expected to increase with the recent opening up of the sector to full competition.

TARIFFS
Figures 9, 10 and 11 show the price trend of calls within Uganda, to East Africa and to Europe. The following key observations can be made:
- The general trend is a very slight decrease in local call costs during the period under review. Some exceptions to this include the cost to UTL fixed lines;
- Mobile charges within East Africa have been reduced. Celtel, having a presence in Kenya, Tanzania and Uganda, established full roaming in these countries at no cost, with local rates applicable to roaming users. To remain competitive, MTN in Uganda, Safaricom in Kenya,
and Vodacom in Tanzania followed by forming an operational consortium offering regional free roaming and use of local rates;

- There is an upward trend in the cost for calls from or to fixed lines in East Africa;
- The price of calls to Europe has, in all cases, continued to decrease.

These are discussed further below.

**FIGURE 9. CALL CHARGES FOR UGANDA TELECOM LOCAL CALLS**

Earlier, fixed-line rates provided by Uganda Posts and Telecommunications Corporation were heavily characterised by cross-subsidisation. Rebalancing occurred in preparation for competition, however, it is observed that intra-network call charges have increased while calls to fixed lines of destination networks are falling. Mobile networks of other providers are also coming within range of each other. This suggests that the result of competition on local and national calls charges is that these are becoming closer to cost. The MTN trend shown in figure 10 below suggests that the technology used does not affect the price trend.

**FIGURE 10. CALL CHARGES FOR MTN UGANDA LIMITED LOCAL CALLS**
When MTN first launched its fixed-line services, these were provided over the GSM network. Later, when MTN deployed fibre around the capital, this became the platform for corporate fixed-line service. More recently, CDMA technology has become more common, replacing the GSM fixed-line service particularly for residential customers.

In the international calling market, a levelling out of prices is observed with calls to various parts of the world attracting the same charge. This is demonstrated by the graphs in Figure 11.
When the prepaid option was originally introduced, it proved more attractive than the post-paid due to the flexibility of spending only what is in hand, with no outstanding bills at the end of the month. With charges driven down while costs continue to stay high (due to factors such as unstable commercial power and taxation on airtime), more avenues to attract customers had to be found. Recent years have therefore seen more packages created within the prepaid category, including the flexibility of per second billing and charging the same tariff to all customers irrespective of time of day or the network of the party called.

Despite these positive developments, using an OECD comparative method to establish the cost of a basket for low mobile users, which would be more aligned to African mobile usage than middle or high user baskets, RIA’s comparative analysis of pricing across several African countries demonstrates that prices in Uganda remain high, as can be seen in the nominal tables below, and when adjusted for purchasing power parity are the highest of those reviewed. One of the reasons for this is the 30% duty on cellphones and services. Originally intended to tax high-income users of mobile phones, with the mass take-up of prepaid mobile services largely in the absence of traditional voice services, the tax is in fact a regressive tax on the poor, the portion of their income going to these taxes being far higher than the portion of wealthier segments of the population.

There are obvious caveats to the pricing in the table, as all markets are not evenly liberalised or tariffs rebalanced. The very low prices in Ethiopia with its very low penetration rates are unlikely to reflect cost-based prices.

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25 This figure is exceptionally high; possibly some businesses are operating from homes.
INTERNET USAGE

The Internet has been available in Uganda longer than mobile telephony service, and although the former market was more liberalised, and despite the growth in public bandwidth as shown in Figure 17, it has experienced much lower growth than the mobile industry.\(^9\) The number of subscriber accounts stood at 11 000 in June 2006.\(^{10}\)

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\(^9\) UCC estimates a penetration of 5% of the Ugandan population access the Internet at least once a month

\(^{10}\) Source: UCC. A single account can have a multitude of users since a corporate and a café would each be taken as a single account.
FIGURE 17. GROWTH OF INCOMING/OUTGOING INTERNET BANDWIDTH IN UGANDA

![Graph showing the growth of incoming/outgoing internet bandwidth in Uganda over time.]

