

ICT BOOK FOR THE YOUTH FORUM



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**ITU TELECOM
AFRICA 2004**
Cairo
4-8 May

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who contributed to the
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Country	Institute
Algeria	Institute of Telecommunications
Benin	University of Abomey – Calavi
Burkina Faso	Université de Ouagadougou
Burkina Faso	Ecole Supérieure des Sciences Appliquées (ESSA)
Burundi	Université du Burundi
Cape Verde	Institut Supérieur d'Ingénierie et Sciences de la Mer
Cape Verde	Universidade Jean-Piaget de Cabo Verde
Cameroon	Ecole Nationale Supérieure des Postes et Télécommunications de Yaoundé (ENSPT)
Cameroon	Ecole Nationale Supérieure Polytechnique de Yaoundé (ENSP)
Central African Rep.	Institut Supérieur de Technologie de l'Université de Bangui
Central African Rep.	Université de Bangui
Comoros	Université des Comores
Comoros	Ecole Nationale d'Administration et de Commerce
Congo (Rep. of the)	Université Marien Ngouabi de Brazzaville
Dem. Rep. of the Congo	Université de Kinshasa
Djibouti	Pôle Universitaire de Djibouti
Egypt	Ain Shams University
Egypt	Helwan University
Ethiopia	Addis Ababa University
Gambia	University of Gambia
Ghana	University of Ghana
Guinea-Bissau	Université «Amilgar Cabral»
Guinea-Bissau	Escola Normal Superior Tehico-Té
Kenya	University of Nairobi
Lesotho	National University of Lesotho
Liberia	Liberia College of Professional Studies (LICOPS)
Lybian Arab Jamahiriya	Al-Fatah University
Madagascar	Université d'Antananarivo

Madagascar	Hautes Etudes Chrétiennes de Management et de Mathématiques Appliquées
Malawi	University of Malawi
Mali	Technolab – ISTA
Mali	Faculté de Médecine Pharmacie Nodonto Stomatologie
Morocco	Ecole Mohammadia d’Ingénieurs
Namibia	Windhoek College of Education
Namibia	University of Namibia
Niger	Université de Niamey
Nigeria	University of JOS (Centre for Continuing Education)
Nigeria	Lagos State University
Rwanda	Kigali Institute of Science, Technology and Management
Senegal	Ecole Supérieure d’Informatique et de Management (ESIM)
Seychelles	Seychelles Polytechnic
Sierra Leone	Fourah Bay College University of Sierra Leone
Somalia	University of Hargeisa
Somalia	Amud University of Borame
South Africa	National Institute of Higher Education
South Africa	Rekenaar Skool Boland
Sudan	University of Khartoum
Swaziland	Swaziland College of Technology
Tanzania	University of Dar-Es-Salaam
Togo	Université de Lome
Tunisia	Institut Supérieur des Etudes Technologiques en Communications de Tunis (ISET’Com)
Tunisia	Ecole Supérieure des Communications de Tunis
Uganda	Makerere University
Zimbabwe	University of Technology
Zimbabwe	National University of Science and Technology

Mlle Djazia Abdelkader
Algérie

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Vu le fossé numérique qui continue à se creuser entre les pays développés et l'Afrique, il est tacitement admis que les nouvelles technologies de l'information et de la communication (TIC) peuvent servir de levier pour accélérer le développement économique de l'Afrique et les communautés pauvres de ce continent. Les TIC sont maintenant présentes dans toutes les sphères de la production et des services et elles sont appelées à y prendre encore plus de place. De manière générale, elles influenceront nos manières de communiquer, d'interagir et de traiter les informations.

Certes les contextes géographiques, socioculturels, économiques, et politiques des pays et des communautés africaines sont différents, et le niveau de familiarité avec les TIC varie selon les communautés, mais un certain nombre de défis doivent être relevés:

Participation communautaire: elle est importante dans le processus d'introduction de produits innovants, transformateurs que sont les TIC, car les populations rurales, dans leur grande majorité, pensent que les nouvelles technologies ne leur sont pas destinées et sont, de ce fait, marginalisées.

Utilisation des TIC: l'accès à l'information est jugé crucial dans cette ère mais les facteurs tels que l'âge, le niveau d'instruction, le revenu et la localisation, semblent limiter l'accès aux nouvelles TIC.

Les jeunes Africains semblent être les utilisateurs les plus assidus des services des TIC (56% de la population), et les femmes semblent avoir des barrières psychologiques dans l'utilisation des TIC (29% par rapport aux hommes).

Niveau d'instruction: les utilisateurs des TIC sont bien instruits et savent lire et écrire, aussi bien en anglais qu'en français ou au moins dans l'une de leurs langues locales. Cela voudrait-il dire que les non-instruits sont exclus de l'accès aux TIC et qu'ils sont plus nombreux dans les zones rurales? Or cette population active devrait être un des moteurs de la croissance. Dans ce contexte, le défi est de trouver des solutions technologiques pour leur permettre d'améliorer leur condition de vie et participer pleinement au développement économique et social.

Localisation: il existe une discrimination entre zone rurale et zone urbaine. Les communautés urbaines semblent profiter plus des TIC que celles situées dans les zones rurales. L'inexistence de l'infrastructure est due au coût jugé élevé des services ce qui empêche l'utilisation des TIC.

Formation et renforcement des capacités: le continent africain ne dispose pas de toutes les compétences techniques indispensables au développement efficace des TIC, d'autant plus que ces techniques sont importées et en constante évolution. Donc la formation est une condition indispensable pour l'utilisation et l'appropriation des TIC. Mais

l'absence de politique de formation dans ce domaine, limite le processus d'apprentissage et donc freine le processus d'appropriation sociale de ces outils.

Supports d'information: Les médias (TV, radio, journaux) jouent un rôle important dans l'information des populations rurales sur les TIC. Ces médias peuvent être combinés aux TIC pour collecter, traiter et diffuser l'information au profit des communautés, particulièrement dans les langues locales.

Contenu: La production de contenu dans le domaine des TIC en Afrique est limitée, la plupart des contenus publiés notamment sur l'Internet sont soit en français et surtout en langue anglaise. Le taux d'analphabétisme est très élevé dans le continent (environ 70 % de la population), tant dans les langues officielles (français et anglais principalement) que dans les langues locales.

Technologies: L'Afrique est caractérisée généralement par l'existence d'un niveau minimal d'infrastructures de télécommunications (radio, fax, téléphone, Internet, fibres optiques, téléphonie mobile, satellites, RNIS, etc.). Dans la plupart de ses pays, les politiques de libéralisation sont mises en œuvre, d'où un environnement technologique sensiblement amélioré, avec la disponibilité de plus en plus importante de services et l'introduction de technologies nouvelles.

Recommandations

Vu les changements non négligeables observés en Afrique dans l'appropriation des TIC mais qui restent toujours insuffisants, des actions d'envergure et urgentes devraient être menées pour répondre aux attentes et consolider les bases de l'appropriation des TIC par ces communautés africaines.

Les recommandations suivantes sont formulées sous forme d'actions à mener pour que les TIC soient au service du développement communautaire en Afrique.

- 1) Le processus d'introduction des TIC doit contenir la sensibilisation aux différentes potentialités des TIC, l'utilisation de base des TIC, la demande de produits et de contenus spécifiques (en langues nationales, pour des catégories de la population, handicapés, etc.).
- 2) La participation de la grande masse des populations (en particulier rurales) est cruciale. Toutefois des études plus systématiques et des analyses plus approfondies sont nécessaires pour déterminer la nature, le type et le sens des relations entre l'utilisation des TIC et ces populations.
- 3) Le faible niveau d'utilisation des nouvelles TIC par les femmes, même celles qui sont relativement instruites. Par ailleurs, des recherches spécifiques devraient être menées pour trouver des applications et supports de transmission de l'information qui sont les plus adaptés à leurs conditions, à leurs besoins, à leur rôle dans la communauté et à leur structure de pensée.
- 4) D'une façon générale, les TIC demandent beaucoup plus d'infrastructures, d'où le coût d'installation élevé. Dans un souci d'améliorer l'accès des communautés à ces outils, il faut envisager l'utilisation de technologies demandant moins d'infrastructures (utilisation de satellites, une technologie sans fil, utilisation des outils multimédias, etc.), multiplier les points d'accès communautaires qui permettent d'allier les technologies traditionnelles maîtrisées avec les nouvelles TIC pour promouvoir un accès plus démocratique aux TIC. Des technologies alternatives adaptées et abordables sont nécessaires pour un accès universel aux TIC.

Ms Sosina Abraha Gebregziabher
Ethiopia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

The major challenges for achieving universal access to ICTs in Africa, in my opinion, are the outcomes of the low standard of living of the African people. It is a well known fact that a large portion of the African population is living under conditions of poverty. This poverty is manifest in the low level of income. Most of the time, it is even hard to satisfy their primary or basic needs such as food, shelter and clothing let alone spend money on ICTs, which are considered as secondary or luxury needs. A strikingly low level of literacy also characterizes Africa. Most of its people have only attended a primary level of education or cannot read and write at all. On the contrary, ICTs require a relatively higher educational level, which in turn makes them inaccessible in Africa. Lack of essential services (telecommunication electricity) as well as low infrastructural development are prominent outcomes of the continent’s poverty. This situation inhibits the African people from utilizing ICTs because ICTs are highly dependent on such kinds of services and infrastructures.

In spite of all these constraints, there are also some opportunities for achieving universal access to ICTs in Africa. In my opinion, two points should be considered to make ICTs accessible for the people of Africa.

One is to expand the use of those ICTs which are less costly. Considering the current situation of Africa, these ICTs can solve problems related to information flow within a short period of time. For instance, the world space satellite radios are designed to provide information to the masses for a reasonable price.

The second option and more important one is achieving overall economic growth and social development in Africa. Though this process might take a longer period of time than the first option, it plays a crucial role in solving all problems related to low living standards and consequently the constraints mentioned above in achieving universal access to ICTs in Africa.

Mr Sameh Ahmed
Egypt



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

As the Information Revolution has increasing impact around the globe, the issues of who has access to these technologies has great importance. Connection to these networks and services influences people’s access to jobs, education, health care and full participation as citizens. The convergence of telecommunications, computers, information production and broadcasting has a great impact on how societies are structured. There is a major question throughout the world: will these technologies and systems lead to increasing disparities between the connected information elite and a large majority of ‘information poor’ (the ‘digital divide’), or can these systems be used to support widespread development and a more just society? These communication and information networks are often now referred to as the “Information Infrastructure”, as important to the development of a country as the road and water networks.

Should access to communications (especially a telephone service) be considered as a right, as the UN suggests (ITU,1997)? If it is accepted as a right then the cost/benefit equation should become a secondary consideration – but how is this possible in developing countries, especially in Africa, with very severe economic constraints.

There now are technical solutions that would allow telephony throughout the world. The issue is one of political will, which often (but not always) means finding economic models that allow for provision to be paid for. Throughout the world there is a move from state-owned monopoly telecommunications providers (PTOs – Public Telephony Operators) towards a more commercial and liberalized environment. In the former case, universal access action would come through national policy requiring certain actions from the PTO. In the liberalized sector, other regulatory mechanisms are required.

In many developing countries currently, many households can neither afford a phone, nor can the operators supply them with one. This makes the developed countries’ goal of universal service unachievable in the next few years, and so an alternative implemental goal of universal access has been adopted in numerous countries.

This usually amounts to some form of community provision, either through a payphone owned by the operator, some other form of commercial pay point, or a connection within some form of community centre (often referred to as a telecentre).

The key issue is what does accessible mean? Universal access has been defined in many different ways in different countries, such as a phone for every settlement with over ‘X’ population (500 people in Ghana); a phone a certain distance between everyone (20 km in Burkina Faso); or a phone within a certain travelling time (such as 30 minutes). It is

recommended that a time criteria is not used as it is open to too much interpretation (e.g. time travelled by who, using what means of transport?).

The national goals can be a mix of different elements; for example, China has a policy of "One family, one telephone" in urban areas and a telephone in every village by the year 2000. Targets can also be specified for different kinds of organizations. For example, South Africa has a list of 'priority customers' that Telkom SA is obliged to provide with a telephone in its licence conditions that includes schools, health clinics, government offices and community centres. Targets should include reliability standards (percentage of time useable, time to repair a fault, line quality for voice, fax or data communications) and the provision of emergency and operator services. Also the number of hours of access is relevant (e.g. 24 hours a day or less). Targets should be stated in terms of the services and standards expected, but should not specify the technology required to meet them. This changes too fast and can be very limiting on operators for no benefit.

Small commercial telecom entrepreneurs have emerged in many developing countries. The number of such Public Call Offices has hugely increased in the last few years, usually with no external financing from governments or external donors. These companies usually offer one or a small number of telephones and sometimes a fax machine. A few also offer other services such as photocopying and even the Internet.

Multipurpose Community Telecentres

Offering far greater services than a Public Call Office, in the last few years a movement in support of Multipurpose Community Telecentres (MCTs) has grown up. A large number of projects are currently being established, usually by funding from international donors, to offer telecommunication in ways to support a range of developmental services. The IDRC is running the Acacia programme supporting telecentres in Mozambique, Senegal, South Africa and Uganda, as well as other projects in Asia and Latin America. ITU has supported telecentres in many countries (Benin, Bhutan, Honduras, India, Mali, Mozambique, Suriname, Tanzania, Uganda and Viet Nam) (Ernberg 1998). A key feature of most telecentres is a large degree of community involvement or ownership. Involvement of the local community in managing and running is stressed, and frequently techniques such as Participatory Rural Appraisal are used in developing the centres.

There are different levels to this goal of providing access to information and communication to communities that have been excluded:

- Infrastructure: Access to the telephone system (network roll-out) as well as computer equipment (many computers could be sourced from recycling of older computers)
- Education and training: Training the operators of these centres and the users in the systems, especially computerized and network systems
- Information: Arranging links to local and national information sources, and developing local information creation (e.g. community directories)
- Social sustainability: Ensuring the services are used in the local area and are responsive to social needs
- Economic sustainability: This is the key test to whether these centres can survive on a major scale

To promote the use of ICTs for development, developing skills, content and services is as important as providing access. The content required can only be determined by

participation of the communities involved, and then seeing patterns of usage over time. There already have been a number of hard lessons that should be learnt – for example, centres where the equipment has been stolen, where community tensions have closed down centres, where incompetent or fraudulent management have made centres fail. It is clear that Multipurpose Community Telecentres must be developed through partnerships, between the public, private and community sectors (Benjamin 1998).

Virtual telephony in Brazil

Telebahia has instituted a service where people can subscribe to receive a telephone number attached to an automatic answering service (without a separate telephone line). Received calls can be retrieved by phoning the service's number and entering a security code, which is akin to the cellular phone 'voice mail' service. This has proven very successful, and has provided an incoming call service, which other universal access systems do not do so well. This also is a relatively cheap way to increase the telephone network in a way that promotes the added growth from network externalities mentioned above.

These are some examples of IT applications and technical solutions that could be taken in order to achieve and promote universal access to ICTs in Africa. It has been proved that the ability to use telecommunications for instantaneous communications can support development by increasing:

- Efficiency: the ratio of output to cost;
- Effectiveness: improving the quality of services;
- Equity: better distribution of benefits throughout society (Hudson 1998).

Telecommunications forms the 'information infrastructure' to support developments in many areas of life (Parker and Hudson 1995; ITU, 1998).

Mlle Alda Déo-Gratias Allaba

Bénin

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

L'Afrique vit actuellement des temps nouveaux marqués notamment par la libéralisation du système économique et la globalisation des échanges. Or, la compétitivité et la reconnaissance de ce continent à l'échelle mondiale semblent très faibles, surtout lorsqu'il s'agit d'intervenir sur le renforcement des capacités dues aux TIC. Après avoir défini les TIC, nous parlerons des défis à relever et des opportunités pour parvenir à l'accès universel des TIC en Afrique.

Les TIC sont l'ensemble des outils ou moyens de communication et d'information accessibles à l'homme de manière rationnelle et automatique pour atteindre ses objectifs. Il s'agit entre autres de l'Internet, du net-phone, de la vidéoconférence, de la téléphonie mobile, des satellites et des liaisons spécialisées, pour ne citer que ceux-là.

Quels sont les défis à relever?

Il s'agit d'œuvrer résolument, aujourd'hui, pour que demain l'Afrique se présente au rendez-vous de la mondialisation et de la globalisation avec les mêmes atouts que ses partenaires. Pour faire cette Afrique, où le chantier est vaste à défricher d'ailleurs, les Etats africains doivent éviter d'une part le monopole de communication, le manque de formation et de recyclage en TIC de leurs citoyens, la non-vulgarisation des TIC dans les zones rurales et, d'autre part, la réduction du matériel informatique, ce qui décourage certains initiateurs privés. Il y a également la qualité des ressources humaines, car c'est par les hommes, leur imagination, leur foi et leur ardeur au travail qu'un pays peut se transformer. La réticence des pays africains à s'approprier des TIC – ce qui s'explique par l'inexistence dans certains pays des structures en charge des TIC – n'est pas à perdre de vue, de même que le fort taux d'analphabètes.

Quelles sont les opportunités?

Les autres pays, à l'instar du Bénin, doivent œuvrer pour une politique de défiscalisation de l'outil informatique en exonérant les matériels informatiques de toutes taxes, de même que pour la libéralisation des télécommunications. Entre autres, intégrer dans les systèmes éducatifs africains l'étude de l'informatique, ce qui entraînera son insertion dans les examens et concours. Il faudra aussi créer un réseau pour le financement des TIC dans chaque sous-région.

Il revient également à l'Etat d'encourager les groupements d'association des jeunes, les organisations non gouvernementales, des cadres de réflexion et d'action sur les TIC, en subventionnant les forums et colloques initiés par ces organismes. Une vulgarisation, une meilleure sensibilisation aux TIC, notamment dans les zones rurales, s'avèrent indispensables. L'Afrique doit veiller aussi à ce que règne la paix dans sur continent. Une prise de conscience des jeunes pour une meilleure exploitation des TIC, une unité en leur



sein et un esprit d'initiative privée favorisera l'essor des TIC. L'Afrique doit considérablement réduire le taux d'analphabétisme de ses fils.

Les TIC, qui sont encore en Afrique un vaste champ à défricher, doivent-elles rester sans évolution? Non il est nécessaire pour ce continent africain de relever tous ces défis, à l'instar de l'Occident, et de mettre en œuvre ses opportunités pour son insertion harmonieuse dans le nouveau millénaire.

Ms Sara Moftah Al-Rabei
Lybia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Universal access to information and communication in Africa is an important issue that must be considered seriously in development steps and research.

Many challenges exist in most African countries that restrict access to ICTs.

One of the major challenges is that these countries are militarily unstable including civil wars, which leads to mismanagement of development programs. Other challenges for achieving universal access to ICTs in Africa are summarized in the following points:

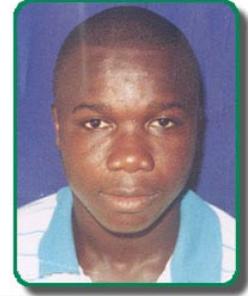
- Poverty and starvation in many countries in Africa.
- Language challenge; there are over 100 different languages and this restricts the use of communication among African countries.
- There are no plans for connecting African countries together.
- Absence of strategic information, insufficient legal and regulatory frameworks and government strategy.
- Minimum involvement of universities and research institutions in Africa.
- Limited IT industrial base; some of these problems are compounded by the high price of equipment relative to the available resources.
- Need for development of adequate human resources for sustainability of ICTs.

To overcome these challenges, there are some steps that must be kept in mind. The first steps in improving new communication technologies in African countries are:

- help them to achieve more technological literacy, so that they can use technology to help themselves and to help them to make meaningful contributions on ICT issues that affect their livelihoods;
- the best resource in the world is human resources; if we keep this in mind then we are heading for progress;
- they need an advanced infrastructure and highly skilled labour sources;
- urgent need for investment in human resources.

In conclusion, these challenges and opportunities must be kept in mind for any future improvement.

M. Mawufemo Koffi Amewo
Togo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

La communication et l'information prennent une importance capitale dans la vie de l'homme, surtout dans ce monde où les relations d'affaires tendent à occuper une place prépondérante. Cette nécessité a conduit à un développement très rapide des moyens d'information et de communication. Ainsi, de nouvelles technologies de l'information et de la communication (TIC) sont utilisées aujourd'hui. Cependant ces technologies de l'information et de la communication n'ont pas fait l'objet d'un usage ou d'une possession équitable. Il en est ainsi du continent africain qui ne parvient pas à fournir ces technologies à tous ses pays.

Ceci étant, quels peuvent être les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique? Autrement dit, quels sont les défis que doit se lancer l'Afrique et quelles sont les opportunités qui lui sont offertes pour aboutir à cela? Avant de voir les opportunités que l'Afrique a pour avoir l'accès universel des TIC, il est nécessaire d'analyser les principaux défis qu'elle peut se lancer en ce domaine.

On ne saurait imaginer un monde sans informations ni communications. Plusieurs défis s'imposent donc à l'Afrique pour accéder à cette haute technologie. En ce sens, les gouvernements des différents pays africains doivent faire comprendre aux citoyens la nécessité impérieuse de l'accès aux TIC notamment en organisant des séminaires de formation comme celui d'Accra en 1995 (cf. PANCS).

Il s'avère aussi nécessaire de permettre aux populations les plus reculées ou enclavées d'avoir des informations, autrement dit, il s'agit de vulgariser les moyens de communication et d'information. Pour cela, on a besoin de spécialistes dans le domaine. Ainsi, il faut favoriser la formation de jeunes capables de fournir ces prestations, surtout dans le domaine de l'Internet. Ceci doit se faire dans les écoles et Universités, d'où la nécessité de renforcer les études en technologies de l'information et de la communication. Et pour cela, le domaine de l'éducation doit bénéficier d'un certain nombre de structures nouvelles aussi.

Cependant, pour ne pas léser les autres couches sociales, l'installation de centres de formation en technologies de l'information de la communication s'impose. Ceci permettra à ceux qui sont dans la vie active de suivre eux aussi cette formation. Les gouvernements doivent aussi permettre aux régions les plus reculées d'installer par exemple leur presse, leur radio et leur télévision, ce qui leur permettra de suivre les informations et donc l'évolution du monde actuel.

Il faut aussi et surtout permettre aux jeunes étudiants d'avoir accès et de maîtriser certains de ces moyens, comme l'outil informatique, qui tend à occuper une place importante dans le monde actuel dominé par les relations à distance. Une fois ces défis

lancés quelles sont les opportunités pouvant permettre leur aboutissement ou leur réalisation? Malgré ses moyens modestes, le continent africain offre des opportunités pouvant lui donner l'accès universel aux TIC très facilement.

Les ressources des différents Etats africains doivent leur permettre d'envisager ou d'opérer des investissements dans le domaine de l'information et de la communication. Le domaine de la technologie doit attirer davantage l'attention des gouvernements. Autrement dit, il faut financer les projets visant à entreprendre des travaux en ces domaines. Pour cela, une mobilisation de ressources ou de moyens financiers est importante et indispensable. Les pays africains doivent aussi envisager la création de groupements ou regroupements régionaux, voire d'une institution continentale, qui serait chargée de favoriser l'accès ou la vulgarisation des technologies de l'information et de la communication dans tous les coins les plus reculés. Les Etats africains doivent éviter les conflits interétatiques pour investir plutôt dans le domaine de la communication et de l'information qui s'avère nettement plus constructif. Sur le plan continental, il faut penser à une institution comme l'Union Africaine qui serait chargée, par l'une de ses sections, du financement de ce domaine des TIC.

Les gouvernements peuvent même créer au niveau des différents Ministères de la communication, des Directions chargées spécialement du domaine des TIC. Pour une bonne gestion des aides extérieures visant le domaine de l'information et de la communication, ces Directions doivent être en contact permanent avec les postes de vulgarisation qu'il faudra créer dans les lieux les plus reculés et enclavés de l'Afrique.

Le domaine des technologies de l'information et de la communication préoccupe sincèrement l'Afrique qui affiche des images inévitables de l'accès aux TIC. Ainsi, il est nécessaire pour favoriser l'accès universel des TIC, de prendre des engagements dans certains domaines comme celui de l'éducation, de la formation professionnelle, de l'information et de la communication ainsi que de l'urbanisme...

Une fois ces engagements pris, il faut une mobilisation des moyens nécessaires à leur réalisation, notamment en supprimant certains domaines d'investissement au profit de celui des TIC. Les gouvernements doivent aussi s'appuyer sur les regroupements régionaux (C.E.D.E.A.O.) ou continentaux (U.A.) pour permettre la réalisation des défis qu'ils se sont lancés. Au niveau étatique, une politique de subvention permettra aux différentes collectivités de mettre en place des structures visant l'accès aux TIC. Ajoutée à cette politique, la diminution de certaines taxes, la presse, la radio, la télévision et autres moyens d'information verront aussi le jour dans certaines localités où ces structures étaient jadis inexistantes. Cela permettra à l'Afrique dans sa totalité d'embrasser les TIC.

Ms Abia Amin
Sudan



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

The demand for Information and Communication Technologies (ICTs) is growing rapidly in Africa. As is the rest of universal access to ICTs in Africa. The challenges can be summarized in the following points.

Affordability: According to the International Telecommunication Union (ITU), statistics from the average number of PCs per 100 inhabitants in 2002 was 1.3. Computer prices are relatively high. The average African struggles to meet his basic needs and a computer is usually the last item on his list and PC prices are usually too high.

Awareness: In many African countries, there is still a problem of illiteracy. The lack of the basic skills of reading and writing greatly hinders the spread of ICTs. Besides, the number of ICT experts, when compared to the large African population is very small indeed. Furthermore, there is very small number of well-equipped computer and communication laboratories and these are usually located in urban rather than rural areas.

Funding: Private companies are the main source of funding and they are usually discouraged from investing in ICTs in rural areas because they see it as an investment without profit.

To solve these problems, there are many suggested solutions:

Making ICT equipment more affordable by local assembling, maintenance and recycling and tariff reduction.

