

RURAL CONNECTIVITY

<http://ictupdate.cta.int>

ICT Update is a bimonthly bulletin focusing on information and communication technologies and their applications for agricultural and rural development in ACP countries

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Issue 10, March 2003

Editorial**The status of rural connectivity**

Five years ago, expectations regarding new opportunities offered by the Internet to developing countries were high. Privatization of national telecoms and a glut of (international) bandwidth would drive the costs of Internet use down to almost zero. Mega satellite projects would solve all rural connectivity problems in developing countries by creating an 'Internet-in-the-sky', instantly lifting farmers from their economic isolation. Most of these optimistic predictions did not materialize because the underlying causes of the lack of rural connectivity have been difficult to tackle—they are of an institutional rather than technical nature. Many early efforts to bring the Internet to rural communities turned out to be expensive fiascos due to their 'techno-push' approach and insufficient focus on the actual information needs of farmers. However, the past five years do not represent 'lost Internet time'. Valuable lessons have been learned, and many practical initiatives to improve rural connectivity have been taken up.

In this edition of *ICT Update*, Gaston Zongo takes stock of lessons learned in the many multipurpose community telecentre projects that have been implemented in Africa. David Leeming describes how People First Network has ingeniously applied high-frequency radio technology to overcome the seemingly insoluble connectivity problems of Pacific Island states. Tobias Eigen shows that email offers underutilized potential for rural areas that face poor connectivity conditions. Michiel Hegener focuses on recent, promising developments in satellite technology that could bring wireless connectivity within affordable reach of any development organization or small enterprise in rural areas. Mike Jensen looks into the future and outlines the rural connectivity challenges that lie ahead in the next five years. Ingo Mackintosh has compiled a comprehensive list of annotated web resources on promising projects and informative articles, representing the current state of rural connectivity in ACP countries. If you face rural connectivity problems yourself, the column on the right explains how you can access these web resources by email.

ICT Update

ICT Update is a bimonthly printed bulletin, a web magazine (<http://ictupdate.cta.int>), and an accompanying email newsletter. Each issue focuses on a specific theme relevant to ICTs for agricultural and rural development in African, Caribbean and Pacific (ACP) countries, and features four commissioned articles. The printed bulletin also contains a selection of relevant links and projects and a 'Question and Answer' section, taken from the website. Readers are invited to contribute to the site by adding links to online resources on a particular theme. Simply log on to the *ICT Update* website, and click on one of the 'submit' options in the right-hand column.

The next issue of *ICT Update* will be available on 1 May 2003.

TechTip**Web-to-email: Web pages via email**

For many people in ACP countries, particularly those living in remote rural areas, non-existent or poor and expensive Internet connections are a daily reality. But that doesn't mean you have to go without all the vital information on the World Wide Web. There is a simple but little known solution to common connectivity problems: web-to-email.

Web-to-email is a technology that allows anyone to receive web pages by email. If you are not able to surf the web, but are able to receive email, web-to-email is an effective way to still have access to all the resources on the Internet. And if you do have access to the web, using web-to-email will save you time and money. You don't have to worry about slow connections or per minute dial-up charges trying to download web pages—you just quickly check your email.

You may have wondered why the printed version of *ICT Update* includes the web addresses of all the projects, documents and organizations it mentions. The reason is that we want to promote the use of web-to-email to enable you to retrieve dozens of relevant online files, a minimum investment in terms of time, effort and money.

How does it work?

Web-to-email technology uses servers that fetch documents from the web, and send them to you as email messages, either in plain text or HTML. To use the system, simply send an email message addressed to one of the web-to-email servers listed below. Leave the subject line blank. In the body of the email message, type the web address of the page you want to read.

In the following example, the message is addressed to www4mail@kabissa.org, a web-to-email server run by Kabissa. The page requested is *ICT Update's* homepage, <http://ictupdate.cta.int>. Your email message should look like this:

TO: www4mail@kabissa.org
cc:
bcc:
SUBJECT:

GET <http://ictupdate.cta.int>

Simply replace <http://ictupdate.cta.int> with the address of the web page you want to read.

Web-to-email servers

The email addresses of two of the most popular web-to-email servers, owned by development organizations Kabissa and Bellanet, are listed below. Other server addresses are available from the *ICT Update* website.

www4mail@kabissa.org
www4mail@access.bellanet.org

People First Network: Radio email for the Solomon Islands

David Leeming

Imagine the amazement of farmers who are able to receive technical advice on how to deal with a poultry disease. Or of the residents of remote rural villages who can find out about job opportunities and submit their applications well before the deadline. All thanks to radio email.

