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Extending Rural ICT Access in Africa

Background Paper – Session Three

1. BACKGROUND

As the recent substantial growth in mobile services has shown, there is tremendous potential for ICT-driven social and economic development throughout Africa. Building on this progress, as never before, African countries have the opportunity to empower marginalized populations and communities with ICTs to reduce poverty and thereby improve access to health, education and employment opportunities, particularly in rural and remote areas. Ironically, it is these very people that remain unconnected from the opportunities offered by ICTs and the modern economy. ITU estimates that some 55 per cent of the total rural population of Sub-Saharan Africa remains without access to ICTs.

While connectivity is an essential foundation, accessibility and affordability of local access to ICTs are also important. For those who cannot readily afford telephone services, innovative “shared access” models provide opportunities to reach the most marginalized people. Examples include community access tele-centres and the very successful Village Phone model pioneered by Nobel Prize winning Professor Muhammad Yunus and his team at Grameen Bank, now being adopted in other countries throughout Africa and elsewhere.

Despite multiple efforts, many African countries have yet to achieve the widespread access to ICTs needed to spur progress towards meeting the WSIS connectivity and UN Millennium Development Goals by 2015. The *Connect Africa Summit* aims to address this challenge by bringing together partners that are both committed and able to play a key role in extending access to ICTs across currently un-served or underserved rural and remote parts of Africa.

Technological change, innovation among local communities and growing private investment are opening up new possibilities for extending access to infrastructure and services to remote and poor communities. An appropriate mix of policies, regulations, investments, incentives and partnerships is needed to expand access in affordable and sustainable ways, which not only maximize public and private investment, but also empower a range of local actors to contribute innovatively to sustainable solutions.

2. PURPOSE OF THIS PAPER

This paper aims to:

- Highlight the urgent need to extend access to ICT networks and affordable services in rural and remote areas;
- Identify the key constraints for the deployment and upgrade of access networks; and
- Propose follow-up actions to be undertaken after the Summit.

3. SUMMARY OF THE EXISTING SITUATION

Africa is the fastest-growing mobile market in the world, having leaped from 16 million mobile subscribers in 2000 to 198 million in 2006. This strong growth is expected to continue, with a projected 278 million subscribers in 2007. However, this growth has taken place mainly in urban areas. Despite high growth rates in mobile access, Africa continues to lag other regions in overall access to ICTs, particularly in rural and remote areas.

The following table based on ITU statistics demonstrates the size of the gap between the African continent and other regions of the world in 2006.

Table 1: Access to ICTs for different regions of the world, 2006

| | Fixed Telephone per 100 inhabitants | Mobile Subscribers per 100 inhabitants | Internet Users per 100 inhabitants | Personal Computers (PCs) per 100 ¹ inhabitants | Broadband Subscribers per 1000 inhabitants |
|-----------------|-------------------------------------|--|------------------------------------|---|--|
| Central Africa | 0.27 | 9.74 | 0.80 | 0.77 | 0.03 |
| Eastern Africa | 0.87 | 8.17 | 2.37 | 1.09 | 0.14 |
| Northern Africa | 8.98 | 36.82 | 10.17 | 4.17 | 4.22 |
| Southern Africa | 9.43 | 66.49 | 9.87 | 8.24 | 3.09 |
| Western Africa | 1.19 | 19.24 | 4.16 | 0.95 | 0.19 |
| Africa | 3.10 | 20.97 | 4.76 | 2.17 | 1.18 |
| Americas | 32.42 | 61.95 | 37.02 | 35.35 | 89.3 |
| Asia | 15.80 | 29.28 | 11.57 | 6.42 | 27.1 |
| Europe | 39.70 | 94.29 | 35.73 | 30.69 | 110.2 |
| Oceania | 36.55 | 72.57 | 57.16 | 50.46 | 136.9 |
| World | 19.38 | 40.91 | 17.39 | 13.42 | 43.0 |

Source: ITU World Telecommunications/ICT Indicators Database 2007.

Further gap analysis² leads to the following conclusions:

- With about 14% of the world's population, Africa had some 221 million telephone subscribers in 2006 (cellular = 198m and fixed = 28m), compared with the global total of 3.9 billion subscribers in 2006.
- The largest town in each country, with between 12-22% of total population, accounted for up to 77% of total national main telephone lines in 2004;

¹ Data refers to 2005.

² Data refers to 2005, unless otherwise noted.

- Total annual subscription cost for the fixed telecommunication network is about 10.6% of the Gross Domestic Product (GDP) per capita in Africa, compared to the 4.2% world average and 1% in Europe;
- The total price for 100 minutes of mobile cellular use is about 77% of Gross National Income (GNI) per capita in Africa, compared to the world average of 30.0% and 6.3% in Europe;
- The total price for monthly access to the Internet is about 170% of GNI per capita in Africa, compared to the world average of 62%. The cost of 20 hours' Internet usage per month is US\$47.09, compared with US\$14.95 in the USA;
- Africa accounts for 4% of global investments in this sector (estimated at US\$8 billion in 2005); and
- As much as 70% of inter-African traffic still transits through outside the continent.