COST OF ACCESS

Table 3 shows a sample of tariffs for an individual or home user in the Ugandan market, using different access methods.

TABLE 3. SAMPLE OF TARIFFS FOR BANDWIDTH

<table>
<thead>
<tr>
<th>Access</th>
<th>Item</th>
<th>Speed (Kbps)</th>
<th>Monthly Tariff (US$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dial-up</td>
<td>ISDN</td>
<td>9.6</td>
<td>85</td>
</tr>
<tr>
<td></td>
<td>Installation</td>
<td>56</td>
<td>90</td>
</tr>
<tr>
<td>Leased</td>
<td>Installation</td>
<td>16</td>
<td>50</td>
</tr>
<tr>
<td></td>
<td></td>
<td>32</td>
<td>450</td>
</tr>
<tr>
<td></td>
<td>64/64</td>
<td>785</td>
<td></td>
</tr>
<tr>
<td>ADSL, Frame relay</td>
<td>Installation</td>
<td>64</td>
<td>350</td>
</tr>
<tr>
<td>Wireless</td>
<td>Installation</td>
<td>64</td>
<td>350</td>
</tr>
<tr>
<td></td>
<td></td>
<td>44</td>
<td>150</td>
</tr>
<tr>
<td>VSAT</td>
<td>Installation</td>
<td>16/16</td>
<td>185</td>
</tr>
<tr>
<td></td>
<td>Installation</td>
<td>24/64</td>
<td>150</td>
</tr>
<tr>
<td></td>
<td>Installation</td>
<td>32</td>
<td>150</td>
</tr>
<tr>
<td>Large users(^{1})</td>
<td>Monthly cost</td>
<td>21,000</td>
<td>1,920 (per Mbps)</td>
</tr>
</tbody>
</table>

**Dial-up.** The introduction of Freenet by UTL brought a significant twist to the dial-up market in Uganda. Traditionally, dial-up services were associated with a subscription fee and telephony charges for time spent on line. Freenet eliminated payment of a subscription fee for its dial-up clients. As the dominant operator in fixed-line access, this made them the service provider of choice against the ISPs, whose dial-up services would still have to be accessed via UTL’s network and attracted a subscription fee as well. The introduction of Freenet posed a significant threat to the dial-up market, although its packaging would appear to ben-

\(^{1}\) This rate is for Makerere University, which is receiving bandwidth at costs far below what is typical. Many organisations that have bandwidth greater than 1Mbps typically pay roughly twice this amount.
efit customers. While UCC directed UTL to offer ISPs the same terms as it those offered between its Internet and telephony service units, enforcement of this was not followed through. However, limitations in bandwidth on Freenet have impeded take-up of the service.

Competition in dial-up has also been challenged by the use of CDMA for fixed telephony service. The mode of deployment by UTL made access to dial-up services of other ISPs very difficult, meaning that customers of UTL fixed telephony services using CDMA really have no choice of ISPs. This should be viewed as an anti-competitive practice. In the case of MTN, although charges for access to Internet using fixed phones were reasonable for a number of subscribers, the quality of service (in terms of available speeds) became degraded or reduced with growth in popularity and increase in number of users.

Dial-up services are also accessed using GSM due to the commonality of mobile services in Uganda. However, due to the cost of mobile services, this method of access to the Internet is considerably more expensive than fixed dial-up access.

Digital Subscriber Line (DSL) services have now been introduced by UTL for customers with copper fixed telephony services.

**Leased line.** The result of the exclusivity is that only UTL and MTN possess nearly nationwide networks. ISPs consequently have to rely on UTL and MTN to extend services in and outside the capital, Kampala. This dependency impacts on the quality of service (QoS) provided by the ISPs, especially as far as disruption of services due to problems on the transmission networks and connection time are concerned. Additionally, whereas the ISPs have to charge a customer the cost of the leased line in addition to cost of Internet bandwidth, UTL and MTN bundle these and only charge for the leased line, giving them an unfair competitive advantage, especially in tenders for services. Operators also reportedly use information received from ISPs in requesting leased line installations to woo customers by offering bundled packages that are obviously cheaper than the offers from the ISPs.