When it comes to rural connectivity in the Pacific, one project proves that there is an alternative to solutions that depend on continued government support and donor subsidies. In the Solomon Islands, People First Network (PFnet) is pioneering a communications model based on radio email technology and community ownership.

Focused on facilitating communications, networking and information sharing for rural development and peace building, the project has established a high-frequency (HF) radio email network, a central Internet cafe in the capital Honiara as the revenue-earning base, and a development web portal, www.peoplefirst.net.sb.

The project's strategy is to establish many basic email-only, operator-assisted access sites across the country, and to allow them to evolve into email cafés or even full telecentres in response to community demand. The access sites are managed by village committees, who identify the operators and are involved in the ongoing operations. They work with PFnet to raise awareness of the facility among the entire community, including women, businesses, schools, health workers and farmers. This has created a 'development dynamic' that is now driving the demand in rural communities for more ICTs to facilitate services such as telemedicine, distance education, e-commerce and e-finance.

Technology

The large distances between islands and villages prescribe the use of the HF band for the email stations. HF is long range (thousands of kilometres) and does not rely on the use of repeater stations, which are vulnerable to vandalism arising from disputes associated with customary ownership of land. Each HF station can also

act as a hub, using much cheaper very high frequency (VHF) technology to connect nearby villages. Technical performance is acceptable, with secure data transmission at 2 Kbps and no per-minute charges. The technology is proving very reliable and simple to use – operators are usually able to manage by themselves after only one week's training.

Applications

Using PFnet for popular applications has proven a key success factor. So far, the project has supported rural networking for health clinics, an indigenous business development service, and the reinforcement of traditional agriculture. In 2002, PFnet even conducted trials with the University of the South Pacific to offer formal education over its email system.

By enabling the exchange of daily news between grassroots communities, PFnet is helping to break down the barriers caused by mistrust and misinformation. The project supports the efforts of rural communities to press for constitutional reform, and allows them to lobby for their interests either directly or through the media. All in all, the impact of PFnet on the Solomon Islands has been truly staggering.

People First Network (PFnet) is pioneering a rural communications model based on radio email technology and community ownership.

PFnet was established by the UNDP (Fiji Multi-Country Office) and has received substantial support from local missions of Japan, the Republic of China and the UK, and through EU and AusAid projects. It is an initiative of the Rural Development Volunteers Association (RDVA), and is supported by the Ministry of Provincial Government and Rural Development.

David Leeming is People First Network's technical adviser (email: leeming@pipolfastaem.gov.sb). PFnet Manager Randall Biliki is his local counterpart (email: pfnet@pipolfastaem.gov.sb).

Relevant links

About PFnet includes newsletters, discussion forums and PowerPoint presentations.

www.peoplefirst.net.sb/General/PFnet.htm

The **PFnet Distance Learning project** has set up a computer station, and is utilizing an existing rural email connection to pilot a distance learning facility in a Solomon Islands high school.

www.peoplefirst.net.sb/General/Distance_Learning.htm

The **PFnet Input Paper to the World Summit on the Information Society** (January 2003) offers a detailed analysis of PFNet's objectives, strategy and results.

www.peoplefirst.net.sb/General/PFnet-WSIS-Paper-5-Jan-03.htm

The **Network Startup Resource Centre Guide to Wireless Connectivity** includes links to papers, case studies and websites on wireless connectivity solutions such as HF radio email and packet radio technology.

www.nsrc.org/wireless.html

Radioamateur.org is the main virtual meeting place for French-speaking radio amateurs. It includes equipment reviews and technical documentation. www.radioamateur.org

Schuemperlin AG is a supplier of HF radio modems and messaging software for email over HF, VHF and UHF.

www.schuemperlin.com

Improving rural connectivity: The next five years

Mike Jensen

New telecommunication systems using wireless and satellite technologies have recently become available that will radically reduce the cost of connectivity. They will also make access possible from virtually anywhere on the planet, without the need for traditional cables. Because these systems can use the Internet, which allows you to share your connection with anyone, even small organizations and individuals in rural areas in developing countries can now afford relatively cheap access, especially where there is no existing telecom infrastructure.

Radio transmitters for broadband 'line of sight' connections now cost less than •100. As a result, hundreds of user groups around the world are setting up their own local wireless infrastructure for Internet sharing.

