

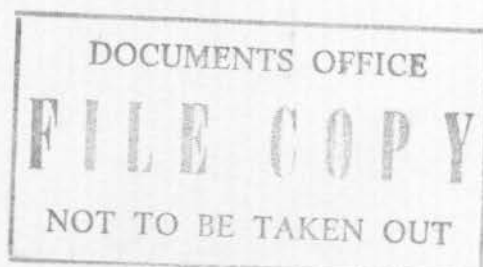
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Democratizing Access to the Information Society

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ABSTRACT

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The information revolution is calling for new imperatives in the way in which people throughout the world mobilize and utilize communication resources. This paper assesses the issues surrounding the democratization of access to the information society in Africa and attempts to offer strategies for harnessing information and communication technologies in support of development initiatives with particular emphasis on access for rural communities.

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1. Democratizing Access to the Information Society: Introduction

Democratization is a process through which the establishment of democratic systems, principles and values are instituted in society for greater participation of people in the processes of political, economic, social and cultural governance. Popular participation, freedom of expression, the rule of law, respect for economic, socio-cultural, political and human rights are just some of the hallmarks of such a process. It is also an emerging structural process in many African countries, which needs to be understood and nurtured in the interest of strengthening intrinsic democratic culture. To a great extent, democratizing access to the information society is dependent on the degree of democratic culture that exists in societies in which citizens become full participants in the decision-making, development, application and evaluation of the deployment of ICTs. Where possible, the process also entails building and developing a citizenry empowered to fully utilize ICTs for basic human development, especially within the current context of the information revolution.

The combination of old and new information and communication technologies of broadcasting, telecommunications, the Internet, CD-ROM, satellite and cable are creating a plethora of applications that promote interactive learning. Characteristically, the availability of information is making the application of participatory communications ever more possible for target beneficiaries.

Approximately a decade ago, governments dominated (and in some cases monopolized) all sectors of society, including the provision and delivery of information. Today, African societies have achieved significant measures of political, economic and social reforms and attempts at economic liberalization, democratic governance and the opening up of communications (press, broadcasting and telecommunications) all signify such changes. The restructuring of telecommunications and the opening up of the airwaves has stimulated unprecedented growth, ushering a rare culture of communications through cellular telephony, public payphones and the emergence of private/independent broadcasting stations in many cities and towns of the continent.

Six years ago, there were only a couple of newspapers in Tanzania, for instance. Currently, there are approximately 60 newspapers, a plethora of both TV and radio stations across the country, and there is also better access to mobile telephony and a growing number of Internet Service Providers (ISPs). In Ghana, the proliferation of FM private stations and the increasing numbers of phone-in programmes have created a better climate for freedom of expression, contributing to the development of a more open society and building the basis for popular participation in public issues. Although the potential of ICTs could flourish in more open and plural societies, its applications are also tools for enhancing the culture of democratization that is often elusive in some countries.

Ultimately, the challenges facing African countries in achieving a culture of democratized access to the information society goes far beyond passing legislation or introducing a new policy but includes how participatory communication could become an inherent aspect of cultural identities in every society. Consequently, the questions that need to be answered are access for whom, for what, at what costs, where and how? Therefore, the continuum of participatory governance should begin by the policy maker asking the right questions and involving different actors with different skills and expertise to respond to the changing needs and contexts in African societies. However, in discussing democratizing access to the information society, focus will inevitably be on the grassroots and/or rural communities in relation to improving their standard of living.

1.1 Creating democratic processes and procedures

There are no hard and fast rules for creating democratic culture but rather there should be equal levels of political commitment from the major actors that constitute the African society in entrenching certain values and principles in processes and procedures in public policy formulation and implementation. The use of current information and communication facilities in promoting the spirit of open and public debate is critical for developing democratic culture in African society. It is in this vein that radio, newspapers and television should become platforms for stimulating, sustaining and upholding such debate allowing a diversity of voices.

Overall governments should provide the broad umbrella for national discourse and interaction on ICT by encouraging democratic participation in order to build consensus in society through participatory communication methods to promote ICT use for social transformation purposes. Even though liberalization of broadcasting and telecommunications in a number of countries did not offer much room for public consultation and participation, with the possible exception of South Africa, a participatory approach should be encouraged in the formulation and implementation processes of national policies. The advantage for governments and decision-makers with this approach is that it builds public confidence in government initiatives, encourages alliances between different interest groups in society and builds a *bona fide* critical mass through stakeholder's coalitions. Popular participation in not only the policy arena but also in network design, deployment and ownership should include as many stakeholders for the full benefit of the end user. In so doing, any legislation on democratization procedures will be upheld and enforced because most people have an interest in the process, procedures and outcomes.

While policy decisions should be based on negotiation and consultation with as many actors as possible, stakeholders should also develop strategies for engaging with governments and decision-makers to strengthen the emerging democratic culture in African countries. For civil society groups this entails, understanding the issues and problems with regard to access to information and communication resources in society and how coalitions could be built with the private sector, communities, public institutions and the governments to midwife and manage increased access to the information society.

In ensuring a culture of democracy, there has to be a commitment to the coordination of the ICT initiatives in various sectors of the economy with an adequate ICT audit on current projects. The many fora organized by various international agencies, and the action plans that came out of these meetings aimed at kick-starting Africa's information revolution, have still not galvanized sufficient momentum, even though civil society groups have taken the lead in fostering the use of ICTs. Generally speaking, pilot projects geared towards facilitating the development process and empowering citizens have so far been collaborations between civil society groups and international agencies.

Awareness raising is important because some African intellectuals and policy makers question the potential of ICTs on a continent where people can neither read nor

write and are consequently wary of possible harmful effects. This assertion has been backed up with claims that clean water, roads, provision of primary health care and schools are much more important for improving poor people's lives than providing them with computers and access to data networks. It is also felt that the information available through networks produced in the North spread Western values and culture, which threaten the survival of local culture.

Whilst these notions may be true, those who realize the potential benefits of the information society know that telecommunication infrastructure provides the basis for effective ICT utilization and is just as important as roads. Access to telephones and faxes reduce the need for people to travel and help break isolation. With communication comes the improvement in efficiency in transportation, which in turn reduces costs, improves availability of essential goods and contributes to improving living conditions. In some cases, it may also contribute to saving lives during disasters and reduces their harmful consequences. Whilst it may take years to build roads in places with difficult terrain, ICTs could provide access in a relatively short time to very remote and isolated areas and reduce drastically the need for unwarranted travel.

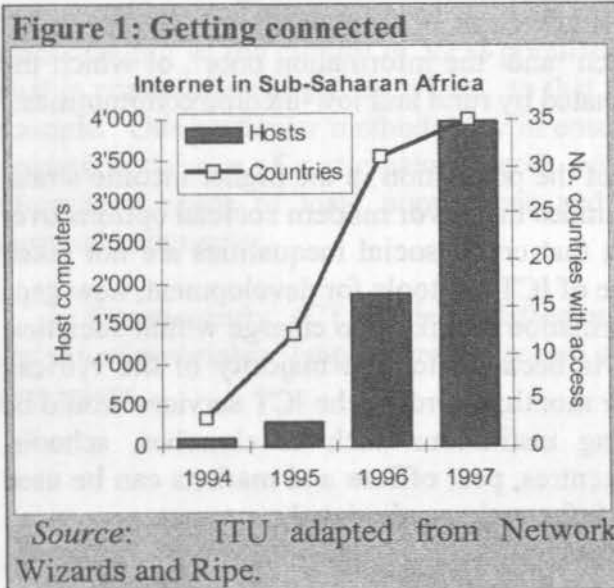
South African politicians and decision-makers have taken a leadership role in supporting Africa's need to develop coherent strategies in deploying information and communication technologies. During Africa Telecoms '98, in Johannesburg, in May 1998, the then minister for Posts and Telecommunications, Jay Naidoo stated: *"African leadership must confront a major indictment against us. There are 700 million people on the continent and only 12 million have access to a telephone, five million in South Africa alone. A key policy requirement is the achievement of a national communications infrastructure, essential for social and economic activity. This is important in a world where reliable and speedy communication is vital to the success of rapidly globalizing trade, industry and services"*.¹ The potential impact of ICTs ultimately rests on external and internal factors facilitating or impeding accessibility and use.

1.2 The state of information and communication infrastructure

Despite the fact that African countries are expanding and extending communication systems, the current state of infrastructure is still a major problem and remains a threat to the continent's full participation in the information society. Statistics reveal that over 80% of the world's population lacks minimally efficient telecommunication facilities, the majority of which is in Africa and over 40 of the poorest countries in the world – 35 of them in Africa – have less than one telephone to 100 inhabitants. Cash-strapped national treasuries and limited investment opportunities are two major factors reducing rapid infrastructure development. In comparison, between 1990-1995 China added nearly 34 million main telephone lines or 20% of the United States level accumulated over one century of development. The penalty of slow growth on a low base for Sub-Saharan Africa is that it will take over a century for it to reach the 1995 level of Ireland. (Mansell & Wehn: 1998, 24/5)

¹ See Panos Feature Oct. 5, 1998 on Knowledge & Development: *Is Information Manna From Heaven?*

Nevertheless, despite severe constraints in telecommunication and infrastructure development, the most dynamic telecommunication market is the Internet, which is growing rapidly. As a result, the majority of African countries are now linked to the Internet (Figure 1) even though Arabic-speaking countries and South Africa were the early Internet adopters.



