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ICT in Africa:

Boosting Economic Growth and Poverty Reduction

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ICT in Africa: Boosting Economic Growth and Poverty Redution

EXECUTIVE SUMMARY

Africa is on the move, and information and communications technologies (ICT) are a powerful tool to boost economic growth and poverty reduction. ICT increase efficiency, provide access to new markets or services, create new opportunities for income generation and improving governance and give poor people a voice. Taking into account Africa's complexity and diversity, specific interventions are required rather than "one-size-fits-all" approaches. Isolated investment in ICT does not permit leapfrogging to higher growth rates. However, as a key part of a development strategy, mainstreaming ICT in the productive sectors is a matter of economic survival. Maximum mobilisation of private investment, including from the African Diaspora, is vital.

2. **African leaders and their development partners share alike the vision and commitments** of the World Summit of the Information Society resolutions regarding the key role of ICT for inclusive, globally competitive and knowledge-based societies. The following recommendations follow on from that vision. Africa's success story with mobile telephony graphically shows that when ICT become affordable to low-income users, new employment, micro-entrepreneurial and social development opportunities emerge. ICT-induced growth should be reinforced by targeted policies for effective poverty reduction. The key bottlenecks to progress are rooted in infrastructure, access and the enabling environment.

3. **It is recommended that African governments and their international partners make an unprecedented effort to address infrastructure bottlenecks** regarding access, operational capacity and maintenance requirements of ICT infrastructure, transport and electricity. In particular,

- Assign highest priority to advance **NEPAD's broadband initiative**, by mobilising funding and investment, and providing the necessary regulatory and legal frameworks;
- Ensure and support **regional co-ordination** in the planning of new infrastructure and in assuring maintenance of existing infrastructure.

4. **It is recommended that African governments and their international partners prioritise ICT access and effective use at all levels**, including the provision of public access facilities, relevant content, and increased capacities. In particular,

- Invest in and support **community public access facilities** such as telecentres or local radio stations in order to ensure access for all and the creation of locally relevant content;
- Include and support **capacity building** components in all ICT activities, starting from infrastructure, its operation and maintenance, to government and regulatory authorities, private service providers, and end-users.

5. **It is recommended that African Governments and their international partners create and support enabling environments**, consisting of both ICT-specific regulatory frameworks and an overall policy framework that promotes sound economic and political governance. In particular,

- Improve **ICT governance and affordability** by ensuring freedom of expression, providing a competitive framework for the application of ICT, ensuring compliance through independent regulation and favouring low-cost, technology-neutral and open source solutions;
- Link the creation of an enabling ICT environment to national planning and strategic frameworks, including **performance monitoring and dialogue** processes.

ICT in Africa: Boosting Economic Growth and Poverty Reduction

I Introduction

6. For more than a decade, information and communication technologies (ICT)[1] have been attributed a key role in both economic growth and poverty reduction. They increase efficiency, provide access to new markets or services, create new opportunities for income generation and give poor people a voice. And while considerable improvements have been achieved in Africa with respect to certain aspects of ICT – including the spread of mobile telephony and an increasing number of national ICT strategies as well as regional initiatives – there are still areas where improvement is needed in order for Africa as a whole to be able to take advantage of the benefits of ICT.

7. The purpose of this paper is to illustrate how Africa and the international community can address the challenges presented by the current situation in Africa. The situation is characterised by its **complexity and diversity**. This stems from the fast developments and transformations in the dynamic field of ICT; the numerous initiatives; and the diversity of stakeholders, including the G8; the New Partnership for Africa's Development (NEPAD); the UN Economic Commission for Africa (UNECA); the International Telecommunication Union (ITU); other UN organisations; international networks such as the Global Knowledge Partnership; various non-governmental organisations (NGOs); research centres; bilateral donor agencies; development banks and many private sector actors. Furthermore, the situation in Africa varies significantly between the North and South as well as within countries and regions, which demands specific interventions rather than "one-size-fits-all" approaches.

8. The paper has the following structure: **Sections II and III** provide the context, describing how ICT can be used to boost economic growth, its role in poverty reduction efforts and the current situation of ICT in Africa. **Section IV** summarizes the key commitments of the various stakeholders with a focus on multilateral development partners and African institutions. **Section V** assesses the situation and lays the foundation for the recommendations set out in **Section VI.**

II Economic Growth and Poverty Reduction

9. **Africa is on a growth path which is becoming more broad-based**.[2] In 2007, for the fourth consecutive year Africa's real gross domestic product (GDP) growth rate exceeded 5%. Twenty-five countries achieved a GDP growth rate of above 5% in 2007, and another 14 countries grew at a rate between 3% and 5%. High prices for commodities, increased remittances and policy reforms which have stimulated foreign direct investment (FDI) are the main drivers. However, the growth path is still fragile as diversification of African economies is generally low.

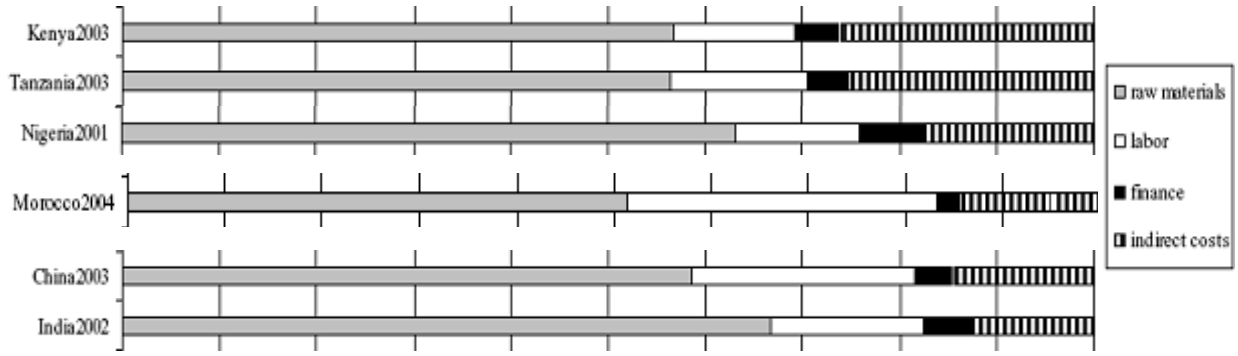
10. **Sustainable economic growth is the result of an interplay of a number of factors**, among them governance performance, physical infrastructure, skilled human resources, access to technology, and an enabling policy environment. Furthermore, effective information and communication processes are a prerequisite for any economy. While ICT play a role in all of these areas, isolated investment in ICT does not permit leapfrogging to higher growth rates. Nevertheless, as a key part of development strategies, mainstreaming ICT in the productive sectors "is a matter of economic survival" as the Chennai Statement on Up-scaling Pro-Poor ICT Policies and Practices notes.[3] In the words of NEPAD: "Better connectivity offers the prospect for African countries to transform their economies

[1] ICT consist of the hardware, software, networks and media for the collection, storage, processing, transmission and presentation of information (voice, data, text, images) as well as related services. Both traditional technologies (telephones, radio and TV) and newer technologies (such as computers and the Internet) are usually included in the concept of ICT infrastructure.
[2] See Kasekende and Shetty (2008); World Bank (2008).
[3] The Statement is available at: http://www.gersterconsulting.ch/docs/Chennai_statement.pdf.

from reliance on traditional activities, with low productivity and weak growth outlook, to more advanced activities that can sustain higher wages, create new employment and reap the other social benefits offered by new technologies".[4]

11. **The cost of doing business in Africa remains high**, reducing potentially achievable growth rates. Unreliable infrastructure is a major reason for high transaction costs in a majority of African countries. Indirect costs are a greater burden than in China and India. However, as the graph below shows, there is again considerable difference among African countries. Better power, transport and ICT infrastructure will enhance productivity and efficiency and increase employment.

Figure 1: Average cost structures at firm level (by country) 2002



http://www.nber.org/confer/2008/Africas08/Ramachandran_Gelb_Eifert_CostofDoingBusinessinAfrica.pdf)

12. **The structural transformation of African economies is on-going and will continue at a faster pace**. Better diversified economies with a growing service sector create new employment opportunities, strengthen productivity, and reduce the risks of economic downturns. Within the service sector, ICT services have an important role to play – as a sector of the economy as well as an enabler for other sectors. ICT also enable the aggregation of dispersed demand into viable markets. Further, given that informal and formal small and medium enterprises (SMEs) are the backbone of broad-based economic growth, it will be crucial to mainstream the use of ICT for micro, small and medium enterprises. Even economies depending on the production of raw materials and on subsistence agriculture can achieve efficiency improvements through ICT investment.

13. **ICT contribute to economic growth** through: (1) increasing productivity across all sectors; (2) facilitating market expansion beyond borders to harvest economies of scale; (3) lowering costs of and facilitating access to services, notably in administration, education, health and banking; (4) providing access to research; (5) development of ICT products and services; (6) contributing to better governance, a prerequisite to growth, through increased participation, accountability and transparency. The use of ICT provides positive externalities, enhancing creativity, learning and problem-solving skills. Its impact on employment, new types of exports, and FDI requires the interplay of a number of factors: "It is the interaction among connectivity, access, network security, capability/skills, market structures and firm governance, as well as the regulatory and facilitation environment, which determine whether firms from developing countries can participate effectively and efficiently in the information economy and compete in global e-marketplaces."[5]

Box 1: Market information in Senegal

[4] NEPAD 2007, p.1.
[5] Indjikian and Siegel 2005, p. 696.

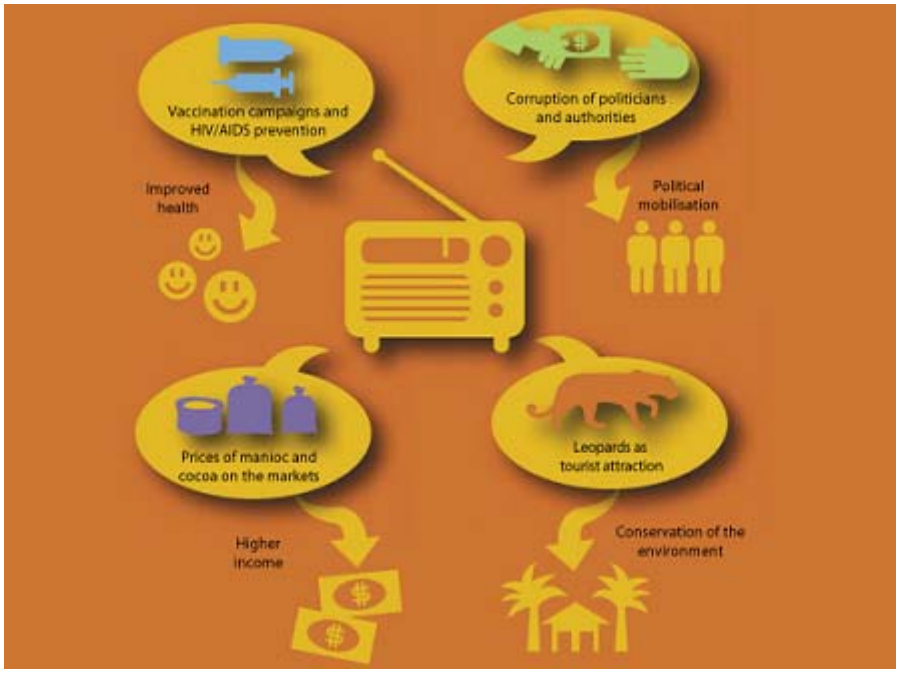
Manobi is a private multi-channel service provider in Senegal which (1) improves the safety of fishermen by establishing a GPS-based navigation platform; (2) partners with rural communities to establish a land resources management system and reducing disputes over land; (3) delivers market information to farmers and fishermen, who can monitor real-time prices in several markets and sell their fruit and vegetables where they can get the best price. Manobi employs data collectors who record market prices in several locations. These data are transmitted by mobile phone to a central database where they are accessible via the web or via SMS on any phone. To access the information, farmers and fishermen pay US$5 per month plus a small fee for message services. Using these services, farmers have increased their income by 30% and more.

