

## BRIDGING THE DIGITAL DIVIDE IN LEAST DEVELOPED COUNTRIES

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### 1. INTRODUCTION: THE MODERNISATION CHALLENGE

Uganda is currently grappling with the challenge of modernisation: modernisation of agriculture; modernisation of industry; modernisation of the financial sector, health delivery, education, governance, etc; integration of equity in development by focusing on traditionally disadvantaged group: women, rural communities, and the youth. Explicit in all this is the desire to enhance equitable human development as well as the need to increase efficiency, productivity, competitiveness and transparency of our private and public enterprises.

Uganda has a multifaceted strategy in trying to modernise. This paper addresses one of the strategies: the use of information and communication technology (ICT) as a tool for modernisation. It is important to understand and appreciate from the beginning that it is not a question of using ICT for the sake of it, but using it in instances where it can increase the pace of our modernisation. This means we must identify and start with those areas where ICT will have the greatest leverage factor in achieving modernisation. ICT will help us to achieve more with the same resources or, better still, achieve more with less resources.

New initiatives or strategies in trying to lift the least developed countries out of the vicious circle of poverty and deprivation are not new. Because of this, the tendency nowadays is to treat them with suspicion as new slogans, new promises that will live their day and eventually be confined to the dustbin of noble slogans, shattered hopes and disillusionment.

Who is to blame for the past disillusionment? All of us, in some measure: Those who have coined grand plans without due cognisance of the limitations, the pitfalls, and the right of peoples to manage and control their destiny; the implementers who have seen the slogans as new opportunities to line their pockets in the name of reducing poverty; the supposed beneficiaries where incompetent and corrupt leaders and officials have gladly joined a seeming international conspiracy.

And yet we do have truly altruistic individuals among all the categories; we have realists; and we have people committed to the welfare of the human race who, slowly but surely, have made a difference for the better in the face of impossible odds.

We must not greet the new initiatives with scepticism, but should play our role in our different capacities to ensure that there is increasing uniformity in human development all over the world. Without ensuring both global and internal equity, peace and stability, such critical pre-requisites to human development, will remain dreams. ***We must bridge the digital divide.***

This paper introduces the present status in of the telecommunication sector Uganda. It then dwells on the challenge of the digital divide, identifying crucial areas of action that will help to bridge it. Such areas of action translate to co-operation and business opportunities for private sector partners.

## **2. UGANDA**

The Republic of Uganda is a landlocked country in East Africa, covering an area of 235,885sq km. The population is about 23 million, and the major source of income is agriculture and agro-based industry. GDP growth has been typically 5-7% p.a. over the last 13 years, with a per capita GDP of (US)\$257 (\$1= shs 1700) for the 2000/2001 financial year. Its national budget for 2001/2002 is (US)\$1.1 billion. This figure includes donor support.

## **3. THE UGANDA TELECOMMUNICATIONS SECTOR**

The Uganda Communications Act, 1997, was passed under the general macro policy of liberalisation and privatisation, which has been pursued by the Government of Uganda in order to promote investment. The poor telecommunication infrastructure has adversely affected investment in Uganda for a long time. It was realised early that government does not have the resources for the major investment required to increase the level and range of services as well as their national penetration to an acceptable minimum.

One of the policy objectives was increasing teledensity from 0.28 lines per 100 people in 1996 to 2.0 lines per 100 people by the year 2002. Tele-density is currently about 1.4 lines per 100 people. This figure here includes mobile telephones and therefore departs from the commonly accepted International Telecommunications Union measure based on fixed lines, a definition made inaccurate by advances in wireless technology and wireless applications. Provided the grade and quality of service are good, mobile penetration is a critical component of teledensity, especially in a country like Uganda where there are almost 4 mobile subscribers for each fixed subscriber. It is important to note, however, that while 80% of the population live in the rural areas, 70% of the communication services are in the urban areas. This situation is rather unfortunate because rural areas produce more than 80% of Uganda's wealth.

(It is important to appreciate the difference in the meaning of the term rural in the Uganda sense and rural in the Canadian sense. The former implies poor and underprivileged, while the later tends to mean rich but widely dispersed).