The transformation in connectivity has been phenomenal where a number of Internet hosts grew from 7,800 in July 1998 to 10,703 in January 1999. There are now approximately 26 countries with 1000 or more dialup subscribers, but only 9 countries with 5000 or more – Egypt, Kenya, Ghana, Mozambique, South Africa, Tunisia, Uganda and Zimbabwe. However, Internet prospects on the continent would definitely change when the technology takes off in Nigeria. With a fifth of sub-Sahara Africa's population, Nigeria has been one of the slumbering giants of African

Internet/ICT development, which until mid-'96 had a few dialup email providers and a couple of full ISPs operating on very low bandwidth links. Nigerian Telecommunications (Nitel) has now established a POP in Lagos with a 2MB link to Global One in the US and has put POPs in four other cities.²

Even so, broadcasting provides a basic information infrastructure for Africa's entry into the information society. Access to radio and television is by far greater (per capita) than access to newspapers, telephones or even computers and this trend will continue. In 1985, there were no fewer than 10 independent stations in all of Africa. With the emergence of independent radio stations, the advent in particular of community radio stations, there is recognition of the far-reaching impact of radio. The advantage that a new technology such as the Internet has over older technologies such as radio, newspapers, and video is that it is the first media tool that allows for users to send, receive, narrowcast or broadcast their own information, making it a natural democratizing tool. Consequently, countries should examine how older forms of technologies can interface with new technologies to deepen access for the majority of people.

² See African Internet Status: <http://www3.sn.apc.org/africa/afstat.htm>

2. ICT needs in Africa

While the issues around democratizing access to the information society are dependent on wider socio-economic and socio-political concerns, if left unchecked, the information economy will overwhelmingly be urban-biased catering for the affluent segment of society. It can be argued that the advent of ICTs is creating two very broad social groups in society: 'the information rich' and 'the information poor', of which the latter group would overwhelmingly be dominated by rural and low-income communities.

ICTs risk benefiting only a fraction of the population in the higher income strata, with higher levels of education, and with attitudes that favor modern societal options over traditional practices. If the macro elements that create social inequalities are not taken into consideration in the introduction and use of ICTs as tools for development, new gaps between the haves and the have-nots of information are likely to emerge within societies. (Morales_Gomez & Melesse; 1998) This is because, for the majority of the African people depending on incomes below \$25 per month, affording the ICT services would be near impossible. Consequently the existing institutions such as churches, schools, hospitals, libraries, community centers, telecentres, post offices and markets can be used as public access points (PAPs) for accessing information and related resources.

The 1998 UNDP Human Development Report, states that ICT markets "can go too far and force out the non-market activities that are so vital for human development and argues that *"the network society is creating parallel communication systems: one for those with income and education; the other for those without connections, blocked by high barriers of time, cost and uncertainty and dependent on outdated information."* The report states that the Internet benefits the relatively well off and the educated: 88 percent of users live in industrialized countries with just 17 per cent of the world's population.

Issues determining access to ICTs and their benefits need to be examined carefully if these technologies are to be meaningful to the poor and the marginalized or even assist displaced people and the handicapped. In rural community centers, or in schools where teachers are poorly trained and underpaid, and where students lack basic books, access becomes more than having a TV or a computer at home, and hence the need for a broader socio-economic perspective.

2.1 Identifying needs of communities

There are very few information needs assessments of different social classes in Africa. However, it is becoming an important aspect to the process of democratizing access to the information society, so as to determine the type of information needed for particular social groups (rural, urban, refugees, women, youth, deaf, etc), taking into account the issue of language, format and appropriate technology. Such assessments should provide a framework for policymakers on how to institute policies that enable various societal groups to access the information society and on what terms. At the same time, network designers need such information for building specific applications for particular and even distinct social groups. Due to the fact that oral tradition is a strong

form of communication culture in Africa, communities need to be involved in the development of specialized applications, which could enhance indigenous knowledge and preserve local languages and identities.

Studies on local communication patterns and processes are essential for ICT development to ensure appropriate applications of technology and content and for the harmonization and integration of existing communication channels. This includes an understanding of the culture of local populations, where and how people communicate, what is communicated and by whom, so that gaps based on gender can be addressed for example. One particular methodology in ensuring people's participation in development projects is the use of participatory needs assessments often undertaken to identify the information needs of local populations and where possible using participatory rural appraisal techniques.

Consequently, ICT needs of different social groups should be addressed in the context of ownership, empowerment, access and active participation by the beneficiaries themselves.

3. Opportunities and challenges in democratizing access to the information society

Increasingly, the democratic process in Africa is calling for more plural and open societies, whereby different groups could play a more challenging role in public decision-making. This is a crucial step to people's participation because unless decisions which affect peoples lives are subject to scrutiny by those they affect, they are unlikely to be sustainable. The very first step towards democratizing access to the information society is to subject as many aspects as possible of policy-making to popular participatory processes for optimal and effective outcomes. The advantage of such a process enables full optimization of the opportunities as well as better strategies to grapple with the challenges.

The opportunities that the information societies could offer are increasingly becoming glaring. The UN Secretary-General, Kofi Annan stated during his opening speech at the Global Knowledge Conference (GK '97) in Toronto, in June 1997 that: *"Recent developments in the field of communication and information technology are indeed revolutionary in nature. Information and knowledge are expanding in quantity and accessibility. In many fields, future decision-makers will be presented with unprecedented new tools for development. In such fields as agriculture, health, education, human resources and environmental management, or transport and business development, the consequences really could be revolutionary."*

Public services such as education, health care and other social amenities are non-existent in most rural areas, and even where they exist, government cut backs have definitely reduced such services to a minimum. Through ICTs, the efficiency (and consequently the impacts) of public services could be increased, depending on the type of ICT(s) application used. Access to the rapidly increasing, electronically stored information and knowledge resources in the field of health and education, as well as basic hygiene, literacy, water management and environment protection could enhance access to basic services. As a result, various information-related activities using radio communications, satellite, cable, CD-ROMs and the Internet are being actively deployed for promoting a variety of social services.

In some cases, the integration of information services is leading to the establishment of telecentres through which communication services could be dispensed under one roof. Consequently, a telecentre is likely to be a radio station, telephone and fax bureau, provide local bulletins, document searches on demand, video libraries for entertainment and education, health and nutrition training, and a post office. The telecentre is increasing representing the vehicle for democratizing access to the information society for the urban low-income and rural communities. Another similar concept is the Multipurpose Community Telecentre (MCT), which is also being promoted for open and flexible learning. Within the UN System-wide Special Initiative on Africa, UNESCO (under the DANIDA Funds-in-Trust programme) has teamed up with IDRC and the ITU to sponsor pilot MCTs in rural communities of five least developed African

countries. Several other partners (British Council, FAO, UNDP, WHO) are participating in the MCT consortium supporting these projects, which are based in:

- Mali (in Timbuktu, a regional capital and UNESCO World Heritage site at the edge of the desert north of the country);
- Uganda (in Nakaseke, a village 50 km. north of Kampala), which started in 1998;
- Benin (in Malanville, a small city in the far north of the country),
- Mozambique (Maniça and Namaacha, small towns respectively about 70 and 50 km. from Maputo);
- Tanzania (in Sengerema, a small town on Lake Victoria) starting this year.

In Egypt, the government has established more than 1300 information support centres and units throughout the country, serving the same kind of purpose as telecentres, and Technology Access Community Centres (TACCs) are being established, aimed at empowering and supporting community utilization of ICTs³.

Other forms of community empowerment through the use of ICTs include the introduction of community radio in a number of countries including South Africa (which has approximately 100), Mali, Burkina Faso, Namibia, Mozambique and Senegal.

3.1 Examples of opportunities

The advent of the information society is not only re-defining the role of communications in society, but is also speeding up emerging forms of participatory communications. This is precipitating a two-way communication based on exchange of ideas and information to improve the lives of people in various communities. In particular, the potential role of the Internet (and electronic communication such as e-mail) as a democratic tool could go a long way in empowering communities.