Long-distance links using terrestrial HF radio and Ku-band satellite transmitters now cost only •1000–•2000.

In addition, satellite companies like Hughes, Panamsat, Intelsat and Ipstar are providing connectivity superior to any dialup system in the developing world for less than •200 per month. When these two systems are combined, connectivity can be affordably brought to remote rural areas via satellite, with the cost of the terrestrial radio connections being shared among users.

Market access

Unfortunately, most developing countries do not yet allow people to set up their own telecom links in this fashion – either through outright prohibition, or by levying unaffordable licence fees. The pace of technological change in this area has been so rapid that most policy makers are unaware of the implications, and still conform to traditional models of telecommunication development in which market access is restricted to a few licensed telecom operators. Consequently, the most important challenge for rural connectivity is no longer technological, but centres on building awareness among national policy makers of these new models of access

provision and the benefits of owner-deployed and owner-financed infrastructure.

Restrictions on the number of licensed operators are usually justified by the need to ensure that the operators are able to generate sufficient income to roll out infrastructure in under-served areas without the funds being siphoned off by too many competitors. However, experience since the breakup of AT&T has shown that the only way to ensure efficient service delivery is to bring self-interest fully into play by opening up markets and using competition to do much of the regulating.

In practical terms, while greater competition and more owner provisioning in the telecom industry may indeed result in some overlap and duplication of resources by the different competitors, the overall operation of the sector is more efficient than when only a few licensed operators have access to the market.

It has long been assumed that provision of rural connectivity in developing countries is unprofitable. This assumption has bolstered the arguments of those who favour limiting market access, and who believe that revenues from the more profitable urban areas are needed to cross-subsidize access in rural areas.

However, the plummeting cost of bandwidth and the increasing value of telecoms links that can carry not only voice calls, but also valuable Internet data and e-commerce transactions, mean that this assumption must be seriously re-examined. When these new dynamics are considered alongside the often underestimated levels of rural wealth (bolstered by remittances from the Diaspora) and the potential of owner-financed, owner-deployed wireless and satellite infrastructure, it is clear that policy makers need to rethink their traditional approaches to achieving rural connectivity.

Most developing countries do not allow people to set up their own telecom links – either through outright prohibition, or by levying unaffordable licence fees.

Mike Jensen is an independent ICT consultant based in South Africa (email: mikej@sn.apc.org).

Relevant links

The **African Internet** by Mike Jensen is a key source on all African connectivity matters: www3.sn.apc.org/africa/. It includes a status report on the Internet in Africa as of July 2002: www3.sn.apc.org/africa/afstat.htm. The French translation is available from www.africanti.org/resultats/documents/afstatfr.htm

The **Africa Computing** website offers detailed connectivity statistics on French-speaking Africa: www.africacomputing.org/

The **Communication Initiative Survey, March 2002** gives a detailed overview of Internet infrastructure and e-governance in

Pacific Island countries. www.comminit.com/ctrends2002/sld-4747.html

Trends in Latin American Networking (TILAN) provides connectivity statistics, analyses, and news articles on the Caribbean region for 2001/2. Countries include Cuba, Jamaica, and the Dominican Republic. <http://lanic.utexas.edu/project/tilan/countries/>

Nua.com is the authoritative online source of information on global Internet demographics and trends. It offers comprehensive Internet surveys and connectivity data for all ACP countries. www.nua.com

Email: A viable alternative to web-based services?

Tobias Eigen

In spite of poor phone connections and electricity supplies, people in poor countries are using the Internet in greater numbers than ever before. It is inspiring to observe the great lengths to which they—and development professionals and civil society activists in particular—will go to get online once they have discovered what the Internet can do for them.

What is remarkable is that many of these people are now using the Internet in much the way as people in rich countries are using it. Why is this remarkable? Because beyond the web there is also email.

A long-time precursor to the web, email is in fact a more appropriate tool for sending and receiving information, especially in poor countries where access to the Internet can be unreliable and expensive. Unlike the web, which requires your presence as you download information to your computer screen, information requested by email can travel at night, when rates are low, and comparatively slowly, yet it still arrives in your mailbox for you to read at leisure.

Although it can indeed be convenient to go on the web to read the latest news from around the world or find a phone number, it is often frustratingly time-consuming and expensive for people in poor countries to search online databases or find and download full-text documents from the web. The reason for this is that content-rich websites on the Internet tend to be created by and for people in rich countries. If they had been designed with poor countries in mind, they would be set up to allow people to use email as the delivery mechanism for information.