A Second National Operator, Mobile Telephone Networks (MTN), was licensed and started operation in October 1998. MTN is licensed to compete in all aspects of telecommunications with the former national monopoly operator, Uganda Telecom Limited (UTL). UTL was privatised during 2000 by selling majority shares (51%) and giving full management control to a private sector consortium.

The Uganda Communications Commission (UCC) was also set up as an independent regulator. Among its main objectives are the following relevant to the theme of this workshop:

- (a) To enhance national coverage of communications services and products, with emphasis on provision of communications services to the citizens of Uganda;
- (b) To develop and improve rural communications services;

(c) To encourage the participation of private investors in the development of the communications sector.

The Uganda Communications Act, 1997, gives the Commission full budgetary and administrative independence. It must be realised however that quite often the law and the practice in many countries are not necessarily in consonance. Uganda has to date established a culture where government stays out of the Commission's business that UCC hopes will become an entrenched tradition. The Commission sees itself as a neutral facilitator of private sector investment, focusing more on the immediate need to avail communication services at fair prices rather than making money out of the sector through prohibitive fees and levies. So far, this approach is bearing fruit as summarised by the indicators in Annex 1 (1996 – to date). Figure 1 shows the growth in telephone subscribers, both fixed and mobile, since 1996.

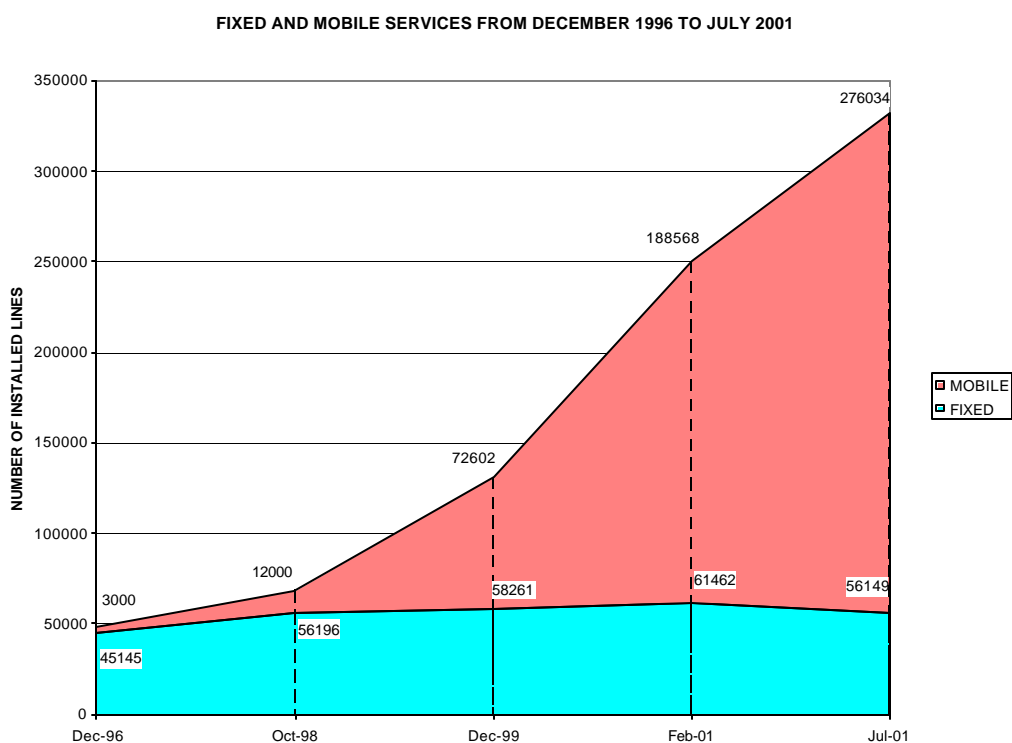


Figure 1: Growth in subscribers, 1996 - 2001

#### 4. THE CHALLENGE OF THE DIGITAL DIVIDE

In order to join the knowledge society, Uganda faces three broad challenges:

- creating and exploiting access to external information resources;
- creating internal information resources;
- creating and exploiting access to internal information resources.