3.1.1 Agriculture and Food Security

African countries confront many significant political, economic, social and environmental constraints to increased food production. One major reason is that food production continues to grow more slowly than population, and, in contrast to every other region of the world, per capita food production has declined since the 1970s. It is estimated that 40% of the total population of sub-Saharan Africa goes hungry, and the figure will increase to 50% by the year 2000. Many of Africa's agricultural and rural development problems have been related to misguided, weak institutions and a lack of well-trained human resources. A critical factor in meeting the challenge of ensuring food security in Africa is human resource development through knowledge building and information sharing, of which communication technologies are central to the process.⁴

³ TACC URL: <http://www.tacc.egnet.net/> & Egyptian Information Highway Pilot Project: <http://www.idsc.gov.eg>

⁴ See <http://www.fao.org/WAICENT/FAOINFO/SUSTDEV/Cdirect/Cdan0017.htm>

According to the UN specialized agency, the Food and Agricultural Organization, information, education and training allow farmers to make use of new farming knowledge and technologies. Research shows that both formal education and non-formal training have a substantial effect on agricultural productivity. An FAO study conducted in Nigeria in 1992 found that an increase in the average education of farmers by one year increased the value-added to agricultural production by 24%. In Burkina Faso, a 1993 study found that crop yields were 25 to 30% higher for farmers who participated in training programmes than those who did not participate.

Consequently, a decisive role can be played by communication technologies in promoting human capacity development for food security in Africa. Experience demonstrates that sustainable development is based less on material inputs (e.g. seeds and fertilizer) than on the people involved in their use. Investments in scientific and material inputs for agricultural production bear little fruit without parallel investments in people. Therefore, ICTs are powerful tools for informing people and providing them with the knowledge and skills they need to put agricultural science and production inputs to best use.

The Ghana Agricultural Information Network System (GAINS), is a database network for agriculture researchers and extension officers on all agricultural research conducted in the country. Although this system is in existence, updates are infrequent.

Agriculture Ministries need to identify ways of developing expertise in digital databases and networks for providing information to researchers, extension officers, etc. In addition extension officers should be trained to repackage information for farmers in local languages.

3.1.2 Health

One of the visible advantages of the information era is that ICT projects in Africa have paid attention to the needs of health researchers and professionals who require access to up-to-date research and reference material. Technologies such as satellites and lately the Internet have also afforded health workers rapid information exchange, conferencing, distance learning, as well as access to urgent advice and diagnostic assistance. SatelLife's HealthNet launched two small satellites, HealthSat I (launched in 1991) and HealthSat II (launched in 1993), and currently use the Internet to serve approximately 4,000 health care workers in more than 30 countries world-wide.⁵

Tanzanian Doctors turn to cyberspace for help⁶

The Muhimbili Medical Center in Dar es Salaam, the capital of Tanzania, has turned to cyberspace to help bring down the high mortality rates among its pediatric burn patients.

Like many health-care facilities in poor and isolated regions, the Muhimbili center now has the opportunity to involve the world's medical community in its struggle to prevent and treat illness and injury. Through

⁵ HealthNet Web site (<http://www.healthnet.org>)

⁶ Source: <http://www.oneworld.org/thinktank/id/index.html>

HealthNet, a satellite-based network for health workers, the Health Foundation in New York learned of the Muhimbili's particular needs and responded by sending a free shipment of phenytoin, a drug that reduces pain and promotes healing of burn wounds.

The Muhimbili center also relies on HealthNet for consultations with specialists.

In a recent book, *The Coming Plague: Newly Emerging Diseases in a World Out of Balance*, author Laurie Garrett writes that: "For the first time, physicians in the developing countries could consult colleagues in neighboring nations or medical libraries and data banks to help solve puzzling cases and alert one another to disease outbreaks."

Ministries of Health could identify ways of introducing or upgrading communication facilities for health care institutions and consider using low-cost methods such as e-mail, radio stations or radiocommunication which can save lives, reduce isolation and enable doctors to make better, more informed decisions.

3.1.3 Education

To respond to the challenges and crisis facing education and learning in Africa, there is a need to stimulate change and create learning environments that are more meaningful and responsive to the localised and specific needs of learners. Teachers and learners, could obtain material whenever required, through the use of radio, television, video, film and newer technologies, which could transform the education sector in many ways and enable people to develop new skills in education and learning. Apart from the application of newer technologies to learning, older forms of communication have also been successfully used in some areas. In Latin America, the Roman Catholic Church introduced the concept of 'radio schools', where communities received education through programmes made by local radio stations.

Saudi Arabia provides a good example of how ICTs are being used in distance learning for women. The increased opportunities for women in Saudi Arabia to enter the work force has created a need to develop IT skills to advance themselves in managerial and decision-making levels. A pilot project aims to empower professional women in Saudi Arabia with the requisite skills and tools to perform better, more productively and to advance professionally. Through the Internet students can have access to the best trainers and to well-tailored course materials without being constrained by the non-availability of certain education locally, or by societal constraints.

The UNESCO sponsored Learning Networks for African Teachers (LNAT) project uses Internet based approaches to help teachers to become better learners and teachers. LNAT is being implemented in Zimbabwe (see box) and Senegal with emerging activities in Namibia. A pilot activity in Nigeria has been proposed, involving 4-6 Teacher Training Colleges in co-operation with the Federal Ministry of Education, the National Training Institute and the Nigerian Board for Technical Education.

Learning Without Frontiers Programme - Zimbabwe

In April 1997, UNESCO with support from Danida provided five teacher training colleges in the Zimbabwean cities of Mutare, Harare, Gweru, Masvingo and Bulawayo each with one computer and a year subscription to one of the Internet service providers in the country. The aim was to use existing Internet technology to empower teacher-training colleges to contribute to educational reform, upgrade teacher IT skills and establish resource centres for learning material. The immediate target of this network was to establish a group of teacher trainers, who could share the many small and bigger problems that the different schools faced in the startup phase. Also teachers were encouraged to develop small-scale activities, among Zimbabwean colleagues, with student teachers, with colleagues or experts overseas, to exploit the Internet as a means of communication and as a rich resource of teaching and learning resources.

However, there have been problems with hardware and connectivity (poor, unreliable service from computer suppliers, Internet service providers and the public telecommunications company). Unforeseen difficulties in use of basic software occurred and lack of experience with computers in general. The impact of technologies regarding innovations in education depends on attitudes, expectations, organization and management. High expectations for ICT applications may cause disappointment among their users, if they do not take full account of the actual educational contexts including, for example, untrained users, unreliable supply of electricity, and, more importantly, educational messages that do not meet the standards of quality and relevance.

Another regional project includes the Global Education Network for Africa (GENA), which is a shared national programming for broadcasting distance education. The aim is to establish a network to allow public broadcasters to share the cost of accessing educational programming. Initial participating countries are Kenya, Namibia, Swaziland, Uganda and Tanzania which broadcast GENA programmes at set times each day.

Satellite University in Uganda⁷

A new satellite university education system is starting in the year 2000, which is an upgraded form of distance learning provided through Makerere University in Kampala. Twenty sites will be established around the country so that students do not have to travel long distances to Kampala for their university education, when they can simultaneously participate in lectures and ask questions through satellite technology. One inherent benefit of this new project is that the satellite university will attract fewer fees than the current university does.

Education ministries should develop policies to strengthen the use of ICTs in the education sector in teaching and learning, strengthening delivery of learning materials as well as commissioning education software in these areas. Also efforts are needed to reduce Africa's dependence on imported training materials that do not meet the local needs. Specific efforts should be made to provide practical information sources and to close the resource gap by making resources electronically available, especially for schools, universities and research centres.

⁷ Source: New Vision newspaper, September 4, 1999: *Satellite university to cut costs*.

3.1.4 Governance

Poor networks and infrastructure exacerbate the difficulties of communication between citizens and governments in many parts of the world. Therefore, ICTs as tools for governance can make a difference to how citizens: 1) access government information; (2) access government services and 3) enhance citizens' participation in the governance process.

In Uganda, the Forum for Women in Democracy (FOWODE) accesses critical and relevant information on the Internet for women Parliamentarians, which make a difference to their contributions in Parliament. With the use of the Internet and email resources such as discussion groups and newsgroups, FOWODE is able to link up with organizations in the region and participate in discussions regarding critical regional issues keeping MPs informed about regional dynamics and politics. Although most FOWODE members have received basic computer training skills, programme officers act as 'information brokers' and provide the research services for requests from MPs on specific issues.

Governments in many countries are the largest consumers of IT goods and services and ICTs are pioneering new relationships between governments and citizens ushering in a culture of participation (for citizens) and efficiency (for governments). Through ICTs, Brazil for instance, is able to determine its cash and foreign exchange positions nightly, and Egypt's Ministry of Finance manages all of its affairs with locally developed software. The South African government through a comprehensive database can now reconcile housing applicants from region to region, spotting double applications and eliminating chances of fraudulent housing claims. Increasingly, government web sites are promoting tourism and culture so as to attract foreign investments and strengthen trade links.