Awareness of the importance of ICTs should be raised in children at an early age in basic schools. Besides, the time has come for illiteracy to be completely eradicated.

Launching scholarship schemes that help more undergraduates and graduates to study ICT fields abroad. These schemes should be well shared out and geographically distributed and should ensure that the scholars will return back to contribute to the development of their geographic regions.

Governments should carry out market research to identify the needs of areas which do not have access to ICT services. Such comprehensive data would be very helpful to private companies and would help them to choose the most efficient technologies in those areas.

M. Abdoukader Ballah
Djibouti

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Pour les pays africains les technologies de l'information et de la communication (TIC) sont la dernière chance pour rattraper leur retard dans le domaine économique.

Cependant, pour atteindre les objectifs, il faudra relever certains défis.

Il faudra initier le plus grand nombre possible de personnes aux TIC afin de lutter contre l'ignorance et l'analphabétisme. Par ailleurs, les gouvernements africains doivent militer pour le développement et la vulgarisation des TIC dans leurs pays respectifs et investir dans ce secteur afin qu'il devienne un moteur pour les autres secteurs d'activité. D'autre part, pour promouvoir et encourager les entreprises locales et étrangères à développer leurs activités sur le continent africain, il faudra prendre des mesures politiques qui pourront faciliter leur compétitivité, telles que la réduction des impôts et autres charges et ainsi donner l'opportunité à chaque personne d'accéder un jour aux TIC.

Enfin, je pense que l'implantation sur le continent africain de certains grands fabricants de matériel informatique, tels que IBM et COMPAQ serait une occasion de réduire largement les prix, condition primordiale à l'introduction et à l'interactivité des TIC.

M. Abdul Malik Bangura
Sierra Leone



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Communication is the transfer of ideas, information, thoughts, feelings or emotions from a source to a receiver. In other words, it is the exchange of ideas or information from one person to another. Communication is a process that keeps going on and on.

In all modern societies, a free flow of ideas and information is considered vital to life. Individuals need information to make choices from what is available. This choice is more than practical; it encompasses information about trade, education, religion, science and almost any other subject one can think about. Since society's most important goal includes a stable political framework, in which individuals can choose and experience just and honest state actors and a higher quality of life sustained by improved social and economic conditions, information, therefore, is also essential to the sustenance of democracy. It is argued that for democracy to function effectively, people need to have unhindered access to information. The world is now a global village and communication is a sinequanon, without it nothing good can be done. It brings the world together.

Moreover, other forms of communication such as infra personal inter personal do not necessarily reflect the above. What is specifically pertinent here is mass communication – communication to a wider audience through the use of mass media – radio, television, internet, the press, etc.

The absence of effective media in other parts of Africa is one of the major problems people face and thus cannot achieve universal access to ICTs. For instance, in Sierra Leone, even though information technology has allowed the development of mass communication, certain areas in the rural zones still lack effective means of communication and thus the voices of indigenous peoples in these areas are usually not heard.

As information is improving every day, there is much to be done for people living in remote areas in Africa. The need is there for them to have equal access to the media so that they could communicate to the world at large.

In some areas a lot of emergency cases that require medical attention get worse because people do not have access or means to communicate to the "outside world" for rescue. Also, a lot of people are being attacked by armed men in their homes from time to time and, because of lack of means of communication to reach the police, lose a lot of property and, in some cases, their lives.

In developed countries like the U.K., a kid has access to a wide range of communications and would be able to dial 999 for any emergency situation.

In some government departments in Sierra Leone, the use of files to keep records is still in existence. Sometimes people get embarrassed because certain files cannot be traced on time to obtain information for certain purposes. How unlike a computer; just a click and there you are. The option will be to read or download the information required.

Because of the availability of information technology, certain communication needs are met from time to time. In Sierra Leone, communication played a vital role in bringing the decade-long civil war to an end. Notwithstanding this, the role it is now playing in post-war Sierra Leone has not only made room for gratification but has also improved the social lives of the people.

The mobile networking is becoming more and more effective especially in the capital. It has also expanded to the interior. There has been a lot of telecentres and internet cafés created and people can talk everywhere and know the latest innovation or occurrence in the world.

With the internet, people can learn a wide range of things from all walks of life; health, agriculture, military, etc. Other media like the television or the radio serve as a forum for the empowerment of women. The rate at which the internet has helped in the educational sector is very high. Other opportunities include linkage. The mass media are able to join together by interpersonal channels different elements of society that are not directly connected. For example, mass advertising attempts to link the needs of buyers with the products of sellers. Geographically separated groups that share a common interest are linked by the media.

The outbreak of hostilities in warring countries linked together a whole nation concerned about safety of their friends and relatives in the armed forces. People turned to TV, radio, newspapers and magazines to learn the latest war news. The internet has enabled us to have pen pals. On the whole, there is a lot of information received. The media provide information, education and entertainment.

If everybody in Africa was computer literate, and had access to other communication equipment, the major challenges and opportunities for achieving universal access to ICTS would be evident.

M. Ameer Bennaoui
Algérie

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

1 Introduction

Les progrès spectaculaires qui ont révolutionné les secteurs de l'électronique, de l'informatique, des télécommunications et de la radiodiffusion ont inauguré une nouvelle ère de progrès social, la plus importante depuis l'invention de l'imprimerie qui a jeté les bases de la révolution industrielle. En Afrique, la faiblesse de l'infrastructure d'appui à ces nouvelles technologies est telle qu'elle préfigure un recul considérable du continent par rapport au reste du monde en matière d'indicateurs de qualité de la vie, à moins que des mesures draconiennes soient prises pour redresser la situation.

Il ne fait guère de doute que l'infrastructure d'information et de communication en Afrique s'est beaucoup développée au cours des dernières années. La télédiffusion par satellite, l'Internet et le téléphone cellulaire se généralisent partout en Afrique, mais ce qui était impensable il y a une dizaine d'années est toujours de domaine du rêve pour la majorité des Africains, c'est-à-dire ceux qui ne vivent pas dans les capitales et ne font pas partie du petit nombre de privilégiés. L'accès au téléphone demeure très limité. On compte seulement 14 millions de lignes pour l'ensemble du continent, c'est-à-dire moins qu'à Manhattan ou à Tokyo, et si l'on exclut l'Afrique du Nord et l'Afrique du Sud, il ne reste plus que 3 millions de lignes pour 600 millions d'habitants. En outre, la plupart des lignes sont installées en milieu urbain alors que plus de 70% de la population vit en zone rurale.

Si le tableau est aussi sombre s'agissant de la capacité de l'Afrique à intégrer la société mondiale de l'information, des progrès notables ont cependant été enregistrés dans certains pays au cours des dernières années. Les chiffres moyens cités ne rendent pas compte des grands écarts entre pays dans l'utilisation des nouvelles technologies et des capacités infrastructurelles de chacun de ces pays.

2 Les principaux défis et opportunités

Jusqu'à une date récente, l'accès à l'information ainsi que l'utilisation des instruments de communication en Afrique relevaient en totalité de monopoles d'Etat. La tendance étant aujourd'hui à l'ouverture démocratique et aux politiques de marché, on constate une nette amélioration dans la diversité et la disponibilité des canaux d'information et de communication. A la fin de 1999, l'Internet était disponible dans toutes les capitales africaines alors qu'il existait dans seulement 12 pays il y a trois ans. Les taux de raccordement au réseau téléphonique n'ont jamais été aussi élevés, des centaines de médias ont vu le jour dans les secteurs de la presse, de la radio et de la télévision et l'utilisation du web se développe de plus en plus.

Que cette évolution coïncide avec la réalisation, en 1999, d'un taux de croissance moyen du PIB de 4,7% en Afrique n'est probablement pas le fait du hasard. Après des années de stagnation, ces niveaux de croissance sont aujourd'hui proches de ceux des pays asiatiques. A la suite de la crise asiatique, il est probable que l'Afrique devienne la région enregistrant le plus fort taux de croissance dans le monde. La révolution de l'information passe pour beaucoup de personnes comme «la dernière chance de l'Afrique pour refaire son retard» et il apparaît déjà de façon très claire que nombre de pays africains se sont engagés à intégrer la société mondiale de l'information.

Il n'en reste pas moins que ces changements surviennent à partir d'une situation catastrophique, de sorte que l'Afrique est appelée à effectuer des transformations considérables pour atteindre des normes proches de la moyenne mondiale. On compte 33 PMA en Afrique sur un total de 48. Il n'y a sur le continent aucun pays à revenu élevé et les seuls pays classés dans la catégorie des pays à revenu intermédiaire de la tranche supérieure sont l'Afrique du Sud, le Gabon, Maurice, la Réunion et les Seychelles.

Si des progrès encourageants ont été réalisés au cours des dernières années, les écarts dans le niveau de développement entre l'Afrique et le reste du monde sont plus grands dans le domaine des TIC que dans d'autres domaines pour lesquels on emploie des mesures de développement plus traditionnelles. L'Afrique compte seulement 2,5% du monde de postes de télévision en service dans le monde pour une population équivalant à 13% de la population mondiale. La télédensité est seulement de un pour 200 habitants. La pénétration des ordinateurs ne dépasse pas trois pour 1000 et seule une personne sur 1500 accède à l'Internet contre une moyenne mondiale de un pour 40.

Les perturbations affectant la fourniture d'énergie électrique ou l'inexistence de celle-ci sont monnaie courante dans le paysage africain et constituent des entraves importantes au développement de l'utilisation des TIC, notamment en dehors des principales agglomérations. Nombre de pays disposent de réseaux de distribution électrique très limités qui pénètrent très peu en zone rurale et les délestages électriques sont courants, y compris dans certaines capitales.

Le niveau de développement des réseaux de transport africains n'est guère plus brillant, ce qui limite les mouvements des personnes et des marchandises. Cette situation ne plaide pas en faveur d'une utilisation accrue des TIC qui permettent d'accélérer les transactions et la prise de décision mais qui ne peuvent couvrir les défaillances affectant le secteur des transports.

Au vu d'une telle situation, il n'est guère étonnant que la radio demeure de loin le principal média en Afrique, le nombre de postes radio dépassant de beaucoup celui de tout autre appareil électronique. De nombreuses personnes se partagent le même poste radio et il est courant de voir des groupes s'agglutiner autour d'un poste de télévision. Le partage des sources d'information constitue en fait une des caractéristiques du paysage audiovisuel africain: un journal est souvent lu par plus de dix personnes; on estime qu'il y a, en règle générale, trois utilisateurs pour chaque connexion Internet et il n'est pas rare de trouver la plupart des habitants d'un village groupés autour du seul poste de télévision disponible, souvent relié à une batterie automobile ou à un générateur d'électricité. Aussi est-il aisé d'affirmer que toute politique de développement du secteur de l'information et de la communication qui ne tiendrait pas compte de la nécessité d'élargir l'accès aux médias traditionnels serait tout à fait incomplète.

Un autre aspect du problème est que les coûts observés sont supérieurs aux coûts réels. Un grand nombre de personnes connaissant bien cette industrie devraient être capables de mesurer l'impact de la baisse des prix ainsi que des opportunités qu'offrent aujourd'hui les largeurs de bandes et l'ordinateur.

En résumé, le principal obstacle à l'utilisation accrue des TIC est la faiblesse du taux de pénétration des services à coût réduit de télécommunication, de diffusion de l'Internet, notamment en zone rurale. Le coût d'accès est considéré comme le problème majeur, au même titre que l'absence d'infrastructures pour les TIC. Si les coûts baissent, la demande d'infrastructures et le flux de communication augmentent, provoquant une baisse du coût unitaire du service grâce aux économies d'échelle ainsi réalisées.

La faiblesse de l'activité économique en Afrique ne permet certainement pas de réaliser les économies d'échelle nécessaires pour attirer l'investissement dans les infrastructures, mais l'infrastructure mondiale de l'information permet d'établir des connections entre des personnes, quelles que soient leur origine ou la distance que les sépare. Il est également possible d'obtenir des financements pour des marchés suffisamment attractifs, dès lors qu'une véritable collaboration est instituée pour consolider la demande et que des politiques coordonnées sont mises en place pour valoriser les ressources humaines et développer les réseaux de transport et d'alimentation en énergie.

Les stratégies mises en œuvre en Afrique pour accélérer le développement de l'infrastructure d'information s'appuient sur des approches très diverses et sur une grande variété de réponses aux conditions historiques prévalant dans les différents pays. Il est clair que des stratégies nationales concertées sont mises en place à cet effet. La restructuration du secteur des télécommunications apparaît de ce point de vue comme une exigence vitale dans l'effort entrepris pour améliorer l'infrastructure dont dépend si étroitement l'utilisation des technologies de l'information et de la communication (TIC).

D'une façon générale, les coûts d'accès au réseau Internet devraient baisser dans d'importantes proportions pour en généraliser l'usage. On peut constater que les niveaux de service se sont améliorés et que les coûts ont baissé, puisque les fournisseurs d'accès Internet sont libres de créer leur propres liens et ne sont pas obligés de passer par l'infrastructure nationale de télécommunication. En outre, les opérateurs de télécommunication peuvent contribuer dans une très large mesure à la réduction des coûts pour les appels longue distance transitant par l'Internet comme c'est le cas dans de nombreux pays francophones. Les tarifs des appels locaux demeurent relativement élevés, ce qui se répercute négativement sur l'utilisateur final qui, en règle générale, ne peut pas utiliser le réseau Internet très longtemps en raison du coût élevé des appels locaux.

Mlle Houda Benslimane

Maroc



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les nouvelles technologies de l'information et de la communication constituent sans nul doute un vecteur de développement socioéconomique dans tous les pays, car à travers l'Internet et les NTIC, des potentialités inédites de communication et d'échange peuvent être mises en œuvre.

Pour les pays africains dont les économies sont faibles, l'appui sur les NTIC ouvre de nouveaux horizons à explorer. En effet, l'Internet ne nécessite que peu d'investissements spécifiques et il est d'un coût d'utilisation modeste. Sa relative indépendance par rapport à la nature des infrastructures, aux frontières et aux opérateurs lui a permis un développement extrêmement rapide à travers le monde.

L'opportunité d'impulser l'économie africaine avec une utilisation massive des NTIC est aujourd'hui réelle; pour ce faire, des domaines socioéconomiques doivent être ciblés, dont principalement:

- L'enseignement: permettre aux élèves, aux étudiants et aux professeurs un large accès à la société du savoir tout en assurant une introduction massive des NTIC dans les programmes d'enseignement et de formation professionnelle.
- Le développement du milieu rural: en effet, le soutien de l'utilisation productive de ces technologies est de nature à assurer la collecte, l'échange, le traitement, l'exploitation et le partage des informations sur le social, sur l'éducation et plus particulièrement sur l'agriculture.
- Le suivi des ressources naturelles pour le développement durable: l'outil informatique peut être utilisé pour gérer l'évolution de ces ressources afin de relever les facteurs de détérioration, la dégradation des sols et des forêts due à des modes de mise en valeur non durables des terres, la diminution des ressources forestières, animalières, etc. et la diminution de la diversité biologique. L'utilisation des outils logiciels capables d'exploiter ces données, permettront sans aucun doute d'améliorer, grâce aux NTIC, la prise en compte de la capacité de charge des ressources naturelles dans la planification, le suivi et l'évaluation des programmes de développement.
- La création d'entreprises, notamment dans un secteur susceptible de créer des emplois qualifiés et de générer des produits ou des services très demandés par le marché local et pour lesquels on fait aujourd'hui appel à des experts et des compétences étrangers, ce qui représente évidemment un fardeau très lourd pour l'économie africaine.



Le renforcement de la compétitivité des entreprises, à travers une aide et une assistance technique: en effet, cette compétitivité est liée à la pertinence des décisions des entreprises et dépend largement de la qualité des informations dont elles disposent ainsi que de leur capacité à les capitaliser et à les traiter. Tous ces processus de production, consommation, échange, traitement ou capitalisation de l'information peuvent être largement améliorés par les NTIC et l'Internet.

M. Moustapha Bikienga
Burkina Faso

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

A l'heure de la mondialisation et de la globalisation, l'utilité des Nouvelles Technologies, de l'Information et de la communication (NTIC) n'est plus à démontrer. Mais une fois de plus, l'Afrique reste à la marge de ces progrès (on parle de moins de 20% d'utilisateurs de l'Internet en Afrique par rapport au reste du monde). Comment peut-on alors procéder pour améliorer cet état de fait?

Il faudrait d'abord chercher à augmenter le taux de scolarisation en Afrique. Cela va de soi, l'instruction étant la base pure d'une appropriation et d'une maîtrise des TIC. Augmenter le nombre d'écoles et d'instituts de formation spécialisée dans le domaine. Plus il y aura d'experts, plus les initiatives privées sur les TIC se développeront. L'idéal aurait été d'encourager les élèves et les étudiants à s'orienter vers ces centres de formation. On pourrait par exemple leur octroyer des bourses d'étude. Pour réduire les coûts de gestion et de fonctionnement de ces écoles et instituts, il faudrait aussi leur permettre d'acquérir le matériel à faible coût. Une exonération de taxes douanières serait un apport non négligeable. Une telle mesure devrait être en fait «une mesure d'urgence» en attendant que l'Afrique puisse devenir productrice et pas seulement consommatrice. Une baisse des prix sans conteste serait un levier pour la vulgarisation et l'utilisation des TIC. La liste des mesures et défis est très longue. Elle est sûrement plus longue que celle des opportunités. Nous pouvons par exemple citer comme opportunité le fait qu'en Afrique il y ait des gisements de tous les minerais utilisables dans la fabrication du matériel (par exemple le silicium). La très grande démographie est aussi un avantage, pour peu qu'elle soit bien exploitée.

Des lignes précédentes il ressort que l'accès universel aux TIC en Afrique serait possible avec de la volonté politique et surtout des moyens financiers.

Ms Hawa Bockarie

Sierra Leone

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

The art of communication is an inherent gift in mankind. It brings about understanding between different races of people and facilitates trade, political activities and global development.

The issues of Information and Communication Technologies (ICT) are, undeniably, of primary importance in our endeavour to improve the economic conditions of our countries. They provide and enhance people with the opportunity/tools to overcome the handicaps that have conspired to retard the economic development of nations.

Communication plays an important role in the changing dynamics of the world and has been identified by modern man and world leaders as very essential and crucial in the development of the world. There is no doubt therefore regarding the great importance world organisations have put on this area and the pivotal role it occupies in a nation's development process.

A good communications environment in every country should boast of an infrastructure that is strong and with strong human resources capability to man these structures; i.e. postal system, telecommunication network systems, Internet Services Providers, (ISPs) telecentres and Voice over Internet (VoI). With these apparatus in motion, a country will experience an influx of investors in the business arena and thus a country's development is ensured.

With the above background, the International Telecommunication Union (ITU), the World Bank, European Union, the United Nations and its bilateral agencies like FAO, UNDP, etc., have recognised communication as a major feature in the world's development and have consequently made significant strides towards (ICT) development by conducting regional/global workshops, conferences and training programmes, to help provide the right technical education for people attending these institutions. At this point I will now seek to bring to focus the main theme of this essay which is Universal Access.

The above activities are a gradual process in moving towards Universal Access and Universal Service that will include the rural population. This will in fact actualise the dream of the United Nations, and that of ITU, towards making the world a global village. The communication world is mainly concerned with the digital divide and bridging the information gap existing between urban and rural settlements.

I will narrow down my essay to Africa and the effect and impact that, Universal Access will provide for the continent. In Africa, globalisation has greatly affected the people in the uneven distribution of economic resources and facilities or access to strategic institutions of development-related issues.

The phenomena apparent therefore is an unending poverty scale at its highest with people living under 1 dollar a day. This poverty scenario is due to a lot of opportunities/facilities denied to the people, with the rich becoming richer and the poor becoming poorer.

Communications can to a great extent bring things round for the continent. If importance is placed on improving the industry and its infrastructure, this will enhance social and economical development of the continent.

Development organisations should focus on building the infrastructure and build on its Human Resources Index if the apparatus are to thrive for the continent.

The infrastructure should not be limited to urban areas alone but be extended to the rural population who are very vulnerable and the majority of whom are poor. If given the opportunity and provisions, their livelihoods will be increased and sustained. Negative thinking on the part of investors in funding rural telephony should be discouraged and pro-poor legislation relating to Universal Access should be instituted and implemented. Liberalising the telecommunication industry should be the vogue in African countries. Incumbent operators should be encouraged to allow competition from other interested bodies/organisations.

This will ensure more service providers and the citizens will benefit. The rural poor will have access to computers and will access valuable information through the Internet on agricultural issues, trade and general development. They will be able to sell their products through the net rather than coming down to the urban areas with all their hazards.

They will be informed on latest technologies like telemedicine. They will be advised on medication and treatment through the net. This will save lives on a timely basis.

Decentralizing the industry can culminate in total bridging of the digital divide. Services will be on, the door step of everybody up to the village community. This saves time and delays in policy implementation.

This will eventually bring or increase social development of the continent. As the saying goes – information or knowledge is power.

M. Sami Boughaba
Tunisie



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les technologies de l'information et de la communication (TIC) sont un formidable moteur de croissance. L'économie mondiale connaît une mutation profonde qui se traduit par la transformation de tout le tissu économique, ancienne et nouvelles économies confondues. Ce passage à l'économie mondiale de la connaissance est un processus auquel les pays en développement doivent être associés, sans quoi la fracture entre le Nord et le Sud ne fera que s'aggraver. De même que la valeur d'un réseau croît avec le nombre d'intervenants qu'il relie, de même les TIC ne pourront déployer leur plein potentiel que lorsqu'elles seront à la portée de la totalité de la population, d'où la nécessité d'un accès universel aux TIC. Cela interpelle l'esprit sur les défis et les opportunités pour un accès universel aux TIC en Afrique.

Les disparités entre pays se mesurent à l'étendue de la fracture numérique qui les sépare. Réussir à réduire cette fracture est donc l'un des principaux défis que doivent relever les pays en développement pour assurer leur prospérité économique et garantir à leurs peuples un avenir sûr. Toutefois, les pays en développement se trouvent confrontés à de nombreux défis dans la réalisation de l'objectif d'accès universel aux TIC.

Tout d'abord, il est nécessaire de noter que les TIC sont en constante évolution et que la vitesse avec laquelle évolue la technologie empêche les pays en développement de parvenir à leurs objectifs. En effet, nul ne peut nier que le continent africain ne dispose pas de toutes les compétences techniques indispensables au développement efficace des TIC, d'autant plus que ces techniques sont importées et en constante évolution. Ces TIC ont été développées en fait pour satisfaire aux normes culturelles et sociales des pays riches. Dans ce contexte, l'appropriation des TIC pour le développement passe entre autres par le développement de ces compétences.

D'autre part, il ne faut pas oublier que les pays d'Afrique n'ont pas toujours la capacité de subvenir aux besoins croissants d'investissements massifs dans les technologies de la communication; de nombreux pays en développement ne sont pas en mesure d'équilibrer leur budget. Alors que certains pays ont des réseaux de communication et d'information très développés et peuvent autofinancer leurs besoins, d'autres n'ont pas les ressources financières nécessaires pour développer leurs réseaux aussi vite que le souhaiteraient les utilisateurs.

Enfin, l'appropriation des TIC dans ces pays passe nécessairement par l'élaboration de contenus significatifs, au lieu de se contenter de consommer les informations venant d'autres sources. En effet la plupart des contenus publiés notamment sur l'Internet sont soit en français soit en anglais. De plus, ces contenus sont parfois valables pour une réalité culturelle et économique des pays riches et producteurs de TIC. En effet, il est

impératif de réduire le taux d'analphabétisme, très élevé sur le continent africain, pour pouvoir parler d'accès universel aux TIC en Afrique.

En vue de ces défis à relever, quelles sont alors les opportunités offertes par les TIC pour payer le prix de ces défis?

Cette révolution du numérique a une incidence directe sur la vie économique, sociale et culturelle. Autrement dit, le développement économique est aujourd'hui étroitement lié à la capacité d'adaptation des pays à cette évolution dont ils doivent exploiter les avantages pour tirer parti du nouveau potentiel qui s'offre à eux.

Tout d'abord, l'insertion des TIC permet d'accéder à un savoir plus large; grâce à l'Internet les individus pourront accéder à des informations et à des connaissances multiples, en d'autres termes accéder à la connaissance universelle, puisqu'à l'heure actuelle on parle de fonds mondial du savoir.

Par ailleurs, l'usage des TIC favorise les échanges entre les citoyens à trois niveaux; à l'échelle locale, pour faciliter ainsi l'organisation des moyens de production par exemple; à l'échelle nationale pour faciliter les moyens de distribution et à l'échelle internationale, puisque les TIC ouvrent une nouvelle voie vers l'économie mondiale et l'investissement étranger. De ce fait, les TIC jouent un rôle clé dans l'amélioration de la productivité et de la compétitivité, surtout en envisageant les possibilités de l'entrepreneuriat sur l'Internet par exemple, ainsi que le e-commerce. Celles-ci auront un rôle de catalyseur au niveau des applications pour combler le fossé numérique et inclure tout le monde dans l'économie mondiale.

Enfin, Les TIC peuvent être vues comme un instrument indispensable dans la lutte contre la pauvreté dans le monde. Les TIC fournissent aux pays en développement une occasion sans précédent d'atteindre beaucoup plus efficacement qu'avant des objectifs de développement vitaux, par exemple en matière de réduction de la pauvreté, de soins de santé de base ou d'éducation. En effet, l'insertion des TIC dans l'éducation offre la possibilité de rehausser la qualité de l'enseignement dans ces pays et une excellente occasion pour former des générations futures qui pourront s'approprier ces technologies pour un avenir plus sûr. Les pays qui réussissent à tirer le meilleur parti des TIC peuvent espérer enregistrer une croissance économique fortement accrue et une protection sociale considérablement améliorée.