14. Nevertheless, **ICT growth is only weakly correlated with poverty reduction**[6] due to the particular situation of the poor. They have low levels of skills. They lack physical assets. Their access to financial services is difficult. In many cases, exclusion on grounds of rural isolation, ethnicity, language, religion or gender adds to the hurdles of overcoming the income, infrastructural and market barriers they face. Economic research suggests that the contribution of ICT to pro-poor growth is dependent not on ICT infrastructure *per se* but on the role of ICT in supporting pro-poor initiatives.[7,8] Effective poverty reduction requires targeted pro-poor policies to provide infrastructure (including ICT), to strengthen physical access to markets and to invest in education and health. As soon as ICT become affordable to low-income users, new employment, micro-entrepreneurial and social development opportunities emerge.[9]

15. **Poverty is a multi-dimensional phenomenon**, encompassing a lack of opportunity, empowerment and security. ICT access can have powerful impact in addressing these constraints,[10] giving the poor a stronger voice, facilitating their participation in decision-making processes and in demanding accountable government. Local radio is a medium particularly suited to promoting economic development and empowerment, as it is affordable and accessible to listeners and demands few specific skills: a recent study found that radio plays a prominent role in tackling gender issues and promoting women's visibility. South Africa, where the average person listens to radio for more than four hours every day, and Mali are examples of countries with a vibrant radio landscape, including but not limited to community radio. African governments have increasingly adopted legislative and administrative reforms allowing a greater variety of stations to operate and reducing public subsidies from state-owned national broadcasters.

[6] OECD/DAC 2005, p. 11.
[7] OECD/DAC 2005, p. 14.
[8] See World Bank (2001).
[9] Paltridge 2008.
[10] World Bank 2001; OECD 2007.

Figure 2: Community radio addresses the multidimensional character of poverty



(from: http://www.gersterconsulting.ch/fs/fs_main.asp?kt=4)

III ICT in Africa

16. **The current spread and use of ICT in Africa is a function of a number of factors** including:

- ***infrastructure*** – its availability, operation and maintenance. This includes not only ICT infrastructure but equally transport and electricity.
- ***access*** – characterised by public access facilities, the existence of relevant content, adequate capacity at different levels and promising experiences with respect to mobile telephony.
- ***supportive enabling environments*** -- including specific regulatory frameworks and an overall policy framework that promotes sound economic and political governance.

These factors need to be addressed at all levels, namely the global, regional, national and local level -- and by all stakeholders.

17. At the same time, the ICT landscape in Africa is shaped by two structural features that characterise ICT development more broadly:

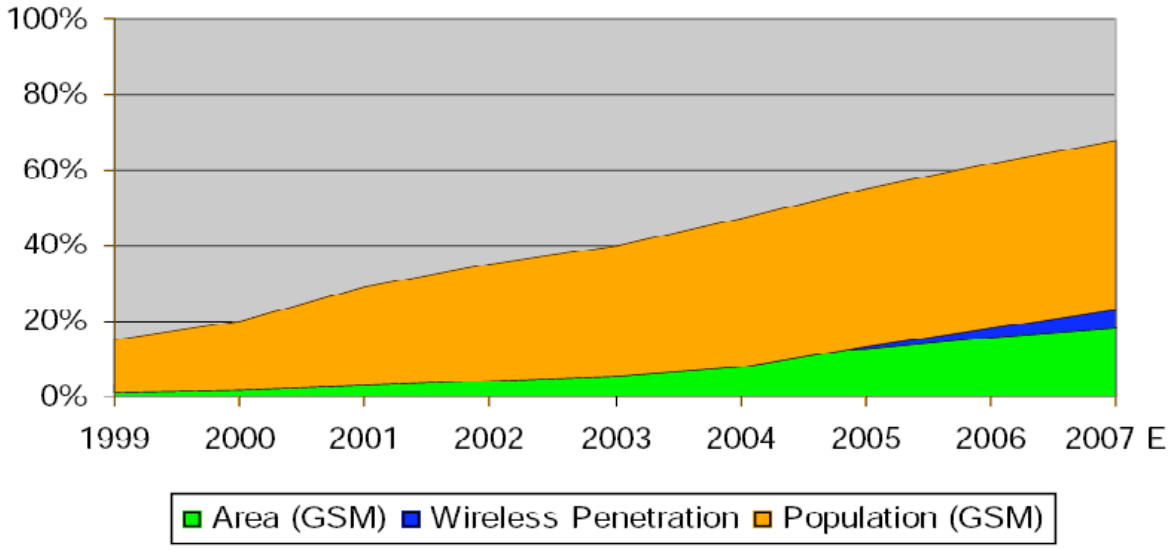
- **Multi-stakeholder partnerships have become an established feature of successful ICT development all over the world.** The DOT Force created by the G8 in 2000 brought together government, private sector operators, NGOs and international organisations in a constructive, interactive alliance for ICT co-operation and development. This approach has been continued by successor organisations, namely the UN ICT Task Force, the Internet Governance Forum and the Global Alliance for ICT ad Development (GAID). Co-ordination and communication among large numbers of very diverse institutions increases the complexity of programme implementation in an environment which is already fast-paced because of rapid technological developments. However, it ensures sustainable solutions if agreement can be reached and sustained commitment achieved.

- I**ncreasing convergence across different technologies**, in which the Internet is becoming the common platform for voice, data and broadcast information. This offers potential for cutting the costs of network deployment, along with providing new synergies, products and mediums for exchange. For example, the Internet is not only a mechanism for the dissemination of information; it is also a broadcasting system, a platform for individuals to interact and a marketplace. Similarly, mobile phones are not only used for voice services – they also facilitate internet access data collection and even financial services.

1 Infrastructure: dynamic, but spreading slowly and unevenly

18. ICT infrastructure mainly refers to networks, cables, wireless links or satellite dishes, as well as other important elements such as optimal use of these physical assets (interconnection of different networks or the management of the frequency spectrum) and their maintenance. ICT infrastructure in Africa has increased over the past years, in spite of the challenges of low population density, low incomes and large rural populations. Particularly noteworthy is the virtual explosion of mobile phones in many African countries, which surpassed 200 million subscribers in early 2007 and continues to grow at higher rates than any other region. This has been particularly beneficial for rural areas. It is estimated that there are around 400,000 localities in Sub-Saharan Africa, of which 99% are villages. According to the ITU, less than 3% of these have a fixed line telephone connection, while 7% of rural households had a mobile service subscription in 2006.[11]

Figure 3: Mobile coverage in Africa



(from: http://www.thepresidency.gov.za/learning/cell_tech2.pdf)

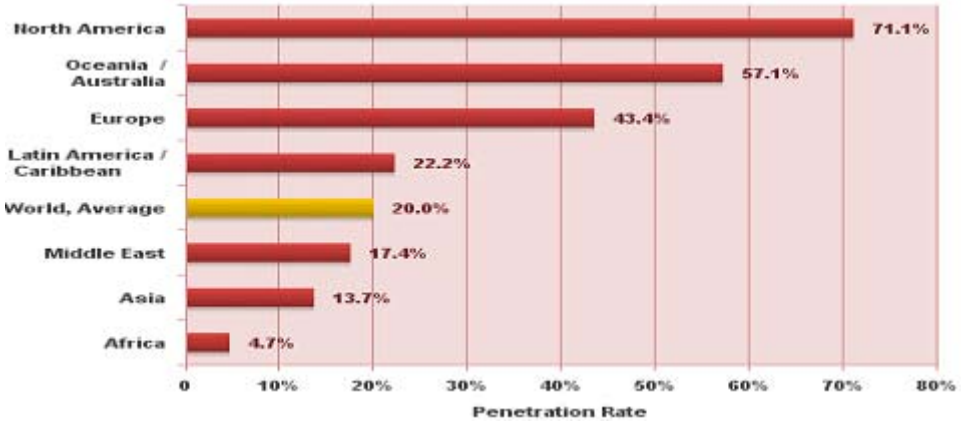
19. **While these numbers point towards positive changes, they also mask vast differences within and between countries**. Most of the infrastructure is concentrated in a few major urban centres: rural areas (where the majority of people in Africa still live) have teledensities hundreds of times lower. In 2004 the largest town in each country, with between 12-22% of the total population, accounted for up to 77% of total national main telephone lines. This pattern of wide variations in teledensities also applies more broadly, with most of the infrastructure on the continent being concentrated in a handful of countries[12].

[11] See ITU 2007a.

[12] Most of Africa's fixed telephone lines are concentrated in only six economies – Algeria, Egypt, Morocco, Nigeria, South Africa and Tunisia – which account for almost 80% of all fixed lines on the continent. Even mobile penetration rates vary widely. In 2006 in the top 10 mobile markets, South Africa had the highest penetration rate of 69.9% (31 million subscribers), whereas the DRC in tenth place had a penetration rate of just 4.3% (2.6 million subscribers). Similarly, four countries account for almost 60% of Internet users in Africa.

20. **There is an overall trend across the continent toward use of wireless technologies** that explains the relatively slow growth in fixed lines, which remains virtually static, at 28.5 million main lines in 2006 – about six times lower than the world average[13]. This, along with high tariffs relative to income levels and low domestic PC usage, has lead to relatively slow rates of Internet and broadband uptake across Africa – by the end of 2006 there were only 44 million Internet users and 1 million broadband users (3.8% and 0.4% of the world total, respectively). This situation is now changing quite rapidly in urban areas with the recent introduction of wireless broadband and 3G[14] in many countries, along with increased use of the Internet on mobile phones.

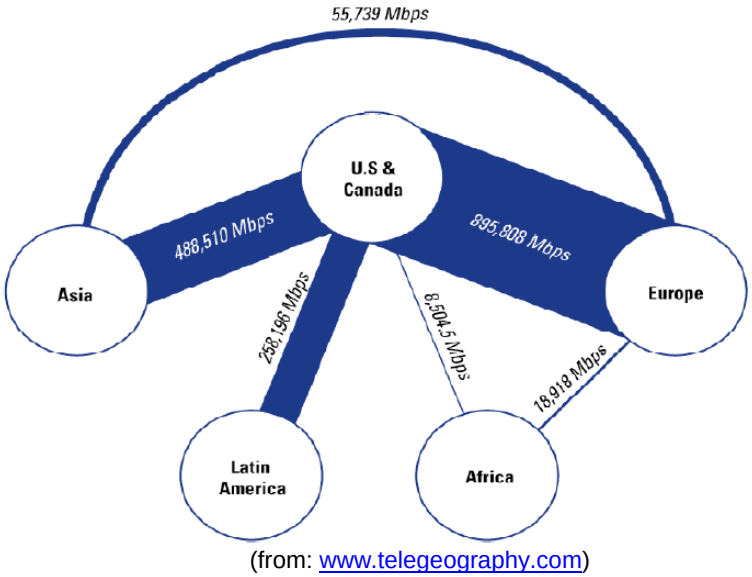
Figure 4: World Internet Penetration Rates, December 2007



(from: http://www.internetworldstats.com)

21. A number of initiatives are now taking place which will help accelerate the broadening of ICT uptake and smooth out the variations in access to ICT infrastructure within and between countries. The most notable are the various international fibre projects which will vastly **improve the availability of international and cross-continental bandwidth** over the next 2-3 years[15].

Figure 5: Worldwide Interregional Internet Bandwidth 2006



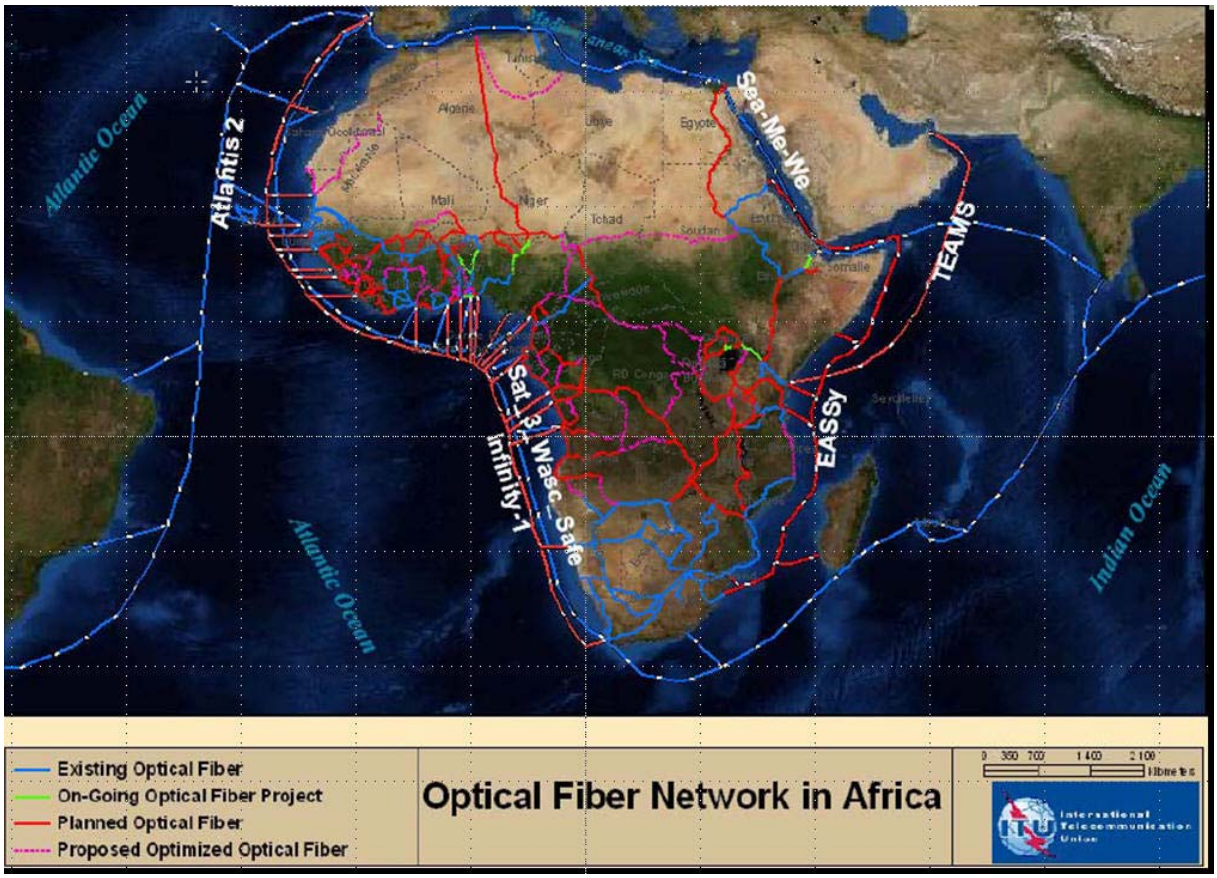
(from: www.telegeography.com)

[13] The world average fixed line teledensity in 2006 was 19.4 per 100 inhabitants, compared to 3.1 for Africa.
[14] Third generation mobile phone technology, which enables network operators to offer users much more bandwidth and a wider range of more advanced services while achieving greater network capacity through improved spectral efficiency.
[15] Intercontinental capacity is expected to increase from the current 354 Gbps, to at least 30 Tbps.