The governments of Angola, Egypt, Ghana, Gabon, Mauritius, Morocco, Mozambique, Senegal, South Africa, Togo, Tunisia and Zambia all have web sites. The South African Government's web site provides detailed information on the various levels of government, departments and their activities, documents and reports, ministers' speeches and legislation as well as the new constitution adopted in 1996. Regional governments of South Africa have sites detailing their municipal services, tenders and development projects. The regional administrations of Ghana are also making a presence on the Internet to promote investments, tourism and local entrepreneurs. African Parliaments are also beginning to register their presence, and Uganda and South Africa have taken the lead.

Using state media for democratic development⁸

Producers of Kyrgyz Teleradio Corporation (KTC) were trained to develop a participatory methodology in which radio documentaries could be used to communicate the concerns of local people to decision-makers in the Kyrgyz government. The documentaries supported democratic development by providing a forum for ordinary citizens to express their opinions on local issues. Government officials, by listening and responding to the concerns expressed in the documents, also became familiar with a fundamental democratic principle – that is- the concept that state employed officials should respond to the needs of their constituents, according to local viewpoints when they define development agenda and set government priorities.

At a time when many governments are decentralizing their local government operations ICTs could further strengthen these efforts to enable citizens – especially those in rural and remote areas break through the feeling of isolation. Local government authorities could enhance citizen participation. As the level of government closest to the citizen, they could expedite access to adequate and reliable government information and promote equitable and affordable participation in government decision-making. Regional intergovernmental agencies such as SADC and COMESA have web sites with fairly extensive information on their activities and member states.

PITS in South Africa⁹

A new scheme to provide Public Information Terminals (PITs) providing 24-hour-access to government departments was launched in Johannesburg. The scheme is as a result of research by the Department of Communications where, computers can be used for time-consuming tasks as applying for driving licenses and passports, or even government tenders. According to Andile Ngcaba, director-general of South Africa's Department of Communications, who conceived of the project, the idea of PITs are to ease government bureaucracies, backlogs in medical care, as well as provide other valuable government information usually not found, and offer citizens access to the Internet, e-mail and tele-shopping. So far five prototype terminals, which will be located in post offices, supermarkets and other public places, have been built at a cost of \$40,000 per unit.

African governments should invest in a research and development (R & D) especially in the design of applications relevant to local conditions for enhancing both national and local government services.

⁸ See Neil Ford's chapter on Using State Media to Promote Sustainable, Democratic Development, in *The First Mile of connectivity: Advancing telecommunications for rural development through a participatory communication approach*, FAO, Rome, 1999, pgs. 99-101.

⁹ See Panos Feature Oct. 5, 1998 On Knowledge & Development: *Is Information Manna From Heaven?*

3.1.5 Income Generation

ICTs are also creating new markets and reinforcing old ones for goods and services, offering enormous trading potential for entrepreneurs. According to Prof. Swasti Mitter, "the most significant benefit that ICTs have brought to poorer women is in the area of low-cost self-employment and entrepreneurship."¹⁰ In Bangladesh, the Grameen Bank wants to use its network of 'branches' to launch the Grameen Phone, which hopes to provide low-cost telephony to every village in Bangladesh. As a result, many rural women in Bangladesh own and run local businesses where they are offered loans to buy cellular phones to rent to other villagers on a commercial basis. This type of business not only provides communication access to some of the poorest people in the country but also enables women earn extra income for their families.

The opportunities for ICTs to provide new trading frontiers for cottage, small and medium-scale enterprises in the developing world is undoubtedly on the increase. Today, artisans and peasants from the developing world sell their products over the Internet. In Africa too, Tuaregs in Niger are using the Internet to sell their crafts worldwide. These products appear alongside many other African cultural products in a "cybermall" hosted by a Canadian charity, which helps developing countries promote exports and trade.

African Textile Trade on the Internet

The Adire African Textiles¹¹ site was the first online gallery of textiles. Orders can be placed for traditional African hand-woven textiles such as: *Adire* and *Aso-Oke* (made by the Yoruba people of Nigeria), *Adinkra* and *Kente* (from Ghana), *Bogolan* (Mali), as well as *Kuba* (Democratic Republic of Congo).

Nigerian Fabrics and Fashions¹² This web site is dedicated to Nigerian culture and fashion and has various collections. "The Ifeyemi Collection", is the latest, which is in three categories:

Traditional African which consist of the traditional Nigerian wrap sets and *Agbadas* made from popular fabrics like *Aso Oke* (hand woven cotton fabric), *George*, *Lace*, and *Jacquard*.

Contemporary African Afrocentric, which utilizes western silhouettes and forms along with traditional African embroidery, patterns to create contemporary African styles.

The Classical African draws from a classical heritage dating back to the pyramids, these styles drape and flow elegantly.

In Ghana, the Network Computer Systems (NCS), a private ISP has an Electronic Data Interchange (EDI) network service. This service, the first in West Africa, is being implemented in collaboration with General Electric Information Services and the International Finance Corporation (IFC). General Electric Information Services operates the biggest EDI network in the world, thus opening up the Ghanaian business community to trading partners worldwide. EDI enables inter-business electronic exchange of documents in a standard format and include invoices, purchase orders, bills of lading, etc.

¹⁰ See Swasti Mitter's article in 'Information and Communication Technology & Development', The Hague, RAWOO, 1998

¹¹ (<http://www.adire.clara.net/>)

¹² <http://www.melanet.com/nff/aboutus.html>

At the international level, UNCTAD's Global Trade Point Network, launched in October 1994 aims at broadening participation in global trade, in particular, of small and medium-scale enterprises in developing countries by lowering transaction costs and promoting effective trade practices. The aim is to establish and network shared facilities ("Trade Points") where local traders can access information on trade and investment opportunities, complete transactions electronically (including customs, freight, banking, insurance, etc.). In July 1996 there were 37 Trade Points established at different levels of operation, four of these are in Africa, based in Cairo, Tunis, Dakar and Harare. Feasibility studies are ongoing in a number of other countries, including Algeria, Cameroon, Cote d' Ivoire, Kenya, Morocco, Mozambique, Namibia and Zambia.

African governments should establish committees to facilitate national and regional electronic commerce through regional bodies, such as ECOWAS, SADC, the East African Community, COMESA.

Income-generation through telecentres in Uganda¹³

Through the Acacia Initiative¹⁴ of the Canadian International Development Research Center (IDRC), and the Uganda National Council for Science and Technology (UNCST) telecentres have been introduced into various rural communities. One of the communities, Nabweru, currently has just one phone line serving a district of 58,000 people and is typical of communications access outside the capital - there are 70,000 telephone lines in the whole of Uganda, almost three quarters of which serve subscribers in Kampala. The telecentre, which will include 8-10 telephone lines, promises to transform the communications opportunities for people in the district. Some comments by members of the community underscores the importance of communication in the rural setting:

Haji Sulaiman Mulindwa, a local chief and farmer says: "This center will help our people because they lack information about producer prices and people will get information on agriculture, education, the nutrition of children and so on - we also expect the center to generate money."

Namubiru Kyotolye, an entrepreneur: "It will help us save time, solve our problems and make appointments so that we don't go somewhere and find no one there".

Sulaiman Kilyabia, a farmer: "The center will bring information about better agricultural practices. I want higher yields so that I can earn money to send my children to school".

Semanda Umaru, a street hawker: "We want to learn this technology. If we get a communications center, it could create job opportunities in our area and it can help us to get information about jobs".

Elizabeth Amuto, a Nabweru community development officer says: "Lack of information has hampered women's ability to maximize their income-generating potential. Currently, people have to go to Kampala for information. We have plenty of women's projects in this area but many remote villages can't get information on when there is an exhibition where they can bring their handicrafts to sell".

3.1.6 Media

The impact of ICTs on the media has been phenomenal and presents interesting opportunities as well as challenges to the media. One radical change is that traditional forms of production have been altered by low costs in the use of information and

¹³ See Panos Feature Aug. 4, 1998 Telecentres Excite Ugandans - But What About The Poor?

¹⁴ The Acacia Initiative is aimed at widening access to information and communications technologies in Africa, in the form 'telecentres' that provide public access to telephone, fax, electronic mail and the Internet.

communication technologies thus enabling almost anyone with access to a computer to become a purveyor of information. Through electronic versions of newspapers, for instance, there is a new form of democracy emerging, where Africans in the Diaspora can follow national events in their countries through Internet versions of local newspapers and send their contributions. Local radio and TV stations in Senegal, Ghana, South Africa and Uganda can be heard on the Internet. The media were the first significant contributors to African content on the worldwide web. Through web-casting and publishing Diaspora around the world are now able to tune in via the Internet to their hometown radio stations, and read the daily newspapers. Electronic publishing today enables scientists, researchers, and academics to contribute to journals and periodicals.

The combination of ICTs with traditional forms of media means that communication is no longer seen as simply a top-down flow of information, exemplified by the delivery of messages through the national press on health or agriculture, for example, to mobilize populations behind government development. This trend is serving to democratize access to information and communication resources and media professionals cannot isolate themselves from audiences they are supposed to serve.