**Cellular telephony.** Competition in the cellular/mobile telephony market has driven innovation, resulting in the introduction of GPRS- (General Packet Radio System) based access to Internet. However, the cost of this is high, particularly due to the current method of billing based on access time rather than data throughput.

**Wireless.** Wireless access using Wifi systems has been popular since around 1999, arising out of the absence of sufficient fixed telephony last mile access and ISPs’ own infrastructure. UCC deregulated the 2.4GHz and 5.8GHz bands in a bid to promote development of the Internet in
Uganda. However, increased competition has driven providers to explore technologies such as WiMax operating in the licensed frequency bands. Cost of equipment remains the main deterrent for many Ugandans desiring to use these services.

**Satellite.** Uganda’s international access today is only via satellite. The cost of bandwidth and restrictions on satellite services under the exclusivity system have been blamed for the high cost of Internet access in Uganda.

In a bid to lower costs, four ISPs (Datanet, Africa Online, One2net and Bushnet) have formed a consortium to purchase bulk international bandwidth. VSAT (Very Small Aperture Terminal) equipment has also become cheaper internationally, and its use in Uganda has increased. The effect on the cost of access (due to the lifting of restrictions on satellite services) under the new regime is yet to be seen.

The desire for cheaper alternatives for international access – especially undersea and overland optical cables – makes the success of projects such as EASSy (East African Submarine System), and COMTEL (the telecom network to traverse COMESA countries) very important to Uganda.

**Penetration**

Most users of the Internet in Uganda are still found in the capital, Kampala. In 2002, UCC exempted operators of cyber cafés from the legal requirement to pay licence fees. This served to reduce barriers to entry into this market, encouraging faster establishment and growth of such businesses. The stiff competition in this segment of the market led to a drop in charges for services and helped increase access to Internet. however, for the overwhelming majority of Ugandans, the cost of an individual subscription with the ISPs remains way above disposable income.

It is expected that the full liberalisation of the sector that now permits any company or any individual to set up a VSAT and establish private networks, will increase the penetration of Internet around the country.

**Government ICT Usage**

**Background**

The e-government strategy\(^{12}\) emphasises the fact that while the centre of government needs to create the right conditions for e-government, it is the agencies that actually deliver government information and services and therefore deliver on e-government goals.

The strategy is focused on delivery and implementation, beginning with infrastructure to enable e-government, standardisation across government (initiatives that need to be undertaken to allow agencies to move

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\(^{12}\) The Uganda E-government (final draft) January 2006
forward and deliver e-government), and coordination between large numbers of autonomous institutions. A framework called “services delivery architecture” is central to the strategy.

Resource constraints have created a number of challenges in harnessing the potential of ICT. These include inadequate ICT infrastructure and access, limited well trained support staff (especially for information resource management), and insufficient budgetary allocations to sustain ICT services. Non-resource challenges include the negative mindset towards new ways of working (which is especially true among civil servants) and lack of enabling policies.

This background on e-government in Uganda (defining the supply-side) is the context within which government ICT usage was surveyed. It uses macro-level data on various government agencies (particularly ministries) to elicit the ICT usage status within these institutions, and to establish if and how they relate to service delivery approaches of government. Repeated surveys over time will give a trend analysis, and help the low level evaluation of how government is moving to achieve its e-government objectives.

**Methodology**

A structured questionnaire was designed based on the indicator guidelines as per the RIA! government E-Usage template. The number of questions was limited for the sake of brevity, while ensuring that all pertinent information is captured. Extra information not included in the proposal template was also included (e.g., staffing levels, categories of recurrent costs, funding periods for capital costs) to provide other related information, providing a more complete picture of the ICT setup at each ministry.

The following pertinent issues regarding the data collected are presented to inform interpretation of results of the questionnaire.