22. Currently, international fibre only lands in a small minority of African countries, and where it does, suppliers are able to charge prices hundreds of times higher than elsewhere due to lack of choice. For example, E1 (2 Mbps[16]) circuits from Africa to the US or Europe currently cost more than US$5000/month. By comparison, similar cross-Atlantic links between North America and Europe can now be obtained for US$10-20/month, and US$15-30/month on international routes in Asia. For the end-user this means that monthly Internet access in Africa costs 170% of gross national income – compared to the world average of 62%.[17] Cross-border links are also still scarce and, as a result, most international traffic across Africa is carried over equally costly satellite links which usually land in North America or Europe, resulting in costs of about US$400 million – which is being paid to foreign operators for traffic between African countries.

23. To address these problems, **NEPAD has established the NEPAD Broadband ICT Network** (NBIN) initiative which aims to ensure that all countries on the continent have access to at least two independent international fibre cable links. In the first phase of the project a US$2 billion network called UhuruNet has been proposed to cover Eastern and Southern Africa with onward links to Europe, Asia and South America, supported by a policy and regulatory framework called the Kigali Protocol which came into force in February 2008. It has been ratified by seven countries so far.[18]

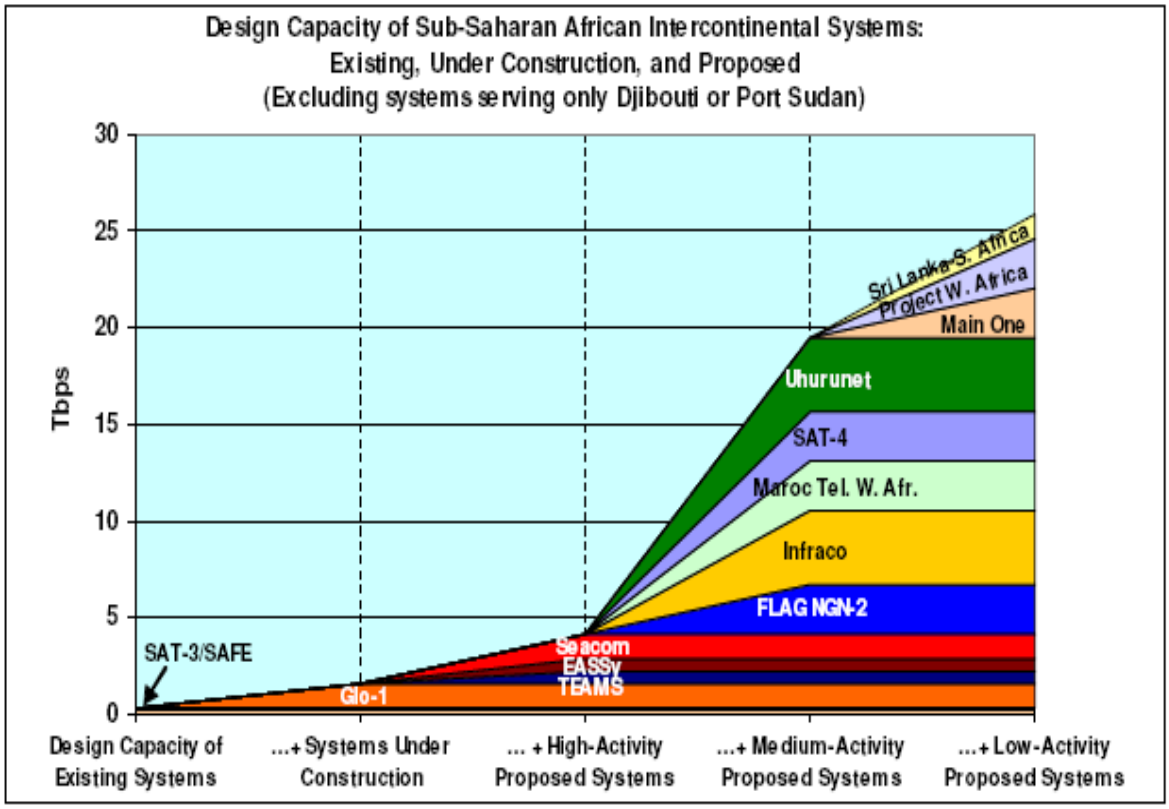
Figure 6: Optical Fibre Network in Africa



(http://confluence.slac.stanford.edu/display/IEPM/Sub-Sahara+Case+Study)

[16] Megabits per second, unit for measurement of electronic data traffic.
[17] See ITU 2007a.
[18] Lesotho, Mauritius, Rwanda, South Africa, Tanzania, Zimbabwe and Malawi.

Figure 7: Design Capacity of African Intercontinental Systems 2008-2012



(from: http://www.novatech2008-proinvest.org/downloads/Papers/Plenary_Session_1.pdf)

24. In view of imminent increases in international bandwidth access, **national infrastructure has become a much higher priority**, and many countries are making strong efforts to establish national backbones. Contracts totalling over US$1 billion for at least 30,000 kilometres of national fibre-transmission networks have been awarded by African operators during the last 18 months[19], two thirds of which have been financed by the Chinese Export Import Bank.[20] Alongside the roll-out of national fibre backbones has been the simultaneous emergence of microwave transmission networks. In the last decade African mobile operators, for example, have built between three and five times as much transmission network as fixed-line incumbents have in total. Mobile operators are now also upgrading their transmission networks in order to provide the capacity to support the delivery of 3G services.

25. To take maximum advantage of these developments, **national interconnection between networks still needs improvement**, along with increased deployment and lower-cost access in the last mile. Interconnection rates between telephony operators are often costly and the links often congested. Similarly, local Internet service providers usually have to interconnect over expensive congested international circuits due to the limited number of local Internet exchange points (IXP)[21] – only seventeen countries in Africa have so far established an independent IXP[22].

26. **Supporting resources and capacities are also essential in order to fully benefit from ICT**. Apart from reliable electricity supply – which is needed to run any ICT infrastructure – transport networks such as roads or rail are required to support increased economic and social activities – otherwise

[19] Fixed-line incumbent operators in Sub-Saharan Africa (excluding South Africa) owned and operated a total of 138'400 kilometres of transmission networks in 2007.
[20] It is worth noting that China's interest in Africa is not only expressed by investment in ICT infrastructure, but in infrastructure overall. This new player is exerting considerable influence in Africa's investment landscape.
[21] IXPs are locations where traffic between different local networks is exchanged.
[22] Angola, Botswana, Burundi, DRC, Egypt, Ghana, Kenya, Mauritius, Mozambique, Nigeria, Rwanda, South Africa, Swaziland, Tanzania, Uganda, Zambia, Zimbabwe.

distances which were removed by ICT will remain an obstacle. A recent report from the World Bank[23] pointed out that a country's capacity to absorb and benefit from new technology depends on the availability of more basic forms of infrastructure. This also implies that there are limits to technologies which can leapfrog.

27. **Human capacity is often another bottleneck to the spread and use of ICT across Africa**. Illiteracy not only hinders economic and social development – it is also a major obstacle to the spread and use of ICT. Reduced capacity for maintaining networks or other hardware also limits the potential use of ICT. Investment in education at all levels – basic, secondary and vocational – is essential for Africa's further development, not only to ensure that the public can effectively use ICT but also to create a better enabling environment for local innovation and wealth creation. This has resulted in increased efforts to ensure that schools and higher education institutions are fully connected to the Internet. Ongoing innovative initiatives in this regard include i) the NEPAD e-Schools initiative, which aims to ensure that all 600,000 schools on the continent are online, and ii) the emergence of National Research and Education Networks, which aim to establish multi-gigabit academic fibre optic backbones to serve their member institutions.

2 Access: improved through community-based ICT and appropriate applications

28. **For the majority of the population, public access facilities will continue to be an important part of the ICT landscape**. Community-based access can be in the form of private cybercafés, state-supported telecentres, as well as schools or libraries. There is increasing awareness that such public facilities can provide multiple low-cost services, ranging from phone calls and e-mail to multimedia distance learning and e-commerce. These community access points provide an important "bridge" facilitating ICT access by SMEs and households in Africa.

Box 2: Telecentres and cybercafés

These institutions may be dedicated facilities or provided through existing entities, most often storefront shops, libraries, community centres, police stations and clinics. Their institutionalisation is being seen as an important way of realising universal service objectives in rural and remote locations and has resulted in many national programmes and international projects scattered throughout Africa to test different models, means of implementation and mechanisms for sustainability. While individual users who pay for the services directly are often the principal income source, other services may be paid for or "subsidised" by government departments such as education, health, local authorities and NGOs. For example, the Kenyan government has launched the Digital Village Project to establish ICT centres throughout the country. To jump-start the process, the programme is training 1000 digital village managers to oversee centres in 210 national constituencies. Managers undergo an intensive three-week training programme in the basics of business management. The ICT centres will be operated on a public-private partnership basis with the Ministry of Information and Communications and will involve collaboration across government, public and private sector organisations, development partners, civil society and individuals.

29. Similarly, **radio is pervasive and readily accessible to all.** There are more than three times as many radios as TVs on the continent, and ten times more radio receivers than fixed telephone lines.[24] It is estimated that 60% of the population can be reached by existing radio networks.[25] A recent study found that the number of community radio stations was growing in the majority of countries studied, with a total of 402 community stations in operation in 2006, although most of these were concentrated in South Africa and the Democratic Republic of Congo (DRC).[26] Combining radio with other ICT,

[23] World Bank (2008).
[24] More specifically: 20 radio receivers per hundred people compared to two fixed telephone lines for hundred people (Girard 2003). In 2006, the African Media Development Initiative studied radio-use in 17 African countries. It found that radio is the most accessible and the most consumed media in all of the countries, which included Angola, Botswana, Cameroon, Democratic Republic of Congo, Ethiopia, Ghana, Kenya, Mozambique, Nigeria, Senegal, Somalia, South Africa, Sierra Leone, Tanzania, Uganda, Zambia and Zimbabwe (BBC World Survey Trust 2006).
[25] See Etta and Parvyn-Wamahiu 2003.
[26] BBC World Survey Trust 2006.

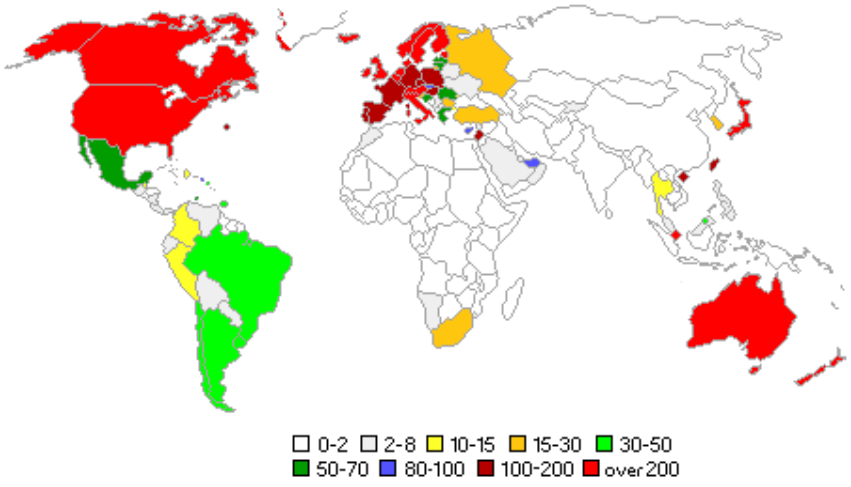
namely Internet and telephony or activities such as listener clubs, has helped to make the medium a more interactive one.