Other interesting forms of media and ICT use include a UNESCO pilot project in Sri Lanka established in 1998 to assess prospects of converging community radio and informatics to serve rural information needs and to determine its possible impact on development efforts in rural communities. In Sri Lanka, the Kothmale Community Radio, which is being implemented in collaboration with the Ministry of Media and Telecommunications and based at the University of Colombo would offer community database and interactive broadcasts in ensuring that relevant community information needs are being adequately addressed.

In Kenya, a news service organization based in Nairobi Interlink Rural Information Services (IRIS) has been able to improve its communications with correspondents in the region and to use the Internet to market its news briefs about rural issues in East Africa to new clients in the USA and Europe. The Southern African Broadcasting Association news service (SABA News) supports a fax/email news delivery service for the national broadcasters in southern Africa.

In Uganda, radio (HF) e-mail has proven to be an effective means for upcountry/rural communications through a local ISP - Uganda Connect. This pioneering initiative requires very careful regulation to enhance and facilitate its more widespread proliferation before commercial interests' appropriate technology. High Frequency (HF) is free-to-air, whereas proposed rural connections through, for instance, Low Earth Orbit satellites (LEOs) come with connection charges of between a dollar and three dollars a minute that are beyond the reach of most members of society. Besides, the importance of the application of HF email is immense when one considers it against the backdrop of community radio stations that have proliferated in many African countries.

3.2 The challenges

While ICTs are a new potent force, their adaptation and utilization in Africa is constrained by among other problems inadequate infrastructure, limited human resource capacity, the absence of national policy and low ICT literacy. Consequently, there has to be a focus on people, organizations and processes in tackling some of the challenges, rather than solely on the technologies. Issues such as ownership and control of information production and dissemination, software development, use of local languages and choice of technology are major challenges. Control over access to information, its quality and relevance, constitutes the basic concern in democratizing access to the information society because information represents power.

Some political structures in Africa still see knowledge as a threat and are not ready to relinquish power. Evidence of this can be found in the way institutions are still not quite autonomous and independent; even despite attempts some regulatory agencies are viewed as government agencies, working in government interests than in those of the public. Moreover, the regulatory agencies that have been established to oversee the information environment lack the requisite expertise, equipment and management resources to operate effectively.

So far in many countries, access to ICTs has been restricted to cities, leaving out the 70 percent of Africans who live in rural areas and who often constitute a rural social group of farmers, petty traders, fisher-folk, artisans, and peasants. Though the challenges facing the continent are not insurmountable, strategies and policies that are developed need to pay heed to the peculiar problems of Africa.

3.2.1 Women

African women's organizations have been some of the proactive players in democratizing access to the information society. The question of training and how ICT policies take into consideration the needs of women at all levels becomes a critical issue in the access debate. In Africa, women's organizations in collaboration with international partners have committed themselves to strengthening ICT-skills base among organizations. Increasingly, women's organizations are keen to use ICTs to promote their acquisition of knowledge and the interaction between different groups in society (such as decision-makers, government officials and other development actors) to facilitate rapid and equitable socio-economic development. However, there is still a shortage in the skill base of women.

Organizations such as ENDA, ABANTU for Development, SangoNet, Baobab and the Association for Progressive Communications (APC) have started conducting electronic communications training for women's groups specifically in Franco-phone West African countries, and in East and Southern Africa. The result is that women's organizations in these regions are increasingly experimenting with on-line conferences, mailing lists and web sites and are creating alternative communication channels to support their efforts, defend their rights, and diffuse their own forms of representation. A woman in South Africa, recently working on a campaign for women's reproductive and

health rights, posted a message to the APC Africa Women mailing list concerning campaigns and information from other African countries. Women from two other African countries responded with information on precedent legislation, which could help the advocacy campaign in South Africa. A Senegalese woman, unable to find data locally on the number of women Ministers in African governments, contacted the international APC women's network through its mailing list. A woman in Geneva with access to UN agency information was able to fax relevant information to Senegal, which was used to support advocacy concerning women's participation in African governments.

ICTs empowers South African women¹⁵

Women'sNet is a vibrant and innovative networking support program designed to enable South African women to use the Internet to find the people, issues, resources and tools needed for women's social action. A project of SANGONeT in partnership with the Commission on Gender Equality, Women'sNet evolved out of a brainstorming workshop held in June 1997 where the information and communication technology (ICT) needs of women were discussed. The need to adapt this technology to the uses of women and to develop women's capacity in all communities - but especially in rural and urban communities where women have least access to information - was agreed on. One of the first steps identified to build women's capacity to use ICT was to develop a practical framework for sourcing, organizing and making information available centrally from a web site in a friendly and accessible way.

Women'sNet aims to empower South African women to use information and communications technologies (ICTs) towards advancing women's equality.

It is a dynamic source of locally generated information and discussion on gender issues.

- making this technology accessible to women, particularly those who have been historically disadvantaged
- providing responsive gender-sensitive training and support
- linking projects, people, tools and resources
- creating a platform for women's voices and issues
- facilitating the dissemination of information in formats accessible to women who are not directly linked to the Internet."

In the pipeline...

- a comprehensive Internet training programme for women
- regional technical support centers in South Africa's nine provinces
- a program of women's information resource development
- a WWW clearinghouse of relevant information and tools

The Women Farmers Association of Nigeria's (WOFAN) has access to email and acts as a focal point for NGOs in and around Kano in Northern Nigeria. WOFAN is the key 'information broker' for its affiliates and other NGOs and uses information as resource and training material for workshops and seminars.

¹⁵ See Women's Net site: <http://www.womensnet.org.za>

Gender -sensitivity should be incorporated into every aspect of ICT development in society.

3.2.2 Language and Culture

The multi-lingual, multi-cultural setting in Africa adds to the complexity of democratizing access to the information society and remains to this day a rather daunting challenge. The seven million documents on the Internet are predominantly shaped by Western countries at the forefront of the technologies. Over 70% of all the host computers, which currently form the foundations of the Internet, are in the US. Thus the plurality of users that one can witness today does not necessarily reflect traditional definitions of 'cultural pluralism'. As a result, linguistic differences still represent substantial barriers to communication and knowledge/information sharing.

It is only through well thought out strategies involving key stakeholders that African countries can begin to address such linguistic differences. Language engineering innovations are providing a basis for integrating written and spoken language processing techniques and improving their ease of use. New applications such as multilingual information services and computer assisted translation may provide greater possibilities for communication among the many dialects and linguistic traditions within and between African countries. However, although ICT applications are being developed that will help to improve information access and interchange across language barriers, this is a technology largely confined to the industrialized world at present.¹⁶ Consequently, language and cultural barriers remain a big challenge to democratizing access to the information society.

Given the multilingual nature of Africa, stakeholders need to explore ways of integrating oral traditions, local languages with appropriate applications. Also countries need to embark on studies to examine the impact of ICTs on cultural identities and values, as well as on the social and cultural factors which determine the effective application and use of ICTs.

3.2.3 Content

Content development is at the heart of the complex issue of language and culture with regards to democratizing access to the information society and is an area that needs urgent attention if as many people as possible are to become stakeholders. Thus far all indications point to the fact that African content is marginal and according to the UNDP Human Development Report, English is used in almost 80 percent of all web sites although less than one in 10 people worldwide speak the language. Also a survey conducted by Network Wizards in July 1998 state that the information available on the Internet is dominated by material produced in the US, Europe and Asia, with Africa generating only around 0.4 per cent of global content. And if South Africa is excluded, Africa generates a mere 0.02 per cent of global Internet content.

¹⁶ See Mansell, R & Wehn U: Knowledge Societies: Information Technology for Sustainable Development, United Nations, Oxford University Press, 1998, pp 91

3.2.3.1 Media content

Having said that, the African media has made some significant contributions, with summaries and copies of entire newspapers going on-line each day. For instance, the AfricaWire site (<http://www.africawire.com/africawire.html>) has a mixture of radio and newspapers and provides easy access to many African newspapers such as the Addis Tribune, Angola News Flash, and the Ghanaian Times. It also carries a number of international newspapers and publications from Francophone Africa. Africa Online also has many African newspapers from countries including Burundi, Cote d'Ivoire, Ghana, Kenya, Rwanda and Uganda. The Internet for instance is beginning to open up to radio and is now possible for radio stations all over the world to download short radio pieces directly for broadcast. Users can also listen to radio stations over the Internet that they would not normally be able to tune into over the air¹⁷. Through the operation of the Radio News Service, OneWorld Online has developed technical relationships with, and support mechanisms for, radio stations all over the world, including a project based in Mali, which links together broadcasters in 10 Francophone West African countries in an Internet-based programme exchange. OneWorld Online also brings to radio stations unique technical know-how in the online dissemination of news and feature content with an alternative agenda. Increasingly, national broadcasters (both radio and TV) can be found on the Internet. Content can be developed through innovative partnerships between local ISPs and NGOs and other such bodies. For instance this year, OneWorld begun the serialization of a 26-part radio drama about the State of policing in Nigeria. The drama serial was produced by the Center for Law Enforcement Education (CLEEN), a nonprofit and non-governmental organization in Lagos.