Il résulte de ce qui précède que l'accès universel aux TIC en Afrique n'est pas un choix mais plutôt une nécessité qui s'impose pour construire le pont qui réduira la fracture entre le Nord et le Sud et c'est devenu une forme moderne de lutte contre la pauvreté dans le monde. Toutefois, il faut garder à l'esprit que c'est le bon usage des TIC qui garantira la réalisation des effets escomptés. Les efforts devront être développés dans ce sens.

M. Naiel Saiti Cassama
Guinée-Bissau

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

A mon avis, l'accès universel des TIC en Afrique dépend essentiellement de la réduction de l'analphabétisme, que je considère comme un défi majeur. Ensuite viennent les autres défis, comme les difficultés d'accès dans les zones rurales, le niveau de pauvreté des pays africains, les guerres et le climat d'instabilité politique et sociale, l'inégalité entre les sexes, qui limite l'accès des jeunes filles à l'école, le faible pouvoir d'achat des Africains, le manque d'électricité dans les zones rurales et même dans certains centres urbains, le non-respect de la démocratie et surtout de la liberté de presse.

Tous ces points constituent un véritable défi qu'il faut affronter et vaincre avant que l'accès aux TIC devienne une réalité en Afrique.

En ce qui concerne les opportunités et si nous prenons en compte les autres continents, je considère que l'Afrique n'a jamais connu de véritables progrès en matière de développement technologique.

Cependant, plusieurs facteurs peuvent conduire à ce développement, car outre les pays qui s'efforcent de mettre en place des mécanismes capables de promouvoir les TIC en Afrique, le secteur privé, les organisations de la société civile et les organismes régionaux et internationaux offrent des opportunités d'accès aux TIC. Je pense que les succès du NEPAD et de l'Union Africaine dans leur mise en place, pourra mieux faciliter l'accès universel aux TIC en Afrique.

Mr Abdou E. Cham
Gambia

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

In the modern age of information and communication technologies (ICTs), Africa stands unique to maximize the benefits derived from ICTs, and at the same time harness fully the inherent potential in the information and communication industries. Suffice to say, therefore, that information and communication systems must be streamlined in a manner that ensures their integration into the global information and communication systems.

To access Africa, therefore, a number of fundamental challenges need to be noted. Foremost among the challenges is the bridging of the gap that exists between rural Africa and urban Africa in terms of their access to ICTs. Another important challenge relates to the minimization of the cost involved in the production of qualitative and quantitative information. By achieving this, the price attached to such information becomes affordable to the users. It is also crucial to create that linkage between production of information and use of information. If that is achieved, the value of information in qualitative terms would bring about greater production efficiency. It is increasingly obvious that the absence of a proper and well designed policy framework governing the utilization of ICTs in Africa could hinder the much needed access by Africans to ICTs. This therefore calls for greater commitment on the part of African governments to ensure that a sound, reliable and flexible policy framework is put in place. Last, but not least, is the balancing of interests among producers and users of ICTs. This is indeed a great challenge and in most cases difficult to overcome. Balancing of interests among producers and users of ICTs contributes to overall harmonious industrial relations.

Moreover, it is imperative to have a broader picture of the opportunities extant in the information and communication industries across the continent. Information serves as an essential fountain or, to be more precise, bedrock for economic development. The development of our information systems, in particular ICTs, guarantees a genuine and sustainable development. Information and Communication Technologies open a door of opportunities. In recent times, a sub-Saharan West African country (Senegal) introduced the use of a communication device to monitor the movement of boats, vessels, ships *inter alia* for the purpose of detecting the type and size of fish net used offshore by fishermen. This sophisticated technological device in no small measure contributes substantially to man-time development. Similarly, the demand for ICT services in one way or the other enhances the level of employment. By this, it could be realized that Information and Communication Technologies have made it possible for specialized personnels to gain employment within the relevant sectors of the economy.

Besides the opportunities cited above, ICTs offer a unique opportunity for the integration of the African economies. Furthermore, another unique opportunity that Information and Communication Technologies offer to the poor or poverty-stricken people is that it makes the voiceless people heard. In Africa, where poverty is pervasive, and the percentage of African people affected by the scourge of poverty is considerably large, I would at this juncture, urge African governments to rely on Information and Communication Technologies as a means of empowering the voiceless. The voiceless African people should also take it as an opportunity to contribute their quota to the overall development of their society.

To sum up, a conducive environment should be shaped in a manner that enhances further development of ICTs in Africa and beyond. It goes without saying that Africa has the potential to access and be accessed as far as Information and Communication Technologies are concerned.

M. Ridouane Chawki

Maroc



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les nouvelles technologies de l'information et de la communication (NTIC) et l'Internet en particulier, s'ils sont bien exploités, peuvent révolutionner les pays de l'Afrique et propulser leurs économies très loin car ils s'ouvrent de grandes possibilités de progrès.

Une condition, toutefois, est nécessaire à l'intégration des pays de l'Afrique dans la société de l'information; elle concerne la volonté politique de participer et de bénéficier de cet essor de la société du savoir et donc de mettre en place un développement efficace, équitable et durable. Cela permettra aux personnes de profiter des possibilités plus grandes qu'ouvrent les nouvelles technologies de l'information et de la communication.

Parmi les actions à mener à cet effet, on peut citer principalement les points suivants:

- En matière de connectivité, l'un des principaux défis que l'Afrique doit relever réside dans le fossé numérique entre riches et pauvres. La prospérité et la stabilité sociale exigent en effet, que tous les citoyens aient la possibilité d'acquérir des connaissances et de participer efficacement à la société civile.
- L'élaboration des services à usage pratique (comme les services de l'Etat en ligne) en favorisant l'accès à la nouvelle économie (par exemple, le commerce électronique).
- L'encouragement de la mise en place de réseaux virtuels pour mettre en valeur le potentiel d'une société civile est dynamisée par la mise en commun des efforts et des ressources de tout ce qui doit favoriser le progrès socioéconomique.
- L'élaboration de cadres réglementaires qui encouragent les efforts financiers nationaux et régionaux en faveur des NTIC et facilitent l'accès de tous à la nouvelle société du savoir.
- La mise en place d'un cadre réglementaire adapté pour la connectivité, qui doit prévoir en particulier:
 - a) Accès universel et équitable à l'information
 - b) Transparence
 - c) Industrie de l'information et de la communication concurrentielle
 - d) Participation efficace des citoyens à l'élaboration du cadre réglementaire
 - e) Un mécanisme de protection de l'information
 - f) Formation à l'utilisation des services des NTIC
 - g) Articulation de la législation visant les secteurs de l'information et de la communication

- L'application des technologies de l'information et de la communication à l'enseignement supérieur, en incorporant les divers aspects des activités éducationnelles, à travers notamment des programmes régionaux qui visent à l'utilisation des technologies de l'information et de la communication aux fins suivantes:
 - a) Mise au point de matériel pédagogique comportant l'utilisation intensive des NTIC
 - b) Création de bibliothèques virtuelles
 - c) Formation professionnelle (reconversions)
 - d) Renforcement et élargissement de l'enseignement supérieur
 - e) Modernisation administrative des organismes éducationnels et des écoles
 - f) Formation des enseignants aux matériels qui utilisent intensivement les NTIC

Le principal but est de donner aux établissements d'enseignement supérieur les moyens d'offrir et d'administrer efficacement des programmes d'enseignement à distance qui utilisent les technologies de l'information et de la communication pour atteindre leurs objectifs de formation.

M. Franck Nizar Cherit
Sénégal



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

De nos jours, les TIC sont des outils importants et incontournables pour tout le développement de l'Afrique. Les TIC facilitent les échanges de biens et de services. C'est pourquoi les TIC constituent de nombreux défis et offrent plusieurs opportunités.

Comme défis, nous pouvons dire qu'il faut rendre les TIC accessibles à tous les Africains; il faudrait scolariser tous les Africains, rendre l'utilisation du téléphone accessible à tous, développer la téléphonie rurale, baisser les prix de l'accès à l'Internet, former tous les scolarisés à l'utilisation de l'outil informatique.

Mais en plus de ces défis, nous avons de nombreuses opportunités des TIC en Afrique, tels que l'accès facile au savoir, contrairement aux bibliothèques, insuffisantes dans le monde rural. En Afrique, peu de familles ont des bibliothèques. Il y a non seulement l'accès facile à l'information mais aussi à la formation via le net.

Grâce aux TIC, nous pouvons avoir l'accès facile aux transactions commerciales. Par exemple, on peut acheter un billet d'avion rien qu'en passant par l'Internet. Les TIC offrent l'avantage d'être accessibles à tous les peuples, en ce sens qu'elles demandent simplement à être réparties de façon équitable entre les communautés humaines. L'accès de ces TIC doit être assuré aux populations africaines dès l'enfance et doit être étendu à toutes les activités, de l'agriculture à l'industrie, aux transports, services et échanges. Les TIC favorisent aussi la démocratisation du savoir ainsi que l'égalité des échanges pour tous.

Les TIC sont de plus en plus intégrées dans le programme de développement de l'Afrique mais elles occupent aussi la meilleure place dans le nouveau partenariat pour l'amélioration du pays. Ainsi, plusieurs mesures ont été prises pour diriger l'Afrique vers l'institutionnalisation de ces outils dans le système économique et social, dans le sens de l'intégration de ces pays dans l'économie de l'information.

Ms Soustain Chigalu
Malawi

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

1 Introduction

The Information and Communication Technologies (ICTs) in Africa are unevenly distributed and expensive. However, it is high time Africans wake up to see the challenges and available opportunities for achieving universal access to ICTs in Africa.

2 Challenges

In my opinion, Africa is currently facing the following major challenges:

a) Network infrastructure

The information and communication network infrastructure is underdeveloped. Telephone, cellular phone and Internet services are generally limited to urban areas, leaving out rural and remote population underserved.

b) Cost

The cost of telecom services is expensive. Cellular operators and ISPs charge their services in USD. The cost of a 512 kbit/s circuit in Africa is 100 times higher than in developed countries.

c) ICTs policy and regulation

Most governments have no policies to promote ICTs market and the participation of youth and women in ICTs initiatives.

The telecom market is not fully liberalized. There are unfair interconnection charges forcing telecom operators to operate in isolation.

d) Research and development

There is less research and development in ICTs. The imported ICTs do not offer exhaustive solutions to Africa's diverse languages and culture.

e) Power supply

Electrical power supply in most African countries is unstable and unevenly distributed. Information and communication network operators are reluctant to invest where there is no electricity grid.

f) Capital

ICT investment capital is very high. Bank lending rates are also high. These facts discourage local investors to build an infrastructure that can be widely accessed.

g) Human resources and illiteracy

There is insufficient skilled labour in ICTs. Many people lack basic knowledge on how to operate a computer and other ICT gadgets.

3 Opportunities

The following are the major opportunities for achieving universal access to ICTs in Africa:

a) Wireless technology

Wireless technologies offer wider access to basic information and communication services than traditional wired networks. For instance, GSM cellular phones introduced in the late 1990s enabled most Africans to have access to telephone and data services with a teledensity of 4.4 per 100 inhabitants, surpassing the fixed-line telephone that is at 3 per 100 inhabitants.

b) VSAT technology

Africa should capitalize on utilizing flexible and affordable technologies, such as VSATs, that offer fast data services without geographical limitations.

c) Open source software

Free and open source software such as Linux is an alternative to proprietary software. Linux and StarOffice would bring tremendous growth to the access of ICTs because they are flexible and affordable.

d) E-learning

Online and virtual training courses are relevant for Africa to train people with ICT skills. IT essentials and networking courses offered by the Cisco-UNDP Initiative are a big opportunity to train ICT professionals.

e) Solar power

Solar power technology offers an alternative source of electrical power for ICT infrastructures. With solar power, ICT operators can offer telephone, computer and Internet services in rural and remote areas.

f) Donor-funded ICT projects

Refurbished computers that come in form of donations, once evenly distributed, would provide wider access to Internet, e-education and e-health services. Other donor-funded projects include the Sustainable Development Network Project (SDNP), Africa Link and the Lelend Initiative that aim to provide African countries with high-speed Internet connections.

g) Co-operation

The declaration of governments to the principles of the information society at the World Summit on the Information Society 2003 is an opportunity for Africa to provide ICT universal access to its people. This is because world governments declared their commitment to the provision of ICTs for all.

4 Conclusion

Africa has the potential to achieve universal access of ICTs despite the challenges being faced. The opportunities to accelerate universal access of ICTs lies in adopting low-cost technologies, wireless and broadband networks and online training among others.

Ms Hawala Christiaan
Namibia

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Africa is posed with a lot of challenges – that can in themselves be opportunities if overcome – for universal access of ICTs in Africa. The African continent, despite its renaissance program, is faced with multiple challenges of poverty alleviation that can overshadow access to ICTs in this great continent. However, poverty reduction should not be carried out alone at the expense of ICTs. A direct level of competencies therefore exists between poverty reduction and ICTs. Currently, one can say that Africa is divided into two groups: those which have done well in the implementation of ICTs as a development co-efficient and others still trailing behind. In this instance one is referring to African giants like South Africa where e-technology is the order of the day in production-related exercises, whilst countries like Guinea are still facing the mammoth task of setting up ICT infrastructure. Normally for poor countries (which the greater part of Africa is associated with), the opportunity they have is by the so-called generous donations of second-hand ICT infrastructure from first-world countries. This is tantamount to environmental damage because it is not out of goodwill that these donations are made but rather to get rid of their outdated ICT machinery. Africa can only gain access to ICTs if there is a political will from our leaders to realize that there exists a direct correlation between poverty reduction and ICTs. Hence they are required to redirect resources, financial and otherwise, from non-priorities to ICT infrastructure development which is a complement of poverty reduction, vis-à-vis agriculture, human capital development and all relevant areas of development.

The development of African indigenous knowledge vis-à-vis ICTs can also serve as an opportunity in developing access to ICTs. The problem that is apparent in ICTs, as argued by some African academics, is that it (ICTs) does not cater for the usage of African knowledge in its development. The issue of indigenous knowledge becomes prominent because traditionalists argue that the usage of ICTs can erode African values, through misinformation campaigns by the West. Africa should therefore aim at clearing out the misinformation. Indigenous knowledge can therefore become a central component of ICTs development in dispelling the poor public image on Africa that disregards any knowledge other than western values. The challenge here is how to make African values central to ICTs. The opportunity here is that if African values are an integral part of ICTs, then Africans will become more receptive to ICTs.

In conclusion, the future looks bright for Africa regarding the access of ICTs provided that:

- Political will and commitment are affirmed to redirect resources to this noble task
- Poverty reduction and ICTs are seen to be complements and not competitors
- Indigenous knowledge is encouraged in the development of ICT infrastructure

Universal access of ICTs shall indeed be a reality in Africa.

Mlle Liliane Marie Consolée Cishahayo
Burundi

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Le service/accès universel des TIC est la possibilité accordée à tous de pouvoir accéder à un ensemble de services de communication électronique de qualité et à un prix abordable.

En effet, l'accès universel des TIC en Afrique se heurte à de nombreux obstacles, à part la radio qui peut-être utilisée par la quasi totalité du peuple africain. L'accès à d'autres TIC ne présente pas encore un caractère universel. On observe un faible taux de pénétration téléphonique et l'absence de cybers dans les zones rurales, qui sont presque délaissées. A cela s'ajoute l'analphabétisme et l'ignorance des populations en matière de technologies modernes, sans oublier le manque d'infrastructures matérielles et de ressources humaines compétentes.

Mais, nul ne peut encore ignorer le coût élevé des appareils de communication et plus spécialement le coût élevé de l'accès à l'Internet. Ne serait-il pas raisonnable d'imputer ces coûts aux taxes d'importation des équipements de ce secteur et aux autres taxes dont les états africains n'exonèrent pas les opérateurs des TIC. Et enfin, les pays moins avancés (PMA) d'Afrique orientent leurs préoccupations ailleurs (éducation, santé, etc.), pour signifier qu'ils ont peu de moyens consacrés au secteur de la communication.

Cependant, un ensemble d'opportunités semble former une panacée pour parvenir à l'accès universel des TIC: construction d'infrastructures de réseaux téléphoniques en milieux ruraux isolés et privatisation de l'opérateur public en procédant à l'ouverture de son capital aux privés.

Les Etats africains doivent généraliser l'utilisation de nouvelles technologies en mobilisant le maximum de ressources. Ils doivent procéder à la création des fonds nationaux (taxes, aides, etc.) réservés à l'accès universel.

Pour faire face à l'ignorance et à l'analphabétisme, il faut une sensibilisation et une formation sur les TIC au sein des écoles (primaires, secondaires et supérieures), des camps militaires, des centres d'handicapés, des camps de réfugiés, etc. Les opérateurs, régulateurs et responsable politiques doivent faire en sorte que de nouvelles technologies soient mises en œuvre.

En outre, il faut mettre en place un cadre qui pousse à investir dans le secteur des télécommunications, par exemple l'allégement fiscal en faveur des exploitants et plus particulièrement ceux de la campagne. Le service/accès universel est un concept qui doit être révisé périodiquement, car étant évolutif, compte tenu de l'évolution de la technologie et de la demande des consommateurs.

«L'accès à un moyen de communication électronique est un droit pour chacun et une obligation du service universel que tous les Etats africains doivent promouvoir.»

Ms Liana Conradie
South Africa



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

When thinking about communicating in Africa, what comes to mind is drums beating; a messenger running from one tribe to another; rock art on the walls of a secluded cave. Communication, however, has changed over the years. These days, when thinking about communication, there is no boundary to one’s imagination. One thinks about radio, television, newspapers, Internet, cellular phones and the mere touch of a button giving one access to the modern world.

In Africa, South Africa is one of the fastest growing countries. What about other countries? Does everyone have access to media as we know it today? How many people have access to a radio, newspapers, television, computers and telephones? Does everyone have the luxury of electricity?

These are the figures:

Of the approximately 816 million people in Africa in 2001, it is estimated that:

- 1 in 4 has a radio (205 million)
- 1 in 13 has a television (62 million)
- 1 in 35 has a mobile phone (24 million)
- 1 in 130 has a PC (5.9 million)
- 1 in 160 uses the Internet (5 million)
- 1 in 400 has a pay TV (2 million)

In Africa, our major problem is illiteracy amongst our people. First of all, we must start educating adults who have been without an education and at the same time improve and encourage youth in developing their talents and skills. As for speaking of opportunity in Africa, there are no boundaries to opportunity. In Africa there is much room for development.

Firstly, economies must be stabilized and people educated. Educating people is the first step in expanding their vision on issues in communities. African people only need the opportunity to expose what talents have been hidden and oppressed by the apartheid regime. We, the inhabitants of South Africa, have the responsibility, as the country with one of the most democratic constitutions in the world, to set the pace in the education phenomena.

Secondly, people’s language skills must be developed to be able to communicate not only in their mother tongue, but other universal languages such as English as well. We should

also try to develop mother tongue education in most of the other indigenous languages. This would enable people to express themselves much better, as it is sometimes difficult to express oneself in a foreign language. It would also encourage children to attend school regularly and as a result perform better.

The development of a communicating media to which the majority of people have access on our continent is the third most important factor to develop our continent to its full potential. We still have, however, a long way to go to achieve this.

Fourthly comes the problem of the negative attitude of values and beliefs about development and modernization of people in certain cultures. Traditionally, some cultures have a negative attitude towards modernization of people in their cultural groups – these people are seen as traitors because of their resemblance to the western world.

To conclude this is a debate that will have Africa, our continent, talking for a very long time. Unless our politicians, who are in control of our respective countries, can come together and think alike, we will get nowhere. It is our responsibility to take action and say: Now is the time... We must make sure that our people, for once, believe in our capabilities.

Mlle Corinne Espérance Dhedet-Lanza
République centrafricaine



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les nouvelles technologies de l'information et de la communication se définissent comme une combinaison des télécommunications classiques et de l'informatique. La pénétration de ces outils de travail et de développement dans les pays africains a connu beaucoup de retard par rapport aux pays occidentaux. Certaines régions d'Afrique n'ont pas accès au téléphone de base. A cet effet, j'estime pour ma part que l'Afrique a plusieurs défis à relever et ainsi plusieurs opportunités s'offrent à elle en ce moment pour un accès de tous à ces instruments.

I – LES DÉFIS

Les principaux défis à relever d'après moi sont les suivants:

- 1) Suite à la mondialisation, chaque pays doit pouvoir s'informer sur tout ce qui se fait dans le monde et participer à son évolution dans les domaines économique, scientifique et culturel.
- 2) Dans chaque pays, il faut mettre en place des politiques pour que toutes les villes et toutes les communes soient dotées du téléphone et de nouvelles technologies appliquées à la vie de tous: santé, éducation, culture, agriculture, etc.

Pour l'enseignement, par exemple, les bibliothèques sont rares et les voyages d'études coûtent très cher et c'est grâce à l'Internet que l'on peut faire beaucoup de recherches.

- 3) Que toutes les couches sociales puissent avoir accès aux nouvelles technologies pour éviter que seules certaines catégories n'en bénéficient parce qu'elles sont riches ou parce qu'elles ont des privilèges particuliers sur les autres.

II – LES OPPORTUNITÉS

Les défis à relever sont importants. Cependant, je pense qu'il y a des opportunités que nos Etats doivent saisir pour mieux s'équiper:

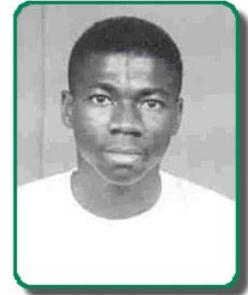
- 1) Actuellement, le secteur des télécommunications est libéralisé dans la plupart des pays, ce qui fait que les prix de connexion et de communication sont en train de baisser grâce à la concurrence entre les opérateurs.
- 2) Le réseau cellulaire prend de l'importance et peut aider énormément à l'utilisation de l'Internet; de nombreux services nouveaux, comme par exemple à BANGUI depuis peu, les messages SMS sont possibles.

- 3) L'utilisation du satellite permet d'atteindre avec beaucoup de sécurité les régions les plus éloignées des grands centres.
- 4) L'Afrique dispose de grandes potentialités pour la construction de barrages électriques. Le climat ensoleillé facilite l'utilisation des panneaux solaires pour alimenter les équipements dans toutes les régions.
- 5) Le secteur des télécommunications attire actuellement les bailleurs de fonds parce qu'il est très rentable et parce que de nombreuses zones sont encore disponibles.
- 6) Les Africains étant habitués à une vie communautaire, la création de points de communication communs à des groupes de personnes aidera beaucoup l'accès universel des nouvelles technologies de l'information et de la communication en Afrique.

Tels sont les éléments que je peux apporter à cette réflexion sur les principaux défis et opportunités pour parvenir à l'accès universel des technologies de l'information et de la communication en Afrique.

Je vous remercie.

M. Oumar Sidi Diamoutène
Mali



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

L'Afrique, vieux continent, bien que pauvre financièrement, dispose d'un certain nombre d'atouts pour se faire une place dans le monde des TIC. Ainsi, pour parvenir à l'accès universel des TIC en Afrique, une vaste campagne de modernisation et d'innovation s'impose aux gouvernements et aussi aux particuliers.

L'Afrique a les ressources nécessaires, il suffit de les mettre en valeur et surtout d'élaborer des programmes de suivi.

La fibre électronique est déjà au Sénégal. L'Afrique dispose ainsi d'une autoroute vers les TIC. Les gouvernements africains doivent saisir cette opportunité en coopération Sud-Sud pour accéder à cet outil très important. Aussi, les particuliers doivent élaborer des projets d'accessibilité aux TIC, car c'est l'affaire de tous les Africains.

Les gouvernements africains doivent, dans leurs projets de développement, donner une priorité capitale aux TIC car c'est l'innovation de ce siècle.

La position de l'Afrique dans le globe terrestre favorise aussi l'accès aux satellites qui sont les cerveaux des TIC.

Le NEPAD ayant déjà élaboré des projets dans ce sens, les gouvernements africains doivent lui emboîter le pas, afin que notre cher continent soit au diapason avec les autres, c'est-à-dire les plus avancés.

Ms Ednah Dondo
Zimbabwe



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Even though African countries are moving towards the achievement of universal access to Information and Communication Technologies (ICT), there have been some challenges that have tended to hinder their progress. However, opportunities are there for Africa to achieve universal access to ICTs. This paper is going to look at the challenges and opportunities that Africa faces.

Finance is one of the major challenges that Africa faces in the drive towards achieving universal access to ICTs. Developing ICTs requires a lot of funds for research and development of the technologies and training of people. They are faced with a high HIV/AIDS infection rate, natural disasters and other emergencies that consume a large share of the meagre resources the government have – a situation that leaves them with little left for long-term investments in information technology.

Another challenge arises from high illiteracy levels. This impacts negatively on Africa’s ability to achieve universal access to ICTs as the grassroots people cannot take part in the process. African governments have tried to make education accessible to all but cultural and financial factors stifle this development. Illiteracy is prevalent in women because most African societies believe that a woman’s place is in the home.

In African countries, ICTs are presented in foreign languages, which most locals are not conversant in, thus hindering universal access to ICTs. Measures should be taken to ensure that vernacular is used in ICTs. Some African countries are making progress in this respect – for instance, Tanzania, where the Internet is being translated into Swahili.

Brain drain is another challenge to achieving universal access to ICTs. Most youths leaving Africa for the developed world are the highly experienced and educated ones in terms of technology, thereby denying Africa an opportunity to achieve full access to ICTs.

However, opportunities exist in the awareness campaigns being launched and the interest shown by the people. In Zimbabwe, there has been greater emphasis on the establishment of technology centres, universities of technology (for instance, National University of Science and Technology and Chinhoyi University of Technology). Technology task forces being set up are a step in the right direction. Ghana has also embarked on a similar initiative entitled ***Digital Bridge Africa Redefining Africa’s Future Through Technology.***

The New Partnership for Africa’s Development (NEPAD), a grouping of African States, has presented Africa with an opportunity to gain universal access to ICTs. Its ICT objectives are to:

- double teledensity to two lines per 100 people by 2005, with an adequate level of access for each household;
- lower the cost and improve reliability of ICT services;
- achieve e-readiness for African countries;
- develop ICT-proficient youth from whom Africa can draw trainee ICT engineers and programmers;
- develop local-content software based on Africa's culture.