30. **Community media play a key role in the production and dissemination of information**. People at local radio stations or telecentres can download relevant information from the Internet, adapt it to the local context, encourage people's participation in debates and contribute to the agenda-setting of a local community. In this way they contribute to general information flows across society and give a voice to people.[27] Sharing of information as well as encouraging increased participation, particularly by the poor, enhances empowerment and transparency – both of which play a key role in improving governance, which is fundamental to sustainable development.

31. **Applications and locally relevant content play a crucial role in linking people to ICT --** they make ICT infrastructure come alive. Applications include e-mail, SMS, electronic transactions, Internet-based telephony and multimedia. The use of these tools in various sectors has led to a wide variety of "e hyphen" constructs including e-commerce, e-trade, e-agriculture, e-health, e-education or e-government. In Africa, governments and development agencies have lagged behind when it comes to developing applications for important sectors of the population such as farmers, teachers or health workers. Further, much of the available content and services are still neither locally relevant nor available in local languages. Only 2% of the over 2000 African languages, which represent two-thirds of all global languages, can be found online. However, there is evidence that speakers of African languages are increasingly claiming their space: there are 1655 blogs from African countries registered – with more than 1000 from South Africa – and the Swahili Wikipedia has more than 1000 entries.

32. **Lagging Internet applications and content in Africa has also retarded development of African Internet sites**. Although growth of Internet sites located in Africa in 2006 was much higher than the world average, Africa – home to 14% of the world's population – still accounts for only 0.3% of global activity in the Internet, with a total of one and a half million hosts, as compared to 88 million in Europe, 42 million in Asia and 18 million in Latin America.[28] Aside from the lack of local content, limited local web-development capacity and low awareness of the value and uses of a web-presence has contributed to the limited sophistication and utility of many local web sites. In addition, African Internet domaines may not be seen to be as reliable or as credible as international Internet domaines, and they are usually more expensive to purchase. Furthermore, local bandwidth constraints have also encouraged the use of "offshore" African web sites and fuelled African uptake of international hosts.

Figure 8: Internet hosts per 1000 inhabitants (.com, .net, .org etc).



(from http://www.gandalf.it/data/data1.htm)

[27] Consumer groups potentially play a critical role particularly with respect to ICT infrastructure and services. They address issues of consumer awareness, rights and voice. Pressure from such groups is needed in order to promote and protect the public interest, especially in the long-run.

[28] Livraghi 2007.

33. **Currently the greatest progress in implementing local Internet applications in Africa has been in made in the media, business and health sectors**. UNECA and other development agencies have led various activities to promote the development and use of e-government, e-business, e-health, e-learning and e-science applications, and Africa's cultural and linguistic diversity has been an issue in various declarations and plans.[29] Building on the explosion of mobile phones in Africa, applications for these seem particularly promising, as shown by the examples of South Africa and Kenya which are leading the continent in the adoption of mobile-banking solutions aiming to reach the un-banked – in both countries, more people have mobile phones than bank accounts. In the case of Kenya, the M-Pesa mobile phone funds transfer service was launched in March 2007 and by November there were 1.1 million registered users, almost 1400 service points, and a total of US$87 million had been transferred. Other particularly promising applications for the mobile technology include: health services (medication reminders, test result notifications, and tele-diagnostics using mobile phone cameras), agriculture (market prices, inputs prices and ordering, and weather information), and job search services.

Box 3: Other examples of successful mobile applications

Mobile phones can be used for more than simple phone calls. In Africa the diversity of mobile applications is impressive – they are figuratively the PCs of Africa:
In South Africa, Wizzit allows anybody with a mobile phone to have his/her bank account in his/her pocket. It provides the possibility to make person-to-person payments, transfers and pre-paid purchases without a bank account. There is no monthly fee: people only pay for transactions they execute.
In Kenya, an SMS job service has succeeded in creating annual revenue of US$100,000. The service has more than 30,000 subscribers who receive between 150 and 200 job vacancy announcements per week. Using a pre-paid service, they pay per offer they receive. 60-70% of the offers are filled by the subscribers which results in much faster results for the employers.
TradeNet, now operating in 17 countries, provides information about agricultural goods for anyone who wishes to sell or buy commodities. After negative experiences with external funding, the initiators decided to provide the basic information for free but charge for tailored and more sophisticated services in order to be financially sustainable on the long term.

The relevance of mobile phones in African people's lives has also been recognised by Google which announced that it will need to tailor its products to work better on mobile phones – if it wants to make real headway in penetrating markets in Africa.
(from:
- http://www.wizzit.co.za;
- http://www.balancingact-africa.com/news/back/balancing-act_339.html
- http://www.tradenet.net
- http://www.balancingact-africa.com/news/back/balancing-act_341.html)

3. Enabling environments for private investment: regional and national ICT policy and regulatory frameworks are essential.

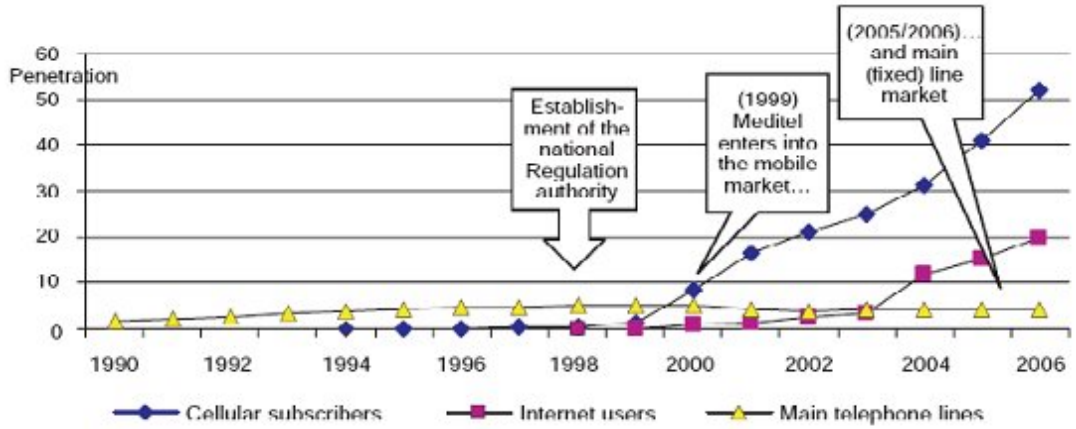
34. National policy is a key factor in the effective development and use of ICT, and an increasing number of **African governments have begun to adapt their national regulatory frameworks** to help foster the use of ICT. The primary objective of regulatory processes is to ensure transparency and openness while establishing a level playing field which limits the abuse of market power. They also promote and strengthen predictability, stability and consistency for telecommunication operators, as well as for investors and end-users. A good ICT regulatory framework is neither arbitrary nor unnecessarily intrusive. In order to achieve these objectives, independent regulatory authorities play a central role.

35. It is generally accepted that competition in the ICT sector is more efficient for the provision of services than a monopoly. However, with 26 state-owned incumbents in mid-2007, Africa is the continent with the lowest share of private fixed line operators. The largest number of monopolies is found in sub-Saharan Africa, where the majority (51%) of the fixed line markets are under the monopoly of

[29] See http://www.bisharat.net/Documents for a list of documents relating to language policy in Africa.

one operator. In the last mile, lack of a competitive liberalised policy environment and the dominance of state-owned operators in many countries is a major contributor to high prices for access and limited network diffusion. "The lack of competition has meant that telecommunication and Internet costs are among the highest in the world for those who can least afford to pay".[30] Clearly, in these circumstances the scope for ICT to contribute to inclusive, pro-poor growth is highly circumscribed.

Figure 9: Penetration of telecommunication services in Morocco 1990-2006



(from: http://www.itu.int/ITU-D/ict/statistics/material/af_report07.pdf)

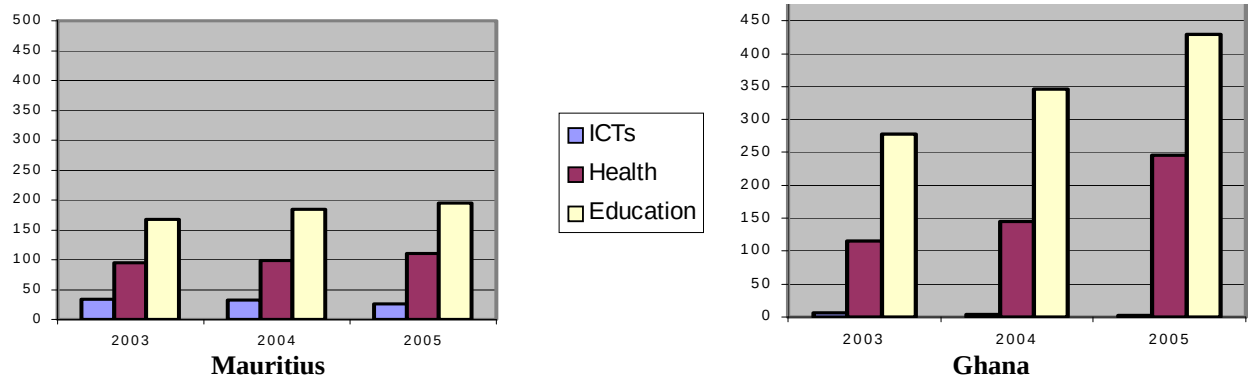
36. Apart from liberalisation of the telecommunication sector**, the wider policy framework is equally influential for the development of ICT**. An inclusive ICT policy addresses a country's vision of its society, includes a situation analysis, defines objectives and targets and describes policy initiatives designed to reach these targets. It furthermore sources funding for implementing these policies and develops tools for assessing progress in reaching objectives. This entails the creation of government bodies to execute national ICT strategies as well as the allocation of funds in the national budget. Although many African countries consider ICT as a priority in their national development plans,[31] the amount of attention given to ICT and its prominence in strategic planning frameworks varies considerably. Furthermore, ICT policies need to be coherent with other government policies, particularly poverty reduction strategies (PRS)[32]. For example, there is little point in investing in ICT access in clinics for telemedicine if insufficient priority is placed on ensuring that clinics are adequately staffed for this purpose. Similarly, if no funds are allocated for implementing ICT strategies, it is difficult to implement them. PRS, which are in place in most African countries, are an important policy framework for identifying core development priorities and are an ideal instrument to integrate ICT into the broader development process.

[30] Song (2007).

[31] See http://www.olis.oecd.org/olis/2003doc.nsf/FREREFCORPLOOK/NT0000098A/$FILE/JT00139973.PDF for a selection of countries.

[32] In 2003 an OECD study found that of 29 analysed poverty reduction strategy papers (PRSPs), only 12 countries included ICT as an independent item in their PRSPs. The remaining countries have not included ICTs as an independent strategic component, although some of their PRSPs mention telecommunications sector development as a factor in development or as a component of the infrastructure for economic growth. See: OECD 2003

Figure 10: Comparing national ICT budgets with other sectors: Mauritius and Ghana



Mauritius

2005 budget:
ICT 1.89%, health 8.3%, education 14.58%

Ghana

2005 budget:
ICT 0.07%, health 6.86%, education 12.02%

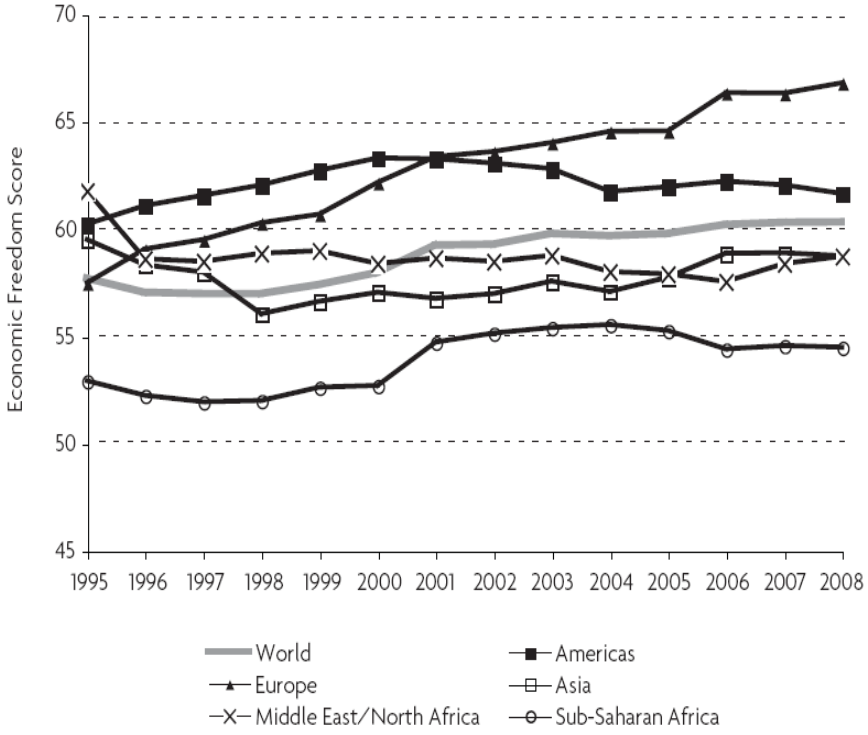
(national budgets in million US$)
(from: http://www.uneca.org/codi/codi4/ICT/Day1-April25/AssefaBahta.ppt)

37. At the same time, **ICT policy is not only the government's responsibility.** Inputs from other stakeholders are also important:

- For civil society, access to information for all and civil liberties are high on the agenda. In this respect the Nigerian parliament's approval of a harmonised freedom of information bill is a positive example. Once signed into law by the President, however, it will only be the fourth national law on freedom of information[33] in Africa.