- In terms of scope/coverage, the study mainly focused on the line ministries. It excluded the Judiciary and legislature. A total of 18 ministries and four statutory bodies were surveyed. The total workforce in these, excluding classified numbers, is about 7,500. The data collected represented 95% (technical information) and 64% (financial information) of the required information from the 22 ministries/statutory bodies;

- 18% of ministries did not have full information regarding ICT annual usage costs, especially maintenance costs and phone bills. This was especially true for expenditures where there is no service contract (e.g., phone bills, one-off repairs). Additionally, no respondents had actual figures regarding investment costs over the past three years. The figures submitted were the respondent estimates. While the
questionnaire did not require identification of the funding source, most indicated donor-funded projects as the major source of IT capital investments;

- Some ministries did not indicate use of the Integrated Financial Management System (IFMS) which is still running as an independent project under the Ministry of Finance, Planning and Economic Development;
- The number of PCs indicated by the Ministry of Finance, Planning and Economic Development are inclusive of what are considered the IFMS project PCs stationed at the various ministries;
- The number of staff is all-inclusive and may potentially skew the ratios between PCs and bandwidth, as it is inclusive of a large number of support staff whose direct work does not require use of computers.

**FINDINGS**

Table 4 gives a summary of usage indicators, which are used to infer the e-usage patterns.

**TABLE 4. GOVERNMENT E-USAGE INDICATORS FOR THE MINISTRIES/ORGANISATIONS SURVEYED**

<table>
<thead>
<tr>
<th>Indicator</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>1  PCs/person</td>
<td>0.52</td>
</tr>
<tr>
<td>2  Fixed lines/person</td>
<td>0.1</td>
</tr>
<tr>
<td>3  Networked PCs/person</td>
<td>0.45</td>
</tr>
<tr>
<td>4  Bandwidth/PC</td>
<td>1.82 Kbps</td>
</tr>
<tr>
<td>5  ICT usage cost/person</td>
<td>US$250</td>
</tr>
<tr>
<td>6  ICT investment/person</td>
<td>US$850</td>
</tr>
<tr>
<td>7  Number of Government portals</td>
<td>None</td>
</tr>
</tbody>
</table>

**PCs/person.** This ranged from 0.08 (Ministry of Works, Housing and Communication) to 1.4713 (Uganda Bureau of Statistics). The average figure of 0.52 gives one computer per two employees. Taking into consideration the fact that a number of staff (particularly group employees) do not require computers for their day-to-day work, the ratio may be closer to one per one, implying a high average access rate to computing facilities. On the other hand, the usage of laptops by senior people needs to be factored in; these tend to have both a PC and a laptop per person. Secondly, many of the upper category offices have computers that are normally unused.

**Fixed lines/person.** The average of 0.1 is seemingly very impressive, especially with implementation of PABXs within most ministry buildings. This figure is, however, lower for typical staff in a ministry as it is common to find more than three lines dedicated to the sole use of one top official, leaving the rest of the staff sharing fewer lines. With the ubiquity of mobile phones for a typical worker in Uganda, which usually

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13 The number of computers is inclusive of laptops for contract staff, who are not included in the permanent staff numbers submitted.
cater for personal calls, this ratio suffices to address official business calling requirements.

**Networked PCs/person.** This ratio, which is almost the same as PCs/person, points to the increasingly high number of local area networks in government. There is however still a long way to go in ensuring that networks actually support information systems and corresponding databases that enable the efficient delivery of services. In many cases, networking only facilitates common access to the Internet through a single link.

**Bandwidth/PC.** The bandwidth of 1.80 KBps/PC is considerably below the benchmark of 8KBps/PC used by universities in sub-Saharan Africa. It can be argued that the research and learning demands of a university make greater demands on bandwidth than government. However, efficient and effective government, with heavy citizen interaction and international linkages, should have a comparable demand. This implies that Internet access is still a very big challenge and to the optimal utilisation of the potential of ICT. This challenge is attributed partly to high cost, but largely to lack of awareness of potential benefits.