Web-to-email

Thankfully, email delivery tools – or web-to-email tools – like [www4mail](http://www4mail.org) go a long way to filling the gap. Organizations such as Bellanet, Kabissa and the University of Trieste offer, as a public service, web access to email users through [www4mail](http://www4mail.org). Thanks to their

services, people in poor countries are able to retrieve web pages using only email (see page 2 for a description).

Marketing problem

Unfortunately, these services are not well utilized. Most requests to Kabissa's [www4mail](http://www4mail.org) server come from Russia and other former Soviet republics – not from our target audience in Africa. Sadly, the majority of resources requested are clearly non-essential in nature. Perhaps most telling of all, subscribers to our *Pambazuka News* social justice newsletter (www.pambazuka.org) are reminded every week of Kabissa's web-to-email service, yet very few [www4mail](http://www4mail.org) requests are recorded. Instead, subscribers click on links and go online directly with their web browser.

This is a marketing problem. As opposed to web-based services, email delivery services are not widely known and are rarely explained in workshops and training materials. An additional problem is that, in their current shape, many (such as [www4mail](http://www4mail.org)) are not particularly easy for non-technical users to adopt, especially in Africa, where the Internet is still relatively new and most people use cybercafes to get online.

To encourage web-oriented people in poor countries to make better use of their precious connection through web-to-email services, it will be necessary to improve the design of existing websites and email newsletters with them in mind. Meanwhile, products like [www4mail](http://www4mail.org) will also need to be made slicker so that they can compete with the glamour of inefficient websites like Yahoo.

A long-time precursor to the web, email is in fact a more appropriate tool for sending and receiving information, yet it remains underutilized.

Tobias Eigen is executive director of Kabissa – Space for Change in Africa (email: info@kabissa.org). Kabissa assists non-profit organizations to use technology to improve the lives of people in Africa. www.kabissa.org

Relevant links

How To Do Just About Anything by Email. This site serves as a comprehensive reference tool showing the email-only user how to make the most of the Internet. www.expita.com/howto1.html#geb

Accessing the Internet by Email FAQ. A series of questions and answers on how to explore the web, to retrieve files from FTP sites, and even to access Usenet newsgroups using email as your only tool. www.faqs.org/faqs/internet-services/access-via-email/

Bellanet offers a guide to the use of web-to-email in French: www.bellanet.org/email-f.htm

A Decision-Maker's Guide to Offering Web-to-Email Service in Your Institution. Prepared by the Bellanet International Secretariat. www4mail.org/bellanet/

PageGetter.com is another provider of free web content via email upon request or subscription. www.pagegetter.com

If you want to know more about [www4mail](http://www4mail.org), the Open Source application that allows you to navigate off-line and search the Internet via email, a user manual is available at www4mail.org/manual/index.html

Satellite: A solution for bridging the digital divide?

Michiel Hegener

Too difficult, too expensive, too far fetched—there have been many objections to satellite as a means to link up small offices, schools, Internet cafes or even individual households to the Internet.

In response to some of these objections, during the mid-1990s dozens of plans were put forward (mainly by satellite builders) to design, build and launch satellites for the specific purpose of bringing cheap and easy connectivity to Internet users in areas without cables.

This applies to most of Africa. Lack of money meant that most of these plans for Internet-by-satellite had to be shelved, and they were replaced by new technologies for end user equipment. Companies such as Armstrong Electronics in Ireland and Hughes Network Systems in the US soon developed systems such as WebSat and DirecWay, which use run-of-the-mill satellites, some of which have been

in orbit for many years. All the innovation resides in the software and hardware on the ground—partly in the large terrestrial stations of the satellite service providers, partly in the equipment on the premises of the end users.

What you get at home is basically a kit consisting of a dish antenna and some hardware, to be linked to a PC. Normally, the dish is only 60 cm in diameter, unless you are near the periphery of the 'footprint' of the satellite that's being used, or in tropical areas with a lot of rainfall. Dishes of up to 1.2 metres in diameter may be needed in such cases. The rest of the hardware consists of either two cards to be plugged into your PC, or two boxes, each the size of an external modem, between the PC and the dish.

So what's so attractive about these new satellite systems? First, their price is falling rapidly. Small satellite links have been available for decades, but they could easily cost between \$10,000 and \$25,000. The current prices of hardware range from \$1,000 to \$2,000.