Africa's vast mineral base presents it with an opportunity to achieve universal access to ICT. If these raw materials can be converted into finished products that are used in ICTs then the cost of accessing ICTs can be greatly reduced.

Mr Muhanad Mustafa El-Amin
Sudan



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Africa is still suffering from complicated and sophisticated problems. War is everywhere in Africa and diseases and famine are killing many people every day. All these problems are due to black situation in our continent. African countries are effected by the unstable political, social, educational and financial situation. Most of these countries are governed by military regimes therefore there is a long way to go before Africa becomes stable. In fact, all these parameters have a direct effect on Information and Communication Technologies (ICT) and vice versa.

ICTs are in general, an implementation of data, information and knowledge. Of course, this implementation to some extent depends on computers and communication technologies. Computers are the environment in which all ICT tools are intergrated. Communications, on the other hand, are the means whereby ICT tools communicate with each other.

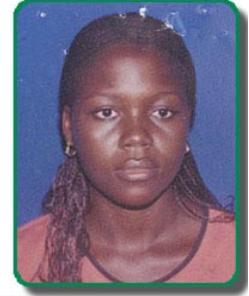
The 20th century witnessed striking developments in communication all over the world. Some African countries have got their own benefits, such as Sudan, Egypt and South Africa. Large communication networks have been developed over expanded regions of these countries. However, the situation, as stated before, is black.

ICTs can play a significant role to help us make some real development in various fields within healthy and stable political institutions. Also they could provide access to all Africans.

The challenge is how to make African leaders play their roles in establishing perfect IT strategies and to introduce IT culture by sharing experiences and knowledge and offering financial support. One of the greatest challenges is to invest our human resources, but the sad truth is that education has become worse in many countries. So by implementing IT infrastructures, we can translate our strategies into effective programmes, which reach the poor.

It can be concluded that the wireless technologies such as mobiles and satellites are the best way to provide access to connect to African communities and collaborate to make a better place to live. Finally, Africans should remember the words of the German philosopher, Friedrich Schiller: “why I should be a brush and colors and by my hand I could be the artist?”.

Ms Olajoke Fawehinmi
Nigeria

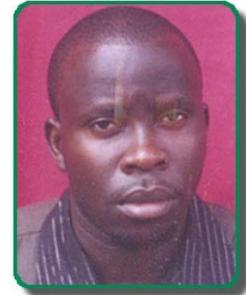


“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

In Africa, governments recognize the ICT sector as a strategic sector imperative for national development and taking cognizance of its immense benefits; however, major challenges are impediments to achieving Universal Access to ICTs in Africa.

- Inadequate infrastructure base is a major challenge to achieving Universal Access to ICTs in Africa. It falls far below the International Telecommunication Union (ITU) recommendation. The cost of telephone services is very expensive due to the inability of the region to manufacture the equipment used for these services. The energy supply is inadequate.
- High level of illiteracy. Access to good quality education is very limited.
- Many schools and higher institutions lack the basic tools for Information and Communication Technology (ICT) such as access to computers, Internet, etc. Schools/higher institutions where these are available are faced with a number of other problems such as lack of skilled manpower to teach and operate the technology.
- The cost of providing Internet services in Africa is very high as many of the Internet Service Hub Operators (ISO) are not in Africa.
- Many government offices lack modern office equipment such as computers, electronic typewriters, and Internet connections. Some government officials are also not computer literate, even if there is Internet connection. Offices where Internet connections are available are limited due to financial limitation.

Mr Sidiki Fofana
Liberia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

There continues to be an increasing need to include Africa in the globalization process, in order to attain world peace and sustainable development. Achieving universal access to information and communication technologies (ICTs) is a major step in closing the gap between Africa and other continents, therefore it must be taken as a basic utility similar to water and electricity.

Limited or poor access to ICTs is, in my opinion, is one reason why Africa continues to be referred to as the dark continent and its development program retarded, regardless of its bountiful natural resources as compared to other continents of the world with advanced information and communication technologies.

I strongly believe that achieving universal access to information and communication technologies in Africa could serve as a way forward in developing the continent; then, if so, what comes to mind and comes into sharp focus is, what are the challenges and how can they be faced? Are there any opportunities? What are they and how can they be utilized to achieve and improve information and communication technologies in Africa?

It has become a common trend to have more challenges than opportunities whenever a program or project is envisaged on or for the African continent. However, it is expected that with determination those challenges can be overcome.

Major challenges facing the achievement of universal access to ICTs in Africa can be placed into two main categories; these are:

- a) General universal access challenges in Africa (GUACA) and
- b) Challenges to the Government (CAG)

The following challenges fall into the GUACA (category A).

- I Human Resource Development. This is a challenge that focuses on the low or limited manpower development, with an increasing need to improve it. The high illiteracy rate in Africa is a challenge to improving the human resource development.
- II Reliability – Constant and efficient training, services and maintenance.
- III Sustainability – The services (ICTs) must be sustained by using low-cost equipment through local manufacturing, repairs and testings. It is even more than a challenge to sustain ICTs in Africa by foreign import of parts and testing a financial burden.

- IV Accessibility – The vast majority of the African population lives in rural areas; more than a reasonable effort is required.
- v Limited market – No attractive return to investors.
- vi Most African countries are small in terms of population and per capita GDP.

The challenges of CAG (category B) are:

- I African governments must engage in every effort to be a part of the globalization process, by involving themselves in partnerships both locally and globally.
- II It is a challenge for the African governments to have the vision, will and strategic capacity.
- III African governments must support research and human resource development and must have the belief in and commitment to Africans' capacity for self development through attractive incentives and support.
- IV It is a serious challenge to African governments and people to put a stop to the continued violence that has engulfed the continent.

The opportunities in line with achieving universal access to information and technologies in Africa are so glaring that every effort should be made to attain this goal.

Some major opportunities are:

- I Achieving universal access to information and communication in Africa will serve as a tool for social and economic empowerment, as well as means of reducing, if not limiting, the poverty line and closing the social gap between the rural and urban areas of most African countries.
- II It creates a means of developing human resources and making a positive step in reducing the illiteracy rate through education, capacity building and creativity .
- III It promotes infrastructure development and creates job opportunities.

Finally, it is my opinion that to achieve this goal there is a need for a World Telecommunication Infrastructure or a universal network (Africa being a part) to link users everywhere, and such a service must be affordable, and accessible. We should especially take advantage of and support training, research and manpower development. And we must put an end to the continued violence.

M. Eric Foutou Mahoungou
République du Congo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Plusieurs technologies ont vu le jour tout au long de l'histoire de l'homme, mais celles de l'information et de la communication (TIC) ont atteint une ampleur considérable à notre époque. L'information de ces technologies est au centre des problèmes qui préoccupent les Africains.

Ainsi, le sujet soumis sera traité en deux phases. Premièrement, nous allons analyser comment la politique transcontinentale africaine peut contribuer à l'universalité des TIC et, en second lieu, nous donnerons les avantages des TIC dans les pays africains.

L'universalité du secteur des technologies de l'information et de la communication n'est possible que grâce aux bonnes relations de l'Afrique avec les pays du Nord, dans le cadre du renforcement des capacités institutionnelles et des ressources humaines dans le domaine des TIC. Un espace propice aux activités TIC doit être aménagé au profit des opérateurs TIC (accès aux infrastructures de télécommunication, stabilité de l'énergie, etc.). Les équipements TIC doivent bénéficier d'une exemption fiscale et douanière.

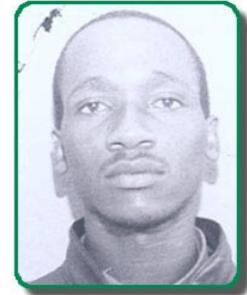
Les pays africains doivent considérer les TIC, comme une solution aux objectifs économiques et sociaux, en proposant des textes de loi sur le commerce électronique. Vulgariser ces technologies en combattant le problème de la fracture numérique, les placer sous le signe du développement. En privilégiant les communautés défavorisées (les milieux ruraux, les jeunes, les handicapés...). Doter les administrations de structures chargées de la gestion des systèmes d'information. L'Afrique doit accélérer la formation aux TIC à chaque étape, en créant des grands centres de formation. Créer des fonds d'appui aux ONG à la vocation TIC, pour accompagner l'œuvre des pouvoirs publics.

Les TIC, avec leurs avantages de temps et d'espace, doivent contribuer à renforcer l'intégration socioéconomique de l'Afrique et contribuer au rapprochement des peuples du continent. Nous citons l'Internet, qui est un bien de vie. Dans le domaine de l'éducation, elles développent la connaissance, l'esprit d'ouverture et la possibilité d'être en direct avec l'extérieur.

Economiquement, elles facilitent les échanges monétaires, des biens et des services. De même, elles permettent aux opérateurs économiques de contribuer au développement de l'Afrique. Dans le domaine politique, les TIC devraient contribuer à accélérer la coopération régionale et continentale pour permettre l'intégration effective de l'Afrique.

L'Amérique du Nord, l'Europe et l'Asie constituent des grands blocs économiques mondiaux: la triade. L'Afrique reste encore en retard dans le domaine des TIC. Les problèmes de l'intégration économique, du chômage, de la formation, de la santé, de la recherche scientifique sont autant de défis que doivent relever en partie les TIC.

Mr Zwelithini Ginindza
Swaziland



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

MAJOR CHALLENGES

1. POOR TELECOMMUNICATIONS INFRASTRUCTURE

Africa is still the region of the world still in need of telecommunications development in order to achieve universal access to ICTs. Achieving this calls for governments to introduce more funds into the development of the infrastructure. A few African states have attained semi-developed telecommunications infrastructures, with the rest unable to develop them due to the high costs of such projects. This can be attributed to the inefficient and unstable economies, recurring conflicts and civil wars in most African states.

2. POVERTY

The devastating effects of famine faced by most African countries has compelled these governments to utilize more resources in the fight against such famine. This reduces the amount of investments by governments towards job-creating projects for poor citizens. Young African people have to regard owning a computer as a luxury simply because they cannot afford having one due to poverty and the hardships they face.

3. ILLITERACY

The poor state of the educational infrastructure in most African countries has caused an increase in illiteracy rates. Even though most governments are working on improving it, more money and time is needed. This is more evident in rural and isolated areas where fewer young people enroll for education; the rest stay at home because there are no funds for their education. Most governments have not shown commitment with their policies concern education. Education ranks low in some governments' lists of spending priorities. The HIV/AIDS pandemic has also contributed immensely to the educational crises faced by African states. More young people are dying, some drop out of school because there is no one to pay for them. Some are forced out to nurse their ailing relatives and this increases the illiteracy rates in these states. Governments must change their policies towards these problems in order to achieve the ICT goals.

4. CIVIL WARS

Almost every country in Africa has a refugee camp set up for Africans who are running away from conflicts in their home countries. Developmental plans have been stalled because of the unstable political situation. In order for ICTs to be accessible to everybody, the environment must be stable enough for everybody to work to achieve this aim.

MAJOR OPPORTUNITIES

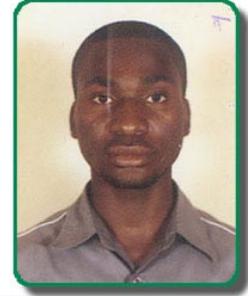
1. EDUCATION

With the global economy relying more than ever on brain-power and innovation rather than raw materials and manual labour as generators of wealth, a good education has become the key to success. Achieving universal access to ICTs will increase the information base for everybody and more especially learners. Most African governments have tried to expand educational opportunities to as many people as possible through distance learning. With the rise of Internet usage in Africa, distance learning experience can be completely transformed.

2. TRADE

ICTs can connect individuals and business people from the poorest and most isolated areas of the continent and bring them to the attention of the national and even global markets. It makes it possible to leapfrog poor transport infrastructure so that distance from markets is no longer a drawback to Africa anymore.

Mr Christian Menyene Godswill
Nigeria



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Going by the advanced learners’ dictionary, ICT can be defined as the use of electronic equipment especially computer for storing, analyzing and distributing information of all kinds and communicating universally.

A lot of challenges and opportunities exist for achieving universal access to ICTs in Africa. Some of the major challenges as seen in my country, Nigeria, are as follows:

- Weak infrastructure base: unreliable power supply in most parts of Africa, unusually high demand for services due to large population, but few operators who can hardly keep up with the demands.
- Lack of skilled human resources: lack of specialized labour, part of the problem of interconnectivity, which has been a prevalent problem in Nigeria, was as a result of no skilled interconnect employees.
- Instability of government policies: instability brings about constant changes in government and its policies (until recently when democracy has brought some stability); instability discourages investors from investing.
- Lack of security: of both investment and the investors, due to the unstable nature of the exchange rate and the economy of the country.
- High licence fees: duty and sundry taxes.
- High poverty rate: prevalent in most African countries, resulting in low purchasing power and high rate of corruption which prevents customers from acquiring phones due to inflated prices.
- Low teledensity: the ITU recommendation of one telephone to a hundred people is still a far cry for most African countries as operators are based mainly in urban centres, due to lack of infrastructural backbone.
- Lack of deregulation of the industry and commitment to the principles of deregulation on the part of African governments.

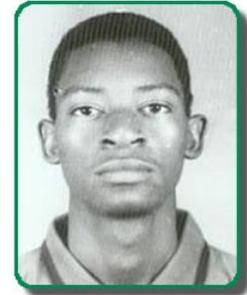
Despite the challenges facing the achievement of universal access to ICTs in Africa, a lot of opportunities have also been provided by the various African governments and private organizations. In my country, Nigeria, the following opportunities which are aimed at achieving universal access to ICTs in Africa abound:

- Africa Internet (AFRINET): This initiative was conceived by the Nigerian Government, as a means of accelerating the development of Internet in Africa.

- Afrisat: This is an initiative that opens up Africa to the world through satellite technology.
- Global Broadband Satellite Infrastructure (GBSI): This harnesses the potential of satellite technology as a means of bridging the digital divide. As such, the initiative recognizes that satellite infrastructure is a powerful way to provide universal, affordable high-speed internet connections, which are critical for access to ICT applications like e-education, e-health, e-commerce and e-governance. The importance of broadband access is in accelerating the social and economic progress of countries.
- Local regional and International cooperation: As an avenue for exploring new ways for further expansion of telecoms in Nigeria and most parts of Africa, the telecom industry has developed close working relationships with some development partners who include ITU, ATU, ECOWAS and WATRA.
- Net Tel@Africa: This is a project centred on capacity building in ICTs, aimed at developing networks in Africa.
- West African Telecommunications Regulators Association: WATRA has also been established to improve regional cooperation and promote cross-border transactions, harmonization of principles and regulatory framework and also for the effective application of VSAT technology in the West African Sub-Region.
- Universal Access and Rural Telecommunications: The Nigerian Government also commenced the studying and defining of a Universal Access Programme (UAP) with a view to achieving Universal Access (UA).
- Liberalization of the telecommunication market: Nigeria's telecom sector is now vibrant and bursting with opportunities; liberalization has also led to job creation, local skills acquisition and technology transfer.
- High teledensity as a result of the introduction of GSM services: In 2000, Nigeria had one of the lowest teledensity rates in Africa, but today, with the introduction of GSM services, the country has registered four mobile companies and now has about 4 million lines which improved telecommunications and has become one of the world's fastest growing telecom markets.

In conclusion, considering the problems mentioned above, great opportunities still lie ahead in Nigeria's telecom industry, as there is a lot of room for improvement. I am optimistic that the telecommunications industry, which is still in its infancy, will steadily strengthen and mature, thereby bringing access to Africa.

M. Ibrahim Habou Zakari
Niger



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Le terme de développement remonte dans l'histoire de la pensée économique. Cependant, parallèlement à l'expansion des littératures sur le développement, se sont développées de nombreuses recherches sur la croissance et son orientation vers une signification humaine.

A l'heure actuelle où le réseau de l'informatique et de la communication constitue, autour de la planète, un faisceau dans une évolution coordonnée et harmonisée de passage d'une phase moins humaine à une phase humaine, le questionnement éthique surgit avec une acuité renouvelée dans les différentes sphères de la vie sociale.

Les enjeux économiques et culturels sous-tendent l'implantation des réseaux électroniques d'information et de communication en Afrique.

Par ailleurs, en Afrique, des obstacles s'opposent à l'accès universel des technologies de l'information et de la communication (TIC).

Les principaux défis sont entre autres la défectuosité des infrastructures de télécommunications, l'absence au niveau national de programmes adéquats de développement des TIC, l'absence d'organismes de régulation indépendants, l'inaccessibilité aux infrastructures de télécommunication due à la pauvreté et à l'analphabétisme, l'absence de propositions de solution et d'alternatives nouvelles, ainsi que le manque d'encadrement technique (formation, information et sensibilisation).

En effet, des opportunités peuvent s'offrir pour parvenir à l'accès universel des TIC en Afrique. Il s'agit de mesurer l'appropriation réelle des technologies (cadre technique), de répondre à des besoins (infrastructures), de prendre en compte le contexte local et de s'interroger sur les bénéficiaires du transfert renouvelé des modes de coopération.

Enfin, les technologies de l'information et de la communication permettront à l'Afrique d'acquérir des nouvelles données positives et cumulatives à l'économie évoluant vers un changement dans les aménagements techniques et institutionnels, d'où le «développement».

Ms Amaal Hafez

Egypt



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

While the rest of the world is moving quickly into a world of Information and Communication Technologies (ICTs) dominated by advanced digital telecommunication systems and the Internet, most Africans do not yet have access to the basic ICT services needed to make or receive a simple telephone call.

As we are at the beginning of 21st century, one African still shares a telephone line with 99 others, compared to 10 lines per 100 people in Latin America and 64 in the United States. These figures still however do not paint an accurate picture, because in Sub-Saharan Africa, South Africa accounts for nearly 90 per cent of teledensity (Mutume, 1998).

Therefore a holistic perspective on resolving the dilemma of rural ICT access in Africa should be taken. This perspective includes several aspects. In my opinion, among these aspects, the need for open and progressive government agendas is vital. The politics of telecommunications and ICT access cannot be ignored by those who promote rural ICT expansion. Nations whose governments are closed and protectionist in their approach to developing their economies, and which restrict the civil liberties and rights to expression of their citizens, may emerge as problem nations for those individuals and organizations intent on seeking increased ICT access in rural areas. Unless governments relax their controls on the private sector's ability to conduct business, and on their citizens' ability to initiate and undertake their own private enterprise initiatives, rural access barriers will remain as strong as they are today.

Rural ICT access programmes built on demand-driven, appropriate technologies.

Whenever possible, ICT initiatives should attempt to be directed from the “bottom-up” rather than the “top-down”, and strive to fulfill the needs and demands of their users, rather than those of their donors. Initiatives which neither meet the needs and demands of their user communities, nor involve these communities in the project planning and implementation phases, are unlikely to succeed in contributing to sustainable development. Projects which successfully contribute to rural poverty alleviation and rural socio-economic development are more often than not those that are demand-driven. In following this demand-driven philosophy, ICT proponents should incorporate user-friendly technologies to ensure that potential users will not only be comfortable with the ICTs, but also have an interest in what they can reasonably provide for them. Moreover, rural ICT initiatives should make efforts to include the participation of intermediary organizations which have the capacity to utilize ICTs and serve as linkages between the technology and the rural inhabitants. These intermediary organizations are able to utilize ICTs (InfoDev, Rural Access to ICTs: The Challenge of Africa).

Utilize the strengths of both new and traditional media to enable the greatest dissemination and sharing of information, and to involve traditional media in ICT advocacy. A key component of ICT initiatives requiring greater attention is the integration of traditional media in ICT initiatives. The dissemination of appropriate and locally relevant information to the largest possible population extends beyond a reliance on one particular technology. Examples exist where ICT initiatives merge the strengths of one technology with the dissemination power of another, such as integrating Internet with radio, newspaper, telephone and fax. Traditional media can also take on an advocacy role for ICTs, working with ICT proponents to sensitize and disseminate information at the local village level on what technologies are available and what they can do to assist rural social and economic development.

Achieving full and active participation of women and youth in rural ICT initiatives. The equal participation of women and youth in development activities has for years been at a disadvantage when compared with the opportunities for men. This fact makes it imperative that women's and youths' participation in rural African ICT initiatives be a priority of project planners and development practitioners; only then will their involvement in civil society and democratic processes improve. ICT initiatives must consider the information needs of women and youth, and include their participation in project planning, capacity building, training, and monitoring and evaluation. Furthermore, the positive socio-economic impacts of integrating ICTs with women and youth entrepreneurial activities are also becoming more evident and recognized as progressive approaches to bridging the gap between ICTs and disenfranchised preventatives are attempted.

Share knowledge of rural ICT successes and failures. Sharing of information – both qualitative and quantitative – about ICT infrastructure initiatives, project outputs and evaluations must be promoted. Unless more information is made available – about how ICT infrastructure projects are faring or have fared in the past, and unless the international community makes a commitment to document and share relevant information with others who are interested in attempting similar projects, the number of ICT success stories will be much lower than the number of failures.

Working on research that would help in approaching the target of achieving a universal access to ICT in Africa. Such as research into the impacts of ICTs on rural African society and culture, to identify effective approaches to ICT awareness building at the local level, to determine what forms of multi-sector partnerships are working for rural ICT initiatives, research focused on gender and universal access, and on youth and rural ICT initiatives and focused on improving the role of women and youth in rural ICT initiatives. There is little attention given to ICT capacity-building activities for women and youth, including such aspects as literacy, language and technical training.

These are some points that could be given consideration and lead to universal access to ICTs in Africa, as access to these technologies has great importance. Connection to these networks and services influences people's access to jobs, education, health care and full participation as citizens. The convergence of telecommunications, computers, information production and broadcasting has a great impact on how societies are structured.

Mr Abdirahman Ali Hersi
Somalia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Much effort has been made in recent years on projects and initiatives to improve access in Africa, particularly in rural and remote areas of the continent, to ICT services. In the world arena, discussions about access policies have focused on the closely related concepts of Access and Universal Services or connections by individuals.

Most African countries have undergone a process of restructuring their communication sector. It is generally acknowledged that “Access to ICT” programs focus primarily on social and economic developments in the key areas of health, education, agricultural extension, water and sanitation. All these are very limited where there is no access to ICT services. It is vital for governments in Africa to play an active role to ensure that the provision of access is successful. However, it is also necessary for such governments to examine how responsibilities can be appropriately allocated to ICT service providers and local authorities, particularly in a competitive multi-stakeholder involvement.

In my humble opinion, the main challenges and opportunities for “Access Africa” is through creating policy and an environment conducive for ICT development and attract investment. Africa requires huge investments both in human capital and financial capital; we can also increase access by sharing the wealth of information and technological know-how available from the Northern countries. Unless this happens, Africa will remain in its current position. For Africa to change, it should start a multi-participation approach in both the private and public sectors.

The question of the huge cost of bandwidth is also preventing access to Africa; the world should help Africa find a way to reduce the cost of bandwidth capacities for access. In addition, custom duties in many countries in Africa are also preventing the technologies from flourishing.

However, it should not be one a way approach; there should be collective efforts to reduce both technology costs and custom duties for Africa to develop.

Ms Alphonsine Inmaniraguha
Rwanda

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Challenges and opportunities of ICTs in Africa

The goal of the wide deployment and exploitation of ICTs in many countries of the world is to facilitate socio-economic development. The threat posed by the digital divide to the rapid development of most LDC's and Africa in particular can be attributed to the inability of these countries to deploy, harness and exploit the developmental opportunities of ICTs to advance their socio-economic development. Rapid socio-economic development in Africa cannot take place without the necessary ICT infrastructure. The common view is that African countries like those in other regions of the world cannot afford not to be part of the communications and global connectivity revolution. There is now a consensus that in what is increasingly becoming a highly competitive information-driven world economy, development without a sound ICT infrastructure and modern communication services is not feasible.

Progress made by African countries

African countries, in recent years have made some efforts to facilitate the ICT infrastructure deployment, rollout and exploitation process in their respective countries.

African countries in the last five years have embarked under the African Information Society Initiative (AISI) on the process of developing their national information and communication policies and plans. On the basis of work done since the adoption of the AISI, there is now an extensive body of knowledge and accumulated experience in the formulation and development of the relevant policies and plans to facilitate the process of accelerated economic development through the deployment and exploitation of ICTs in African countries.

Challenges facing ICTs and education in Africa

The problem of inadequate access to ICT education is mainly due to the poor state of ICT infrastructures and the seriously limited human resources capacity in the country. Other major crucial challenges that francophone countries face in promoting ICT education include:

- language barriers: over 85% of the materials are in English, whereas only 10% of the people speak English;
- high illiteracy rate;

- poor access to technology; teledensity ratio of 0.3, no computers in schools, poor connectivity to Internet;
- non-inclusion of ICT courses in the curriculum.

To address these challenges necessary steps need to be taken, among others:

- to strengthen the institutions mandated to support efficient ICT education delivery;
- to facilitate the effective participation of private sectors in global ICT policy and decision-making;
- to provide extensive training opportunities for teachers, students, administrators, technicians, policy makers, etc.;
- to develop conducive ICT infrastructure;
- to facilitate the wide deployment, exploitation and utilization of ICTs within the societies.

Mlle Deka Issa Moussa
Djibouti

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Pour le développement du continent africain, les technologies de l'information et de la communication (TIC) s'avèrent nécessaires et décisives, que ce soit dans le domaine économique ou financier.

Pour cela les pays africains doivent profiter des opportunités offertes par les TIC. Pour relever leur niveau éducatif, les gouvernements africains doivent intégrer les TIC dans le système éducatif afin de mieux lutter contre l'analphabétisme.

D'autre part, pour les pays africains, les TIC représentent un atout majeur dans la vente de leurs produits au-delà de leur pays et à être plus compétitifs, prêts à concurrencer les autres pays. Les pays africains doivent concentrer leurs efforts dans l'équipement et l'infrastructure des télécommunications pour mieux utiliser les TIC et en tirer profit.