If these challenges are solved on a *sustainable and equitable* basis, we would have bridged the digital divide.

How do we bridge the digital divide? Engineering requires that before constructing a bridge, one must fully analyse the nature of the soils, the width of the gap to be bridged. One must then come up with a suitable design for the bridge. From the development point of view, one must also be sure that there will be real benefits from constructing the bridge: indeed, it is sometimes wise to destroy rather than construct bridges.

From where Uganda stands, we can make the following remarks about the digital divide:

#### **4.1 What is the digital divide?**

This concept brings to mind two worlds: one in which there is the immediacy of access to information, characterised by information based commercial opportunities and transactions; and another where there is no or very limited access to information, characterised by traditional opportunities and transactions of a kind that eliminate any possibility of competitive positioning in the 21<sup>st</sup> century. The phrase “digital divide” sums up all the hurdles, both internal and external, that prevent any community or country from becoming an integral part of the knowledge society, and therefore denies its people the resulting level of human development.

#### **4.2 What has created the digital divide?**

Many factors have contributed. The major factors include:

- The long time to appreciate, and indeed continuing real lack of appreciation by our leadership about the benefits of ICTs in all aspects of national transactions and processes, as well as its overall impact on national development;
- The historical income disparity due to trade imbalances that compounded the slow uptake of ICTs;
- The attempt by many of our countries to retrace the development paths of the older economies: the agrarian revolution, the industrial revolution, production of iron and steel, etc, have been seen by many of our leaders as essential steps in development;
- The absorption of resources by internal conflict, in effect causing movement of limited resources to the countries that produce arms;
- The very low human development index, which means people are reduced to basic survival rather than creative thinking;
- Decades of poor governance, where leaders have not been accountable to those they lead. Citizens have limited or no input in the formulation or implementation of critical policies that enable development. To quote a remark by the World Bank Vice President for Africa at the 27<sup>th</sup> Tom Mboya Lecture: *“Nothing is more important than public understanding and acceptance of what governments are trying to do. Without such public involvement, consensus and ownership, money and decisions will not go very far, and may well go to the wrong things, the wrong people or the wrong places...”*

### 4.3 What increases the digital divide?

Despite the fact that many of our countries have started waking up to the reality of the knowledge society, and despite the attempts made to bridge the gap, one gets a sinking feeling that the gap is increasing. There is no greater challenge than bridging a widening gap. One cannot bridge without first stabilising the connection points. Many factors contribute to this widening:

- Content, software, hardware, and internet infrastructure are currently dominated by the world on the other side of the divide, and yet we cannot afford the time required to go through the learning curve in developing our own products: by then we would have perished. This leads to a high outflow of already limited resources.
- Lack of clear national focus on, and planning for, the benefits of ICTs. Unfortunately, we normally think of only the technology instead of the framework within which technology will help us to achieve our objectives. This means that resources, local and donor, invested in ICTs buy hardware and software rather than real benefits for the country. We should not simply purchase computers and communication infrastructure; we should buy efficiency, transparency, good governance, equity, and human development.
- Internal marginalisation of the rural communities that make up the majority of the population and generate most of the national income. So long as the operations of those who provide most of our income are inefficient and marginalised, the entire country cannot progress. We create our own rural – urban digital divides.

### 4.4 Will globalisation help?

Globalisation is one of the biggest challenges, a two-edged sword, even if it is often talked about only in the positive context. If the bridge we create only makes net resource outflow faster, it is no good to us. Internet links still follow the traditional airline routes from Uganda and most of Africa. Trade follows the same routes: goods and services in and money out – at a much faster rate than ever before. We cannot say we are trading in the international marketplace if all we ever do is buy. We shall be gobbled up and globalisation will really become “gobblelisation”.

And yet globalisation presents a unique opportunity for us to benefit from the knowledge society without immediate heavy investment in resources. The challenge to us is to become imaginative and creative. We shall sup with the devil with a long spoon until we get our fill.

## 5. CHALLENGES: HOW SHALL WE BRIDGE THE DIVIDE?

Each problem is only a challenge. In each problem we therefore see an opportunity that leads to solutions, a chance to be innovative and create success regardless of the problem scenario. The solutions we see will only be limited by our innovation and determination. Since the gap is expanding, whatever solutions, bridges, we construct must also be dynamic.