**ICT Usage costs/person.** The average figure of US$250 translates to approximately US$1 per working day, which can provide Internet access of thirty minutes per day or a phone call lasting ten minutes, but excludes other maintenance costs. This is still very low. It would be useful to get comparative per person costs, for example on transport, to get a better feel for relative importance. The figure, however, does indicate that ICTs have become part and parcel of government operations.

**ICT investment/person.** The average ICT investment of US$850 per person is the cost of a standard PC in Uganda. This implies that government is in a position to equip each employee with a PC within one year. It is, however, noted that a large portion of these funds goes into infrastructure and systems for the central services like the information systems, servers, and back-up resources. Secondly, there is a high level of development partner support for current procurements, which leads to an overstatement of what government is actually investing in networks and computers.

The e-government initiative discussed earlier will be the largest public sector investment ever in ICT services and systems.

**Related usage indicators.** A few pertinent usage indicators are worth mentioning:
- Websites. All institutions surveyed had a website hosted on a common domain (institution.go.ug). The institutions have done a commendable job regarding provision of information to the public regarding
services and contacts of various officials. Some have even made provision for a feedback form. It is, however, worth noting that none of the institutions provide access to any online services for public outreach. There is also an implicit assumption that all users know the English language, as no provision is made for other languages. This may be acceptable for the present, but as ICT and Internet use become more widespread, the use of alternative languages has to be considered.

- Intranets and related services. All institutions surveyed have a corporate mail system (somebody@institution.go.ug) and most respondents used this as their contact. We were, however, not in a position to verify any other intranet services like directory, file, bulletin boards, document management, etc.

CONCLUSIONS AND RECOMMENDATIONS

- Government ICT-usage, based on statistics, looks good. The reality, however, is that facilities are used largely for e-mail and document processing. The real value that is derived from an effective intranet, offering services to citizens online, and running information systems, is still to be realised. This should be taken as a priority by government.

- Documentation shows that there are several uncoordinated initiatives at various levels (individual ministries or a group) mainly focused around e-government and improvement of service delivery. It is only the recent establishment of the Ministry of ICT that is expected to bring on board a more harmonised approach to the implementation of various initiatives. It is therefore very difficult to gauge performance by government as a whole against set goals, as most initiatives have specific targets. A number of other strategies (e.g., e-government) are in the early stages of implementation, and cannot be evaluated at this point.

- A number of ministries are in the initial stages of digitising/automating service delivery, implying a citizen focus. A service delivery approach, in line with the decentralisation policy, incorporating a holistic strategy that takes into consideration other non-technology issues like business process re-engineering and a focus on staff retraining to optimally utilise these new technologies is strongly recommended. This should go hand in hand with the creation and enhancement of capacity for information resource management.

- While the quantitative survey instrument used for this study gives some indication of e-usage, its focus on gathering inventory related information is limiting, as the causal relationships between equipment availability and usage are not necessarily obvious and only allow for more generic inferences. This is particularly so for government offices in Uganda. An approach combining a mix of qualitative and quantitative methods with more specific and measurable usage questions (probably within the context of government service deliv-
ery) and targeted to more users within the ministries, would help guide design of a more focused instrument that would elicit a greater depth of information that is limited in current instrument.

REGULATORY PERCEPTION

INTRODUCTION

As part of the Sector Performance Review of the telecommunications sector, an assessment of the regulatory environment was carried out. Regulatory perception is an important factor in attracting sector investment, and it is an indicator that needs to be watched by regulators, and that should inform regulators about required changes as well as public relations activity.

This evaluation draws on the methodology developed by Samarajiva et al, which samples the perceptions of various stakeholders involved with the sector in order to provide insight into the current status of the regulatory environment. Table 5 gives the evaluation dimensions.