Enfin, je pense que les TIC peuvent contribuer à la construction d'un grand marché qui aidera le continent africain à sortir des difficultés économiques et sociales.

Mr Moses Kiige Baiya,
Kenya

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and communication technologies have revolutionized our lives from a slow, under-informed and inefficient society to a more informed one. But on the African continent where availability of ICTs (radio, television, computers, Internet telephone and other telecommunication devices) are scarce, this claim not only sounds patently ridiculous but it is also disconcerting. The truth is that networked readiness in Africa is at a very early stage of development compared to other regions. Indeed, the digital divide is at its most extreme in the African continent. According to a world economic forum report (2002), in Africa, it is estimated that only one in 13 have a television, one in 39 have a fixed line, one in 160 use the Internet. This starkly portrays our current position and hence justifies the massive effort we need to put into achieving universal access to ICTs.

There are several major challenges that constrain the efforts towards achieving universal access to ICTs in Africa. Socio-economic problems that encumber most of the African countries are a major hindrance towards achieving the aforementioned goal. To facilitate access to ICTs, constant financial investment is paramount. The majority of the people in these countries are poor and unemployed. Millions die of AIDS, cholera and malaria. With the limited resources within and from donors, can you justify using a million dollar (or even 5 cents) in ICTs when the money could be used to provide basic amenities like clean water and medicine?

The fact that Africa has poor existing or inexistent infrastructure is also a major hindrance. Transport networks in Africa are in poor condition and costly to use. This is a constraint to increased movement of people and goods. Increased mobility is needed to implement and support pervasive network infrastructure for increased social and economic activity which would positively impact on access to ICTs. Most of the telecommunication infrastructure is concentrated in urban areas and out of reach for the majority population living in rural areas. Telecommunication operations are left to State-run monopolies and due to lack of competition, service delivery is poor while high costs are prevalent, making them unaffordable to people. In addition, availability of electricity is inconsistent and undependable.

Lack of investment in ICTs is a major challenge. Local capital is scarce, and the small markets, non-transparent and time-consuming business procedures, currency instability and exchange controls discourage foreign investors. This results in slow growth of the ICT sector.

Political instability also hinders access to ICTs. An anarchic environment discourages investment and growth of ICTs, and may even result in the decline of the ICT sector due to sabotage.

Brain drain plus low levels of education and illiteracy result in a scarcity of skills and expertise from policy making down to end users. This is particularly exacerbated in Africa and negatively affects growth of the ICTs.

Liberalization provides an opportunity to achieve universal access to ICTs. African governments should liberalize the ICT sector. This will result in increased competition and hence reduced costs and improved quality services to the end users. Example: since the licensing of a second mobile phone network operator in Kenya three years ago, subscription costs have gone down while the number of mobile subscribers has increased from 100,000 to more than 3 million. Liberalization will also enable the establishment of commercial and community radio stations whose investment will result in increased access to ICTs. Cyber cafes and telecentres, which provide shared infrastructure, will increase their services by use of cheaper technology like voice over Internet protocol (VoIP).

Education provides a major opportunity towards achieving this goal. Universities are in a position to offer online courses through the use of the Internet. It is cheaper for the governments to establish ICT service centres in schools which would also serve the communities around.

Advances in technology provide another opportunity for growth since communication devices and techniques are now available at lower cost. Examples include Internet appliances like recycled personal computers, clones and open source (free) software. The availability of fibres, wireless, and satellite bandwidth services have the potential to make rural areas almost as easy to reach as urban ones. Technology convergence means the same infrastructure can be used to provide many services and not just voice calls.

Economic blocs like ECOWAS provide another opportunity. Through economic cooperation between partners it is possible to provide international communication links. For example, links would significantly increase the bandwidth and drive down prices.

Electronic commerce (e-commerce) where the Internet is used for transaction purposes, vastly increases access and added-value potential of the infrastructure and thus the incentives to build it. This increases access to ICTs.

It is true that achieving universal access to ICTs in Africa is challenging, but through effort, determination and sacrifice by all stakeholders, this goal is achievable.

Mr Eddy Komeza
Rwanda

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

We know that ICT (Information and Communication Technologies) infrastructures such as cable and wireless networks, computers and network component resources, as all electronic devices, are expensive and ICTs in African countries today are at an extremely low level, especially when the size of the country and the large population is taken into consideration. There are few universities and research centres or local administrators that have networks. On the whole, there's very little access to the broad array of Internet and Personal Computers in the African countries.

In order to attain ICT access in Africa, the installation of the Network component, a wide wireless Internet access infrastructure is required. In Kigali, the present wireless Internet access infrastructure is a product of the planning of the university's Information Communication Technology (ICT) committee. Local internet service is needed to set up all the facilities of ICTs

The budget for ICT training, research, administration and public services to the university and global communities must be increased.

The objective of ICTs in Africa must be defined according to the infrastructure and equipment needed in order to use the ICTs as something which can increase the development in Africa. The use of computers in the industries as tools that increase productivity is the main challenge that shows the usefulness of ICTs in our life.

ICTs must be based on teaching and learning the facilities, human resources development and linking our educational institutions with other universities/educational institutions around the world.

In order to increase the use of ICTs in Africa, the decrease of the high cost of computers, mobile connections and Internet access in Africa is required; also growth in the penetration of phone subscribers and of computers is necessary as well as connection distributors campaigns competition. Encourage campaigns to invest in ICTs and integrate projects and research on ICTs. The main vision to all African countries' government must be: to provide to all Africans access to information and communication services; to link all African countries and make Africa a full member of the global information society; to promote co-operation in the exchange of information in support of the African ICT community as well as of development efforts at the national, subregional and regional levels; to encourage African scientists and researchers to continue to participate in scientific and technological activities at the global level; to recall the United Nations General Assembly on sustainable development and Africa's discoveries and also ICT development; to introduce subprogram activities in African universities on information systems development; to influence assistance by the International Development Research Center and other donors in promoting Information and Communication Technologies.



There should be insistence on Member States that have not yet done so to take the necessary steps to build national information for decision-making and planning as part of the infrastructure for Africa's information highway, because it is clear that ICT action in Africa is poor. International information and communication networks for planning and making Africa's ICTs should work through a high-level working group on Information and Communication Technologies to make other continents' authorities prepare a plan for action to assist Africa's entrance into the information and communication technology world.

Mlle Aminata Konaté

Mali



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

L'Afrique, depuis hier et même aujourd'hui, est un continent en développement, sinon un continent sous-développé. Les nouvelles technologies de l'information et de la communication (TIC) se sont imposées comme le moyen de développement le plus moderne et le plus efficace qui soit.

Nous, les Africains, n'aimerions pas rester marginalisés dans cette évolution qui s'avère très importante à nos yeux, mais c'est un ensemble de contraintes d'intégrité qui agissent sur notre continent, à savoir les guerres, le sida, la pauvreté, l'accès à l'eau potable, l'accès au téléphone, à l'électricité et beaucoup d'autres facteurs. Beaucoup de pays africains sont à la recherche de la paix, car sans la paix il n'y a pas de développement.

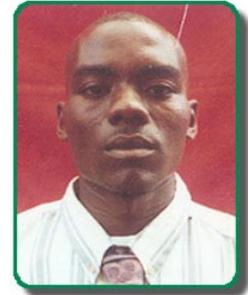
La pauvreté chez nous fait qu'on n'a pas accès à l'eau potable dans nos régions et nos villages, on n'a pas non plus accès à l'électricité et au téléphone, donc en fait on n'a pas accès à l'Internet et aux autres technologies de communication. Par ailleurs, c'est le seul moyen adéquat qui puisse exister pour nous, car si d'une part nos régions et villages n'ont pas cet accès, d'autre part seule une minorité a les moyens d'utiliser les nouvelles technologies.

Les stratégies de développement en Afrique, en matière de nouvelles technologies de l'information et de la communication sont essentiellement:

- promouvoir l'accès aux «logiciels libres», afin que nous puissions les utiliser à moindre coût;
- la mise à disposition d'un ou plusieurs satellites fonctionnels pour les pays africains, afin que les coûts de communication soient réduits;
- la formation, quand nous aurons accès aux matériels nécessaires;
- la formation, quand nous aurons accès aux logiciels libres;
- des moyens d'enseignement à distance, à l'instar des pays développés;
- la vulgarisation chez nous de la téléinformatique et la télémédecine, compte tenu de nos maladies intempestives;

En somme, pour lutter contre la fracture numérique et briser le mur numérique, le Nord et le Sud doivent se donner la main.

M. Richard Boris Krabadja-Endjizapou
République centrafricaine



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

A l'ère de la société de l'information, les TIC revêtent une importance cruciale pour un nombre toujours croissant de services publics et professionnels. Ainsi, dans la perspective de susciter l'engouement du grand public africain à ces néologismes, des actions substantielles orientées sur une politique de proximité se révèlent nécessaires.

D'abord, à l'égard de la population rurale prédominante en Afrique, cette politique de vulgarisation des TIC doit être axée sur trois concepts fondamentaux, à savoir la disponibilité, l'accessibilité et le coût abordable des services fournis.

Or, pour l'heure, la stratégie d'accès universel aux TIC qui se révèle remarquablement percutante est la mise en œuvre des télécentres communautaires multiservices (TCM). En effet, ils constituent un complexe polyvalent susceptible de fournir à moindre coût toutes les activités liées aux TIC, comme l'initiation à l'informatique, le cyberspace, les services multimédias interactifs et non interactifs, les publiphones etc.

Cependant, face à la médiocrité des infrastructures intérieures des réseaux africains, il est indispensable de s'orienter vers des réseaux à large bande et à haut débit, afin de permettre une intégration harmonieuse des TIC et de faire asseoir véritablement le concept du coût abordable des prestations de services.

Aussi, les TIC, à l'image de l'intégration, constituent un facteur prépondérant pour réduire la fracture numérique, principal problème auquel la communauté mondiale doit faire face aujourd'hui.

D'ores et déjà, les progrès gigantesques accomplis dans le domaine de l'imagerie et de la compression numérique vont susciter un regain d'enthousiasme pour la télé médecine et le télé enseignement, et permettront à des zones rurales d'intégrer les infrastructures médicales et éducatives du pays, moyennant un coût relativement faible et de mieux tirer profit des ressources intellectuelles tant au niveau national qu'international.

Mis à part ce qui précède, par leur qualité croissante, les outils de multimédias interactifs et de transmission de son sur l'Internet représentent eux aussi une ressource précieuse pour le renforcement des compétences dans différents domaines en Afrique.

Enfin, la mise en œuvre des plate-formes des commerces électroniques offrira à l'Afrique de nouvelles possibilités de transactions sécurisées et d'ouverture sur le marché international.

En définitive, au travers d'un devenir vital et durable des TIC en Afrique, les pouvoirs publics doivent s'impliquer en encourageant l'émergence des structures de promotion des



TIC, comme les télécentres privés et publics, les services multimédias, les cyberespaces, etc.

Par ailleurs, pour parvenir à l'accès universel des TIC, les organisations non gouvernementales (ONG) sans but lucratif sont aussi mieux indiquées pour sensibiliser et créer ces centres, surtout dans les régions rurales qui, mine de rien, sont mises en marge de la technologie croissante, dont les TIC. Ainsi, la réduction de la fracture numérique en faveur de la population rurale donnerait une chance à l'Afrique de pouvoir rattraper son retard sur le plan du développement socioéconomique et culturel.

Mr Gideon Tekpor Yaw Leckson-Leckey
Ghana

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Access Africa

Africa, together with the world at large, witnesses a revolution every generation. Today, the new era evolution is on Information and Communication Technologies (ICTs) and the Internet.

ICTs have brought so much development to western and south-eastern Asia countries. This means there are considerable challenges for Africa to have access to ICT development.

Challenges

1. **ROOT SERVER:** While Europe and the Americas have more than three root services, Africa has only one based in South Africa serving more than 700 million people, three times more than the total population of Europe.
2. **RATE OF ACCESS:** Due to the "Root server" problem, getting quick access to Internet services is woefully slow. A technologist at ITU TELECOM 2001 mentioned euphemistically that "There are more points of Internet access in the city of New York, USA, alone than the whole of Africa in the year 2000".
3. **EDUCATION / ICT-ILLITERACY:** How many people are formally literates? Talk of ICT literacy in Africa! How many computer literates know extensively about research and information sharing using the internet?
4. **POLITICAL WILL:** How many African countries with policies on ICTs really pursue it vigorously? Lack of pragmatic political will is a big challenge.
5. **COST:** It is also expensive to educate people on proper usage of ICT practices and to set up another Root Server perhaps in W/Africa.
6. **HUMAN RESOURCE DEVELOPMENT:** Unlike the South East Asia countries, where their development is based on human resource development, Africa has only seen the reverse of it. This affects Africa's access to ICT development.

Prospects

1. **TRANSPORT OF GOODS:** Africa can use ICTs to find optimal transport roots and keep track of large fleets of vehicles and vessels.

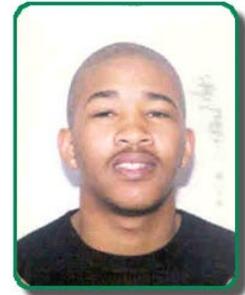
2. **BUSINESS TRAVEL:** ICTs would reduce physical transport by shifting from flying and car-driving to a video-conferencing and telecommuting culture. E-mailing large documents can prevent people carrying large documents to conferences as well.
3. **PRODUCTION AND CONSUMPTION:** ICTs would make the economies of Africa more efficient, more accurate in demand and supply estimates, and would assist optimization of production processes and updates of products.
4. **ENVIRONMENTAL PROTECTION:** The use of ICTs can determine levels of environmental protection and how well environmental degradation should be monitored.
5. **ACADEMIC & RESEARCH STUDIES:** ICTs can be used to advance academic work and research studies across Africa in various fields of study and developmental issues. Students can also provide access to their performances using ICTs instead of manually, and early release of examination results and lecture materials could be possible.
6. **AGRO-TECHNOLOGY & REMOTE SENSING:** ICTs can be used in remote sensing in order to locate fertile lands and the type of crops and farming production process to yield bumper harvests.
7. **E-COMMERCE & E-GOVERNANCE:** ICTs can be used to facilitate commerce and easy governance leading to a well-developed economy and peaceful governance.

Conclusions

Africa has the tools in front of her, has the resources and understands the challenges and opportunities.

The discussion about ICTs and Africa's development must continue, but we cannot wait any longer for the actions that could make it a reality.

Mr Levard Links
South Africa



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

With the dawning of every new day, new opportunities are created which should be exploited with vigour. The sad part is that a wide range of challenges hobbles many of these opportunities; they turn the opportunities into impossibilities. The African continent is riddled with a range of external factors which obliterate the reality of the application of ICTs into unreality. Issues such as HIV/AIDS, poverty and crime, to mention a few, need to be dealt with in a sensible way.

The youth of Africa has phenomenal potential but how do we save our dying youth? ICTs are not a medication for our dying youth. However, I do believe the youth who will carry Africa forward, at the end of the day, are those who can benefit tremendously through information and communication technologies.

The scourge of HIV, poverty and crime, which are destroying our continent, present us with enormous challenges. To provide information via ICTs to educate people, for example, about HIV we need electricity in these communities. This can be made possible by affordable mobile power-generating equipment installed in appropriate community facilities. Then technology such as the Internet is really “just a click away”. Information will then be more readily available.

Poverty is responsible for empty classrooms in many rural communities. Again, ICTs can support education through making relevant material available at more affordable prices by way of data projectors, computers and DVD interactive material. Study sources such as textbooks are often a major stumbling block in most schools but with ICTs we can overcome this hindrance. Technology can truly be brought to the heart of Africa AND make a difference.

Our medical facilities are daily exposed to new and unknown illnesses. Access to the Internet means not only access to information but an opportunity to save a life.

Better technology implies a better social infrastructure. Some technologies are extremely expensive to extend to the most remote areas of Africa. However, affordable communication technology can be made available to just about any place in Africa.

Criminals are described as “loitering vultures” but do we really believe that a young person whose mind is constructively and purposefully occupied will involve him or herself in criminal activities? I don’t believe so.



To address all these challenges and to convert all the opportunities into realities, our youth needs appropriate training; training which will empower them to become champions of their own future. Job creation is a major priority and our people should be empowered with knowledge, skills and competencies that are in demand in the labour market. A strong education system results in a strong economic system. More work opportunities will contribute positively to the reduction in crime and the alleviation of poverty. These possibilities will contribute to the restoration of family and community values; values which in themselves will assist in the fight against the spreading of HIV.

Ms Mariem Mahjoub
Tunisia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and Communication Technologies are powerful tools for empowerment and income generation in developing countries. But the cost effectiveness of different ICTs does vary between developed and less developed countries.

Rural poverty in Africa is a complex phenomenon and there obviously cannot be one dominant approach for its alleviation. Some of the causes of this poverty are inadequate infrastructure such as roads, electricity, hospitals and the inaccessibility of some villages. ICTs are generating new possibilities to address and solve these problems.

First of all, radio and telephone are very important and they are demonstrating their utility in developing countries, but providing telephone and networked services access to low-density populations in rural areas and especially to mountain and forest regions is significantly more complex and expensive than providing those services in urban areas. That is the reason why Tunisia implemented MobiRif, a way to procure phone lines using the concept of GSM in a limited area. Moreover, this concept allows the residents of these areas to access the Internet through the PSTN.

Using a phone is still easy and does not need any knowledge compared to the features of the Internet. Surfing is a tool that requires a minimum level of education and computer literacy to be used constructively. Even the poor who could find access and are literate or who may have acquired basic computing skills face the significant barriers of language. In fact, language skills are vital to utilize the Internet’s resources fully, because minority languages are dramatically under-represented on the World Wide Web. For example, the language spoken in Nigeria is completely absent from the Internet while English, a language spoken by very few people of the poorest world, is dominant.

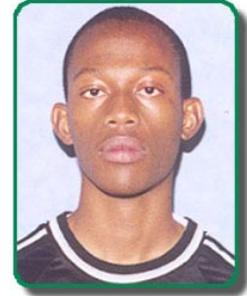
Moreover, the Internet access cost in some regions of Africa is sometimes more expensive than a day of work.

So the Internet presents straightforward affordability questions; when it comes to increasing access, there are reasons to suggest that the requirements for their successful utilization make radio and telephone far more suitable technologies for the poor.

Thus, innovative universal access programs in Africa have to make the goal of extending telephone access to the majority of the poor an increasingly feasible idea.

In conclusion, ICT applications can be categorized into improving services to citizens and knowledge. Rural communities can be helped though access to knowledge that will improve productivity in their work, daily life and enable them to learn about their environment. This knowledge can lead to the creation of rural employment opportunities.

Mr Tebello Mathaba
Lesotho



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

The imperative need for Africa to embrace the “information age” manifests itself with increasing vigour day by day. Regardless of a variety of hurdles in Africa’s way, there are also crucial opportunities that can gear up progress towards universal access to ICTs.

The most prominent among the challenges that Africa faces is economic weakness; several African States are categorized as the least developing countries (LDCs), with multitudes of Africans living below the poverty line. Therefore, the obtaining and maintenance of adequate ICT facilities will be too expensive.

Over the past three decades, Africa has experienced several cases of political instability in many of its States. In most cases, these power struggles are accompanied by guerrilla warfare (civil wars in the worse cases), the burning down of cities and infrastructure facilities and illegal exploitation of the African resources. These cause major set-backs in African development and countries take a very long time in recovering; up to this day, some States are still slowly battling to recover.

The HIV/AIDS pandemic is a worldwide menace, yet statistics depict that sub-Saharan Africa (especially the SADAC region) suffers the greatest blow from this pandemic. The effects of this pandemic are disastrous; they include a great loss in the working class of Africa, a high demand on the African States’ health budgets and an increasing number of orphans and widows. These lay a heavy burden on the ailing economy of many African States.

Moreover, to facilitate rapid acceptance of ICTs, the “digital-divide” must be battled. Most of the rural population of Africa, unlike their urban counterparts, lack adequate exposure to ICTs. The prevalent situation of low standards and urban centralization of infrastructure hampers Africa’s actions against the “digital-divide”. Since the majority of the African population is rural (about 60%), it remains a great challenge to Africans to reach out to their fellow country-men and women.

In spite of many challenges facing Africa, “now” turns out to be the right time for it to gain universal access to ICTs. The ICT market is an ever-changing fast growing one, with new technologies invented frequently. This result is the production of a wide variety of ICTs within which Africa can easily find the most suitable technologies. ICTs have also become relatively cheap, even cheap enough for poor African States to obtain.

Furthermore, the increasing demand of ICTs among Africans, with the right administration, can catalyze a rapid widespread acceptance of ICTs. Therefore, the mere demand of ICTs can lead to a breakthrough for Africa.



It is therefore upon every African to take up the challenges and use the opportunities that Africa has, so as to ensure its success in harnessing the "power" of ICTs.

Ms. Veronica Matikila
Tanzania



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Unless otherwise stated, the meaning of ICTs is Information and Communication Technologies. This includes all sophisticated and advanced means of communication under the current technologies advancement. This comprises mobile phones, fixed phones, fax machines and the International Network (Internet). When you talk about Africa, you directly mean the third-world countries, in the poorest continent in the world. ICTs in Africa were introduced in the 1990s so are not as popular and well known as in developed countries like Canada and the United States of America.

ICTs present the following opportunities for achieving universal access in Africa.

Through communication by using mobile phones and the Internet, people are able to communicate all over the continent and worldwide. The Internet has almost spread all over the continent and has speeded up communication. This is good and makes life better and simple.

ICTs also help in the provision of social services like online studying. People are able now to get their degrees in this way. For example, in Dar Es Salaam there is an African virtual university established from Australia and it provides online degrees in computer science. Also people can get health services through advice via the Internet. They can also obtain the contact details of health specialists and how to meet them.

This also brings availability of the market through advertisements on the Internet. A good example is South Africa where they advertise their products such as their home-made motor vehicles through the Internet.

In all economic aspects, ICTs bring about employment in communication companies like Vodacom and Celtel in Tanzania. People can also find jobs through advertisements on the Internet. This increases money in the people's pockets.

There is also the contribution of ICTs to the environmental case and in educating people. Billboards and posters which are spread all over the city with advertisements of the different communications companies make the places beautiful. They also help in spreading social messages such as those on AIDS.

The competition among the communications companies has led to better and cheaper services. For example, in Tanzania now there is Vodacom, Celtel, Buzz.

Globalization has led to the flow of investors from one country to another. ICTs enable countries to communicate with each other and promote their investment opportunities. For example, in Tanzania many South African companies have invested in the country and the latest company took control of Air Tanzania.



Despite all the opportunities that ICTs offer in achieving Universal Access, there are also some challenges which include lack of capital, lack of specialists and poor technology. Other problems are the slow adaptation to new technologies and the economic problems facing countries of Africa, particularly those south of the Sahara.

Apart from that, there is political instability. Many of the African countries are in civil war and all this retards communications development. Examples are Burundi, the Democratic Republic of the Congo and Rwanda. It is difficult to spread communications facilities where people are fighting. In order for the African continent to achieve Universal Access to ICTs, they have to solve these problems and improve opportunities for more people to access them.

Mlle Maria Norpa Mimoso le
Guinée-Bissau



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

En ce qui concerne les défis, je citerai l'analphabétisme très généralisé, la forte marginalisation des femmes due aux divers tabous culturels africains, le coût des équipements, la pénurie de l'infrastructure des télécommunications, l'instabilité politique, la corruption généralisée, les coups d'Etat, la fragilité de la démocratie, le chômage des jeunes, les grands problèmes du secteur énergétique, la pauvreté généralisée et les autres facteurs qui sont les grands défis pour l'accès universel aux TIC en Afrique.

En ce qui concerne les opportunités, je considère que l'Afrique en offre de nombreuses, grâce à la création de la Union Africaine d'une part, et du NEPAD d'autre part.

On peut considérer les TIC comme un élément essentiel pour le développement de notre continent.

- Mondialisation et standardisation des TIC, transfert des technologies
- Mise en place des recommandations de la Déclaration de Principes et du Plan d'Action du SMSI
- Connexion à bas coût
- Création de télécentres communautaires
- Introduction des technologies informatiques et des TIC dans les curriculums scolaires et divulgation dans les médias des opportunités de ces instruments pour changer la vie des personnes dans le domaine socioculturel surtout
- Bonne gouvernance
- Adoption de politiques sociales liées aux utilisations des possibilités des TIC, comme e-learning, telesanté, etc., qui peuvent encourager l'utilisation des TIC.

Ces éléments peuvent être pour nous une grande opportunité pour parvenir à l'accès universel des TIC en Afrique.

M. Eric Mingeni Vovo
République démocratique du Congo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les technologies de l'information et de la communication connaissent un développement qui semble inéluctable dans les pays industrialisés.

Etant donné que le débat porte sur les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique, il semble nécessaire et opportun de donner notre contribution sur l'amélioration et le développement des TIC en Afrique.

Certes, il est évident que les pays industrialisés connaissent une très forte avancée sur les technologies de l'information et de la communication par rapport à nous, Africains, qui ne faisons que copier ce qui a déjà été réalisé par les pays industrialisés.

Parallèlement à ce mouvement d'importation des TIC, qui semble inéluctable, on observe dans les pays africains une situation toujours alarmante des services publics, notamment dans les secteurs de l'information et de la communication via les nouvelles technologies.

Il existe un moyen d'introduire notre continent dans le nouveau monde de l'information et de la communication via les nouvelles technologies. Mais pour cela il faut une étude très poussée par les spécialistes. Mais en ce qui nous concerne, nous proposons quelques pistes de solutions pour un accès universel des TIC en Afrique.

Vu que la majorité des gouvernements africains ont toujours été démissionnaires, nous proposons que cette intégration se fasse par le secteur public et privé qui auront à travailler en bonne entente en vue d'une meilleure gestion des matériels et autres équipements d'information et de communication. Les gouvernements africains doivent apprendre à devenir plus responsables et considérer que le manque d'informations est un risque, au même titre que le VIH/SIDA. Il faudrait qu'ils adoptent une attitude très réfléchie.