There is no uniform blue print for doing this. Each community, along with development partners, must consider the local social, economic, and political environment; the alternatives approaches; and map out the most beneficial way forward. The main issue, whatever the path chosen, is to recognise that technology is not and will never be the solution to poverty, **but it is a vital element of the solution.**

To quote the UNDP Human Development Report 2001: *“Many people fear that these technologies may be of little use to the developing world – or that they might widen the already savage inequalities between North and South, rich and poor. Without innovative public policy, these technologies could become a source of exclusion, not a tool of progress”*. This is very well put.

It is always the same question: do you have a phone because you are rich, or are you rich because you have a phone?

How shall we bridge the divide?

### **5.1 Uganda and countries on the same side of the divide must develop their own agendas**

It has been said many times by the current President of Uganda, Museveni, that the world does not owe us a living. We must create the internal preconditions and set priorities that will bring in private sector partners, not as charity, but as a cooperative and mutually beneficial effort.

We must forget the historical causes of the divide, except where they point us to a useful solution. Recrimination is time wasting and dissipates creative effort. Let us take the current circumstance as the starting point and map a way forward.

We need to develop clear frameworks within which ICTs fit as tools for development. These are the structural elements of the bridge. A national information policy, for example, should precede a national ICT policy. Water is useless if no one appreciates its benefits. The strategy for change must start with people and human benefit.

National information infrastructure agendas have to be established to provide a framework for legislative and fiscal policy interventions.

### **5.2 We must create awareness and skills, change the mindset**

The lake region people in Uganda have a saying to the effect that it is better to teach someone how to fish than to give them fish. The biggest challenge in bridging the digital divide is the human being. We have to transform the way of thinking and doing things, and change the mindset of more than five generations.

The generation in the fifties and early sixties that controls political decisions and financial resources; the next generation, the forties, that makes up most of the top level technocrats in the private and public sector; the people in their thirties, who implement most of the processes and are poised to play a more influential role; the fresh graduates in the twenties, many with a good knowledge and appreciation of the benefits of ICT, but not positioned to influence national direction; then the school going ages, most of whom are being taught antiquated

ways of doing things. We need to work with the older generations to achieve immediate change, and with the younger generations to create inbuilt sustainability.

We must create awareness and educate our civil and political leaders about the benefits of being part of the knowledge society; *and equally important, about the terminal danger of being left behind.* We must put emphasis on making the younger generation, right from the lowest level of education, ICT literate. This is where the long term solution lies.

### **5.3 We must address the challenges of technology cost to our countries**

If we take globalisation as a given, as indeed we must, the challenge of technology cost to our countries must be addressed through cooperative and competitive partnerships with those who already have it.

Consider Uganda where there are more than 6 million students in school or tertiary institutions. Helping them to belong to their international generations requires a minimum of say 1 million computers over the next three years if we are to achieve a real impact. Combined with other associated hardware, software and infrastructure, the cost is easily about \$1.5 billion. Annual software licenses will cost at least \$50 million per year. Uganda's national budget for the current year, including donor support is \$1.1 billion. Are we surprised that there is pirating? We must find cooperative solutions that enable sustainable access in the short term and internal generation in the long term, otherwise we shall have the AIDS drugs arguments all over again.

### **5.4 We must take something to sell to the market place**

Again taking globalisation as a given, we must have something to sell in the global market place. It is simply not sustainable to be part of a market, especially if you are the poorer party, if all you ever do is buy or market low value products.

Opportunities abound, from offering ICT based clerical and research services across time zones to exporting skills. We can develop content that is internationally marketable. We can get into software development – it does not call for major investment.

### **5.5 ICTs must provide direct and visible benefits to our communities**

We need to develop applications, content and/or create information portals that channel content that will be beneficial to our communities. Weather information and agricultural produce market information are particularly relevant. Telemedicine, tele-education, agricultural extension services, will improve human development.

We also need to recognise the literacy limitations of many of our people and create easy mediation applications for them.