3.2.3.2 Other forms of African content

Content on African travel and tourism is also increasing and information from countries such as Zimbabwe, Botswana, Tanzania, Uganda, Morocco, Senegal, Ghana, Zambia, Kenya, Egypt, The Gambia and Tunisia is now available on national web-sites with information on internal travel tours, hotel accommodation and transportation. Many travelers frequently make hotel reservations to most of these countries through the Internet.

The Ford and Rockefeller Foundations' sponsored Project for Information Access and Connectivity (PIAC) has an activity known as Database of African Theses and Dissertations (DATAD). This activity is geared towards enhancing content through the archiving and indexing of theses and dissertations completed in African Universities on CD-ROM technology with links to other electronic databases enabling researchers around the world gain access to research on Africa and vice versa.

¹⁷ See Opoku-Mensah & Budge-Reid (eds): *Signposts on the Superhighway: African Environment – a guide to news and resources on the Internet*, 1998, Panos Southern Africa/Danida and Oneworld site: <http://nt.oneworld.org/radio/>

However, Lishan Adam of ECA notes the visible absence of African scientific and technological information; the little that exists in this category is mainly devoted to information technology; attempts to build consolidated directories, virtual libraries and gateways on Africa-related science and technology information have not yet borne fruit¹⁸

3.2.4 Training

Training is the biggest challenge facing all societies and is the key to preparing each and every sector and class for the full deployment of ICTs. It is by building and developing a critical mass of people that a participatory approach to the information society can emerge. Training also offers the lifeline to full participation, management and sustainability of information and communication systems and channels. Therefore, stakeholders, at the grassroots, technical, managerial, and policy levels of society must pursue a coherent human resource development programme with training needs assessments for the development of effective formal and non-formal training packages, designed for different social classes.

There are a number of training initiatives on a national, regional and continental basis. So far, these initiatives lack coordination even though they have contributed positively to ICT awareness in Africa. The UNESCO Regional Informatics Network for Africa (RINAF), which started in 1987 to build capacity in the use of computer networking technology in Africa is one of the major continental projects. The initial aim was to create nuclei of connectivity and competence within the sub-regional nodes in Algeria, Kenya, Nigeria, Senegal and Zambia through the provision of training and networking equipment. In addition, there have been regional training programmes undertaken by non-governmental organizations, aimed at building ICT skills within civil society groups. However there is a need for awareness raising on policy formulation for instance, to build a critical mass within civil society to influence policy decisions and directions.

Training programmes that can enhance access need strategic investments targeted at all sectors of the economy and all levels of society. National ICT curricula should be developed for universities and other tertiary institutions, secondary and primary levels of education in the short, medium and long-term. Such curricula should target community and vocational institutions as well.

In addition, there is a need for capacity building programmes, which develop the skills-base of people in:

- *Participatory skills*, which are necessary for information sharing in networked communication. This includes computer literacy and fluency in English language for use of the Internet, databases and most other software until such time as indigenous content in local African languages take off,

¹⁸ See Lishan Adam's article 'Giving the Internet an African voice' in the UN publication Africa Recovery or: <http://www.un.org/ecosocdev/geninfo/afrec/voll2no3/internt2.htm>

- *Facilitating skills*, for installation, user training, and maintenance is required for the design, implementation and maintenance of networks, as well as software and engineering skills. From a training policy perspective, there would be a need for extensive vocational training to provide a large pool of manpower to ensure functional networks.

When tele-medicine was being introduced in Egypt at the University of Cairo, approximately 350 health workers including doctors were trained in hospitals where key nodes were established. The techniques provided include access to medical journals, the development of local content and video-conferencing.

3.2.4.1 Training rural communities

In developing training programmes for rural communities, a great deal of emphasis should be put on enhancing participatory communication, such as group facilitation and group dynamics. Attention should also be paid to the form and techniques of indigenous communications that exist so that links can be made with indigenous communication efforts to ensure bottom-up planning and needs-based projects. As a result, a comprehensive multi-dimensional national training programme should be developed in consultation with stakeholders. Also training centers should be identified and well equipped for such programmes.

4. Success stories in democratizing access to the Information Society

Though it is early days in democratizing access to the information society, there are some initial successes in Africa as well as in other places. The Mamelodi Community Information Services (MACIS) in South Africa builds confidence in the use of telecentres in urban low-income and rural areas (see box on MACIS).

Mamelodi Community Information Services (MACIS), SOUTH AFRICA

MACIS was launched on 1st July 1995 as a pilot project for the Center for Scientific and Industrial Research (CSIR). The MACIS idea was first discussed with some community leaders, who recommended a workshop of community organizations to explore the concept further. The ensuing workshop brought together representatives from the youth, women, business, political, education, health communities, as well as churches, NGO's, CBO's, government and other organizations. It was agreed that the project be housed in the community library and function as an independent and autonomous entity.

MACIS links information needs in the community with information resources that provide survival information on health, housing, education, government services and plans, employment, etc., and with citizen action information, which is needed for effective participation in social, political and economic processes. The MACIS operates on a Wireless Community Network, invented by CSIR, known as Community Information Delivery System (CIDS), which is a semi-urban and rural community network providing on-line, high-speed access to local nodes and to the Internet. It is a cost-effective way for schools to connect to the Uninet, for businesses to interconnect buildings in a campus type environment and for communities to inter-link clinics, training centres, small businesses and libraries.

According to one Mamelodi resident: "Had it not been for MACIS staff presenting a directory of services to me, I would still be going up and down whenever I needed resources that could be of service to my day to day problems". This was a comment from Mrs. Mageza who bought a directory of services available in Mamelodi. She finds it easy to consult telephonically from home and make appointments rather than visit places without an appointment and be returned for a certain date.

Ms Moyo, a high school student, accessed information on insects and diseases. This helped and enabled her to obtain 80% mark in her examination. She knew about the service through a school presentation that was done by MACIS staff members and mentioned that the school encourages them to utilize the resources available in their community, where MACIS has developed a community profile. Students, researchers, field workers, etc are happy with the establishment of the center because it provides them with survival information.

In the area of health, there are models of success through SatelLife's HealthNet, which provides access to the latest health information, e-mail connectivity, electronic conferencing, and other services tailored to meet the current demands of its users. A significant accomplishment in 1994 was to provide a seamless electronic mail interface between HealthNet and the Internet. This allows users to send and receive electronic mail on the global Internet. Having access to low-cost communications, offered by e-mail, has transformed the fortunes of one Tanzanian hospital: "Before HealthNet services were available, our 800-bed Catholic Teaching Hospital, serving 7 million people, relied

on telephone calls and faxes for securing donations of materials and funds. Even short-term medical volunteers were secured by that expensive mode, totaling over US\$5,000 a year phone/fax charges! Since HealthNet appeared in the sky, we have increased our ability to raise funds, recruited personnel and acquired materials".¹⁹

HealthNet - in action

Physician collaborations. Burn surgeons in Mozambique, Tanzania and Uganda use HealthNet to consult with one another on patient treatment and reconstructive surgery techniques.

Data collection. In the Gambia, health workers no longer need to travel 700 km per week to collect data for a clinical trial. With HealthNet this information is now sent computer to computer via e-mail in seconds.

Health care delivery. Physicians in Ethiopia use HealthNet to schedule consultations and referrals, making it unnecessary for ill patients to travel long distances with no guarantee of seeing a physician.

Medical alerts. Health care workers in Zaire's Vanga Hospital use HealthNet to send regular dispatches to report on progress in treating trypanosomiasis to health organizations in the North.

Access to medical libraries. In response to a cholera epidemic in Zambia, the medical librarian at the university obtained literature from her "partner library" at the University of Florida then disseminated the information to all HealthNet users in the region.

Research. Malaria researchers at a remote site in northern Ghana used HealthNet to communicate daily with the London School of Hygiene and Tropical Medicine and the Tropical Disease Research Center in Geneva.

Conservation. Researchers with the Diane Fosse Gorilla Foundation in Rwanda will use HealthNet to report on endangered gorilla habitats. Data gleaned from this research are expected to have epidemiological implications for human beings as well.

Urgent action. Electronic mailing lists are operated which keep HealthNet users informed of the latest developments in a number of fields. For instance, the proMED mailing list aims to detect disease outbreaks at an early stage and alert doctors who might be in affected areas.

User database. The Database of Health Professionals allows HealthNet users to search profiles of thousands of "wired" health professionals, in order to identify others with similar professional interests.