Etant donné que le secteur public travaillera en intelligence avec le secteur privé, il faudra répartir les tâches de la manière suivante:

Le secteur public sera là en tant que coordinateur et assumera également le rôle de police; il utilisera les ONG, ONDG et autres associations pour colporter les TIC, aussi bien dans le milieu urbain qu'à la campagne, en dotant le secteur privé des matériels adéquats, comme par exemple des ordinateurs reliés à l'Internet qui jouent un rôle prépondérant dans les TIC, des fax, téléphones cellulaires, etc. en vue de créer un réseau d'information et de communication efficace qui servira à relier les Africains au reste du monde et en même temps servira d'outil principal dans la recherche d'information. Il faudrait que les gouvernements (secteur public), toujours en collaboration avec les ONG, associations etc., organisent des conférences et séminaires de formation, des journées de sensibilisation,



afin de permettre à une grande majorité d'individus de se familiariser avec ces nouvelles technologies qui semblent encore un luxe dans la plupart des pays africains.

A la lumière des suggestions et pistes de solutions apportées par rapport aux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique, il est clair que si l'Afrique veut réellement se prononcer dans le monde de l'information et de la communication, elle doit faire en sorte que le secteur public travaille en collaboration avec le secteur privé afin d'être à même de relever ces défis.

Ms Agueda Sofia Monteiro Tavares
Cape Verde



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Technology is wonderful. The machines are rapid and permit us to do a lot of things, that until now we could not imagine.

The whole world is close by the computer (Internet). We send and receive, each moment, electronic messages, from one place to any other in the planet. We communicate using the changes.

In my opinion, first of all, we have to separate the project into two stages, stage zero and one, because we have to assume a different attitude faced with the two groups.

In stage zero, we have people that could benefit from the advantages of the technology but they don't have any conscience of it, because they have other things to care about, for example, household management; they have to struggle for a living, to survive, etc. For these people we have special work to do: publicity with the practical benefits of ICTs, how they will change their life according to their job and occupations, with advertising campaigns, sensitization, pamphlets, etc.; We have to train people every years. After, they will be stronger on their level. We have to simulate interest, making competitions that draw attention to the advantages of ICTs. When the objective has been reached, we pass to stage one.

In stage one, we find people who know about ICTs through publicity, television, newspapers, reviews, but for whom this is only utopia. For these people we have to change this point of view. How?

We have to find a way so that each school has at least a computer, even if this computer is only to consult, but they won't have only abstracted ideas. Subsequently they will have the opportunity to explore ICTs; we have to create work places where people live together with ICTs, computing centres especially for poor people. The state authorities have to try for protocols that permit rebates on technology equipment in such a way that people can buy such equipment.

The technology is very attractive and interesting. Reflect about the advantages of a computer. For example, it works rapidly, it is interesting, it shows beautiful pictures; the news at every instant permits us to communicate a long way off, we can play music, we can do practically everything we want to do.

To end, I want to say: we have a lot to do, but it's nothing that together we can't do, to take up the easy things after the more complicated, all together.

Martin Luther King said "I have a dream that..."; now I say, I am confident that, one day, ICTs will be the same reality to everyone in Africa.

Mr Wilika Mutota
Namibia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

I consider language as the major challenge. Once you have a command of a language, it opens up avenues of communication and enables you to access the latest technological developments.

The development of ICTs has not yet been upgraded to an effective standard due to the fact that there is a great gap in communication within African countries. In Africa, most countries use French as an international language, whereas the other countries use English. This causes an inability to communicate and breaks the bonds of latest technology. Within Africa, each and every country has about 10 ethnic groups, each with its own individual language, and the practice of any international language is neglected, leading to the lack of use of the latest technology.

Due to their poor financial status, many of the African countries do not have the possibility to equip themselves with technology devices. Due to war, many of the countries have been left bankrupt and this has slowed progress in becoming developed. Rural areas do not have access to information and technology due to the fact that there is no electricity for access to technological devices like in urban areas. The issues of finance to support these countries are outboard since the populations of these countries only strive for survival. African countries need to build on an international language to improve the communication gap between countries and these countries need to try and assist themselves financially. This will help to build a stable relationship between countries and improve the standard of ICTs.

The world of ICTs is a world known for its value in information resources, on-line chats and the process of connecting countries with each other. Most education institutions in the world use computers as a resourceful reference for information in any field of study. The ICT world offers a wide range of information to students and provides latest updates on news worldwide. With ICTs one is assured of being in contact with the world thanks to e-mails and literature. ICTs are updated with worldwide developments, e.g., history, financial status and current aspects faced by each and every country. ICTs provide information on various subjects to the world's population. ICTs also help researchers, scientists, mathematicians and all career fields to compile effective and beneficial reports while at the same time allowing students and learners to upgrade their knowledge and improve the learning process. It saves time on research and also keeps students and learners busy constantly (Okai: 2004). In the meantime ICTs are contributing to the aim of keeping the youth in life-long learning.



Without ICTs, people would not know about each other's existence, beliefs and cultures. They provide opportunities to countries to adapt to each other's lifestyle and prepare tourists for a holiday of fun and adventure. Through ICTs, the world is opened up to exploration, tolerance and communication on the basis of an effective language. Financial companies can have access to improved financial status through using ICTs. ICTs are a reliable information source to the world.

Mlle Fidele Ndamyimana
Rwanda

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les technologies de l'information et de la communication (TIC) sont l'une des grandes révolutions technologiques du XX^e siècle.

En effet, elles sont la base du développement de la société, surtout dans le secteur sanitaire, commercial, industriel et éducationnel. Elles jouent aussi un rôle important dans les activités courantes de la population. Le cas des grandes réalisations des Etats-Unis illustre les propos ci-dessus.

Néanmoins, l'accès à cette technologie en Afrique n'est pas sans difficultés; de nombreux obstacles entravent son développement, notamment le manque de personnel qualifié, d'organisations facilitant son utilisation, le peu d'infrastructures industrielles, les problèmes politiques et culturels, l'insuffisance d'énergie, la réticence des investisseurs vu l'insécurité et les guerres qui règnent en Afrique et l'analphabétisme auquel plus de la moitié de la population africaine fait face; sur ce point, on voit mal comment cette partie de la population aurait accès à l'Internet. Tout cela est couronné par la pauvreté qui sévit dans la plupart des pays africains.

Cependant, il n'y a pas que les défis. Ces derniers temps, l'Afrique avec ses différentes initiatives, dont le NEPAD, est en train de prendre conscience de son retard économique et du rôle prédominant que joueraient les TIC dans le développement de la société humaine. Dans cette optique, les organisations tant régionales que nationales ont été mises au pied en vue de réglementer, de standardiser et d'optimiser les activités en rapport avec les TIC. Pour étayer la véracité de ce propos nous citerons l'exemple de RITA.

Plusieurs universités, écoles supérieures et centres de formation qui se focalisent sur les TIC, sont en train de voir le jour, ce qui dotera les pays africains des ingénieurs et du personnel qualifié pouvant contribuer à la promotion de cette technologie.

Les règlements régissant le commerce électronique sont promulgués. La libéralisation et la privatisation des télécommunications et d'autres activités économiques dont les gouvernements détiennent actuellement le monopole feront pencher la balance en faveur de l'expansion des TIC.

Nous ne pouvons pas oublier que les gouvernements africains et les organisations internationales font tout pour réduire la pauvreté et éradiquer l'analphabétisme avec le programme «Education pour tous».

Grâce à l'armée d'outils de lutte contre la pauvreté, la population s'élancera dans l'utilisation de l'Internet, le téléphone cellulaire et les ordinateurs en général.

Les TIC sont un outil pour le développement des pays africains mais elles se heurtent à plusieurs obstacles qui sont en rapport avec la pauvreté et la politique. Cependant, la



bonne gouvernance et le relèvement économique et technologique aideront à leur développement et tout le monde bénéficiera de ses services.

M. Alain Ndikumana
Burundi

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les technologies de l'information et de la télécommunication (TIC), représentent un intérêt majeur dans le processus de développement économique et socioculturel du continent africain.

Nous allons nous atteler à montrer les principaux défis auxquels il doit faire face, mais aussi les opportunités offertes pour parvenir à l'accès universel des TIC aux Africains.

La faiblesse, voire l'absence d'infrastructures de télécommunications adéquates est le premier handicap à franchir. En effet, le réseau africain de télécommunications est faiblement dense, obsolète et peu numérisé. Les zones rurales qui couvrent la majeure partie des territoires sont quasiment dépourvues de ces infrastructures.

Un autre défi à relever, et non des moindres, est la faiblesse des moyens humains tant au niveau de la formation, dans les disciplines associées aux TIC, que dans les capacités de production d'œuvres scientifiques, littéraires, artistiques et médiatiques. Les Africains sont obligés de consommer les produits conçus et fabriqués ailleurs, en grande partie dans les pays développés, sans pouvoir proposer à leur tour leurs propres produits. Ceci n'est pas de nature à intensifier les échanges.

Malgré ce tableau peu reluisant, les opportunités ne manquent pas pour un accès universel aux TIC en Afrique. En effet, grâce à leur déploiement rapide, les TIC permettent de combler le fossé numérique existant entre les pays riches et les pays pauvres, dont la plupart sont africains, sans devoir passer par les longues étapes intermédiaires que les premiers ont dû franchir. L'intérêt pour cela en serait une illustration. Les TIC offrent des forums d'échange plus élargis et contribuent à combler les fossés entre villes et campagnes et entre générations. La jeunesse, qui constitue la majorité de la population en Afrique, est la plus impliquée dans les TIC et cela contribue à parvenir à l'accès universel des TIC dans le continent.

Mlle Annie Ngalula Mukambu
République démocratique du Congo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les progrès des technologies de l'information et de la communication (TIC) ont révolutionné la façon d'être et de vivre de l'homme.

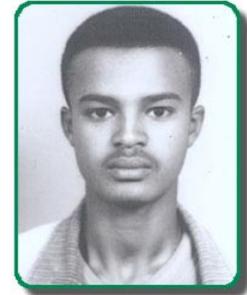
L'introduction des supports de transmission à large bande passant à des coûts de revient de plus en plus réduits a supprimé les distances physiques entre peuples et contrées du monde, offrant ainsi des possibilités de développement extraordinaires pour les populations bénéficiaires.

Cependant, les avantages apportés par le TIC ne sont restés que l'apanage des pays du Nord, notamment de l'Europe, l'Amérique et l'Asie. L'Afrique quant à elle n'a à ce jour pas encore accès à ces atouts indispensables pour tout développement. C'est ce qui est appelé la fracture numérique ou le *digital divide* pour les anglophones. Quelle opportunité saisir pour permettre à l'Afrique de rattraper le train du développement de la population? Plus qu'une volonté des Africains, aujourd'hui cette insuffisance ne devrait se réparer que par une solidarité des pays industrialisés à travers un «plan Marshall des TIC» en Afrique. Ce plan devrait prévoir la mise en place d'une autoroute de fibre optique qui raccorderait tous les pays d'Afrique sans exception, ayant une sortie sur l'Océan Atlantique, Pacifique ou la mer Méditerranée. A partir de ces pays, des autoroutes transafricaines de transmission par fibre optique entreraient vers l'intérieur de l'Afrique du Nord, du Sud, de l'Est ou de l'Ouest de l'Afrique, vers son centre, s'appuyant sur la boucle externe de l'Afrique. Par la même occasion, tous les présidents africains devraient prendre la mesure d'exonérer des droits de douane, tous les équipements informatiques ou de télécommunication utilisés, pour permettre l'accès à l'Internet, à la communication, aux applications de télématique, telles que la visioconférence, télémédecine, télééducation, télé-détection, au profit de tous les centres ruraux d'Afrique. Une décision d'Etat, prise dans tous les pays africains devrait rendre obligatoire l'enseignement de l'informatique dès l'école primaire.

Egalement un fonds universel devrait être créé dans chaque pays pour le financement des services universels des TIC. Ce fonds pourrait être alimenté par le redevance des services de télécommunication mobile, des industries de la cigarette et de l'alcool, des multinationales, implantés sur le sol africain.

Enfin, des programmes de développement de l'Afrique, tel le NEPAD, devraient réserver une place de choix à l'implantation des réseaux intégrateurs, comme des autoroutes des TIC.

Mr Solomon Nigussie Tolosa
Ethiopia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Although ICTs are not a recent phenomenon for Africa, their development is very slow. This is attributable to numerous challenges in different regions of the continent, but the predominant ones are economic, social and political. This short essay is devoted to explaining the challenges and figuring out some opportunities available for developing the sector.

The core challenge to ICT development in Africa is poverty. The very poor infrastructure in rural areas accompanied by the expensive price of satellite connection has made ICTs a luxury for most Africans. Moreover, as one expects, Africa’s governments are following a pragmatic approach to models of deployment of ICTs due to other vital priority demands such as food, security and health care.

In some countries, the political instabilities and frequent conflicts do not allow governments to focus on the sector, while in others, although the peace is there, the indispensable resources to intensify ICT access, i.e. skilled manpower and budget, are lacking. Moreover, the hostility of these countries towards foreign investment makes the situation very much worse.

The other serious challenge is the inequity observed in ICT distribution. These limited communications are installed in cities where certain sections of the society are privileged while the majorities are denied access. This problem should be urgently addressed to avoid collision on the available resources. Moreover, the low socioeconomic status of most African women does not allow them to have equal ICT access as the men. This is a great obstacle to achieving universal access as the women make up more than half of the population.

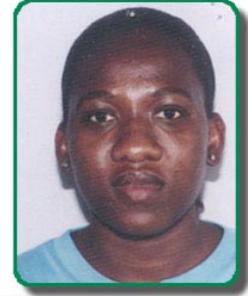
In my opinion, reform of the presently existing ICT policies and other related sectors would create an opportunity for universal access in Africa. The financial constraints can partly be solved by establishing public-private partnership. In doing so, governments would be able to provide their citizens affordable access without compromising quality standards.

The challenge posed by the social factors is also tremendous. The scattered settlements of the population make the cost of construction of telecentres and the huge connections between them very high. Hence the wireless Internet is very promising to develop ICTs. If African countries exploit this technology, it will be possible to narrow Internet access gaps with little expansion of the existing mobile telephone networks.



Above all, the rights of citizens to freedom of expression should be respected without any reservation. Tapping of one's telephone and fax messages should not be tolerated. Hence, both the people and the government should work to bring an end to these contraventions of human rights. Censoring mechanisms should only be in the hands of the individual users, so that the end users have the sole responsibility to filter or block online content for themselves.

Ms Alberta Nortey
Ghana



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Introduction

The speed with which Information and Communication Technologies (ICTs) are developing and their impact on socio-economic activities cannot be over-emphasized. ICTs, according to UNDP, have been defined to include the full range of electronic technologies and techniques used to manage information and knowledge. It is imperative that Africa is not excluded from the technological revolution. It is a stark fact that the use of ICTs has been integrated into virtually every facet of commerce, education, governance and civic activity in developed countries and has become a critical factor in creating wealth worldwide. Unfortunately, in Africa, ICTs have barely taken a foothold. Computer illiteracy and lack of access to ICTs are widely recognized as an increasingly powerful obstacle to the economic, civic and political development of Africa.

A Wide Area Network called the Research and Educational Network (REN) was also established in 2000 with the help of the World Bank InfoDev project where African universities and local research institutions such as the Atomic Energy Commission were linked to serve as nodes for the broad network. This network among other things is to create an enabling environment for the use of ICTs, foster information exchange among local scientists and to facilitate the interactions and collaboration between researchers in institutions and the world.

Though Africa is not yet there as far as ICT infrastructure is concerned, it has been able to chalk some successes in attracting some foreign investors to the country. Some of them are Affiliated Computer Services (a Fortune 500 company and a global leader in IT and Business Process Outsourcing), Data Management International Inc., Rising Data Solutions, Global Response, Busy Internet, AQ Solutions and Supra Telecom. Most of these companies operating in the continent have recorded an average of 50% in revenue and profits. Other U.S. companies like Cincom System Inc. (a call centre) and Convergys Corporation are expected to open offices in the locality.

However, despite these massive investments in ICT infrastructure and ICT capacity building, Africa is still to a large extent digitally isolated from the Global Village because it lacks the critical drive and strategies to harness the full potential of ICTs for the socio-economic development of the country. These have been some of the challenges facing the full ICT deployment in the country.

Problems facing communication in the African continent range from Voice-over-IP and international traffic termination issues. This has led international revenue dropping yearly.

Other factors such as bad debt, which is estimated to be as high as USD 40 to 45 million annually in some cases, in addition to bad management are hampering efforts to operate more efficiently and competitively.

For example, in Ghana, the Voltacom Project which was perceived to be one of the key and cheapest solutions to aid ICT deployment is still not fully utilized. This national asset, which is not fully operational at this stage except for delivering some services to VRA, which currently owns and operates a fibre optic ring between Accra, Tema, Kumasi and Takoradi of about 600 km. Though the government decided in 2003 to privatize Voltacom, nothing concrete has come out of this.

Another issue worth considering is the high cost of Internet usage. Though there has been an upsurge in Internet Cafes and Communication Centres all over the country, some prominent Internet Service Providers such as Africa online, Internet Ghana, WWWplus, Network Computer Systems (NCS) among others continue to charge between USD 25 to 50 per month for a dial up service with unlimited access. A corporate account for Internet access attracts a subscription ranging from 40 for limited access to 200 for unlimited access. The high infrastructure and subscription costs unmatched with quality service-by-service providers have been a major drawback to the use of ICT in education, research and development.

Another issue has been how to address interconnection issues with special reference to fixed-to-mobile operations, development and delivery of fundamental economic issues for regulators, which includes competition policy, costs and pricing and finance for regulators. There have been instances where fixed phone lines and mobile phone operators have engaged in a lot of tussle about connectivity issues. Up till now, GSM operators are doing better to connect to far-off places than some national fixed lines.

Another major identifiable challenge facing the development of the full potential of ICTs for education, research and development in the continent has been the brain drain syndrome. The effects of the brain drain can be argued to have contributed not only to lack of medical and other critical professionals in the country but also ICT gurus. This has resulted in the lack of the critical mass of ICT engineers and scientists relevant for undertaking ICT-related projects professionally. It has also been found that the most talented people in the area of science and technology, if they have not left for more attractive environments, often pursue private agendas, shunning the "civic space".

Above all, one critical hurdle has been the lack of enabling environment and the political will to do things. It is interesting to note that some governments have been described in certain circles as a "bad virus" to ICT development. Also, Gregg Pascal Zachary in his forward looking paper "Black Star: Ghana, Information Technology and Development in Africa" made it clear that "cynicism about the potential for policy to make a difference is widespread and even when the policies are correct, government faces the difficulties getting things done". A country like Ghana can now boast of a National ICT Policy document but more needs to be done. Some of the questions that need answers and reflection, among others, are: Do we have the political will, resources – both money and human – to embark on the 14 ICT AD priority areas? Do we have the right government, leaders and policy implementers who will defy all odds to create the necessary structures for ICT to take off and to make this dream a reality?

The way forward

However, the solution towards bridging the divide will require a mix of the following strategies:

One key solution is to create the necessary awareness in all the organs of governments namely the executive, legislature, judiciary and the Press. For us to pull everybody along on the ICT development continuum, it demands the full awareness of our ICTs development agenda. All the organs should be the benefits of ICT and how the new ICT Policy document can impact the development of the country. The executive should be prepared to sacrifice and priority this sector among others on our development agenda and to implement the agenda to the core; the legislature should fully understand the concepts and all the implications of ICTs and be prepared to sell this agenda vis-a-vis their political manifestos; the judiciary should be prepared to react swiftly to legislate concerning ICT and the Press should be up and doing in the selling of ICT opportunities and creating the necessary awareness among the citizenry. Much is actually expected from the executive to lead this crusade and to drag all citizens, both local (young and old, politicians of the other divide, etc.) and foreign towards this development. The zeal with which the current Presidency has been identified in dealing with ICT issues should be manifested in all the executives and other stakeholders who matter.

Based on the recent comparative studies on dynamic industrial clusters in developed and developing countries, it is paramount to create an open, supportive and economic environment or habitat including a good investment climate, economy and social infrastructure to support entrepreneurship, a culture to encourage innovation and allow failure. In addition to policies that allow free and open entrepreneurship and national e-government services, regional and community level leadership is necessary to encourage innovative application of ICTs to public services, health, education and all aspects of community life. This then requires the efforts of all the citizenry in the maintenance of rule of law.

There should be aggressive human capacity building through training workshops, seminars and courses in collaboration with local and international institutions. Once again, these platforms should not be perceived as talking shops, holiday making ventures and a means to earn some per diem. There should be conscious efforts to select and support well meaning executives and staff from various ministries and agencies in each country who actually matter, are prepared to learn and make an impact but not on the basis of seniority or otherwise to attend conferences and courses. We are all witnesses to some conference participants who end up sleeping because of their handicaps in the subjects and themes. The responsible sector ministries should continue to attract the qualified personnel and be prepared to seek the necessary advice (transcending party lines), learn and implement ideas.

The call for improvement of the sector based on development, expansion and modernization of communication infrastructure to achieve universal service and access to basic and value-added communication services cannot be over-emphasized. This then demands swift and cost-effective methods to place Africa in a competitive position. One project that should have aided Africa in this regard is the Voltacom (based in Ghana). This project, one of the landmarks in ICT development history with the aim to provide lower-cost basic access with a reasonable basket of important services such as Internet and voice communication, is no more discussed and talked about. It is on paper that the government had the intention to privatize this brilliant idea. Investors were invited to send in proposals and to tender but nothing has been heard about it. For us to move forward as

a nation with the vision to develop its ICT potentials, this project should be given a second look as soon as practicable.

Some specific institutions like the Kofi Annan Centre for Information and Communication Technology which, though located in Ghana, also helps to serve some of the surrounding countries, need to be strengthened and be focused on demand-driven initiatives in order to provide products to meet local needs. The departments of Computer Science in most African universities are nothing to talk home about though they should be the source for producing the needed ICT professionals for the country. These university departments (for public and private universities) and responsible public institutions should be made centres of excellence. They should also manage and coordinate activities of their research and educational network and should be at the forefront of developing innovative ideas for the efficient utilization of ICT infrastructure in the area of distance education and virtual laboratories for teaching and research. The academic environment should therefore be made attractive in order to attract the ICT gurus. These universities and the research institutions should as be at the helm of picking or selecting outstanding young people from the entrepreneurial and policy background who have the potential to become future leaders on the ICT development of country. The selected individuals would then continue to work together in diagnosing current problems, searching for strategy to create a unique cluster in their various countries, learning from case studies, interacting with industry leaders at home and abroad, formulating road maps and milestones to materialize the goals, and creating international networks particularly with the Diaspora community to support their plan.

It is also an established fact that the government alone cannot find investment capital for such development and this calls for private sector support and investment in the industry. Industry and financial leaders from the Diaspora community could be invited by the responsible sector ministries to provide the industry's view point for ICT development strategies from time to time and to discuss how the business community can lead in creating a business environment to encourage entrepreneurship. Our banks should be re-orientated towards this new paradigm.

The role of NGOs in capacity building and societal application of ICTs is crucial and cannot be downplayed. Young NGOs' leaders could be invited to work on a specific nonprofit business model to utilize ICTs for social development in the areas of empowerment of the rural poor and the farmers through community information centres and creation of jobs through ICTs.

There should also be a programme that aims at creating and promoting innovative and sustainable business models addressing the needs of the massive bottom-of-the-pyramid market, in the areas of rural communication infrastructure, e-commerce, e-learning and health, etc.

Successful ICT industry development is characterized by regional clustering of small, innovative firms with professional skills, mutually interactive and dynamically created by spin-off mechanisms like those found in the State of Andhra Pradesh in India. Supporting infrastructure such as venture capital funds, incubators, outsourcing services, academic/industry collaboration mechanisms are essential elements of dynamic country-specific ICT clusters. Governments need to encourage the formation of these clusters and venture capital should be made available with ease for promising ICT entrepreneurs.

The press should also continue to play its role as the watchdog, disseminator of policies and programmes and to offer constructive criticisms where and when due. A conscious effort is needed this time around to propagate the current achievements in terms of ICTs and to sell Africa as a safe haven for investors other than focusing on political and "antidevelopment" issues. People who are contributing to ICT development in diverse ways need to be recommended and their experiences shared with the young through these media.

To conclude, progress – though dismal – should not be an excuse for complacency. The gap between developed and developing countries persists and also policy-makers should recognize that the ICT sector is not only an economic engine but also an enabler of social and political progress. Though the progress we make might be thwarted along the road, we should re-organize quickly and move ahead.

Mr Stephen NYENDE
Uganda



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and Communication Technologies, or ICTs, involve the use of computers in business, education and other sectors. The critical role of easy and timely access to information as well as ICT services and systems as major drivers of social and economic development cannot be over-emphasized. Equitable access to information as well as ICT services and systems is necessary to reduce the increasing internal divide between the advantaged and disadvantaged groups.

Good governance, rural development, education, agriculture, health, e-commerce and e-business are strategic priorities in achieving human development which need the implementation of access to information as well as ICT services.

There are several challenges that governments have to address in order to achieve successful integration of ICT in all national transactions, among them being infrastructure, awareness and training and policy management. The human being is the greatest challenge in introducing ICT services and systems in any organization.

The insufficiency as well as high cost of infrastructure and the high cost of licensed software that follows widespread introduction of ICTs in the country, together with the high cost of high-speed Internet access are all barriers to all the sectors, especially e-business.

There are also legal, fiscal, know-how and attitude barriers that are stopping Africans, and in particular Ugandans, from using both e-commerce and exploiting the e-business opportunities. The legal issues of copyrights, patent rights and installation of software present a big challenge. The majority of the population does not know how to use computers. People are intimidated by them and, in fact, have phobias about them.

On the other hand, among the opportunities is good governance as a precondition for sustainable development. A critical factor in this is creating transparency and putting the citizens at the centre of government.