- Private sector actors will be keen to ensure issues such as hospitable investment conditions, the protection of intellectual property rights, transparency of regulation, and protection of privacy and personal data have been addressed. In this respect Africa is lagging behind as illustrated by the World Economic Freedom Index below.

Figure 11: Economic freedom 1995-2008, world average compared to different regions



(from: http://www.heritage.org/research/features/index/chapters/pdf/index2008_execsum.pdf)

[33] The other three countries with such a policy in place being South Africa, Uganda and Angola.

ICT policy frameworks are best developed in collaboration with key national stakeholders from all relevant government departments, as well as civil society and the private sector. Communication ministries and regulators often lack the capacity to address the needs of the poor, as they are too preoccupied by dealing with private sector entities and telecommunication operators. Furthermore, in many circumstances they are marginal players in national development strategies.

Box 4: Elements of appropriate community radio legislation

Insufficient legislation in general, and very high licensing fees in particular, are key constraints for community radio stations. Appropriate community radio legislation includes: (1) a legal framework providing a three-tier system for broadcasting: public, commercial, and community radio; (2) government support and policies that clearly recognise and promote the special role of non-profit community broadcasting for, by and about the community, including them in their own communication strategy and allocating funds accordingly; (3) open and participatory decision-making processes for ensuring a fair allocation of the frequency spectrum for broadcasting uses;. (4) scope for community radio to have recourse to commercial advertising.

(from: http://www.gersterconsulting.ch/docs/Synthesis_report.pdf)

38. Under the UNECA African Information Society Initiative (AISI) initiative, **many national, sectoral and regional policy-making efforts have produced tangible results**: 35 African countries now have an ICT policy in place, 11 are in the process of elaborating one and only in seven countries is the process not yet launched. Nevertheless, only three countries have actually adopted their ICT policies and begun implementation.[34,35] While the existence of ICT policies *per se* can be seen as progress, the quality and utility of these policies has not been fully evaluated. In a large sense, regional integration will be increasingly important for ICT development given the limited market size and differing investment and regulatory frameworks that characterise a number of African countries. [36]

Box 5: Cyber Island Mauritius

Mauritius' development vision identified early-on the importance of building an information economy (including ICT development) in ensuring that it could develop into a modern nation and to enhance its competitiveness in the global market place. Reform in the telecommunication sector began in 1997 with analytical work and extensive consultations. Recent top-level commitment and specific funding for ICT projects such e-government and e-education has generated a new impulse to strengthening Mauritius' emerging knowledge economy. A key step towards the realisation of its goal has been Mauritius' decision to connect to the Southern Africa Far East fibre optic submarine cable, as this significantly enhanced its connectivity. Today, 90% of the population have access to the Internet, and 89% of Mauritian households have fixed line telephone access. Other factors which determined the country's supportive ICT environment include: stable politics, follow-through in ensuring regulations were implemented and liberalisation of the ICT sector. In the international context, its bilingual environment is another asset. Overall, Mauritius has achieved tremendous progress in ICT development thanks to a common vision and a supportive public policy framework.

(from: http://www.itu.int/ITU-D/ict/cs/mauritius/material/CS_MUS.pdf and http://www.novatech2007.org/downloads/country_profiles/Mauritius_Country_Profile.pdf)

[34] Burundi, Gambia, Swaziland.

[35] For a more detailed list on the national strategies as of 2002 see: http://unpan1.un.org/intradoc/groups/public/documents/un/unpan012179.pdf.

[36] The following regional strategies have been developed: e-government strategy (EAC); Regional ICT Strategy (SADC); ICT Strategy – COMESA; ICT Strategy for Central Africa (CEMAC and CEEAC); Harmonized regional legal framework for ICT and Regional Cyber Security Strategy (ECOWAS); e-trade (UMA). Consult Annex A for the Acronyms.

IV African and International Commitments and Performance Delivery

39. A number of declarations and commitments have been agreed by the international community in an effort to reduce the digital divide, particularly in Africa. Chief among these are the two UN Summits on the Information Society (WSIS), certain provisions of the G8 Africa Action Plan and the NEPAD Founding Statement. Nevertheless, the language of most of these commitments is quite broad, reflecting the wide range of issues connected with ICT development and its effective use. Efforts to deliver on concrete commitments have been mixed: Africa has taken a leadership role in this regard through its NEPAD ICT initiatives. At the international level, the UNECA has played an important role in promoting policy dialogue and co-ordination. Multi-stakeholder and private sector commitments – which are important given their facilitative role in furthering ICT development – are beginning to emerge and should be taken into account.

International community

40. In the **Millennium Declaration** of 2000 the international community resolved to ensure that the benefits of new technologies, especially ICT, are available to all.[37]

41. The 2003 **World Summit of the Information Society (WSIS)** sought to establish the foundations for an information society for all. The international community committed itself "to turning this digital divide into a digital opportunity for all, particularly for those who risk being left behind and being further marginalized."[38] Additional commitments included special efforts to empower young people and women. This broad commitment was reaffirmed during the 2005 WSIS in Tunis, where the focus was "to put Geneva's Plan of Action into motion as well as to find solutions and reach agreements in the fields of Internet governance, financing mechanisms, and follow-up and implementation of the Geneva and Tunis documents."[39] The general feeling is that the Internet Governance Forum has been a success so far, though some key internet governance issues remain contentious. On financial mechanism very limited progress has been registered.

42. The **G8** addressed ICT through both the establishment of the DOT Force[40] and in specific elements of its Africa Action Plan.[41] The DOT Force had a positive impact by setting a standard with respect to introducing a multi-stakeholder approach in ICT activities and by initiating a number of effective and continuing programmes in Africa[42]. At the same time, progress reports regarding implementation of the Africa Action Plan are more disappointing: they signal "significant additional funding"[43] by the G8 for basic education, but limited concrete contributions to ICT activities. In recent years ICT issues and concomitant commitments have not figured in the G8's agenda.[44]

Africa

43. The **African Union** identified the right to access to information and freedom of expression as fundamental principles underpinning its landmark 2002 "Declaration on Democracy, Political, Economic and Corporate Governance". Specifically, African governments agreed to "…ensure responsi-

[37] http://www.un.org/millennium/declaration/ares552e.pdf, para. 20.
[38] http://www.itu.int/dms_pub/itu-s/md/03/wsis/doc/S03-WSIS-DOC-0004!!PDF-E.pdf, para 10.
[39] http://www.itu.int/wsis/basic/about.html.
[40] The DOT Force was created by the Okinawa Charter on Information Society in 2000, see http://www.mofa.go.jp/policy/economy/summit/2000/charter.html, para. 18-19.
[41] http://www.g8.utoronto.ca/summit/2001genoa/africa.html.
[42] Many of them are still operational, others had a lasting impact. They are: ADEN, Twinning Promotion and Facilitation Through ICT, CAR Project, CATIA Project, Telecentre Infomediary/HelpDesk, Health InterNetwork. See Digital Opportunity Task Force 2002 for more information on these projects.
[43] http://www.g8.gc.ca/AFRIQUE-01june-en.asp, para 28.
[44] The DOT Force's mandate was limited from its inception, its agenda was taken up by other bodies, namely the UN ICT Task Force and later by GAID and the Internet Governance Forum.

ble free expression, inclusive of the freedom of the press." These two principals are central as well to the "Declaration of Principles on Freedom of Expression in Africa" as it was adopted by the African Commission for Human and Peoples' Rights in 2002. The declaration commits the States Parties to the African Charter on Human and Peoples' Rights to "make every effort to give practical effect" to a number of principles, including the following: i) to guarantee of freedom of expression; ii) to encourage a diverse, private broadcasting sector while transforming government-controlled broadcasters into public service broadcasters; and iii) to have independent telecommunications regulation.

44. The **NEPAD** Founding Statement[45] situates ICT within the field of infrastructure, which is one of its six identified sectoral priorities for the development of Africa.[46] Nevertheless, ICT has been identified as one of four fast-track priority sectors in the implementation of the NEPAD programme. The NEPAD programme has established a special task force, the NEPAD e-Africa Commission, to coordinate its core ICT initiatives:

- NBIN In its first phase, ministers responsible for ICT from Eastern and Southern African countries have endorsed the US$2 billion UhuruNet submarine cable project for the region. A particularly important contribution of NEPAD in this context is pursuing an open access model, which means that anyone can join in as an investor in the project, which will be operated on a cost-recovery rather than a for-profit basis.

- e-Schools This initiative, which aims to provide Internet access in African schools, is backed up by a commitment of US$15 million from the private sector for the demonstration phase of the project. Of the 16 countries that have been invited to participate, nine countries[47] have so far begun their involvement with the project.

While progress has been achieved with these initiatives, implementation has proceeded at a slower-than-anticipated pace, not least because communication and co-ordination among partners in these multi-country, multi-stakeholder and continental initiatives has proven to be challenging.

45. Among the international institutions working to foster ICT development in Africa, the UN-ECA has taken a leadership role. Much of **UNECA**'s work is co-ordinated and implemented in the framework of AISI, which focuses on the following issues:

- Policies and plans at all levels: Through AISI 35 national ICT policies have been developed. Furthermore, sectoral initiatives in the fields of e-trade and e-health are on-going.

- Networking and partnership: PICTA, the Partnership for ICT in Africa, focuses on partnership and networking and is an informal group of donors and executing agencies where information and experiences are exchanged.

- Capacity-building: Targeting policy makers, civil society and the private sector, UNECA organises workshops and trainings as well as numerous events on various topics related to the information society.

[45] http://www.nepad.org/2005/files/documents/inbrief.pdf, para 104-108.
[46] The following objectives are identified: To double teledensity to two lines per 100 people by 2005, with an adequate level of access for households; To lower the cost and improve reliability of service; To achieve e-readiness for all countries in Africa; To develop and produce a pool of ICT-proficient youth and students from which Africa can draw trainee ICT engineers, programmers and software developers; To develop local-content software, based especially on Africa's cultural legacy; para 107.
[47] Egypt, Ghana, Lesotho, Kenya, Mali, Mauritius, Rwanda, South Africa and Uganda. Other countries planning to participate in the first phase of the project are Algeria, Burkina Faso, Cameroon, Gabon, and Nigeria.

UNECA has also worked with national governments and regional economic communities (RECs) to develop the African Regional Action Plan on the Knowledge Economy (ARAPKE)[48] ARAPKE builds on the Accra Commitments for Tunis[49] and identifies specific action lines for key areas[50].

Box 6: The most recent significant commitment: Connect Africa Initiative

Launched in October 2007, the Connect Africa Initiative aims to mobilise resources to bridge gaps in ICT infrastructure across Africa. It was organized by the ITU, the African Union, the World Bank Group and GAID, in partnership with the African Development Bank, the African Telecommunication Union, UNECA and the Global Digital Solidarity Fund. The launch resulted in investment commitments of over US$55 billion from private and public sector stakeholders, to be spent over the next five years, in support of the five goals[51] adopted by the Summit.

(from: http://www.itu.int/ITU-D/connect/africa/2007/index.html)

V Challenges to be addressed

46. Efforts to promote ICT development and expand effective access in Africa have met with limited success to date. Progress in addressing key bottlenecks – infrastructure, access and the enabling environment – will be determinant in ensuring the digital divide is bridged, and that ICT can play a supportive role in Africa's economic, social and political development.