### **5.6 We must create equity as we bridge the divide: gender and related issues**

It is very easy, as is often done nowadays, to give lip service to issues of equity, ensuring that women, rural communities, and youth are a vital consideration. Each policy, each initiative must, as part of the process address the question: What are the inbuilt elements that will ensure redress for the traditionally marginalized women, rural communities and youth? Any

policy or initiative that does not pass this inquiry will neither have the expected development impact nor be sustainable.

### **5.7 Infrastructure remains a challenge**

We need to roll out infrastructure, the plumbing that will ensure that all our people have the access points within reasonable reach. In this, there must be clear emphasis on rural access and equity. Before rushing into infrastructure there must be a clear policy that captures the management and benefits of information for institutional functions and the implicit human development. There must be awareness and appreciation by all potential users. There must be ownership of the process by the benefiting communities. Just like solutions imposed by more developed countries are often resisted and fail to work in our countries, solutions developed and imposed without the participation of our communities will not work, and the internal digital divide will increase, compounding the international one.

### **5.8 We must create business opportunities**

Working in collaboration with the private sector means creating business opportunities through macro-policy, legislation, regulation, fiscal policies, good governance, and stability. Our debt laden government will never mobilise sufficient resources to address all the issues. We need to particularly help, through policy and direct financial support (accessed on a competitive basis) companies that want to invest in rural areas. Foreign companies and the local private sector could work together with small rural start-ups, one bringing in funding, technology and experience, and the other local know-how.

### **5.9 Governments must not abdicate their responsibilities**

It is very easy for our governments to fall in the trap of abdicating their responsibilities to the private sector. The private sector is driven largely by profit, and there will be many instances where private capital cannot provide a solution. If we accept access to information as a right, as we must if we really want to achieve our objectives, our governments will have a continuing obligation to channel resources directly into the sector through public-private sector partnerships. Governments have the responsibility of providing basic telecomm services for all their people through enabling financing, targeted at priority areas, to the private sector.

### **5.10 Let us establish equitable e-commerce linkages: South - South**

When we talk of south-south linkages, it often sounds like empty political talk. We must however admit that over the past one or two decades, south-south linkages have led to higher levels of co-operation and trade with partners with whom we are almost at the same level of economic development. This creates a better and more mutually beneficial trading environment. How does this relate to the digital divide? Switching to e-commerce is one of the elements in bridging the digital divide, and our countries must use it to strengthen south-south trade.

We must however be conscious of the pit-falls under the current circumstances. We shall find, inevitably, that the largest "e-supermarkets" are north based, and we shall have all of them at our finger-tips. The airline route syndrome will be back with a vengeance. What then happens to the budding south-south trade? Shall we accept the renewed one-way trade or

resort to protectionism? This is quite a challenge. The solution lies in having the foresight and understanding of the full ramifications of e-commerce in an open trading environment so that our governments are guided in their enabling policy formulation and negotiations in the World Trade Organisation fora.

*It should be noted that a pre-requisite for the development of e-business in our countries is a complete overhaul of the antiquated financial systems. This is another daunting challenge.*

## **6. WHERE IS UGANDA?**

From the human development and other indices in the UNDP Human Development Report 2001, Uganda is almost at the bottom. While the statistics in that report make grim reading, it is exciting that there are clear indications that while we have a long way to go, Uganda has definitely turned round. Initially slowly, yes, but as the Chinese say, “Do not fear going forward slowly, fear only to stand still”. The process looks daunting, but we can do it by breaking down an apparently huge task into simple manageable actions.

### **6.1 Positive steps**

We must start by recognising some positive steps taken in Uganda in bridging the divide:

- The National ICT Policy and the National Information Infrastructure Agenda are both approaching grey paper level.
- Uganda has actively addressed, through inbuilt legal mechanisms, issues of gender inequity. It is interesting to note that women take up 27.1% of ministerial level posts, which is higher than Canada (24.3%). We still have a long way to go though.
- Liberalisation and privatisation of the delivery of telecommunication services. This has resulted in a 500% increase in the number of people with access to basic telecommunications over the last 4 years. The high rate of growth continues.
- Roll out obligations as well as high returns have led to a rapid growth in national telecommunications coverage. Services are no longer the preserve of urban community (See Annex 1)
- Incoming internet bandwidth, while still painfully small, has increased from 384 kbps to almost 8 mbps over the last 3 years. (Small compared to say many universities in the developed world which have more than 155mbps incoming capacity).
- The Rural Communications Development fund established by the Uganda Communications Commission will be operationalised this financial year. This fund accrues from the 1% levy on the gross revenue of service providers. It will be used mostly through competitive access by the private sector, on a minimum subsidy basis, to deliver services to areas that are not commercially viable in the medium term. The fund also provides for an internet point of presence in every district, support for vanguard projects in educational institutions, support for content creation, and support for commercial communication kiosks in rural areas.

***The support of IDRC (through the Acacia Project) and the people of Canada for the support in carrying out a policy and strategy study for the Rural Communications Development Fund is gratefully acknowledged.*** This is a project that will succeed: it is not based on hope and idealistic thinking but hard facts and commercial reality. The delivery mechanism is almost entirely dependent on the private sector. We believe it will provide a best practice in public-private sector partnership.

It must be noted, as an illustration of the need for countries to develop their own agendas, that this study was conceived by the Uganda Communications Commission, and then sold to IDRC who also helped in refining it.

- Makerere University – the oldest, largest and dominant university in Uganda – is, with the support of development partners, now focusing on projects that will impact on the spread of infrastructure and applications. The Development of an Information Infrastructure Agenda for Uganda conducted by the Institute of Computer Science with funding from Infodev is noteworthy.
- The educational sector has recognised the avalanche effect of introducing information and communication technology training at all levels of education. An ICT Policy for the Ministry of Education and Sports is near completion, and a new computer science curriculum for secondary schools has been introduced. Another example is Makerere University, which, as part of its ICT Policy and Master Plan, requires all staff and students to be ICT enabled.

## 6.2 Hurdles

The positive steps must not blind us to the remaining hurdles and shortcomings. We are moving in the right direction, but we need to move a lot faster.

- The telecommunication sector has been liberalised, but not entirely. We must completely liberalise the telecommunications sector as fast as possible. Incorrect projections have for long led our policy makers to believe that our telecommunication markets are very limited and cannot attract multiple players. We are learning that this is not the case. The challenge here is the medium term commitments in licenses, like duopoly, that we have entered into. Technology is however changing so fast that many of the duopoly provisions will be rendered irrelevant in the short term.
- Our political and administrative leadership has not recognised the benefits of efficient and cheap communications to national economic performance and growth. Rather than kill the goose that lays the golden egg, like the recent taxation imposed on pay as you go airtime in Uganda, government should take the policy initiatives to drive the cost of telecommunications further down.
- Privatisation and liberalisation have been seen as a way for government to abdicate from what should be regarded as a right for its citizens: access to basic telecommunication services. We must remember that in most of the developed world, national spread of infrastructure was achieved through government subsidies and funding. Even now, countries like Sweden have embarked on major government driven projects to deliver an optical fiber to every home. I am not saying we should get back to parastatals, but that

government has an obligation to contribute directly to the Rural Communications Development Fund that will be operated through the private sector.

- Our regional groupings are still operationally weak. We must strengthen our regional groupings, like the East African Community, and through them establish regulatory procedures that will say permit an operator to be licensed only once for the entire region. We must also speed up our licensing processes. Slow and inefficient licensing procedures are some of the major barriers to investment.

## 7 CONCLUSION

New technologies, especially information and communication technology bring unprecedented opportunities for us to bootstrap ourselves into the modern economy. For the first time, we can participate in the international economy on the basis of knowledge and creativity rather than heavy capital investment. Other countries have done it, and Uganda can do it. We must challenge ourselves to take leadership in our individual capacities so that *“bridging the digital divide”* is not reduced to yet another noble slogan in the dustbin.