There is a current window of opportunity for Uganda to exploit international e-business opportunities. Government can negotiate for favourable terms with ICT suppliers and put in place policies to promote the development of skills and industry that will in the medium to long term address the outflow of resources.

Government should continue its policy of using the private sector to deliver and operate infrastructure. Government should increase its direct contribution to the development of rural communications, working through the private sector.



Government should also work with regional groupings to overcome the major infrastructure barriers to cheap Internet access. It would also suspend, in the short term, all taxes, including VAT, on ICT equipment and software.

It should be a policy-level driver to require each ministry to allocate a fixed percentage of its overall budget to the integration of ICTs in all its functions.

The biggest opportunity is the awareness of the fact that ICT is needed. As such, from this burning desire, strategies can be devised to that effect. The potential is there, the means is lacking.

For God and my country.

Ms Maureen Olembo
Kenya



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and Communication Technologies (ICTs), tools for the delivery of information, include telephones, radios, faxes, televisions and computers. The information and communications revolution has led to availability of other ICTs, including compact disks, mobile telephones and the Internet. The digital divide, a gap between the information-rich and information-poor, is a reality in Africa. We need to embrace the information age, yet a number of challenges stand in our way.

There is a lack of ICT infrastructure in Africa. Our communication network is paltry to say the least, with some areas of the continent rendered inaccessible. An important step towards accessing ICTs would require setting up a communications network across the continent. The mobile phone industry is an example of the importance of ICTs, enabling communications with previously unreachable people.

But of what use will the infrastructure be if we do not receive the necessary education to harness the power of ICTs? We need to know how to put to use the information available as a result of ICTs in order to change our lives for the better.

Due to low income of most individuals in the continent, ICT facilities are unaffordable. The communication costs are also oppressive, with most charges far above the reach of ordinary citizens.

Even with these challenges, all is not lost. Access to ICTs remains an achievable goal for Africa as a whole.

The most important opportunity is provision of education. Education would broaden our minds, encourage us to think outside the box and acquire that which remains unattainable to us due to ignorance.

Yet another important resource we have available, though not widely, is the Internet. It is an equating factor in the unbalanced equation of accessing ICTs in Africa. A vast amount of resources are available through the Internet, to educate, train and provide access to information. Knowledge is only a button click away.

Finally, there exists a great amount of untapped potential amongst us. With the right exposure, we can use the information we are able to obtain, to put us on a par with those considered information-rich. This is attainable, if we begin to educate all of us who are thirsty for knowledge.



In conclusion, ICTs are an important resource that we as Africans can ill afford to ignore. We need to put all our efforts into ensuring access to ICTs for all that want them. This would open up the world to us, as well as putting us back on the map of the world, as key players in virtually every industry within which our strength lies. We would then properly utilize the potential we possess as the African continent.

Mlle Wend-Yam Deborah Oueddouda
Burkina Faso



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Dans bien des domaines, l'Afrique se laisse distancer par le reste du monde. Ce qui est communément appelé TIC ailleurs se fait encore appeler Nouvelles Technologies de l'Information et de la Communication (NTIC) en Afrique. Cela dénote bien que ces technologies n'y sont pas encore accessibles à tous. Quels sont donc les défis et les opportunités pour parvenir à l'accès universel en Afrique?

Le rapprochement des lieux d'accès aux TIC des utilisateurs potentiels, constitue un défi majeur dans la lutte menée. Afin de le relever, l'appui des municipalités est important. Du fait de leur grande capacité de mobilisation des ressources locales et communautaires, elles pourraient servir pour la promotion des TIC. Par ailleurs, le réseau des bureaux de poste offre une autre opportunité à exploiter. En effet, l'importante ouverture spatiale des bureaux de poste dans nos pays peut servir de support pour la vulgarisation des cyberspaces. Cela pourrait notamment se faire en associant à chaque bureau de poste, un cyberspace. D'autres obstacles à franchir, et non des moindres, sont la pauvreté et l'analphabétisme des populations, surtout rurales. Les coûts d'accès actuels pratiqués sont très élevés pour la majorité. Une des solutions à adopter serait de travailler au développement des réseaux à haut débit pour offrir aux internautes des plages de coûts à leur portée. Une autre solution serait d'encourager les initiatives d'associations qui travaillent à relever le taux d'alphabétisation des populations rurales. La multiplicité des services offerts par les TIC devrait être perçue par tous pour une propagation de l'utilisation de ces technologies. On peut déjà constater chez les jeunes un certain engouement pour les TIC, qui pour des études qui pour des recherches d'emploi, aussi et surtout pour se faire des amis.

L'accès au service universel des TIC en Afrique pourra aussi être atteint par la baisse des taxes douanières sur le matériel informatique.

Au Burkina Faso, les municipalités et la poste s'investissent depuis quelques années dans la création de cyberspaces appelés centres multimédias ou cyberpostes. L'affluence dans ces lieux montre bien à quel point les populations s'intéressent aux TIC. Nous osons croire que de telles initiatives ne resteront pas en si bon chemin et que d'autres pays suivront ces exemples afin que les TIC soient accessibles à tous et partout en Afrique.

Mlle Mariama Oumarou Mahamane
Niger



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les TIC, technologies de l'information et de la communication, constituent un ensemble d'outils électroniques qui ont pour épicerie l'ordinateur et dont la dernière avancée est l'Internet. Ces outils sont en passe de révolutionner les activités sociales, économiques et culturelles des individus.

En Afrique, l'usage des TIC est un domaine réservé à une élite qui constitue une infime minorité de la population. En effet, plusieurs obstacles concordent à rendre l'accès à l'Internet une chimère pour tous les Africains:

- La navigation reste encore chère comparativement au revenu moyen des Africains, d'où la nécessité de baisser les tarifs.
- La non-maîtrise de l'outil informatique, par bon nombre d'Africains, même lettrés, à cause de la rareté de la ressource et la relative complexité de l'exercice.
- Une tranche importante des Africains demeure analphabète, ce qui les exclut d'office de l'usage de l'Internet.
- Le sous-développement en matière d'infrastructures, tant électroniques que de télécommunications, et dont la présence constitue un préalable à l'accès aux TIC.
- Le faible niveau de vie des Africains est un autre facteur défavorable à l'accès de tous aux TIC. En effet, beaucoup d'Africains ne mangent pas à leur faim et ne peuvent donc songer aux TIC.

Cependant beaucoup d'opportunités s'offrent aujourd'hui à l'Afrique qui nous autorisent à espérer voir une grande partie des Africains accéder aux TIC. Au premier chef, la conjugaison des efforts des Africains dans le cadre du NEPAD en vue de mettre au point des projets dans le cadre du développement des TIC est l'une des opportunités. Parmi ces projets on compte:

- La réalisation du projet de câble sous-marin de la côte Est.
- La réalisation d'infrastructures de télécommunications et électriques toujours dans le cadre du NEPAD.
- La réalisation d'un cadre législatif favorisant l'importation de matériel informatique pour les pays africains.
- Enfin, l'Afrique doit renforcer la coopération bilatérale et multilatérale pour accroître le nombre d'utilisateurs des TIC; c'est le cas en Inde aujourd'hui.

Ms. Lavanya Palani Batcha
Seychelles

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

“Access Africa”.

“In the middle of difficulty lies opportunity” – Albert Einstein

These are but two instances of ICT in action:

- Providing avenues for small/media businesses, enabling all round the development
- Installing ICT infrastructure in areas without basic electricity lines

The 19th century was a time when the African continent was considered as “unenlightened”, a land peopled by those who were isolated by the civilized world. A century and more later, in the “information age”, every African nation must ensure that history does not repeat itself. And in a world increasingly being referred to as a global village, the focus is on information access for everyone, everywhere and at every instant.

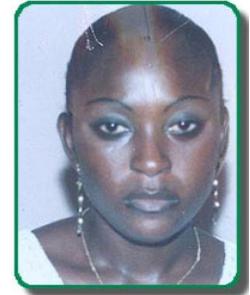
Millions die of hunger, deprivation, HIV/AIDS or internal strife, a hard-to-ignore fact about Africa. When even the basic amenities of life are not accessible to people, the question whether they can have access to information seems inappropriate. Naturally, it follows that a well-networked telecommunication infrastructure to enable information access cannot be expected. And without such an infrastructure to maintain, there will be a dearth of vital technically skilled personnel.

In an attempt to provide universal access, the stumbling block would be including the rural areas; often only urban communities are catered to completely, ignoring the less fortunate. But therein lies a problem; the rural people – being unaware of the benefits involved – may never create a demand for it. Most of the time potential investors are deterred by such environments that are not conducive to growth and development. The difficulty is in convincing people and their representative governments that information access is not only a privilege but also a necessity.

Often, even when governments take the initiative to implement a project for universal access, it remains in its preliminary stage, the reason being lack of a definitive regulatory policy, prohibitive costs or unavailability of internal funds. Several African nations are crippled by the exorbitant debts paid by them every year, yet without these debts substantial internal funds could be allocated towards ICT development.

Uganda rural women have formed an organization to sell indigenous handmade products via the Internet to world markets, with the aid of an NGO – an uplifting example of how e-commerce can be instrumental in rural development. Recently, Kenyan elephants in the wild are being monitored by Global Positioning System (GPS) tracking mechanisms, an example of technology’s use in preserving a nation’s wildlife heritage.

Mlle Prosperine Louise Pandi Milebe
République du Congo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Le XXI^e siècle sera largement modelé par les TIC. Actuellement l'Afrique subsaharienne a le réseau de communications le moins développé du monde. Constituée de près de 12% de la population mondiale, elle ne porte que 0.5% de toutes les lignes téléphoniques mondiales (sauf l'Afrique du Nord).

Le coût d'une ligne téléphonique en 1995 atteignait 20% du PIB par habitant en Afrique, contre 1% dans les pays à revenu élevé. Comme l'écrit J.-J. Servan-Schreiber: «Dans la société, comme pour les hommes il n'y a pas de croissance sans défis». Pour sortir de cette impasse, l'Afrique doit relever certains défis pour parvenir à l'accès universel des TIC.

En Afrique les ordinateurs sont peu nombreux: on compte, d'après les estimations récentes, de 1 à 3 ordinateurs pour mille d'habitants. Ils coûtent également cher, sont rarement assemblés dans les pays africains et sont taxés comme des produits de luxe.

Chaque pays africain doit bâtir des stratégies nationales sur des nouvelles technologies, notamment la mise en place d'un conseil stratégique sur les NTIC et la création d'une autorité de régulation unique et autonome. Chaque pays doit se doter de l'Internet à grande capacité, définir des lois adaptées au secteur des nouvelles technologies, et doit aussi créer un fonds de soutien aux NTIC. De même, il doit appuyer les PME/PMI pour favoriser la compétitivité et l'émergence des téléservices et du commerce électronique. Chaque pays africain doit numériser les archives publiques et créer un réseau gouvernemental d'accès à l'information (Internet, site web, etc.). Face à ces défis, différentes opportunités sont offertes:

- La dispute des marchés des télécommunications nationales et internationales par les entreprises en pleine expansion.
- L'existence des fibres optiques, les transmissions sans fil et par satellite pour joindre toutes les zones.
- Inscription des TIC par le NEPAD comme faisant partie de ses 10 priorités.
- La figuration des TIC à l'ONU parmi leurs stratégies.

En somme les NTIC offrent des perspectives de développement. Les pays africains doivent s'engager politiquement, économiquement et socialement à l'application des solutions qu'elles offrent en prenant appui sur les opportunités qu'offrent actuellement les sociétés du savoir et les stratégies de développement international.

Mr Trevor Pool
Seychelles

“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Access to ICT infrastructure and services is not only a major concern in African countries, but most third-world countries face the consequences of being left behind in the ICT Community, if no action is taken now to reverse the trend.

The major issues with regard to challenges of making ICTs accessible to African countries more or less lie in the lack of solid foundation to start with. Most African countries have very limited financial resources to invest in ICT projects, since most is utilized to satisfy the basic needs of survival. Therefore, there is a heavy reliance on foreign investors for the deployment of ICT services. To attract investors, a country must provide a secure environment, stable economy and reasonable demand for ICT services for the sustainability of any project. Nevertheless, expatriation of dividends is also a requirement.

Another situation which I feel should be addressed is the lack of proper engineering planning. For a country to embark on any wide scale ICT project, a thorough study and planification should be undertaken by experts in the ICT field to ensure the sustainability. As a result of a lack of this human resource, many African countries will find it very difficult to implement cost-effective and efficient ICT projects as the financial value for proper engineering is very high which most cannot afford. Most commercial decisions projected by society leaders usually result in ICT development in highly populated areas, ignoring rural and remote areas, creating an uneven distribution of ICT infrastructures.

The key to tackle Universal Access to ICTs in Africa lies in education. Providing education to people, especially the youth, is the only way to enable individuals to embrace ICTs as a part of their everyday life. Once they are aware of the potential and benefits that ICTs will bring to their respective communities, it is only then that they will give their full cooperation and support.

The government should play a major role in encouraging small scale ICT projects such as multipurpose community telecentres (MCT) by decentralizing those projects and by effective and efficient regulation, making provisions for long-term sustainability. Individuals should be encouraged to enroll for courses being offered at the MCT. The basic knowledge and skills gained in ICTs would then be passed on to the respective communities, resulting in a large IT literate population.

Development in ICTs is advancing at a rapid rate. Africa does not have to learn from trial and error as did developed nations. Today, cost-effective ICTs resolutions can be deployed in the most difficult terrain of Africa within a short time frame. Services' affordability is a concern due to the uneven distribution of wealth. However, subsidized ICTs services would be a good starting point. Access to ICTs would enable Africa to leapfrog into the future by sharing local digital content. It is this sharing of knowledge that would unveil the full potential of Africa. Access to ICTs is just a stepping stone.

Ms. Mamello Raliapeng
Lesotho



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Top barriers to Africa’s participation in ICTs are poverty, illiteracy, and limited access to communications infrastructure; hence, for the majority of Africans, affording ICT services is unfeasible. If information is power, then access is empowerment.

The first step towards universal access to ICTs is to employ public access points for accessing information and related resources in the existing institutions such as schools, libraries, community centres, etc. Access to electronically stored information and knowledge resources in health, education, literacy, water management and environment protection could enhance access to basic services. African countries confront many significant political, economic, and social constraints to increased food production. They thus have to offer food security by human resource development through knowledge building and information sharing, of which communication technologies are central to the process – hence use of ICTs. Training is the biggest challenge facing Africa and it is the key to preparing every sector and class for full deployment of ICTs. Training also offers the lifeline to full participation, management and sustainability of ICT systems and channels.

Africa needs to pay attention to the needs of health professionals who require access to up-to-date research and reference materials. They have to introduce communication facilities for health institutions and consider using low-cost methods such as e-mail and radio stations to save lives, reduce isolation and enable doctors to make better decisions. Countries need to stimulate change and create learning environments that are meaningful and responsive to the specific needs of learners. Through the Internet, students will access the best trainers and superior course materials without being constrained by lack of certain education locally, or by societal constraints. Specific efforts should be made to provide practical information sources by making resources electronically available, for schools, universities and research centres.

Africa needs to provide low-cost ICTs that will enable individuals to access computers and become purveyors of information, thus allowing the sale of their crafts worldwide using the Internet. Africans need to explore ways of integrating local languages with appropriate applications for multicultural settings, embark on studies to examine the impact of ICTs on cultural identities and values, as well as social and cultural factors, which determine effective applications of ICTs. Tourism is also increasing and information from countries should be made available on national websites with information on internal travel tours, hotel accommodation and transportation. In addition, there is a need for capacity-building programmes for rural communities, which develop the skill-base of people in *Participatory* and *Facilitating skills*. Most of all, Africans need to have the confidence to identify and



build upon the fact that they are the world's experts in a wide variety of knowledge domains.

Adaptation and utilization of ICTs in Africa is constrained by, among other problems, inadequate infrastructure, limited human resource capacity, absence of national policy and low ICT literacy. Consequently, there has to be a focus on people, organizations and processes in confronting some of the challenges, rather than solely on the technologies.

M. Hajasoa Andriamanoro Randriambola
Madagascar



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

L'accès universel des TIC en Afrique contribue au développement socioéconomique. Ainsi, il est nécessaire de survoler les principaux défis et opportunités pour y parvenir. L'Afrique doit augmenter le niveau d'instruction pour l'appropriation nationale des TIC. En matière d'alphabétisation, il est important de donner la priorité aux jeunes en milieu rural pour diminuer le fossé avec le milieu urbain. Aussi, l'intégration d'un module TIC dans les programmes d'enseignement, l'appui à la formation, la vulgarisation des TIC et la sensibilisation auront un rôle primordial. Mais l'Afrique doit également faire face à un manque d'infrastructures et aux coûts des services assez élevés pour répondre aux besoins de la population. Une révision de la réglementation s'impose également pour mettre en place une concurrence réglementée et pour favoriser l'investissement étranger en Afrique.

Cependant, les éléments qui pourront favoriser l'accès universel des TIC en Afrique sont aussi nombreux que les défis à relever et ils méritent tous d'être exploités.

Le premier atout de l'Afrique est sa population très jeune et intéressée et qui dès son enfance se familiarise avec les TIC. L'Afrique avance vers une démocratisation et une libéralisation de l'économie, ce qui favorise l'esprit d'entreprise en matière de TIC, qui profite des moyens technologiques développés et avancés, comme les liaisons satellitaires et la fibre optique. Le partenariat entre le secteur privé et l'Etat joue aussi un rôle de promoteur et de facilitateur de projets TIC qui prennent de plus en plus d'importance en Afrique grâce à l'intervention des professionnels africains ayant effectué leur études en Europe et aux Etats-Unis. De plus, la richesse en ressources naturelles permet de diminuer le coût de l'énergie indispensable au fonctionnement des TIC.

L'Afrique a fait des progrès ces dix dernières années sur le plan macroéconomique et en matière de politique commerciale. Cela est certes dû aux progrès à la stabilité et à la croissance de l'économie mondiale, qui sont vitales pour l'avenir des pays en développement. Pour parvenir à l'accès universel des TIC en Afrique, il est important de renforcer les ressources humaines, l'éducation, les infrastructures et surtout l'économie. Le développement du secteur des TIC ne fera que rétrécir le fossé Nord-Sud et réduire ainsi ce qu'on nomme actuellement la fracture numérique. C'est aussi un secteur générateur d'emploi.

Mlle Anicée Michaëla RAZAFINTSLAMA ANDRIANASOLO
Madagascar



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

L'utilisation des TIC, ou technologies de l'information et de la communication, s'est avérée nécessaire pour le développement socioéconomique d'un pays. Ce sont des moyens très pratiques pour l'ouverture à la mondialisation. Cependant, dans le cas de l'Afrique, la majorité de la population n'a pas accès à ces technologies et, de ce fait, il est indispensable de porter attention aux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique. Pour ce faire, nous résumerons d'abord les principaux problèmes qui empêchent la majorité des Africains d'accéder aux TIC. Cela nous mènera à examiner les défis et opportunités de la vulgarisation de ces technologies sur le continent africain.

Nous savons tous que de nombreux pays africains sont en développement. La population massive est de classe pauvre, beaucoup de gens sont illettrés. De plus, la majeure partie du réseau de transports est dans un état délabré. De ce fait, pour parvenir à l'accès universel des TIC en Afrique, nous devrions d'abord appliquer les meilleures stratégies pour combattre la pauvreté. En effet, la plupart des gens n'ont même pas les moyens pour se procurer les outils nécessaires à la communication. Ensuite, comme second défi, il nous faudrait résoudre le problème de l'illettrisme. En tant qu'illettrée, une personne ne pourra ni accéder à l'Internet, ni lire un sms. Ainsi, nous pourrions par exemple nous lancer dans une politique contre l'illettrisme ou utiliser de nouveaux matériaux qui contournent ce problème, tels que les ordinateurs indiens «Simputer». Ces deux premiers défis nous ouvriront de nombreuses opportunités dans les domaines de l'éducation, du niveau social, ce qui ne fera qu'accélérer la vulgarisation des TIC. Enfin, le troisième défi consisterait à se rapprocher des personnes isolées géographiquement à cause de la difficulté de transport. En les dotant des outils nécessaires pour la télécommunication, nous leur ouvrirons la porte vers le développement et la mondialisation.

Finalement, nous dirons que de nombreux Africains ont vraiment besoin des nombreux avantages que peuvent offrir les TIC. Mais considérant leur situation actuelle, des obstacles doivent être franchis afin de leur permettre l'accès aux TIC.

M. Marlino R. Monteiro
Cap-Vert



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Le XIX^e siècle est considéré comme le siècle de la révolution industrielle, alors que le XX^e siècle est sans doute le siècle de la révolution des technologies de l'information et de la communication. Les TIC ont permis la diffusion du savoir et le partage de l'information à une vitesse jamais vue avant. Les expériences montrent que l'usage des TIC est un des facteurs déterminants pour le développement économique et social des communautés et des nations, mais malheureusement on le perçoit encore mal dans la majorité des pays africains¹.

Ainsi, je crois qu'on est encore bien à temps pour prendre le train (en ce qui concerne les TIC) pour qu'on passe de la condition de simples consommateurs à celle de producteurs de technologies de l'information et de la communication, ainsi qu'à la participation à l'économie mondiale.

La base du développement des pays africains (moins développés) est l'application des TIC dans les domaines suivants, que je crois prioritaires: l'éducation (la formation en quantité de techniciens de haute qualité), le développement des ressources humaines, la santé, l'accès universel, les infrastructures et la libre gouvernance du secteur des télécommunications, une des meilleurs voies pour le développement rapide du continent, non moins importante que les éléments de l'Etat, les secteurs public et privé, les institutions d'enseignement et de recherche, les citoyens et la communauté en général.

En ce moment les défis sont énormes dans le domaine des TIC, parmi lesquels la faible couverture du réseau de communication et ses coûts élevés. Nombreuses sont encore les opportunités qu'elles offrent, ainsi que l'accélération de l'intégration économique régionale effective, la réduction de l'oscillation des niveaux de développement actuellement existants entre les pays et la participation effective à la construction des nations et de l'économie globale.

Dans ce contexte, avec l'intention de promouvoir la coopération régionale et internationale dans le domaine des technologies de l'information et de la communication, je propose les actions suivantes: participer activement aux organismes régionaux de culture des télécommunications (ITU) et autres; célébrer des accords, des protocoles aux niveaux régional et international dans le domaine de l'information et de la communication; participer activement à des initiatives et des projets de caractère supranational; trouver et appuyer les efforts des secteurs public et privé et de la société civile; promouvoir l'ample divulgation, à niveau national, améliorer les expériences et les pratiques d'autres pays

¹ Environ 20 millions d'utilisateurs de l'Internet, moins de 1% du continent africain.



dans l'usage des technologies de l'information et de la communication pour le développement².

² J'ai fait cet essai me basant sur la réalité du Cap-Vert.

Ms Najat Hussein Said
Somalia



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

In my opinion, the main challenges and opportunities for access in Africa are in education. Education unlocks the door to the information society. Technology is meaningless if we fail to develop the skills to use it. Africa needs tools and services that will enable its countries to acquire those skills. Skill transfer is vital to avert concentration in any one area. The technology must enable people to play a more active role as citizens, to avoid disengagement.

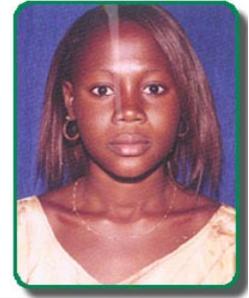
For example, distance learning is an excellent solution for Access Africa in universities, schools and technology institutions; it could offer basic training online thereby eliminating travel costs. Open, no charge, online courses could be offered, like those already available through a partnership between MIT and UNESCO. Accessible worldwide, such courses help to level the playing field and narrow the digital divide.

Informal education is an important part of the information society, giving young people in Africa the opportunity to learn through practical experience and to expand and share the knowledge to other communities.

For Africa to become a knowledge-based society, the role of radio and television must be enhanced. The majority of Africans are dependent on radio for information. In Africa the place of communities within the information society is still too small. The efforts of some countries in Africa are based on the bottom-up approach, whereas the most widespread practice tends to be top-down. There may be a failure to exploit the power and know-how of the communities. We should be promoting social inclusion rather than exclusion.

For Africa to have an access that is meaningful for our community, we should include ICTs in our primary education curriculum, encourage a top-down approach as well as a multi-stakeholder step-by-step approach.

Mlle Coumba Daga Sarr
Sénégal



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

INTRODUCTION

En ces temps de grand débat pour parvenir à l'accès universel des technologies de l'information et de la communication (TIC), le retard qu'accuse un continent comme l'Afrique reste l'objet de beaucoup de controverses entre les gouvernants et les professionnels.

Dans ce qui suit, nous allons essayer de définir les défis et opportunités pour parvenir à l'accès universel des technologies de l'information et de la communication.

DÉFIS

Pour faire face aux changements et rester compétitifs, les Etats doivent se doter de compétences humaines solides à tous les niveaux. L'acquisition d'un capital sur la formation régulière et de qualité des cadres, agents et techniciens. Il est évident qu'une fois la formation terminée, il faudra nécessairement avoir le matériel adéquat pour accroître et développer les connaissances acquises.

Il est heureux de constater que certains dirigeants politiques africains l'ont bien compris en associant le volet des NTIC au projet du NEPAD. L'idéal est qu'un outil comme le téléphone, qui reste la révolution attractive du troisième millénaire, cesse d'être un luxe, mais contribue plutôt à faciliter la vie des populations. Il serait opportun que le citoyen et son frère rural puissent communiquer à un prix moindre par le truchement de plusieurs supports de communications (Internet, minitel etc.), sans se soucier des unités téléphoniques qui s'égrènent.

OPPORTUNITÉS

La téléphonie mobile, avec son cortège de services commensurables et de technologies connexes est le *nec plus ultra* des télécommunications ces dernières années.

Aux USA et au JAPON, les gens se servent de leur mobile pour envoyer et recevoir des fax, e-mails, informations en temps réel et cela permet de gagner du temps et de réaliser de bonnes affaires.