1. Inadequate and unevenly distributed infrastructure

47. The primary obstacle in making use of ICT for economic growth or poverty reduction for many is the absence or limited scope of existing ICT infrastructure, particularly in rural areas. Basic ICT infrastructure is concentrated in a few countries and in urban settings. For most of Africa's rural population, ICT are physically out of reach. Where ICT infrastructure is in place, its use is often constrained due to inadequate supportive infrastructure, in particular electricity and, to a lesser extent, transport systems.

48. Africa's available ICT infrastructure is not fully utilised due to its low physical and technological capacity (as is the case for Internet bandwidth) and due to gaps in interconnectivity, both at regional and international levels. This means in practice that much of Africa's Internet and telephone communication is routed via networks and technologies located in North America or Europe, resulting in substantially higher costs for the end user than in other regions of the world.

49. While there are numerous initiatives to address the lack of infrastructure, many of them are moving forward slowly and/or lagging behind schedule. Implementation is hindered by a lack of long-term commitment, available investment capital and capacity and an absence of sustained support from implementing parties.

[48] UNECA 2005.
[49] See http://www.uneca.org/aisi/docs/AccracommittmentsEN.pdf. While the document refers to Commitments in the title, it does not actually make any, but remains at the levels of recommendations.
[50] The identified key areas are: enabling environment, infrastructure and acess, e-strategies and policies, e-local, information society indicators, capacity building, research and development, digital solidarity, internet governance, women and the information society, parliamentarians, youth, cities and local authorities, media, harnessing the digital diaspora, African languages, persons with disability, resource mobilisation and partnership (UNECA 2005 p. 10-12).
[51] For the five goals see: http://www.itu.int/ITU-D/connect/africa/2007/goals.html.

2. Inadequate capacity and affordability hinder access

50. The main challenge to make effective use of the benefits offered by ICT is absent or inadequate capacities at several levels, in particular

- on the individual level as regards literacy levels and ICT skills;
- at the institutional level as regards capacities for effective deployment and maintenance of ICT infrastructure, for the creation of relevant content and applications, as well as for regulation. This requires a mix of interventions in technical, legal, economic and socio-cultural issues.

51. For many media there are only limited applications which are relevant to the needs and capacities of poor people. Banking services or market information communicated via mobile phones have proven that poor people can benefit from ICT if the applications meet their needs and can be accessed by them. An important aspect of relevant applications is the provision of locally relevant information in local languages. African languages are seriously under-represented on the Internet and software applications in African languages are only slowly developing.

52. Affordability and public access, which are of fundamental importance especially for rural Africa, are challenged by issues of financial sustainability. A lack of a competition keeps prices for ICT services unattractively high. Local radio stations have difficulties paying qualified staff and high licensing fees. Telecentres cannot always cover their costs from the income generated by their clients.

3. Deficiencies in the regulatory and wider policy environment reduce potential benefits

53. One of the most important limiting factors to affordable and efficient ICT in sub-Saharan Africa is often ineffective regulation combined with the large share of the market being held by monopolies or duopolies, which results in ineffective competition, high prices and limited investment from the private sector. The dominance of monopolies together with the lack of independent telecommunication sector regulators which are able to encourage effective competition in the sector are two key challenges in ICT policies. The rationale for establishing independent regulatory institutions is based on ensuring non-discriminatory treatment of all players in the liberalized market. The UN Task Force on Financing ICT stated: "The introduction and strengthening of independent, neutral sector regulation has helped to reinforce investor confidence and market performance, while enhancing consumer benefits."[52]

Box 7: Independent regulation: The case of India

Since the Telecom Regulatory Authority of India started to move to competition in 2003, there has been an unparalleled growth in teledensity, a strong trend to lower tariffs, and to increased geographical coverage. "Our experience in telecom sector broke all the myths and we realized that a level playing field and competition are the only answers for growth, investments and sustainability."

(from: http://www.ictregulationtoolkit.org/en/Publication.3336.html)

54. In competing for scarce government financial resources, ICT policies and development priorities are often at odds with one another. In addition, ICT policies are not always integrated into other national processes, namely the budget, general budget support (GBS) and poverty reduction strategies (PRS). Policies with respect to universal access, education, electricity and micro-finance need to be closely interlinked to offer real benefits to the rural population. But also other policy areas, such as taxes, need to integrate ICT concerns (for example the impact that high import taxes on computer equipment have on broad access to computer hardware). Policy incoherence across relevant public policy areas can undermine the outreach and effectiveness of ICT by limiting the extent to which they can be used for low-cost communications and timely information-sharing.

[52] See: http://www.itu.int/wsis/tffm/final-report.pdf.

55. The wider policy environment in many African countries is characterised by unfavourable business conditions as well as by the limited circulation of information. Difficulties with respect to information access not only hamper private sector stakeholders, it also hinders transparency, accountability and participation from the bottom, with a negative impact on governance in general. Improved governance to give the poor a voice is essential to stimulate private investment and technological change for poverty reducing and sustainable economic growth.

56. Given the small size of many African countries and markets, the lack of a regionally harmonised regulatory environment is a serious hindrance to cheaper ICT services and greater geographical coverage. New challenges for regulation are emerging in the wake of technological developments, including trends towards converging telecommunications and broadcasting.

Box 8: The catalyst: CRASA

CRASA, known previously as TRASA, is one of a number of regional associations of independent national communications regulators in Africa – the change in name reflects an increased diversity: from telecommunications to communications. It sees itself as "providing a platform for regulators to exchange ideas, views and experiences in all aspects of regulation of the information and communications sector" and serves as facilitator for regional harmonisation in the SADC region. One of the central functions of TRASA is to make recommendations on policy guidelines. Furthermore, CRASA focuses on capacity building of its members, which are authorities from 13 different countries. With the Nokia Siemens Networks, it also has an associate member from the private sector.

(from: http://www.crasa.org)

57. **The use of ICTs as a tool for economic growth and poverty reduction is a multidimensional challenge**. It is therefore not sufficient to address it only in an economic or technical context. It also requires political, educational, cultural, scientific, legal, regulatory and financial attention. A multi-thematic perspective appears to be the best way forward and this is also reflected in the forthcoming events, listed below, where further action could be initiated to address Africa's ICT challenges, mobilise support, deepen dialogue and collaboration and identify solutions.

Date	Title	Place	Link
April 16-18	Infopoverty World Conference "Low Cost-Smart technologies to fight poverty and save the planet"	New York	http://www.infopoverty.net
April 20-25	UNCTAD XII	Accra	http://www.unctadxii.org/en
April 21-23	ICT Best Practices Forum 2008	Burkina Faso	http://www.ictbestpractices.net
April 28-30	EU-Africa Business Summit	Hamburg	http://www.europeafricabusinesssummit.org
May 7-9	IST Africa	Windhoek	http://www.ist-africa.org/Conference2008
May 12-15	ITU Telcom Africa	Cairo	http://www.itu.int/AFRICA2008
May 13-30	Cluster of WSIS related events	Geneva	http://www.itu.int/wsis/implementation/cluster.asp?year=2008&month=0&type='alf'&subtype=0
May 14-15	Annual Meeting of the African Development Bank	Maputo	http://www.afdb.org/portal/page?_pageid=473,26740393&_dad=portal&_schema=PORTAL (no direct reference to ICT on agenda)
May 18-22	World Congress on Information and Technology	Kuala Lumpur	http://www.wcit2008.org

Date	Title	Place	Link
May 28-30	TICAD IV	Tokyo	http://www.mofa.go.jp/region/africa/ticad/ticad4/index.html
May 28-30	3rd International Conference on ICT for Development, Education and Training	Accra	http://www.elearning-africa.com
May 29-30	Regional ITU and WTSA Preparatory Meeting "Bridging the ICT standardization gap in developing countries"	Accra	http://www.itu.int/ITU-T/wtsa-08/prepmeet/index.html#Africa
July 7-9	G8 Summit	Hokkaido Toyako	http://www.mofa.go.jp/policy/economy/summit/2008
October 21-30	World Telecommunication Standardization Assembly (WTSA-08)	Johannesburg	http://www.itu.int/ITU-T/wtsa-08/
November 2-7	ICANN Meeting 33	to be decided?	http://www.icann.org/general/calendar
December	EU-Africa Summit	Portugal	
?	World Conference on Digital Solidarity and its Financing	Lyon	
?	African Development Forum VI	?	

VI Recommendations[53]

58. A **common vision of the key role ICT plays in ensuring inclusive, globally competitive and knowledge-based economies and societies** which has been set out in the 2003 and 2005 WSIS resolutions and is shared by African leaders and their development partners alike. The following recommendations are derived from this shared view of how ICT can play a supportive role in promoting economic growth, poverty reduction and achievement of the Millennium Development Goals (MDGs).

59. **Sustained political commitment to ensure ICT-friendly regulation and increased investment is a pre-requisite for effective growth and poverty reduction**. Strong political impetus is crucial when it comes to ensuring open, liberalised and effectively regulated ICT markets. On the donors' side, sustained political commitment needs to be maintained, even where ICT activities are mainstreamed successfully into development activities.

60. **Securing adequate financial support and multi-stakeholder partnerships for ICT development and diffusion.** Scarce public funds need to be complemented by maximum mobilisation of private investment, including from the African Diaspora. This underlines the importance of ensuring that public policy creates a welcoming enabling environment for private initiative and risk-taking. ICT licensing arrangements should support access by underserved regions and SMEs. ICT-related multi-stakeholder partnerships, which encourage co-operation across a wide range of resource providers, can boost access by the poor and the SME sector to ICT services and opportunities, with positive impacts on growth and poverty reduction. In the words of UNECA: "Multi-stakeholder networking and partnerships have been widely accepted as a means towards more effective and impactful development in Africa, and are central to ECA's vision for an African renaissance".[54] Private capital will follow improved infrastructure, broader access, and a supportive enabling environment.

[53] Many of the following recommendations are not unique to the field of ICT. Some of them have been made in past APF background papers, including as regards the improvement of economic governance and the investment climate and the development of infrastructure. This underlines the fact that ICT are a cross-cutting, multi-dimensional policy area thatneeds to be addressed from all perspectives. Investment in ICT alone will not permit leapfrogging, and some of the benefits will take time to materialise.

[54] See: http://www.uneca.org/disd/events/2006/rwanda-workshop/content/Stakeholders%20Networking%20and%20Partnerships%20-%20Thierry%20Amoussougbo%20-%20EN.ppt.

1. Developing regional and rural infrastructure

61. Addressing the availability, operation and maintenance of basic infrastructure (ICT, electricity, transport) beyond borders is a core requirement to boost economic growth.

African countries should:

- Mobilise funding and investment and implement the necessary legal frameworks to advance NEPAD's broadband initiative.
- Design mechanisms and policies which ensure adequate infrastructure for universal access, i.e. foster private sector investment which also extends to underserved areas.
- Ensure regional coordination in planning new infrastructure as well as when operating existing infrastructure.
- Those countries which have not yet done so need to establish IXPs.

International partners should:

- Support the NEPAD-led broadband project with financial resources as well as with capacity building.
- Support regional bodies such as RECs and regulatory associations as well as national governments by building their capacities in managing challenging, large-scale and long-term projects involving numerous partners.
- Increase financial support for infrastructure – in particular ICT – and target countries and regions which are significantly underserved.
- Support access to financial resources such as microcredit and venture capital for SMEs to take advantage of business opportunities.

2. Strengthening capacities and providing relevant content

62. ICT access for the masses requires adequate individual and institutional capacities, enhanced relevance via appropriate local content, affordable end-user prices, and ready physical access to ICT.

African countries should:

- Encourage and promote the creation of applications (based on open source approaches to facilitate sharing) which are i) relevant to subsistence farmers, health workers and teachers, ii) available in local languages and iii) work on locally available media (i.e. mobile phones).
- Ensure regulation permits companies to offer services such as banking through mobile phones.
- Facilitate public access by supporting telecentres financially (such as through Universal Service Funds) for their provision of public services and by developing radio legislation which is adequate for both local commercial and local community radio.
- More fully utilise ICT potential and opportunities in the education sector.

International partners should:

- Include training/capacity building components in all ICT activities, particularly infrastructure, in order to ensure that established infrastructure is used and maintained efficiently.
- Support capacity building efforts in view of developing locally relevant content as well as applications in local languages (such as the open source software translation project translate.org.za[55]).
- Invest in community access such as telecentres or local radio stations in order to ensure both access for all and the creation of locally relevant content.

[55] See http://www.translate.org.za.