<table>
<thead>
<tr>
<th>TABLE 5. DIMENSIONS USED IN SURVEY EVALUATING THE PERCEPTIONS OF TELECOMS REGULATORY ENVIRONMENT IN UGANDA</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimension</strong></td>
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<tr>
<td>Licensing</td>
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<tr>
<td>Regulation of anti-competitive practices</td>
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<tr>
<td>Interconnection</td>
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<tr>
<td>Regulator independence</td>
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<tr>
<td>Allocation of scarce resources</td>
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<tr>
<td>Tariff regulation</td>
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<tr>
<td>Universal services</td>
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</tbody>
</table>
METHODOLOGY

Sixty questionnaires were sent to a number of participant categories, 20 of which were returned as highlighted in Table 6. Follow-up interviews were then conducted with a few respondents based on their willingness to participate and the knowledge they exhibited about the different dimensions.

The perception for each dimension was judged based on a Likert scale: Poor (1 point) Unsatisfactory (2 points) Neutral (3 points) Satisfactory (4 points) Excellent (5 points)

There was room for respondents to elaborate on perception for each of the dimensions of the survey.

<table>
<thead>
<tr>
<th>TABLE 6. PARTICIPANT CATEGORIES</th>
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</thead>
<tbody>
<tr>
<td>Participant categories</td>
</tr>
<tr>
<td>Operators</td>
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<tr>
<td>Financial sector</td>
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<tr>
<td>Government agencies</td>
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<tr>
<td>Media</td>
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<tr>
<td>Private sector</td>
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<tr>
<td>Academics</td>
</tr>
<tr>
<td>NGOs</td>
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<tr>
<td>Totals</td>
</tr>
</tbody>
</table>

FINDINGS

Licensing Process. Most respondents perceive the licensing process to be satisfactory. UCC provides detailed information about how to apply for various licences, clearly spelling out the necessary terms and conditions. Many of those who gave a neutral response (25%) admitted that they did not know much about licensing procedures, perhaps an indication that the regulator needs to do more work to enlighten the stakeholders to better understand the licensing procedures and their motivation.
There were some complaints that the time provided for reviewing licensing terms and conditions is not adequate, hindering extensive consultation with all the necessary stakeholders before such terms and conditions come into force. Other issues highlighted include high licence application fees, which some respondents felt may discourage local entrepreneurs, the lack of feedback to the general public on licensee performance vis-à-vis their licence obligations, and UCC’s inability to inform potential applicants a priori of the length of time required to process various types of licences.

With the expiry of the duopoly regime, there was a period of uncertainty, leading to complaints from various stakeholders, particularly those interested in participating in areas that the duopoly regime did not allow.

**Monitoring Anti-competitive Behaviour.** Most respondents (70%) rated the performance of the regulator in this aspect as poor or unsatisfactory. The regulator instituted the Communications (Fair Competition) Regulations, 2005, as a means of regulating anti-competitive behaviour among licensees.
There have not been many complaints amongst the major operators in the sector, given that all of them have invested in their own infrastructure while at the same time offering services directly to the end-user. Most complaints have come from other players wishing to join the market, as well as retail service providers who get upstream capacity from the major licensees and then compete with them in the retail services. In addition, there has been a perception challenge relating to meeting rollout commitments especially to the rural areas; an information gap meant that some respondents complained that major operators had met rollout obligations using wireless rather than wired lines, unaware that UCC formally gave consent to this approach early during the duopoly period.

For end-users, the assumed lack of regulatory oversight over interconnection phone bill charges among the major players in the sector is a major cause for the unfavourable perception of the regulator. Operators try to lock customers into their networks by imposing high charges for calls across networks.

**FIGURE 20. HOW EFFECTIVE IS THE INTERCONNECTION REGIME?**

**Interconnection.** About 70% of the participants rated the dimension either unsatisfactory or neutral, primarily because they are not aware of the ground rules in this area, making it difficult to judge the performance of the regulator. Most respondents agree that there is room for improvement in this dimension if the consumer is to realise more benefits from increased competition as other players join the telecommunication sector.

