

# **ICT and Broadband Connections: The Key that Unlocks Rural Development in Africa?**

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## ***The Importance of Rural Development in Africa***

As Africa increases its use of information and communications technologies, it is likely that the continent's urban centers will benefit first from these developments. The infusion of ICT resources and high-speed Internet connections will support the creation of media production houses in Cairo, business incubators in Dakar, call centers in Nairobi, and technology parks in Johannesburg. But what of the rural areas, where the agricultural sector provides a livelihood for 70-85% of the labor force of most African countries and where most of Africa's poverty exists? Will ICT and broadband connections unlock development in the rural areas?

In the face of ICT policies that support technology development in urban areas, Nobel laureate Norman Borlaug reminds us that no nation has been able to bring about economic development and substantially reduce poverty without first sharply increasing productivity in its agricultural sector. The dramatic increases in economic development we are witnessing today in China and India were built on the success of the Green Revolution that took place in these countries between 1970 and 1995<sup>1</sup>. This revolution has yet to materialize in Africa, where there has actually been a decline in per-person food production over the last two decades.

## ***ICT and Rural Development***

Can ICT contribute to the Green Revolution and rural development in Africa? To explore this possibility, I visited seven rural community telecenters in East Africa and interviewed managers, staff members, and users. These are among the stories that farmers in these rural communities told me of how information contributed directly to their economic and social improvement:

- A Ugandan farmer near the northern shore of Lake Victoria previously produced ten 100 kg sacks of maize per acre on his farm. When he learned how to use manure as fertilizer, he increased the productivity of his farm to twenty sacks per acre.

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<sup>1</sup> N. Borlaug, "The Green Revolution Revisited and the Road Ahead", special 30<sup>th</sup> Anniversary Lecture, The Norwegian Nobel Institute, Oslo, September 8, 2000. N. Borlaug & C. Dowsell, "The Unfinished Green Revolution—The Future Role of Science and Technology in Feeding the Developing World", paper presented at the Seeds of Opportunity Conference, School of Oriental and African Studies, London, May 31, 2001.

- Another Ugandan maize farmer used to broadcast his seeds in the spring planting. When he learned to plant in straight lines and space his seeds, his productivity went from two bags per acre to ten bags or more.
- In a rural market in northern Tanzania, a buyer offered a maize farmer TSh 2,800 per 100 kg sack. Because he knew the going market price, the farmer refused the offer and was able to get TSh 3,200 per sack. With the 14% difference he was able to purchase sheet metal for a roof on his house.
- Another Tanzanian farmer was offered TSh 2,500 per 20 kg basket of her chick peas. Because she knew the market price she was able to negotiate TSh 4,000 per basket. With the 60% difference, she was able to pay her daughters' high school fees.

Each of these villagers was a user of a community telecenter. Computers were available in all these centers. But bicycles, books, cell phones, radios, video tapes, and the Internet were among the technologies that villagers used to acquire information and improve their lives.

Information, communication, and technology each play a unique role in development. These distinct roles are often lost with the terms are rolled up into the common acronym "ICT". ICT is often thought of only as technology, and too often narrowly conceived as computers; the roles of information and communication are overlooked. Yet information and its communication are critical to ending poverty and launching the Green Revolution in Africa. *Information* is the raw intellectual material that supports development. *Communication* is the social, interpersonal process by which information is transferred, exchanged, and disseminated. *Technology* is the means to extend human capability and support these processes.

"Information is power" reads the slogan of the Family Alliance for Development and Cooperation, a telecenter in Tanzania. Most of the centers I visited were very responsive to the informational needs of their communities. For example, the Nakaseke Community Telecenter in Uganda did a formal survey of community informational needs. Staff members of the Nabweru Community Telecenter, also in Uganda, regularly attend community meetings and they have a user's committee that helps them assess the community's informational needs. The Cromabu Telecenter in Tanzania has user support groups that regularly assess the needs of particular clientele—women, out-of-school youth, farmers, and others. The informational needs of these communities often related to farm practice and productivity: information on seeds, planting, fertilizing, weeding, and harvesting, as well as animal breeding, feeding, and treatment of diseases. Current information on market prices was also highly valued. But there were needs beyond farming, as well, related to water harvesting, energy efficiency, health, nutrition, culture, local news, and even national sports.