- Sustain a high commitment to the education sector[56] and foster independent research and think tanks, such as the African Economic Research Consortium[57].
- Provide platforms for the exchange of experiences and material which can be used by local institutions (such as the Simbani News Agency[58] or the platform of oneworld radio[59]

3. Improving regulatory and governance policies and their implementation

63. A conducive environment in terms of improved overall governance, a level playing field for (potential) competitors, and targeted pro-poor ICT-policies are essential for ensuring ICT has a strong impact on economic growth and poverty reduction.

African countries should:

- Ensure effective competition to lower end-user prices and establish independent regulatory mechanisms.
- Improve and ensure coherence among national policies by mainstreaming ICT into political processes, particularly in poverty reduction strategies.
- Actively take up ICT and promote e-government applications in order to increase effective administration, transparency and public participation. Open source solutions should be considered.
- Improve information-sharing within the country, including freedom of expression and support for consumer awareness groups.
- In countries which have one, continue to implement national ICT policies: in other countries, start elaborating one, ensuring broad-based participation.

International partners should:

- Support independent regulators through the exchange of experience.
- Promote good governance, including freedom of expression.
- Provide platforms for the exchange of experience in order to strengthen regional cooperation

[56] For example support for initiatives such as tuXlabs, see http://www.tuxlabs.org.za.
[57] See http://www.aercafrica.org.
[58] See http://simbani.amarc.org.
[59] See http://radio.oneworld.net.

VII Annexes

Annex A Acronyms

3G	Third-Generation (mobile phone technology)
AISI	African Information Society Initiative
ARAPKE	African Regional Action Plan on the Knowledge Economy
CEEAC	Communauté économique des états de l'Afrique central (Economic Community of Central African States)
CEMAC	Communauté économique et monétaire de l'Afrique Centrale (Economic and Monetary Community of Central Africa)
COMESA	Common Market for Eastern and Southern Africa
CRASA	Communications Regulators' Association of Southern Africa
DOT	Digital Opportunity Task Force
DRC	Democratic Republic of the Congo
EAC	East African Community
ECOWAS	Economic Community Of West African States
FDI	Foreign Direct Investment
GAID	Global Alliance for ICT and Development
Gbps	Gigabits per second (one billion bits per second)
GBS	General Budget Support
GDP	Gross Domestic Product
GPS	Global Positioning System
ICANN	Internet Corporation for Assigned Names and Numbers
ICT	Information and Communication Technologies
ITU	International Telecommunication Union
IXP	Internet Exchange Points (exchanges traffic between different local networks)
Mbps	Megabits Per Second (unit for measurement of electronic data traffic)
MDG	Millennium Development Goals
NBIN	NEPAD Broadband ICT Network
NEPAD	New Partnership for Africa's Development
NGO(s)	Non-governmental Organisation(s)
OECD	Organisation for Economic Co-operation and Development
PC	Personal Computer
PICTA	Partnership for Information and Communication Technologies in Africa
PRS	Poverty Reduction Strategy
REC	Regional Economic Community
SADC	Southern African Development Community
SME(s)	Small and Medium Enterprise(s)
SMS	Short Message System
Tbps	Terabit per second (one thousand gigabits per second)
TICAD	Tokyo International Conference on African Development
UMA	Union of Maghreb States
UN	United Nations
UNCTAD	UN Conference on Trade and Development
UNECA	UN Economic Commission for Africa
WSIS	World Summit of the Information Society
WTSA	World Telecommunication Standardization Assembly

Annex B Literature

African Development Forum (1999). A strategy to accelerate African development through the increased use of Information and Communication Technologies. Available at: <http://www.uneca.org/ADF99/adf99strategy.htm> [9 March 2008].

BBC World Service Trust (2006). *African Media Development Initiative.* [On-line]. Available at: <http://www.bbc.co.uk/worldservice/trust/specials/1552_trust_amdi/index.shtml> [9 March 2008].

Cohen, Noam. African Languages Grow as a Presence on Wikipedia. *New York Times*. 26 August 2006.

Danofsky, Samuel (2005). *Open Access for Africa. Challenges, Recommendations and Examples*. New York: United Nations ICT Task Force.

Digital Opportunity Task Force (2002). *Report Card. Digital Opportunities for All*. [On-line]. Available at: <http://www.g8.gc.ca/2002Kananaskis/pdf/General-Report_e.pdf> [25 February 2008].

Etta, Florence; Parvyn-Wamahiu, Sheila. (Ed.) (2003). Information and communication technologies for development in Africa. Ottawa and Dakar: IDRC.

EU (undated). *Financing ICT for development: the EU approach.* [On-line]. Available at: <http://www.dfid.gov.uk/pubs/files/eu-financ-wsis-english.pdf> [25 February 2005].

EU (undated). *The Africa-EU Strategic Partnership. A Joint Africa-EU Strategy. [On-line]. Available at:* <http://www.eu2007.pt/NR/rdonlyres/D449546C-BF42-4CB3-B566-407591845C43/0/071206jsapenlogos_formatado.pdf> [25 February 2008].

Farrell, Glenn; Isaacs, Shafika; Trucano, Michael (2007). *The NEPAD e-Schools Demonstration Project: A Work in Progress. A Public Report.* Vancouver, Washington: Commonwealth of Learning, infoDev.

Gerster, Richard; Zimmermann, Sonja (2003). *Building Digital Opportunities (BDO) Programme: ICTs and Poverty Reduction in Sub-Saharan Africa. A Learning Study*. [On-line]. Available at: <http://www.gersterconsulting.ch/docs/Synthesis_report.pdf> [22 February 2008].

Gerster, Richard; Zimmermann, Sonja (2005). *Up-scaling Pro-Poor ICT-Policies and Practices. A review of experience with emphasis on low income countries in Asia and Africa*. [On-line]. Available at: <http://www.gersterconsulting.ch/docs/Upscaling_ProPoor_ICTPolicies_Practices.pdf> [22 February 2008].

Gillwald, Alison; Lisham, Adam (2007):*The Political Economy of ICT Policy Making in Africa: Historical Contexts of Regulatory Frameworks, Policy Performance, Research Questions and Methodological Issues.* [On-line]. Available at: <http://www.aercafrica.org/documents/ICT_project_working_papers/Adam_Gillwald_The_Political_EconomyofICTPolicyMaking.pdf> [17 March 2008].

Girard, Bruce (2003). *The One to Watch. Radio, New ICTs and Interactivity*. Rome: FAO.

Indjikian, Rouben; Siegel, Donald S. (2005). The Impact of Investment in IT on Economic Performance: Implications for Developing Countries. *World Development*, 33, 5, 681–700.

infoDev; Alcatel (2005). Promoting Private Sector Investment and Innovation To Address the Information and Communication Needs Of the Poor in Sub-Saharan Africa. Washington DC: World Bank.

ITU (2007a): *Connect Africa Summit - Background Paper – Session Three. Extending Rural ICT Access in Africa*. [On-line]. Available at: <http://www.itu.int/ITU-D/connect/africa/2007/summit/pdf/s3-backgrounder.pdf> [17 March 2008].

ITU (2007b). *Connect Africa Summit - Outcomes Report.* [On-line]. Available at: <http://www.itu.int/ITU-D/connect/africa/2007/finalreport.pdf> [28 February 2008].

Jensen, Mike (2003). *ICTs in Africa: A status report. Chapter 6 of the 2002-2003 global competitiveness report*. [On-line]. Available at: <http://www.weforum.org/pdf/Global_Competitiveness_Reports/Reports/GITR_2002_2003/ICT_Africa.pdf> [15 February 2008].

Jensen, Mike (2006). *Open acces - Lowering the costs of international bandwith in Africa.* APC Issue Papers. [On-line]. Available at: < http://rights.apc.org/documents/open_access_EN.pdf> [15 February 2008].

Kasekende, Louis; Shetty, Sudhir (2008). *Africa's Economic Prospect and Challenges.* [On-line]. Available at: <http://www.sarpn.org.za/documents/d0003008/Africa_ecn_prospect_challenges_Feb2008.pdf> [7 March 2008].

Livraghi, Giancarlo (2007): Data on internet activity worldwide (hostcount). [On-line]. Available at: <http://www.gandalf.it/data/data1.htm> [17 March 2008].

Moodley, Sagren (2002). *Competing in the Digital Economy? The Dynamics and Impacts of B2B E-commerce on the South African Manufacturing Sector*. WIDER Discussion Paper. Helsinki: UNU/WIDER.

Mukhebi, Adrian (2004). *Kenya Agricultural Commodity Exchange Limited (KACE). Reaching the Poor in Rural Kenya with Market Information: A Case Study of a Market Information System.* A Paper for presentation at the CTA Seminar 2004 on the Role of Information Tools in Food Security. [On-line]. Available at: <http://www.cta.int/ctaseminar2004/MukhebiKACE.pdf> [21 February 2008].

NEPAD (2007). Learning from capacity and consensus-building activities to establish the NEPAD ICT Broadband Infrastructure Network.]. Available at: <http://www.eafricacommission.org/docs/Lessons_Learnt_Report_NEPAD_1.pdf> [7 March 2008].

Ó Siochrú, Seán; Girard, Bruce (2005). *Community-based Networks and Innovative Technologies: New models to serve and empower the poor. A Report for UNDP*. Making ICT Work for the Poor. New York: UNDP.

OECD (2003): *Integrating Information and Communication Technologies in Development Programmes.* Policy Brief, November 2003. Available at: <http://www.oecd.org/dataoecd/2/57/20611917.pdf> [17 March 2008].

OECD/DAC (2005). *Good Practice Paper on ICTs for Economic Growth and Poverty Reduction.* Paris: OECD.

OECD (2007). *Promoting pro-poor growth. Policy guidance for donors*. DAC guidelines and reference series. Paris: OECD.

Okpaku, Joseph O. (Ed.) (2003). *Information and Communications Technologies for African Development. An Assessment of Progress and the Challenges Ahead*. New York: United Nations ICT Task Force.

Paltridge, Sam (2008). *Global Opportunities for Internet Access Developments.* [On-line]. Paris: OECD/Directorate for Science, Technology and Industry/Development Coopration Directorate.

Panos (2007). *Mapping declarations and statements on communication for development.* London: Panos.

Panos Technology in emerging economies: Of Internet cafés and power cuts. Emerging economies are better at adopting new technologies than at putting them into widespread use. *The Economist.* 7 February 2008.

Peyer, Chantal (2005). *WSIS and the struggle to bridge the digital divide: A lack of commitments.* [On-line]. Available at: <http://www.twnside.org.sg/title2/resurgence/184/cover2.doc> [20 February 2008].

Research ICT Africa network (2006). *Towards an African e-Index. SME e-access and usage across 14 African countries*. [On-line]. Available at: <http://www.researchictafrica.net/images/upload/SME_book-Web.pdf> [20 February 2008].

Sarrocco, Claudia (2002). *Elements and Principles of the Information Society.* [On-line]. Available at: <http://www.itu.int/osg/spu/wsis-themes/Access/BackgroundPaper/IS%20Principles.doc> [3 March 2008].

Song, Steve (2007). *The Future of Access*. [On-line]. Available at: <http://www.gkpcms.com/beyondtunis/index.cfm/elementid/146/The-Future-of-Access> [9 March 2008].

Souter, David (2004). *ICT and Economic Growth in Developing Countries.* [On-line]. Available at: <http://unpan1.un.org/intradoc/groups/public/documents/APCITY/UNPAN022641.pdf> [21 February 2008].

Southwood, Russel West African licence tendering processes – a case to answer. *Balancing Act News Update.*

Southwood, Russel Kenya's economy held back by lack of online payment authorisation systems. *Balancing Act News Update.* 8 July 2007.

Southwood, Russel African countries' ICT policy– going from the blah, blah, blah cycle to getting something done. *Balancing Act News Update.* 1 February 2008.

Statement from participants in the "Civil Society Workshop on Open Access to ICT infrastructure in Africa". [On-line]. Available at: <http://www.apc.org/english/news/index.shtml?x=5262405> [22 February 2008].

Stecklow, Steve; Bandler, James A Little Laptop With Big Ambitions. *Wall Street Journal.* 24 November 2007.

The African News Source (2008). *The Kigali Protocol for the NEPAD ICT Network Comes into Force*. [On-line]. Available at: <http://appablog.wordpress.com/2008/02/19/the-kigali-protocol-for-the-nepad-ict-network-comes-into-force/> [7 March 2008].

UNCTAD (2006). *Information economy report 2006. The development perspective*. New York and Geneva: United Nations.

UNCTAD (2007). *Information Economy Report 2007-2008. Science and technology for development: the new paradigm of ICT*. New York and Geneva: United Nations.