Interconnection costs are meant to be cost-oriented and transparent, but are known only to the operators and the regulator. As highlighted in the discussion of the previous dimension, this is one area where end-users believe that operators have been given too much leeway to the end-users’ disadvantage, especially since interconnection agreements are considered by the regulator as confidential and cannot be accessed by the public.
Regulatory Independence. The dominant perception is neutral. There is agreement that the regulator’s independence exists legally and is generally practised. Having assets that generate income, providing financial independence from Government, is seen as positive. Some respondents were however unhappy with the regulator’s inability to guide government policy. A few cited the example of increasing taxes on prepaid airtime, which are ultimately borne by the consumer. The regulator is on record as having advised government against imposing and later increasing these taxes, but theirs is only an advisory role as far as government policy is concerned. This expectation indicates a lack of public knowledge about roleplayers and their functions.

Allocation of Scarce Resources. This is one dimension where the regulator is perceived to be doing a very good job. Many frequencies have been allocated and issues of frequency dispute seem to be quickly
addressed when they arise. In addition, the regulator has done an excellent job of providing information and application guidelines online.

FIGURE 22. IS ACCESS TO SCARCE RESOURCES SUCH AS SPECTRUM AND NUMBERS ENSURED?

Complaints that arose include the very high number of frequencies that have been allocated in urban areas versus the rural areas, and the apparent indication that the exercise seems to be driven by affordability and short-term concerns as opposed to the long-term national benefit.

FIGURE 23. HOW EFFECTIVELY HAVE TARIFFS BEEN REGULATED?

Tariff Regulation. The majority of respondents felt that the regulator’s performance was unsatisfactory or poor with respect to tariff regulation. Most of them in fact assume that tariffs charged in Uganda are some of the highest in the region. Given that they are not privy to the cost calculations, the natural inclination is to assume that the regulator is colluding with operators or turning a blind eye to the fate of the consumer. This negative perception was compounded when government imposed higher taxes on airtime.
There are a host of confusing payment plans, all of which claim to benefit the consumer, but the regulator and other informed stakeholders have not undertaken an advocacy role to assist consumers. While it may be desirable to subject tariffs to open competition, it is detrimental to the spirit of open competition for a user to be uninformed about the basis for charges that must be paid. Apparently cheap options like VoIP were trapped in uncertainty with the regulator taking the position that the services were illegal.

UCC needs to address the challenge of consumer education relating to tariffs and how they are regulated.

**Universal Access.** Around 40% of the respondents thought that progress towards universal access is poor or unsatisfactory, 40% gave a neutral response, and 20% thought it satisfactory or excellent. There have been concerted efforts by the regulator to improve universal access, although coverage of rural areas is still very poor. The limiting factor here is in reality the affordability rather than the coverage aspect of universal access. Increasing costs of telecom services, which some respondents believe is a result of increased government taxes, are an obstacle towards universal service provision. As observed in the earlier reviews, income levels remain the key barrier to access.

**CONCLUSIONS AND RECOMMENDATIONS**

Lack of easily accessible, complete and understandable information appears to be a major contributing factor to regulatory perception. While the regulator has invested considerable resources in making available information about various regulatory processes on their website, the fact that the majority of people lack access or Internet literacy means there is no real access to the information.
The public is informed about licence applicants during the application process. But after publication, often nothing is heard from the regulator again regarding that licensee. It would be valuable for the regulator to engage the public beyond this, even if only for informational purposes. While the regulator collects considerable information about the performance of various licensees, such information is considered private and is not shared with the public. What is shared with the public are aggregated details of the performance of various sectors as a whole. An approach that puts performance information into the public domain would be desirable.

Of all the dimensions, tariff regulation seems to have drawn the most discussion. Perhaps this is understandable, given that it is one of the most visible aspects of the regulator’s work and one that end-users constantly interact with. Assuming that most tariffs are justifiable since the regulator has approved them, there is a need to engage the public to help them better understand basic charges. This includes increased transparency around the issues of interconnection and interconnection costs, and must go hand in hand with requiring operators to be more transparent about multiple payment plans.