4. CHALLENGES AND OPPORTUNITIES

The major challenges which explain why the above-mentioned gaps continue to exist are related to policy and regulatory reforms to accelerate investment in non-profitable areas and to build ICT skills and capacity. They include:

- Inefficient use of or non-existing Universal Service Funds (USFs);
- Different and sometimes inadequate policies with respect to rural and remote areas;
- High costs of interconnectivity;
- Lack of access to electricity and phone-charging facilities;
- Limited affordability, reducing demand for services;
- High risks for investment projects, in particular in rural and remote areas;
- High operational and maintenance costs, significantly exceeding possible revenues;
- Lack of self-sustainability of access network infrastructure projects / poor infrastructure including challenges of the geographical terrain.
- Lack of competition in access networks;
- Constraints on innovation at the local level;
- Low literacy levels; and
- Limited technical and management competence in some areas.

The liberalization of the telecommunication sector has paved the way for private sector investment in the development of ICTs and has led to rapid growth in mobile communication services in densely populated areas.

The same connectivity is not as widely available in rural and remote areas, however, where an estimated two-thirds of all Africans live. World Bank estimates project that some 57 per cent of the total population in twenty-four Sub-Saharan African countries was covered by a mobile signal in 2007³. ITU estimates that 45 per cent of Sub-Saharan villages were covered by a signal in 2006 — although only 7 per cent of rural households are estimated to subscribe to mobile services⁴. Less than 3 per cent of Sub-Saharan villages had fixed line service, while under 0.5 per cent of Sub-Saharan African villages had a public Internet facility⁵. To help overcome some of these challenges, the RASCOM project will provide connectivity via satellite. In accordance with their commitment on RASCOM Terminals for Rural Access in Africa, about 80,000 Rural Terminals will cover 80,000 villages, providing coverage to an estimated population of some 80 million rural Africans.

To stimulate rural ICT network development, governments can establish Universal Service Funds and/or develop other Universal Service/Access Strategies to provide financial incentives to local operators to close the access gap in rural and remote areas, or apply other financing mechanisms such as Global Digital Solidarity Fund (DSF). According to the GSM Association Universal Access

3 See Winrock International and Pyramid Research (2007): "Costing ICT infrastructure needs for Africa", a Report to the World Bank.

4 Paper on Village Connectivity, "Measuring Village ICT in Sub-Saharan Africa", ITU, 2007.

5 Paper on Village Connectivity, "Measuring Village ICT in Sub-Saharan Africa", ITU, 2007.

Report, within a group of 92 developing and emerging economies around the world, 32 countries have set up USF and a further 57 have plans to do so⁶. Some 15 countries have collected more than US\$6 billion; however, only US\$1.62 billion has been redistributed. The remaining 73 per cent has not been yet dispersed for infrastructure development initiatives. New approaches are needed to allocate these funds in a cost-effective, catalytic and competitive manner, with the aim of stimulating local operators to extend their networks and services to currently un-served populations and as a means of complementing and promoting private investment for network expansion.

Promising Technologies for the Extension of Access Networks Provision of the access network is not an easy task, particularly in rural and remote areas. The deployment of connectivity in such environments is generally costly and time-consuming, especially if appropriate technologies have not been used. Therefore, in each situation, careful study is needed to determine the target group, affordability and suitable technology to meet local need requirements. Depending on the geographic and economic conditions, as well as population density, various technologies may be deployed in different areas in order to fill the gaps. These include wired solutions (DSL, VDSL, ADSL, ADSL2, cable, fibre etc...) or wireless communication systems (IMT-2000, broadband wireless access, satellite, etc...). The rapid growth of wireless technologies, coupled with innovative local business models and delivery solutions, offer exciting new possibilities for extending access to rural areas with low marginal costs associated with additional consumers. Furthermore, the growth of Internet Protocol (IP)-based networks make possible creative technical, financial and business models for public private partnerships, separating the financing and ownership of a transport network from the services that are provided over the network.

5. CONCLUSIONS AND RECOMMENDATIONS

To achieve the goal of connecting all African villages to broadband ICT services by 2012 and implement shared access initiatives such as community tele-centres and village phones, the following next steps are proposed:

Once affordability and access gaps are determined, identify appropriate financing mechanisms for deployment of access networks (i.e. Universal Service Funds, directed budgetary funds, tax incentives, Public Private Partnerships, target policy/incentives) and other innovative financing mechanisms;

- Ensure that USFs are available for the extension of access networks in remote and rural areas;
- Study the most effective and affordable access technological solutions and innovative business models, as well as explore and implement strategies for lowering overall communication costs;
- Adopt flexible and technology-neutral radio-spectrum policies and ensure that sufficient and suitable frequency bands are allocated to wireless broadband services;
- Issue a sufficient number of licenses to ensure competitive markets in the provision of wireless broadband services; and
- Develop and implement targeted human and institutional capacity development programs that will foster widespread deployment and utilization of ICTs among the less privileged communities.

⁶ "Universal Access – how mobile can bring communications to all", GSM Association, available at <http://www.gsmworld.com/universalaccess/index.shtml>.