UNCTAD (2007). *The Least Developed Countries Report 2007. Knowledge, Technical Learning and Innovation for Development*. The least developed countries report. New York and Geneva: United Nations.

UNECA (2003). *SCAN-ICT: Indicators of Information and Communications Technologies. The Impact of Information and Communications Technology at the country level*. [On-line]. Available at: <http://www.uneca.org/aisi/docs/ScanICT.pdf> [16 February 2008].

UNECA (2005). *African Regional Action Plan of the Knowledge Economy. ARAPKE. A Framework for Action.* [On-line]. Available at: <http://www.uneca.org/aisi/arapke/content/ARAPKE%20-%20A%20Framework%20for%20Action%20-%20EN.pdf> [9 March 2008].

UNECA (2006). *Report of the Forum on ICTs, Trade and Economic Growth. Addis Abeba, 14-16 March 2006. [On-line]. Available at:* <http://www.uneca.org/e-trade/> [16 February 2008].

UNESCO Institute for Statistics. (Ed.) (2005). *Measuring Linguistic Diversity on the Internet.* Paris: UNESCO.

Wild, Kate *(1999). From ISAD to ADF: the expansion of interest in ICTs in Africa from 1996 to 1999. The African Computing & Telecommunications Summit, Cambridge, 25 - 27 August, 1999. [On-line]. Available at:* <http://www.uneca.org/adf99/kate.htm> [1 March 2008].

Wilson, Ernest J.; Wong, Kelvin (2003). African information revolution: a balance sheet. *Telecommunications Policy*, 27, 155–177.

World Bank (2001). *Attacking poverty. Published for the World Bank.* World development report. Oxford: Oxford University Press.

World Bank (2008). *Africa Development Indicators 2007.* Washington DC: World Bank.

World Bank (2008). *Global Economic Prospects. Technology diffusion in the developing world*. Global economic prospects. Washington DC: World Bank.

World Bank Group (2006). *2006 Information and communications for development. Global trends and policies*. Washington DC: World Bank.

Zhen-Wei Qiang, Christine; Pitt, Alexander; Ayers, Seth (2004). *Contribution of Information and Communication Technologies to Growth.* World Bank working paper. Washington DC: World Bank.

Annex C ICT Data for African Countries

	Access, supply side			Access, demand side					Quality	
	Telephone subscribers (per 1,000 people)			Households with own telephone			Average delay for firm in obtaining a mainline phone connection (days)	Internet users (per 1,000 people)	Duration of phone outages (hours)	Telephone faults (per 100 mainlines)
	Total 2000–05[a]	Mainline telephone 2000–05[a]	Mobile telephone 2000–05[a]	Total (% of households) 2000–05[a]	Urban (% of urban households) 2000–05[a]	Rural (% of rural households) 2000–05[a]	2000–05[a]	2005	2000–05[a]	2000–05[a]
SUB-SAHARAN AFRICA	**149.7**	**17.0**	**124.5**					**29.0**		
Angola	74.5	5.9	68.6	..	..	..	..	11.0	..	..
Benin	97.9	9.0	88.9	4.4	10.3	1.0	159.7	50.4	6.1	5.8
Botswana	541.2	74.8	466.3	..	..	..	..	34.0	..	..
Burkina Faso	50.6	7.4	43.3	3.7	19.8	0.3	..	4.9	..	18.4
Burundi	17.6	3.8	20.3	..	..	..	..	5.3	..	6.0
Cameroon	102.0	6.2	138.4	2.3	4.8	0.0	..	15.3	..	..
Cape Verde	302.2	140.9	161.2	..	..	..	..	49.3	..	33.0
Central African Republic	27.2	2.5	24.8	..	..	..	..	2.7	..	56.0
Chad	14.4	1.4	21.5	0.9	4.3	0.0	..	4.1	..	60.8
Comoros	55.0	28.2	26.8	..	..	..	..	33.3	..	55.8
Congo, Dem. Rep.	47.9	0.2	47.7	..	..	..	..	2.4	..	..
Congo, Rep.	102.4	3.6	122.5	1.3	2.2	0.2	..	12.5	..	..
Côte d'Ivoire	108.1	14.4	120.6	..	..	..	..	11.0	..	81.0
Djibouti	69.1	13.6	55.5	..	..	..	..	12.6	..	136.0
Equatorial Guinea	212.3	19.9	192.4	..	..	..	..	13.9	..	..
Eritrea	17.8	8.6	9.2	..	..	..	256.3	15.9	..	54.3
Ethiopia	14.3	8.6	5.8	4.4	35.3	0.2	154.9	2.3	..	100.0
Gabon	497.8	28.3	469.6	15.3	20.0	1.8	..	48.4	..	45.0
Gambia, The	192.1	29.0	163.1	..	..	..	..	..	..	..
Ghana	143.1	14.5	128.5	7.5	17.0	0.7	..	18.1	..	5.6
Guinea	19.7	2.8	20.1	7.2	23.7	0.3	..	5.3	..	1.6
Guinea-Bissau	7.9	7.1	42.2	..	..	..	..	19.5	..	70.5
Kenya	142.9	8.2	134.6	12.3	37.4	6.0	99.4	32.4	27.2	130.4
Lesotho	163.3	26.7	136.5	16.9	45.8	10.6	73.8	..	26.4	75.0
Liberia	2.8	2.2	48.7	..	..	..	..	..	..	..
Madagascar	30.7	3.6	27.1	4.9	11.9	3.0	63.8	5.4	21.3	59.6
Malawi	41.3	8.0	33.3	6.0	26.7	2.1	107.7	4.1	28.0	..
Mali	69.9	5.5	64.3	3.5	12.8	0.1	70.6	4.4	10.3	177.6
Mauritania	256.3	13.4	243.0	3.6	8.0	0.2	..	6.5	..	..
Mauritius	862.5	288.8	573.7	..	..	..	22.6	..	5.3	41.5
Mozambique	40.0	3.6	61.6	2.1	6.1	0.1	..	..	..	66.0
Namibia	206.1	63.7	243.7	17.4	43.5	4.5	..	..	..	40.4
Niger	23.2	1.7	21.5	..	..	..	60.1	2.1	..	104.6
Nigeria	150.6	9.3	141.3	5.1	11.7	1.8	..	38.0	..	20.6
Rwanda	18.2	2.6	32.1	1.1	6.1	0.2	..	5.5	..	..
São Tomé and Principe	96.7	46.1	76.7	..	..	..	..	..	..	..
Senegal	171.3	22.9	148.4	19.8	35.9	7.5	12.0	46.3	11.4	17.3
Seychelles	928.0	253.3	674.6	..	..	..	..	248.5	..	6.0
Sierra Leone	18.6	4.9	22.1	..	..	..	..	..	..	..
Somalia	72.9	12.2	60.8	..	..	..	..	10.9	..	..
South Africa	825.1	100.9	724.3	..	..	..	8.2	108.8	3.9	48.2
Sudan	68.9	18.5	50.4	..	..	..	..	77.3	..	..
Swaziland	207.8	31.0	176.8	..	..	..	..	..	..	70.0
Tanzania	55.6	3.9	51.6	9.7	31.4	3.0	23.1	..	10.8	24.0
Togo	81.7	9.5	72.2	..	..	..	..	48.8	..	6.2
Uganda	56.4	3.5	52.9	3.1	18.5	0.9	33.4	17.4	16.9	..
Zambia	89.2	8.1	81.1	4.3	11.2	0.6	88.6	..	11.7	108.0
Zimbabwe	78.9	25.2	53.7	..	..	..	..	76.9	..	7.7
NORTH AFRICA	**414.3**	**105.8**	**308.4**					**84.8**		
Algeria	494.1	78.3	415.8	..	..	..	174.3	58.4	..	0.8
Egypt, Arab Rep.	324.5	140.4	184.1	..	..	..	136.9	67.5	..	0.1
Libya	155.8	133.2	40.9	..	..	..	..	..	..	..
Morocco	455.2	44.5	410.8	..	..	..	4.4	152.5	15.0	25.0
Tunisia	691.8	125.4	566.4	..	..	..	..	95.1	..	30.0

a. Data are for the most recent year available during the period specified.

Pricing				Financing				
				Annual investment ($ millions)				
Price basket for Internet ($ per month) 2005	Cost of a 3 minute local call during peak hours ($) 2000–05[a]	Cost of 3 minute cellular local call during off-peak hours ($) 2000–05[a]	Cost of 3 minute call to US during peak hours ($) 2000–05[a]	Telephone service 2000–05[a]	Mobile communication 2000–05[a]	Telecommunications 2000–05[a]	Committed nominal investment in telecommunication projects with private participation ($ millions) 2000–05[a]	Average annual ODA disbursements for communication ($ millions) 2000–05
				85.4	**20.3**	**21.7**	**..**	**17.2**
34.3	0.1	0.1	3.2	..	..	..	119.8	0.6
20.7	0.1	0.7	4.8	..	3.6	26.4	5.8	0.3
21.3	0.1	0.1	2.9	..	..	19.0	19.0	0.3
90.6	0.2	0.7	1.1	..	23.2	61.2	5.3	0.3
52.0	0.1	0.5	2.5	..	..	..	6.0	0.1
44.6	0.1	0.9	..	..	..	111.2	29.0	0.2
40.3	0.1	0.8	6.1	12.4	1.6	8.9	..	1.0
147.8	0.6	0.6	2.0	..	..	0.1	..	0.2
86.3	0.1	..	9.1	..	..	..	1.4	0.2
37.9	0.2	0.7	..	..	..	4.2	..	0.1
93.2	..	..	..	..	..	..	42.0	0.5
84.5	..	..	5.4	..	..	..	7.0	0.0
67.1	0.3	0.6	2.2	32.2	83.2	95.2	20.0	0.1
41.1	..	..	4.7	..	..	..	..	..
32.7	..	..	..	..	..	..	..	..
28.6	0.0	0.3	3.6	..	17.2	17.4	40.0	0.1
23.3	0.0	0.1	4.0	14.5	5.2	35.3	..	0.4
40.1	0.3	0.5	2.8	..	..	53.0	9.0	0.2
17.8	0.0	0.5	1.8	..	..	3.7	6.6	0.0
23.6	0.2	0.1	0.4	..	..	59.4	51.6	0.4
24.7	0.1	0.4	4.6	..	..	0.8	32.6	0.1
75.0	..	0.0	..	..	..	..	0.6	0.7
75.9	0.1	0.4	3.0	..	..	80.5	421.0	1.0
38.6	0.2	0.1	3.3	..	..	7.1	3.0	0.0
..	..	0.0	..	..	..	..	15.8	0.0
45.9	0.2	0.7	0.6	..	..	14.8	12.6	0.2
41.9	0.1	0.4	3.6	..	..	..	0.9	0.4
28.4	0.1	0.8	12.3	..	..	17.7	82.6	2.7
54.3	0.1	0.4	..	..	..	84.7	1.6	0.0
17.5	0.1	0.1	1.6	..	..	29.7	25.7	0.1
32.9	0.1	0.2	1.2	..	..	19.7	14.0	9.7
48.7	0.0	0.4	4.3	..	..	20.5	8.8	0.2
101.8	0.1	0.7	8.8	..	..	..	47.2	0.5
50.4	0.1	0.1	1.5	..	..	386.9	2,312.0	0.5
30.1	0.1	0.4	2.4	..	..	..	33.0	0.0
53.2	0.2	0.0	5.1	..	..	2.2	..	0.4
25.6	0.2	0.6	1.0	..	19.8	106.0	157.0	6.6
31.5	0.2	1.2	3.8	..	..	4.1	14.9	0.0
10.6	0.0	0.4	..	..	..	..	0.3	0.6
..	0.1	0.0	..	..	..	..	1.4	0.2
63.2	0.2	1.2	0.8	..	360.3	871.2	1,183.5	7.4
65.5	0.1	0.3	39.2	..	..	128.5	152.0	0.2
51.7	0.1	0.9	3.0	..	..	27.6	3.0	0.0
93.6	0.2	0.2	3.2	..	..	9.4	88.5	0.9
44.7	0.1	0.6	4.0	26.4	..	30.0	..	0.2
99.6	0.2	0.5	3.2	..	..	68.0	77.0	1.3
68.4	0.1	0.4	1.4	..	36.9	42.5	74.0	0.7
24.6	0.1	1.2	4.4	..	20.3	21.7	13.0	0.7
				..	..	..	..	..
9.4	..	..	2.1	..	..	..	1,272.0	..
5.0	..	..	1.5	..	..	..	1,827.0	..
22.0	..	..	..	..	..	..	..	..
26.8	..	..	1.7	..	..	..	626.0	..
12.4	..	..	2.3	..	..	..	106.0	..

(From: World Bank (2007): Africa Development Indicators 2007. Table 7.3, p. 73-74)).