Meanwhile, in the Philippines, an innovative communication project known as TAMBULI²⁰ led to the establishment of community radio stations in remote areas in the Philippines, a country where commercial media outfits dominate. Funded by the Danish International Development Agency (DANIDA) through UNESCO, the project started in late 1991. The stations are largely controlled by a multi-sectoral body composed of leaders from varied major interests in the community. The presence of the radio stations has encouraged people to be expressive, more open and inclined to participate in discussions of issues directly affecting the community. For local leaders the stations are a means of informing the citizens of their projects and programs as well as a means of getting candid and well-discussed responses from their constituents. A new sense of community belonging and involvement is cultivated among the people. The exchange of information among local people is stimulating social and economic activities. Locating

¹⁹ Dr. Peter LeJacq, M.M., Bugando Hospital, Mwanza, Tanzania [quote on the HealthNet Web site] (<http://www.healthnet.org>)

²⁰ See web site: <http://www.tambuli.org.ph>

the stations in remote and isolated communities of the Philippines is a step towards more citizens' access, not only to relevant information but also to the means of communication. A further stride towards democratic communication opens up the opportunity among citizens in small villages to prepare programs and express themselves socially, culturally, politically and spiritually. The programs are concrete ways by which every villager is afforded the chance to use radio as a medium of communication.

MISANET News Exchange

Although targeted mainly at print media outlets, this programme run by the Media Institute for Southern Africa (MISA) aims to network independent media organizations and workers throughout Southern Africa. News is distributed via e-mail through a listserve maintained by a local South African ISP, SangoNet where individual members are responsible for putting their own content on to the service. This is a cheap and reliable source of large amounts of information enabling subscribers keep in touch with developments throughout the region. The MISANET news exchange has many sources chiefs among these are Pan-African News Agency (PANA), IPS, Panos Features, and a wide range of African newspapers. The remaining content is derived from MISA itself, which mainly posts information on media freedom issues and from daily and weekly newspapers in the region.

South Africa has stolen the lead in providing for telecentres throughout the country (see Table 1). Such a move not only strengthens the critical information infrastructure that is needed, but also provides a basis for community empowerment.

USA Telecentre Provincial Breakdown

Table 1

PROVINCE	RURAL/ PERI-URBAN	TOWNSHIP/SQUARTER CAMPS	TOTAL NUMBER	TRAINED OPERATORS FEMALE	MALE
Northern Province	12	0	12	16	8
Eastern Cape	8	1	9	12	6
Free State	3	5	8	8	6
Northern Cape	0	4	4	5	3
Gauteng	1	3	4	5	3
North West Province	4	2	6	7	7
Kwa Zulu Natal	6	2	8	5	5
Mpumalanga	5	2	7	6	6
Western Cape	2	2	4	3	3
TOTAL	41	21	62	67	47

5. Policy issues

The quality of professionalism, autonomy, and independence displayed by institutions such as regulatory bodies and communication commissions determines the credibility and integrity of the policy environment. Therefore, decision-makers in Africa need to consider impediments to the information society and systematically develop strategies to minimize or remove them if people are to gain equitable access.

A number of African countries have embarked on developing ICT policies, which are targeted at infrastructure development through telecommunication roll-out programmes in countries such as Ghana, South Africa, Uganda and Malawi. These countries have also established national regulatory institutions to oversee the communication sector, including the development of infrastructure in marginal and economically disadvantaged areas. The ideal situation would be for emerging policies to strike a balance between the interests of a broad spectrum of interest groups (government departments, universities and research institutions, libraries, civil society groups: NGOs, CBOs, professional bodies, community leaders) to ensure popular participation in the process of policy formulation and implementation.

Consequently, the kind of democratic culture that pre-exists in a country makes a significant difference to policy formulation. A country with a strong and vibrant civil society would produce a far more representative, reflective and democratic policy than a country that does not have this level of democratic culture. The Internet Society of Ghana (ISOC GH) has been lobbying the government to provide Internet access to all schools in the country. As a result, the Ghana government is now looking into the provision of access to the civil service including local governments, as well as the establishment of mobile "Internet community centers".

Policies should as much as possible reflect the convergence of the telecommunications, computer and media industries. In their publication *Knowledge Societies*, Mansell and Wehn identify four well-established policy fields: technology, industrial, telecommunication and media that coalesce to form ICT policy. Technology policy attempts to stimulate the economy by fostering innovation, while industrial policy concentrates on growth and employment and the emergence of new industries to secure future growth. Telecommunication policy seeks to secure the provision of communication services and media policy provides the framework for the development of the audio-visual sector²¹. In Africa, the various units and institutions that fall within the ambit of these four sectors do not necessarily work in concert, which could delay the formulation and implementation of new integrated policies.

The ultimate goal for any ICT policy should be a process of participatory and consultative planning for developing infrastructure for interactive learning involving actors and expertise from all levels of society. Such applications help to build bridges

²¹ R. Mansell & U. Wehn *Knowledge Societies: Information Technology for Sustainable Development*, UNCSTD-UN, Oxford University Press, 1998, pps 231-2

between the knowledge of people at the policy-making level, and those in the business, academic, technical, NGO and CBO sectors.

ICT policy in Thailand²²

Thailand's ICT strategy includes measures to encourage investment in an equitable national information infrastructure. It emphasises investment in the skills base to increase literacy and good governance. Thailand's goal is to become a regional hub in South East Asia for financial services, manufacturing, commerce, transport, tourism, and human resource training. The telecommunication network is digital with optical fibre and satellite links between the major cities, but there are problems in extending access to rural areas. The country also faces a shortage of skilled people, the established shortfall being close to 10,000 in skills in software and telecommunication engineering fields.

The Five-Year Rural Thailand Communications Expansion and Modernization Programme, an independent telecommunication regulatory agency, and a School Informatisation Action Programme are among recent government measures. The latter aims to achieve a PC density in all state schools of at least one for every 80 primary school children and one for every 40 secondary school children. The IT2000 policy supports ongoing policy research, and the local ICT industry.

5.1 Universal Access

Democratizing access should be a public policy goal spearheaded by governments in interlocking partnerships with other stakeholders, such as through universal service/access. Universal access to basic communications can be determined by population, distance and time in relation to rural and remote areas with affordable access to ICTs comparable to those available in urban areas.

Traditionally, telecommunication provision has always been accomplished through universal service strategies in the industrialized world, which aims to provide access to almost every individual in society. Liberalization and deregulation of African telecommunications markets have precipitated universal service concerns even though access still needs to be convincingly addressed. In Tanzania there are plans for a Rural Telecommunication Development Fund, whereas in Mozambique general universal service obligations are contained in the 1992 Telecommunications Law, according to which the state must guarantee basic service throughout the country.²³ In practice however, few countries have actually addressed the extension of services to rural areas, with the exception of South Africa where an appropriate institution was created to drive access-related policies and strategies in the country.

The South African Universal Service Agency (USA) promotes affordable universal access and service in information and communication technologies for

²² P. Durongkaveroj (1997) 'Social Equity and Prosperity: Thailand IT Policy into 21st Century, report by the National Information Technical Committee and the National Electronics & Computer Technology Center, quoted in Mansell & Wehn in *Knowledge Societies*.

²³ Sean O'Siochru: Telecommunications and Universal Service – International Experience in the Context of South African Policy Reform, IDRC, 1996, pp 70-73.

disadvantaged communities to facilitate development, empowerment and economic growth. However, the organization was mandated by the Telecommunications Act (1996) to develop clear definitions of 'universal service' and 'universal access' in collaboration with the South African Telecommunications Regulatory Authority (SATRA). South Africa's existing definition is that 'Universal Access is defined as living within 30 minutes travelling time of a telephone, Universal Service is more than 50% of economically eligible households with a telephone and service for 24 000 priority customers'.²⁴ The USA is supporting telecentres as pilot projects in providing universal access in previously disadvantaged areas, and particularly in rural areas and is working with other organizations in establishing such telecentres in schools, libraries, churches, existing community and civic centres. Although it has no regulatory powers, the USA has positioned itself to generate innovative mechanisms in pursuit of universal service ideals in South Africa and is working with government departments, civil society groups as well as the private sector.

5.2 Forging partnerships

Strategic partnerships on a national and regional level should be encouraged and initiated in building strong national and regional networks and should provide the basis for active policy measures and new partnerships. Whilst partnerships between governments and international agencies are almost inevitable, partnerships between the private and public sectors should be encouraged and nurtured, particularly between ISPs, NGOs and various governmental agencies. Regional partnerships should harmonize policies and strategies at the regional and national levels. Several national, regional and international organizations are promoting policy changes aimed at creating a more favorable investment climate. The Telecommunication Foundation of Africa (TFA) is supporting the formation of National Industry Platforms (NIPs), bringing together stakeholders in ICT to share experience and promote industry growth, by assisting foreign investors, providing information to decision makers and acting as an interface between users and service providers.