*“It is not the strongest of the species that survive, nor the most intelligent, but the ones that are most responsive to change”... Charles Darwin*

### ANNEX 1 SECTOR INDICATORS SINCE 1996

Table 1 gives comparative figures in terms of service providers, customer base, and current service coverage since October 1996. While it is clear that there has been a lot of growth in the sector, the totals have to be carefully interpreted. Many people who have fixed lines, for example, also have a line at home, and a mobile phone. Secondly, most of the services are concentrated in the urban centers. Thirdly, there are only 270,000 or so communication ports for more than 20 million Ugandans: less than 1.5 % of the population can access telecommunication services at any time. Multiple usage, especially in public and private enterprises as well as government offices, does increase the actual number of people with access to telecommunications probably to one million or so.

All the three cellular network operators are using GSM 900MHz technology. The 1800MHz band has just been opened up.

The cellular networks have been a boon to rural communications. As they attempt to cover the main road corridors and small towns, they have achieved signal availability to many rural areas so that the only hindrance to immediate communication is the availability of a hand set. It is evident that in the short to medium term, this will be the cheapest way of availing services to many rural areas without incurring direct infrastructure costs. The synergy of the large number of private FM stations and the growth in telecommunication services availability in the democratisation process must also be recognised. Live phone in radio programmes are very popular in Uganda and have increased the transparency and accountability of government to the public. Public officials, including cabinet ministers and the President, have had to respond to issues raised literally by anybody live on radio programmes.

TABLE 1

**TELECOMMUNICATIONS SECTOR COMPARATIVE FIGURES FOR  
OCT 1998 AND FEB 2001**

**Comparative Summary of the Communication Services Sector, 1998 and 2001**

	Service Provided	DEC 1996	OCT 1998	DEC 1999	FEB 2001	JULY 2001
1	Wired telephone lines (UTL)	45,145	55,749	57,913	58,880	<b>52,054</b>
2	Fixed wireless lines (MTN)	Not Operational	447	148	932	<b>1900</b>
3	Fixed wireless pay phones (MTN)	Not Operational	0	200	1650	<b>2195</b>
4	Mobile cellular subscribers (MTN, Celtel, and UTL)	3,000 - Celtel	12,000 <i>Celtel: 8100</i> <i>MTN: 3900</i>	72,602 <i>19,074 - Celtel</i> <i>53,528 - MTN</i>	188,568 <i>MTN: 146,634</i> <i>Celtel: 32,934</i> <i>UTL: 10,000</i>	<b>276,034</b> <i>MTN: 185,734</i> <i>Celtel: 40,000</i> <i>UTL: 50,300</i>
5	Internet/ email subscribers *	504	1308	4248	5688	<b>5999</b>
6	National Telecommunications Operators	1	2	2	2	<b>2</b>
7	Mobile Cellular Operators (CelTel, MTN, UTL)	1	2	2	3	<b>3</b>
8	VSAT International Data Gateways (Includes UTL and MTN)	2	3	7	8	<b>8</b>
9	Internet Service Providers	2	7	9	11	<b>11</b>
10	Public Pay Communications Network Services**	1	10	30	42	<b>47</b>
11	Private FM Radio Stations	14	28	37	100	<b>112</b>
12	Private Television Stations	4	8	11	19	<b>20</b>
13	Private Radio	453	530	688	770	<b>800</b>

	Communication Licenses					
14	National Postal Operator	1	1	1	1	<b>1</b>
15	Courier Service Providers	2	7	11	10	<b>10</b>

Table 2 shows the growth in internet access based on the available international data capacity. Gateway operators increase this according to demand Internet access so it is a fairly correct indicator. The table does not include UTL's planned capacity (1mbps) supposed to come on line any time.

**TABLE 2**  
**TOTAL DATA UPLINK AND DOWNLINK CAPACITY**

	UPLINK	DOWNLINK
1998	256kbps	384kbps
1999	640kbps	768kbps
Feb 2000	1.2mbps	1.7mbps
Feb 2001	4.088mbps	5.216mbps
<b>Sept 2001</b>	<b>4.380mbps</b>	<b>7.768mbps</b>

**NB:**

\* According to reliable sources, the number of Internet subscribers is usually underestimated by the Internet Service providers to avoid paying larger amounts due to taxation by the government. The source estimates the number of subscribers to be 40,000.

\*\* The Public Pay Communications Network Service licence is issued for the provision of fax, payphone and Internet café services.