Il est impératif d'investir dans le domaine des TIC. L'accès universel des technologies de l'information et de la communication ne peut être que profitable à notre planète. En libéralisant et en ouvrant ce secteur de pointe à tous les Etats et aux peuples les plus accessibles, l'occasion sera donnée de s'adapter aux mutations socioéconomiques qui résultent du développement général du monde.

CONCLUSION

Les objectifs sont de poursuivre le développement et l'évolution des technologies, de fournir un service public sur l'ensemble du territoire mondial et à toutes les couches de cette population. Il est urgent de réduire le fossé entre les nations. C'est pourquoi, exploiter toutes les technologies modernes s'avère indispensable.

Mlle Essi Cacavi Akpene Seto
Togo



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les progrès de la science et de la technique apparaissent sous un aspect spectaculaire sur le champ mondial et spécialement dans les pays développés et industrialisés. Ce phénomène est à peine naissant dans les pays du Tiers-Monde ou en développement, mais il arrive à démontrer combien les nouvelles technologies dans le domaine de l'information et de la communication sont avantageuses et utiles pour ces pays.

A ce sujet, la question qui se pose est de savoir quels sont les principaux défis et opportunités pour parvenir à l'accès universel des TIC, c'est à dire des technologies de l'information et de la communication.

Nous pouvons définir les TIC comme étant l'ensemble des techniques permettant la transmission des diverses informations par le biais des différents canaux. Certes, ce système permet une meilleure compréhension des échanges et de la soif de connaissances dans les rapports entre les diverses sociétés humaines. Mais plusieurs facteurs expliquent la méconnaissance de l'utilité de ces nouvelles technologies de communication en Afrique.

En effet, le sous-développement qui se traduit sous divers aspects (économique, politique, démographique, industriel, culturel) est la principale cause qui justifie le nonaccès aux TIC en Afrique.

La socialisation des peuples est très importante pour l'individu. Eduquer quelqu'un c'est lui transmettre un certain héritage culturel ou conduire l'individu non social à la vie sociale. Ainsi, la lutte serait de sensibiliser les populations pour élever le taux si bas de l'alphabétisation, de l'instruction, de la scolarisation, par la création des structures éducatives telles que les écoles et les centres socioprofessionnels. L'évolution est nécessaire dans les domaines suivants:

- économique: lutte pour l'élévation de la production agricole industrielle (caractéristique des pays du Tiers-Monde) en vue d'arriver à l'autosuffisance alimentaire et au bien-être de l'homme.
- politique: par une véritable démocratie (ensemble des activités d'un individu en vue de se mettre en contact avec le monde séparé du pouvoir); la coopération d'abord entre les citoyens d'un même pays et ensuite avec les autres pays du continent dans la gestion des biens de la cité.
- démographique: par la sensibilisation au maintien de la santé; sensibilisation par exemple aux méfaits de l'avortement, des conceptions et naissances répétées sur la santé de la femme; enfin sur le maintien de l'équilibre entre le taux de natalité et de mortalité quand la population s'accroît.

Les défis sont donc nombreux.

Les différents canaux de communication constituent les opportunités pour l'accès aux TIC. Ils sont multiples. Par ailleurs, nous pouvons citer le téléphone, les journaux écrits ou la presse, les documents ou livres, la radio, la télévision, la poste pour l'envoi des courriers dont le nouveau style est l'express ainsi que l'outil informatique, qui est déterminant.

En effet, l'ordinateur est l'outil qui renferme les différents fichiers sur la communication et l'information. Son utilisation la plus courante est l'Internet qui est un moyen d'échanges par la messagerie, même sur portable. Même les diverses opérations économiques peuvent se faire par l'Internet.

A travers les différentes analyses et explications données dans notre devoir, nous pouvons voir combien les défis à relever sont nombreux. Les opportunités sont en place mais il manque une certaine spécialisation de l'outil informatique; les fonds et le matériel nécessaires pour le développement industriel en Afrique.

En définitive, l'accès universel des TIC en continent africain serait la meilleure chose qui pourrait arriver puisqu'elles font gagner du temps et facilitent les échanges entre les sociétés humaines.

Mr Ahmed Naser Shetwi
Lybian Arab Jamahiriya



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Africa is the most unconnected continent in an increasingly connected world. There are many challenges and difficulties that face the development of information and communication technologies (ICTs) in Africa.

Some of these challenges are:

Fighting disease, poverty in some countries, poor physical facilities, poor and inadequate telecommunication facilities, poor level of awareness and education in Africa, minimum involvement of universities' research and practical study applications, lack of cooperation and coordination among the few African experts in system management and development, no well-established centres dedicated to the struggle for development, reduction of the gap between the developed and the developing countries.

In spite of the above-mentioned challenges, there are a lot of aspects and opportunities for achieving universal access to ICTs and improving telecommunications in Africa.

Such information and opportunities that could be useful in Africa can be divided into three general areas: supply, demand and environmental factors.

Supply:

Availability of resources in finance, labour, material and technologies.

Demand:

Market opportunities, prices, size of markets, quality.

Environmental factors:

Competitiveness and legislation.

There is a great demand for communication technologies and services in Africa. Obtaining local support for equipment and improving education are essential. Specific geographic areas must be re-oriented to be able to more fully take advantage of the information economy.

The above paragraphs represent my opinion about the challenges and opportunities for achieving universal access to ICTs in Africa.

M. Dagbegnon Clément Sohoulade Djebou
Bénin

«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

A l'heure de la globalisation, aucune communauté ne peut prétendre être dans un processus normal de développement tout en restant en marge des technologies de l'information et de la communication (TIC). En Afrique, nombreuses sont les régions qui n'ont pas véritablement accès au TIC. Cette situation est d'autant plus préoccupante qu'elle risque d'élargir le fossé entre l'Afrique et le reste du monde.

Les pays africains sont souvent caractérisés par des irrégularités aussi bien interrégionales qu'intrarégionales, un PIB par habitant très bas mais aussi par des taux d'alphabétisation et de scolarisation primaire très faibles. Ces réalités limitent l'utilisation des moyens de communication par les populations. Pour parvenir donc à un accès universel des TIC en Afrique, nombreuses seront les contraintes à surmonter. Au nombre de ces défis, nous pouvons citer:

- le désenclavement complet des régions restées jusque là en marge des TIC;
- l'encouragement des recherches scientifiques sur les TIC endogènes aux communautés traditionnelles africaines;
- l'orientation des investissements dans les TIC;
- la subvention des entreprises de montage et de fabrication *in situ* des matériels radiophoniques, téléphoniques et informatiques à travers une politique de suppression des taxes;
- l'élaboration des programmes d'alphabétisation en direction de la masse analphabète;
- un taux de scolarisation primaire voisin de 100%;
- la diversification des secteurs d'activités dans l'objectif d'accroître le PIB par habitant.

Toutes ces mesures permettront de réduire le coût d'accès aux TIC, tout en éliminant les inégalités inter et intrarégionales. Par ailleurs, l'Afrique présente de nombreux atouts favorables à l'accès universel des TIC. La jeunesse de la population africaine est incontestablement l'une des opportunités majeures pour l'accès universel des TIC en Afrique. De plus, le besoin de communication et d'information sans cesse grandissant au sein de la population africaine est sans doute un facteur de nature à motiver l'investissement aussi bien privé que public dans les TIC en Afrique. La diversité et la richesse des valeurs culturelles associées à celles des ressources naturelles à potentialité touristique constituent un argument favorable pour parvenir à l'accès universel des TIC en Afrique.



Pour faire face aux défis actuels de la globalisation, l'Afrique ne peut en aucun cas se passer des NTIC. L'accès universel des TIC en Afrique serait un véritable tremplin pour son développement. Malgré les potentialités pouvant permettre de parvenir à l'accès universel des TIC en Afrique, d'énormes défis restent à relever. Pour ce, il faudrait en plus d'une volonté politique manifeste, une participation active des communautés à la base.

M. Abdou Soudjay
Comores



«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

Les TIC (technologies de l'information et de la communication) représentent aujourd'hui un facteur très important pour mesurer le degré de développement économique, culturel et stratégique d'un pays. La disparité d'accès aux TIC entre pays industrialisés et pays en développement, ou entre les zones urbaines et les zones rurales, ou encore entre les hommes et les femmes, pèse de plus en plus lourd. La question de l'accès universel suppose la réduction de la fracture numérique et signifie ainsi l'occasion d'offrir à tous les citoyens des services à des prix équitables. En Afrique, où nous enregistrons un faible pourcentage de la population qui a accès aux TIC, quels sont les défis et les opportunités y afférents?

DÉFIS (principaux)

- Un service de qualité a un prix abordable.
- Atteindre les communautés rurales, éloignées, défavorisées, enrayer la fracture numérique.
- Bâtir une culture d'accès à la société de la communication, le savoir doit être universel.
- Mise à disposition d'équipements TIC (fabrication nationale), réduction des tarifs douaniers, promotion du prêt à la consommation.
- Les TIC doivent fournir à l'Afrique une occasion d'atteindre beaucoup plus efficacement les objectifs de développement: réduction de la pauvreté, amélioration de la santé et de l'éducation.

OPPORTUNITÉS

- Le NEPAD, Nouveau Partenariat pour le développement de l'Afrique.
- La stabilité politique.
- Les réformes de la réglementation.
- La baisse des coûts des infrastructures.
- L'introduction de la concurrence.
- La création de télécentres publics.

Ms Simangele M. Vilakati
Swaziland



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and Communication Technologies (ICT) have great potential for making one’s life, the nation’s life and most importantly the continent of Africa’s life better.

Africa is faced with a lot of challenges that hinder it from gaining access to ICTs, like the shortage of infrastructure which is a big obstacle to increasing Internet access in developing countries. Unavailability of software, hardware and competency-based modular courses and training rooms are parts of the lacking infrastructure. Lack of equipment for learning centres contributes to the lack of access to Internet and Intranets. The impact of HIV/AIDS and other diseases (e.g. malaria) is another challenge that needs to be addressed. Teachers whose quality has been improved through professional development programmes die from AIDS at a young age, so there exists the need to acknowledge the impact.

Countries in Africa are at different stages of development and use of ICTs in education and training. In most countries, the informal sector is unemployed and not trained. Because senior government members do not have a good understanding that access to ICTs is not a leisure but a necessity, they find it difficult to provide primary schools, colleges and universities with pre- and in-service educational programmes that would allow access to ICTs.

Developing countries in Africa are poverty and hunger stricken. Apart from food, shelter and clothing, which are basic necessities, competency-based teachers and ICTs learning materials are unavailable. Civil wars and apartheid are some of the challenges that hinder development in countries.

Achieving access to ICTs in Africa would create an educated and skilled society that would support economic development, alleviate poverty and sustain employment. Environmental sustainability would be ensured. Gender equity would be promoted thereby empowering women.

Individuals, small companies and groups in African countries can connect to the developed countries through Internet. In short, ICTs are also a platform to exchange data, information, knowledge and a tool to implement applications (e.g. e-commerce e-health, e-schools). The use of ICTs will act as a catalyst to speed up social and economic progress. Access to ICTs will familiarize nations with the use of Internet.

African developing countries aiming to promote access to ICTs would have to work on improving communication infrastructures and accessibility. They also have to be aware that ICTs can help achieve a better quality of life. More conferences on ICTs resource development in Africa should be held.

Ms Elizabeth Wabulya
Uganda



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and Communication Technologies (ICTs) can be defined as the study or use of electronic equipment for storing, analyzing, distributing and exchanging information of all kinds. ICTs in Africa are commonly in the form of computers, Internet services, mobile phones, automated billing and reading systems, to mention but a few.

ICTs in Africa face many challenges that block their universal accessibility. The major ones are given below.

The ICT facilities are very expensive for the average African earner; for example, it is costly to install a domestic Internet service¹ system and many locals are thereby discouraged from accessing it.

High illiteracy levels in Africa negatively bias the attitudes of the people towards the use of ICTs. Many see it as a waste of resources since many people spend more time on this technology, world wide webbing say than they do on farming per se appearing to claim the labour needed in the rural areas. Eventually the unsensitized persons reject it altogether.

Software piracy tendencies² are increasing in Kampala where unlicensed software is installed on duplicate computers. This discourages copyright holders to an extent of withdrawing their quality ICTs from the market, hence reducing availability and eventually accessibility to ICTs as a whole.

Inaccessibility to rural areas like Katakwi in Uganda due to poor infrastructure limits distribution of ICTs to the sparse rural populace. The ICTs that succeed in reaching these areas are limited to a location, for example the MTN (Mobile Telephone Network) village phones in East Africa.

Low technological advancement coupled with poorly qualified technocrats and lack of resources³ leads to mismanagement of ICTs and causes numerous errors that result in continuous malfunction of ICTs eventually leaving no available ICTs for people’s use. The inefficiency creating, for example, a delay in connection also discourages the prospective users.

Despite the above challenges, universal access to ICTs in Africa is faced with a number of opportunities that make it more promising than any technology used before. These include the following.

The existence and efficient functioning of numerous ICT companies and institutions operating in Africa today promote the distribution of and awareness about ICTs therefore increasing its accessibility, for instance Clone Consultants in East Africa⁴.

Trade liberalism⁵ over ICT equipment like computers and mobile phones – especially in Uganda –ensures a high inflow of the technology and eventually accessibility to the people. The financial cost of using these ICTs is eventually lower hence attracting more people to it.

Arising from the above issue, ICT agencies like MTN and UTL⁶ are able to give subsidized services that increase the reach of the urban poor and rural populace to ICTs.

The increasing notion of globalization has changed negative attitudes towards ICTs, making people more anxious to learn about other worlds through the World Wide Web. This is boosted by the multilingual programming of ICT⁷ that works to reach the diversified people of Africa.

The compulsory use and provision of ICTs in formal employment⁸ and domestic premises ensures an increased access towards the employees who have no option but to learn ICTs in a bid to be highly efficient and effective at work. It helps locals to see the benefits of ICTs like saving time⁹.

Increasing rural development projects have improved infrastructure and sensitized masses about accepting positive change even in technology. These act as a firm foundation on which introduction of ICTs in these areas has higher chances of reaching people and of the people accepting and utilizing it.

In conclusion, the high costs of ICTs, illiteracy levels, increased software piracy, inaccessibility to rural areas, local biases, low technological advancement and poorly qualified technocrats have all created major challenges for the achievement of universal accessibility to ICTs in Africa. However, to every setting sun rises a much brighter and promising one, with major opportunities in this case, such as booming ICT agencies, liberalized trade of ICTs, subsidized ICT services, globalization theory, rural development projects and the overwhelming efficiency of ICTs providing a much higher hope for achieving universal accessibility to ICTs in Africa, for Africa and by Africans, today and tomorrow.

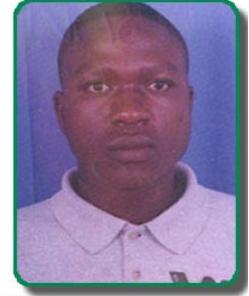
END NOTES

- 1 On average it costs over USD 200 for a person to install Internet services in his/her home.
- 2 Quoting Denning Oluoch, the Microsoft Marketing Manager for East Africa, *The New Vision Newspaper*, Thursday, February 5, 2004, page 30.
- 3 James Lunghabo, Managing Director of Linux Solutions – Uganda, suggested that, "...organisations should invest in appropriate technology ..." as reported in *The New Vision, Business Vision*, Thursday February 26th 2004.
- 4 Clone Consultants are the 1st institute in East Africa to introduce the International Computer, Driving license training. There is also Africa Online that links the whole continent through the World Wide Web.
- 5 In Uganda, the Uganda Revenue Authority charges very little or no tax at all on computer imports.
- 6 UTL (Uganda Telecom) has airtime cards ranging from 4000/= to 40,000/=. It also allows use with no monthly subscription fee.

- 7 For example, Arabic, English and French programming in computers, *Luganda and Swahili* language is used in the automated bank machines thus ATMs in East African banks like Standard Chartered Bank and recently Cairo International Bank, Kampala.
- 8 In the Ugandan Government (for example in the Ministry of Finance Planning and Economic Development), personal secretaries use computers and the officials are even entitled to one in their own offices.

The Uganda Electricity Distribution Company Limited (UEDCL) has introduced an automated meter reading system that minimizes delays in billing, in addition to ensuring meter bill accuracy, *The New Vision Newspaper*, Thursday February 5th 2004.

Mr Ombeni William
Tanzania



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

Information and communication technologies (ICTs), encompassing telecommunication networks and the various services and applications associated with them, have brought new opportunities and challenges for Africa. African countries will step ahead if they consider ICTs as central to the future development of their people.

ICTs can transform Africa through, for example, improved communications, the delivery of education, health services and even businesses. The development of the Internet, for example, has created new opportunities for many African small businessmen and women.

In Dar Es Salaam, Tanzania, local carpenters are making attractive furniture such as beds and tables copied from designs in the catalogues of major furniture manufacturers advertising their products on the Internet. In some areas of Tanzania, farmers have e-mail addresses and communicate with their children who are working in other regions.

These examples show that ICTs have many challenges and opportunities for Africa. They include opportunities which promote the development and accessibility of quality education. ICTs can promote teaching and learning activities locally if students are enabled to access materials on the Internet. The Internet can be of importance in providing education and distance learning.

The problems of expanding the use of ICTs in Africa range from financial to political. The small budgets of many countries mean they cannot afford to provide infrastructure throughout the country. The economic position of the people, including low incomes, also prevents many people from benefiting fully from the opportunities offered by ICTs. For example, in Tanzania, the minimum wage is about 50 US dollars and the price of the cheapest mobile handset with connection is 49 dollars. Poor farmers also cannot afford to get telephone connections due to the relatively high costs.

In fact, the farmers sometimes don't even benefit from the service. Most of the telecommunication operators prefer to operate in towns where there are more profits than in the rural areas. Some of the rural areas cannot be reached easily due to the geography. It is difficult to provide telecommunication services in mountainous areas.

Some of the African countries face deep political instability and wars which make implementation and the participation of Africans in ICT objectives and plans very difficult. The level of literacy also affects the introduction of ICTs. This includes the grasp of English or French languages by the users.

The objective of having universal access programmes is to enable the majority of people to access these technologies and ICT facilities. This can be made possible by establishing



special funds which will financially support operators who want to expand to rural areas but who fear making losses in the process. They can be subsidized.

African countries should set aside funds for promoting universal access. This can be from their national budgets or from a special levy on services in order to promote further development of ICTs in their countries while considering also the highly marginalized groups in their countries, especially those of women and children. 1

Mlle Mkouboi Zahara
Comores



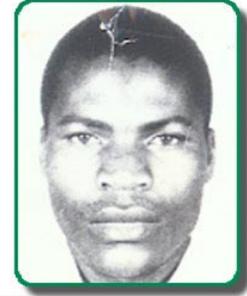
«Quels sont d'après vous les principaux défis et opportunités pour parvenir à l'accès universel des TIC en Afrique?»

- Réduire les coûts d'accès
- Mise en place d'infrastructures des télécommunications qui seront de grande capacité
- Réduire le coût de l'outil informatique afin qu'il puisse être utilisé par les différentes couches sociales
- Favoriser l'ouverture des cybers en offrant des facilités à ceux qui veulent investir dans le domaine des TIC.

Voilà en quelque sorte les défis à relever pour permettre aux populations africaines d'accéder aux technologies nouvelles, qui sont un facteur important pour le développement socioéconomique de nos pays.

En ce qui concerne les opportunités, elles ne peuvent être concrètes qu'en organisant de tels forums, afin de permettre aux Africains d'échanger avec les pays du Nord leur expérience et leur savoir-faire.

Mr Dydimus Zengenene
Zimbabwe



“In your opinion, what would you consider as major challenges and opportunities for achieving universal access to ICTs in Africa?”

The World Bank Information Development Programme (InfoDev) report for 1999 reveals that there is a growing recognition that telecommunications and Internet access are no longer luxuries for developing countries, but rather strategic factors of development and poverty reduction that need to be integrated into development strategies more prominently and systematically.

In developed countries it is evident that the information revolution has already had a profound impact on all sectors of economic and social life. InfoDev reveals that one sixth of the recent economic growth in the United States can be attributed to computer-related investments. It was estimated that electronic commerce on the Internet would double every year, going from USD 41 billion in 1998 to USD 623 billion in 2002 and maybe over USD 900 billion in 2003. This means that technology is already shaping the flow of investment, goods and services around the world.

There are great potential benefits for the developing countries from information and communication technologies (ICTs). However, fears exist that countries lacking in education, infrastructure and institutions are being further marginalized by the information revolution since these are the resources most needed for any country to fully benefit from ICT. By the advent of ICTs, the gap between developed and developing countries continues to widen.

If data provided by the International Data Corporation are anything to go by, African countries – especially the Sub-Saharan countries – spend the least per capita on the development of information infrastructure. The Pyramid Research organization revealed that the African countries are among those which have the least number of telephone main lines per thousand persons, mobile phones per thousand persons, and the least Internet hosts per thousand persons. However, there is hope since the same statistics reveal that there was a significant percentage change of the figures from 1997 to 1999, showing improvements.

What therefore should be done to improve the chance of the developing countries to join the information revolution and gain from it? InfoDev has recommended an “enabling environment” as the main factor required for technological advancement. The environment should promote sustainable innovation and ICT diffusion. Moreover, the environment should allow greater levels of competition, connectivity and education.

Most developing countries lack proper connectivity to promote the flow of information. Societies in developing countries are divided into two, the information full and the information hungry. Urban areas continue to benefit far more from the functions of the

information infrastructure than the rural areas. For example, in Zimbabwe, mobile phone lines are connected only to the urban areas and their peripheries. A cell phone is never reachable from other rural parts like Gokwe, Madziwa, Rushinga and many others. Even the Internet is only accessible from urbanized areas. There is great competition between Internet services, but no-one bothers to establish businesses in rural areas for the benefit of the rural people. Due to the lack of electricity, there is even reduced access to telephone main lines, which may only be accessed through a fortunate school or a growth point.

Under such conditions, universal access to ICTs becomes a very difficult challenge to conquer.

For Universal Access to be achieved, there also should be higher levels of entrepreneurship in the field of ICTs. This would bring about high levels of competition. Competition leads to greater investments, decreased prices leading to subscriber growth and new technology development. Research revealed that countries with least liberal privatization and competition have access charges 700 per cent higher than the more liberal telecommunication regimes. The challenge is, however, to unleash competition while implementing a modern regulatory environment. This calls for a political will, credible and autonomous regulatory bodies, effective policies on interconnection and frequency allocation. Competition by its capitalistic nature would be very difficult to implement, especially for countries that are still finding their way to follow either socialistic ideology or capitalism. The dilemma is perpetuated by their political history.

For the ICT struggle to be a success, there is need for education. For example, the Internet raises a higher social barrier than the voice; it requires not only traditional literacy but digital literacy. This calls for high levels of technological education as a necessary condition for the use, innovation and initiation of ICTs. Zimbabwe has all along been trying to address the problem of education in ICTs through courses in Computer Science. Fortunately, NUST has hit the nail on the head, through its introduction of a real ICT programme which comes under its new degree programme, Library and Information Science, and is due to develop ICTs into an Independent Bachelor of Science degree.

Though such a programme is being addressed at higher levels of education, there is a need to come down to the rural areas, the underprivileged societies and impart ICT knowledge. Some organizations are setting up projects to disseminate ICT information. For example, the Cyberschool Africa project set out to develop online tutorials and testing materials for use in South African education, and in India, InfoDev has supported a study of Information Technology Applications.

African countries are facing great challenges regarding costs in their attempt to participate in the information revolution. This is so because the equipment that enables the use of these technologies is manufactured outside the continent; for example, computers, printers, modems and scanners.

Even maintaining the already established communication infrastructure is proving expensive. For example, the Science Faculty of Addis Ababa University, (Ethiopia) reduced the number of lines on the campus thereby denying several scholars access to e-mail and other online services and rendering all the equipment and infrastructure worthless. Global Communications system also poses difficulties to African countries. For example, communication between Senegal and Zimbabwe passes over many thousand kilometers through Europe, which makes communication more expensive. The power supply in African countries like Zimbabwe is very unreliable. Rationing power is very common,

especially in capital cities where these technologies are located. Such disturbances make ICT facilities unreliable.

ICT has brought with it new challenges in information management. ICTs are associated with CD-ROMS, video tapes and cassettes. Information in such electronic media is difficult to manage, as there are professional skills to be employed in providing the conducive environment in managing such information.

The computer-based information is also prone to other risks like viruses and hackers. This calls for greater measures of security to be implemented in any ICT environment to ensure availability and use of the information stored.

All these challenges mean extra costs in establishing the necessary management equipment, and professionals in this field need to be groomed. Zimbabwe's NUST is producing its first stream in that profession this year (2004), which is a good step towards conquering the ICT problems.

Though there are great challenges of connectivity, education, competition, high costs, there are still chances that we can achieve Universal Access to ICTs, though in the long run.

This can be achieved by governments' political will to drive towards the Universal Access to ICTs, assisted by greater participation of the non-governmental organizations. Attention should not only be given to the urban areas of the countries but also extended to the remote rural areas. The Government should establish educational facilities in the field of Information and Communication Technologies. Zimbabwe can achieve this by the automation of its thirty-seven newly established information centres in rural areas. The rural institutions (like the Murehwa culture house where cultural information is housed and a facility for community meetings provided) can be utilized for introducing computers and training facilities to rural people. The NLDS should play a significant part in this role. Rural connectivity should also be worked towards. Zimbabwe's rural electrification programme could greatly be utilized by introducing ICT facilities in these newly electrified areas like Muzarabani.

Non-governmental organizations like UNDP and UNESCO should be given room to finance and implement ICT programmes in collaboration with the Ministry of Transport and Communications.

As mentioned before, greater collaboration between different bodies is necessary to enable this much needed environment for the development of ICTs. Above all, there is a need for implementing an extensive education programme so that people can have digital literacy at an early age. Zimbabwe's Ministry of Education is doing this through the World Links programme, where the author of this essay got his first hands-on experience in using computers in Bindura.