²⁴ <http://www.usa.org.za/docs.html>

BICA 99²⁵

The BICA 99 conference brought together the experiences of telecentre practitioners to assist the development of telecentres through sustainable partnerships in Africa. The conference provided an opportunity to exchange information and seek collaborations and addressed the following themes:

Access

- The ways of developing sustainable, community-run multipurpose telecentres and rolling them out in remote rural and deprived urban areas.
- An emphasis on appropriate technology and viable revenue streams.
- Appropriate national and regional development policies and strategies to ensure that equitable access goals are clearly defined and met in an increasingly privatized telecommunications environment.

Content

- Achieving the right conditions to facilitate local content creation for various applications including cultural conservation purposes and small business development.
- What's needed at the user end for micro businesses to generate knowledge based products, promotional material and eventually, electronic commerce.
- Ways of delivering effective learning and other public services via telecentres
- Planning ways of designing, implementing and managing systems and networks to help local practitioners gain access to best practice and other information resources held by development agencies

Human Resource Development

- Ways of developing ICT skills and creativity among users in the community, focusing on shared practice between practitioners and the local communications industry.
- Exploring alternatives to the already over-stretched existing educational and training infrastructure to enable individuals to use connectivity to develop a business or become a tele-worker and to enable learning and create a lifelong learning education and training system.
- Expanding resources through an active role for civil society in, for example, disseminating information and organizing volunteers to deliver skills

Partnership

The core theme running through all other themes will be partnership as a means of achieving sustainable development. Attention will focus in particular, on business case driven models and sound investment vehicles, which deliver development goals.

The use of email by African NGOs for instance, is providing better information exchange through participation in regional and global campaigns. NGOs are finding that they can contribute to regional discourse as well as contribute African perspectives to global campaigns. The Jubilee 2000 Campaign has been conducted electronically, with NGOs across the globe demanding that the World Bank and the International Monetary Fund (IMF) ensure debt relief by the year 2000 for developing countries. This has also

²⁵ Building the Information Community in Africa: CSIR Conference Center Pretoria, Republic of South Africa, 22-25 February '99, sponsored by British Council, ITU, ECA, IDRC. Also see <http://www.bica99.org/theme/welcome.htm>

contributed to the growth of equality in partnerships, enabling effective communication of issues and perspectives from African organizations and creating a whole host of networks.

5.3 Regional cooperation

National ICT policy-making efforts offer opportunities for developing regional strategies. Mechanisms should be encouraged to enable linkages between countries and regional international bodies to ensure coordination in ICT initiatives. One clear advantage of regional cooperation in this endeavor is that it will strengthen communications between neighboring African countries with some added benefits of easier trade links, standard tariffs, etc. COMESA is working to promote the development of telecommunications in its member countries and to improve interconnectivity and harmonization of regulatory frameworks between countries. It is undertaking a 3-billion-US-dollar programme to interconnect the telecommunications system in the region, its Secretary-General Erastus Mwencha announced in Sept '98. The programme is taking place in conjunction with SADC and is in four phases. The programme will have transit centres for direct connectivity in Johannesburg, Lusaka, Nairobi and Addis Ababa.

In the area of trade, there is the Trade Information Network (TINET), whose main product is a trade directory of companies operating in COMESA with records of trade statistics, market profiles and tariff details for countries. TINET's future is currently under discussion, and is being superseded in some cases by the work of individual Member States who are putting their own information out in other forms.

The document, *SADC in the next millenium: the Opportunities and Challenges of Information Technology*²⁶ stresses the need for increased development of local IT manufacturing and maintenance facilities to cater for the region's particular needs. The document describes how its Member states will need to respond to the opportunities and challenges being presented by new technological development in order to realize their full potential, or to mitigate any negative effects they may have. SADC's goals in Information Technology are:

- develop an information society in southern Africa;
- improve and broaden equitable access to Information and communication technology;
- reduce costs related to IT;
- develop SADC wide infrastructure;
- encourage the growth of software and hardware development facilities in SADC;
- improve human resource capacity.

²⁶ See <http://www.sadc.int/theme.htm>

6. Conclusions

Overall, while a great deal can be achieved with ICTs, the groundwork for fostering a democratized environment for accessing ICTs is a long way off. The essence of democratizing access to the information society is to enable many different communities have reliable and low cost access even though actual details depend on national circumstances. In addressing ICT access, countries need to take stock of the extent of their telecommunication reforms and the benefits to communities. It is a fact that in many instances, the reform process is still unclear, often not evaluated, and lacking credibility in the public domain. The result is that while the number of providers is increasing in cities, telecommunication reforms are still non-existent in the rural areas. Consequently, if access to the information society is to be democratized, governments need to undertake ICT audits that take into account the extent of telecommunication reform, the level of private sector involvement, the performance of key institutions, the degree to which consumer needs have been met, and that assess the shortfalls of current policies. These audits need to be undertaken in the policy, infrastructure development and training sectors and should constitute the basis for the formulation of ICT policies in the near future.

Furthermore, transparency and accountability are essential requirements for enabling citizen's access to ICTs; factors related to how licenses are awarded and the status of regulatory bodies must be taken into account. For instance, governments need to distance themselves from new and existing telecommunication operators and to allow a level playing field with a view to expanding infrastructure. In addition, operators awarded licenses should meet certain obligations, which may include the expansion of infrastructure into rural areas. Independent and accountable regulation is perhaps all the more important given the systems of patronage that continue to plague democratic culture in Africa. The absence of a clear regulatory framework can stifle infrastructure development as well as access to services. The convergence of the media, telecommunication and computer industries requires that regulation of these sectors be integrated.

African governments have an important role to play in bringing about equitable distribution of ICT resources in their countries, while promoting innovation and generally investing in ICT development. Currently the University of Ghana's department of library and archival studies offers computer studies up to diploma and degree levels, however, the courses are abstract because department computers are outdated and the laboratory is not well maintained. As a result, students get very little hands-on practise and do not really get the opportunity to learn new software packages. As a key public institution in the country, efforts should be made to galvanize resources for training and manpower development. This is perhaps where government and private sector partnerships should be targeted.

Other issues such as studies and impact assessments of ICTs on African culture need to be undertaken. To a large extent, democratizing access to the information society will be dependent on a number of factors, but perhaps the most critical is the right policy

environment where stakeholders can actively pursue their own ICT agenda based on their own terms.

6.1 Summary of key policy considerations

Key considerations in the design and implementation of national strategies should include:

- Strategies to create a dynamic relationship between technological and human resource development in support of production, maintenance and use of ICTs.
- Need to encourage governments, businesses and civil society to complement one another by using ICTs to enhance skills, formal education and informal learning processes.
- Organizational changes need to be identified and implemented by informed managers and technical people aware of the need to develop various levels of competence.
- Comprehensive capacity-building programs that involve the accumulation of scientific and technical knowledge to enable proper assessment, selection, adaptation and development of ICTs so that they contribute to the development process.
- Avoid risks of social exclusion through the need for legislative and regulatory frameworks to extend and upgrade national information infrastructures in line with development priorities.

7. Some recommendations

Access

- Develop national policies with stakeholders to ensure equal access to all manner of communication technologies.
- Create process for policy review, monitoring evaluation
- Strengthen the capacities of institutions and organization so as to develop innovative projects
- Develop strategies to reflect cultural diversity.
- Develop R&D unit in collaboration with stakeholders to support distinctly pioneering and exploratory work.

Content

- Facilitate local content development including the exploration of using local languages.
- Support public institutions to develop extensive databases on all aspects of society as a means of generating and producing content.
- Support public institutions to design, Implement and manage systems and networks and strengthen engineering.
- Undertake information needs research to determine content.

Policy

- Develop human resources for effective national ICT strategies including measures for training in all aspects of ICT management, application, adaptation and maintenance. Also specific training programmes be developed on scientific and technical areas, policy analysis, innovation management, production as well as literacy, language development and basic education skills.
- Ensure that policies are gender-sensitive and reflect a multilingual/cultural environment.
- Ensure that universal service measures be introduced and special attention be given to rural and low-income urban areas to provide access to networks and services that are responsive to people's needs.
- Need to ensure flexible pricing schemes to stimulate demand in marginal, remote and rural communities
- Develop mechanisms to strengthen national and regional participation in the international arena.

Training

- Develop comprehensive national training policy
- Establish centers of excellence for manpower development throughout the country.
- Ensure that training is incorporated in all aspects of ICT development and in the national curricula.
- Provision of relevant and accurate technical input for institutions to offer appropriate training.
- Develop various levels of ICT competence in rural and urban centers.

7.1 Some indicators for measuring access

- Number of communication businesses (video shops, tele-kiosks, telecentres, post offices, etc) in rural and low-income communities
- Number of public access points within a particular zone in relation to access to communication resources
- Incentives given to communication companies for operating in rural and low-income urban areas
- Number of computer literacy centers in a particular area, town, city
- Number of training centers in a particular area, town or city
- Cost of computer, telephone and fax equipment against other utilities
- The rates of innovative initiatives and frequency
- Level of citizen participation in policy formulation, implementation and design of networks
- The extent of linguistic differences reflected in applications