Before needed information can make a difference in the lives of rural Africans it must first get to the people who need it and in a form that makes it useful. However, most of

the world's information is not available to Africans and when it is available, it often in the wrong language or requires literacy skills that people do not have. The most common form of information exchange in rural African villages is word of mouth. However, farmers in Uganda reported difficulties related to word-of-mouth communication, among them the unreliability of oral information, due to informational drift as it passes through the community, misunderstanding of the original message, or intentional misinformation in service of competitive advantage. The community telecenter in the communities I visited served as an information conduit and the communication hub of the community by collecting, organizing, storing, retrieving, and disseminating needed information, often transforming it into the local language.

Technology can be the key to getting the right information to the right people in the right form. But technologies vary in their capabilities and their costs. Some of the telecenters I visited had fairly sophisticated technology that included copy machines, video cameras and tape decks, computers, and even internet access. But in some cases, communication was accomplished with very simple technology. Because capital is so scarce in Africa, technologies must be selected for the greatest information and communication value per cost. For example, the Cromabu Telecenter used community volunteers and a small fleet of bicycles to gather price information on various crops from neighboring markets. The center then collated this information and distributed it to farmers in the community, again using bicycles. Three of the telecenters on my itinerary had community radio stations: Nakaseke, Nabweru, and Sengerema. These were low-cost, low-power transmitters that nonetheless had enough range to service a large number of people within 10-15 km from the telecenter. Twelve to eighteen hours of programming each day was created by local volunteers who often used computers, CD-ROM libraries, and Internet searchers as information sources. Their programming ranged from topics on agricultural practices and market prices to health, education, and women's concerns and was delivered in the local language. Thus through the use of radio, Internet-based information was disseminated at a very low cost to a much larger audience than would otherwise have access to the Internet.

### ***Conclusions and Policy Implications***

Prior to the Green Revolution in Asia, half of the population did not get enough to eat; today this percentage has fallen to one-fifth. In 1975, six out of ten Asians lived in poverty; by 1993, it was only two out of ten East Asians and four out of ten South Asians. There are many reasons that the Green Revolution has not taken root in Africa that include the lack of paved roads, under developed commodity markets, the absence of credit systems, and under-investment in agricultural technologies specific to the African context. Nonetheless, the farmers I interviewed in East Africa were beginning to experience the benefits of increased farm productivity and improved market information, as a result of their use of ICTs.

Increased investments in Afro-centered agricultural technologies, extension services, and rural highways are essential to launch the Green Revolution in Africa. But ICT and the Internet can also be an important part of the rural development package, under the right policy conditions. First, the priority must be on information over technology.

Information important to rural communities must be generated in digital form and in local languages—information on improved crop inputs, weeding, and harvesting; animal breeding, feeding, and treatment of diseases; as well as information on water harvesting, energy efficiency, health, and nutrition.

ICT policies must support information access in rural areas. For the lack of an undersea cable to East Africa, Internet access will likely require the rural subsidies for satellite links, extended by Wi-MAX networks. Radio frequency license fees should be reduced or eliminated for community stations.

ICT policies are also needed that support the development community telecenters. This requires not only funds for facilities and equipment but for knowledgeable staff who can mediate between information available on the World Wide Web and local information needs and who can provide local users with ICT skills.

Finally, there is a great need for human capital investment in rural areas. Illiteracy rates are high in rural communities and adult education programs must be increased if information services are to contribute to improved farm practices and productivity. Investments are also needed in rural primary and secondary education. Beyond universal attendance, the quality of educational services must be improved so that students leave school with the skills they need to contribute to social and economic development.

Technology alone will not change conditions in Africa, nor will information by itself. Change will come in Africa when information is communicated in a usable form to the people that need it, at a time and in a form that is needed, and when people have the knowledge to apply this information. All of these factors are essential. Information, communication, technology, and education must be viewed as a system in which the components work together to support development.