The challenge of negative perception related to achievements in universal access goes beyond public relations and processes to a fundamental re-evaluation of strategy. Until services are affordable to the majority of people, this perception will not change.
CHALLENGES AND CONCLUSION

This review has underlined the continuing dynamism of the ICT sector in Uganda, responding, at policy and regulatory level, to observed policy and implementation failures.

Key challenges as identified in the earlier reviews cited included the following:

- Unacceptably low access to basic telephony despite a perceived exemplary regulatory environment;
- Extremely low level of access to the Internet;
- Cost of access (telephony and data) far beyond the affordability level of the majority of the population;
- Marginalisation of ICT, compounded by multiple and sometimes contradicting political and policy level challenges due to the splitting of its key elements among several ministries;
- Marginalisation of Information Technology;
- Danger of complacency in the regulatory agency.

Government has, at policy level, responded to the specific challenges discussed in this review, by:

- Bringing all elements of ICT together under the Ministry of Information and Communication Technology. This has also elevated the national profile of ICT. A remaining challenge is the continuing location of the technical side of broadcasting under the propaganda arm of government, the Ministry of Information. This will be a continuing source of disharmony and conflict until it is addressed;
- Accepting the critical importance of public funding in rolling out nationwide infrastructure. The planned national fibre backbone, if successfully implemented, will not only boost access, it should also increase affordability since a concessionary loan will be used for implementation. The backbone will also greatly increase access to, and affordability of the Internet. The risk here will be the temptation for government to control the operations of the backbone. Operations of the backbone must be left to the private sector, with independent oversight to ensure a balance between profit motive and social objectives;
- Formally moving, under the cited concessionary loan, to implement e-government. This will bring IT to the fore and will be a major stimulus for growth and other opportunities around the sub-sector. The greatest challenge here is transforming people and changing methods of work;
Moving to increase the profile and content related to ICT in major national documents, including Vision 2035 (the planned successor to Vision 2025) and the Poverty Eradication Action Programme (PEAP). This is, however, not directly related to this review.

Other challenges to the success of the new policy initiatives are related to the following:

- Regulation: Uganda Communications Commission has been required to rapidly transform the sector from a market structure dominated by the duopoly to a fully liberalised market. UCC must develop a new approach to regulation, and should be not be tempted to apply old solutions to new problems. A total rethinking is called for. A poor licensing structure, poor regulations, and new entry barriers can negate the policy objectives of government. Financial entry barriers will not only keep players out, but will also lead to higher usage charges, nullifying the benefits of full liberalisation. As discussed under the section on the regulatory environment, the regulator should address issues around increased public education and awareness, increased transparency around tariffs and tariff regulation and all related aspects, and transparency about the performance of specific operators (rather than presenting macro pictures);

- Laws: As noted in the discussion, many laws that are required to enable a fully liberalised data-centric sector (competition law, cyber laws, laws related to online financial transactions, etc) are not yet in place. Inevitably, legal issues will become a major factor in a fully liberalised technology-neutral environment;

- Institutions: Serious consideration needs to be given to the creation of a converged regulator for the ICT sector, rather than the current fragmented situation;

- The National Fibre Backbone is a strategic resource that should spur national development. However, if institutions created to manage it handle it badly, it will negatively distort instead of enhance competition, and it might bring to life the spectre of direct government involvement in operations, eliminating private sector innovativeness and efficiencies;

- Government re-engineering: The service delivery approach that is core to the e-government initiative will only be achieved if it goes hand in hand with a holistic strategy that takes into consideration non-technology issues like business process re-engineering, government restructuring to match new processes, and a focus on staff re-training to optimally work in an ICT-enabled environment. Critical skills in information resource management will need to be developed among technical and non-technical operatives.
It remains to be seen, over the next two years, how the new policy directions will impact on access, affordability and, at the higher level, development. It should nevertheless be noted in conclusion that, if the challenges are documented from the beginning and tracked to ensure they do not become major risks, Uganda appears to be on the right path to ICT-enabled human development.

REFERENCES:
Towards an African e-Index 2007
Telecommunications Sector Performance in 16 African countries
a supply side analysis of policy outcomes

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