Second, the systems are 'demand assigned' and you 'pay as you go'. For instance, WebSat—which is available

in West Africa on the PanAmSat 1Rsatellite—has a 64 kilobit/second uplink speed and 400 kilobit/second downlink. In old-fashioned arrangements you would rent that capacity round the clock, even when asleep or on holiday. That made satellite technology hugely expensive. Now providers charge at the end of the month for the megabytes you uploaded and downloaded, although there is usually a minimum charge of, say, \$200 per month.

Third, what you get is an Internet link and, as with ADSL, you are always online because the satellite provides a wireless link to the Internet backbone. Usually, two separate technologies are used for the downlink (Digital Video Broadcasting, DVB) and the uplink (Return Channel via Satellite, RCS), which makes these systems unsuitable for Internet telephony.

Systems like DirecWay, WebSat, Tachyon and others are becoming more popular in Europe and the US, and they are now being expanded towards Africa and other under-served parts of the world. To offer such services in Africa, however, providers will first have to overcome a number of hurdles. For example, a billing system must be in place. Staff will be required on the spot to help install the dish, which must be trained at the satellite very accurately (much more so than a TV dish). If the dish is just one degree out of alignment, the data transfer speeds will drop drastically. Finally, and most importantly, the service providers must hire capacity on a satellite targeting Africa—where the would-be users are—as well as the North, in order to link up those users to the Internet backbone.

The big Internet-by-satellite plans of the mid-1990s have been largely replaced by new, relatively cheap and efficient technologies for end user equipment.

Michiel Hegener is a journalist who frequently writes about Internet developments Africa and satellite communications (email: mh@nrc.nl).

Relevant links

The **Global VSAT Forum** is an association of companies that deliver advanced digital fixed satellite systems and services to consumers and commercial and government enterprises worldwide. Their site includes a lot of useful information for those who want to understand what satellite technology is and how it works: www.gvf.org/gvf/about/index.cfm. Of particular interest is an article entitled 'The VSAT Solution: An Analysis of Demand and Practical Applications for Developing and Transitional Economies', available from www.gvf.org/solutions/index.cfm?fuseaction=unido

Case study: **Intelsat**, an important satellite provider, outlines how satellite-based networks are often the simplest and most economic

solution for quickly implementing communication infrastructures to link rural areas to the rest of the world.

www.gvf.org/members_directory/documents/rural_telephony.pdf

Case study: **GILAT** has supported Telkom South Africa in implementing a 3000-site telephone network to serve tens of thousands of rural customers. More than 1600 satellite sites were successfully deployed in the first two months, perhaps the quickest deployment on record. The project enabled Telkom SA to provide a large number of rural sites – mostly schools and village groceries – with basic telephone services, where none had existed before.

www.gilat.com/About_ProfileAf.asp?Sbj=390

Projects and initiatives

This section lists promising projects and initiatives that are promoting rural connectivity. Additional project descriptions can be accessed through the web magazine at <http://ictupdate.cta.int>. Readers are invited to add projects to this resource of *ICT Update*.

AFRICA

Angola: The **Angolan National Institute of Telecommunications** has started an IP Network Implementation project to connect the country to the Internet. The immediate goal is to build a national backbone structure to sustain the progressive development of a national data network, and to prioritize network initiatives for education, health, research and sustainable development. www.lrv.ufsc.br/IFIP-WG-9.5/Ifip-cd/ifip/5a4.html

Benin: The **Songhai Center** is involved in agricultural training, research, and enhanced production for sustainable livelihoods in six locations. Its community telecentres are based on digital radio and VSAT technologies that make it easy to transfer files, short messages, fax and telephone messages via computer, from one site to another. www.geocities.com/songhaiafrica/en/Index.htm

Guinea: The **HF Radio Email project** enables field personnel in the widely scattered village-towns of Dabola, Kissidougou and Nzerekore to access regular Internet email, directly from their desktops, over distances of hundreds of kilometres through high-frequency (HF) radio wavelengths. www.linuxjournal.com/article.php?sid=6299

Kenya: The **first PDA under •25** is being tested by the fishing communities of Lake Victoria in Kenya. A partnership between the Environmental Liaison Centre International (ELCI) and the PDA's creators, MediaSolv, is seeking to address issues such as over-fishing by offering a medium via which fishermen can learn about better natural resource management practices. The project seeks to combine low-cost technology with packet-switched satellite connectivity that does not rely on existing telecom infrastructure. www.balancingact-africa.com/news/back/balancing-act_124.html

Niger: The **Rural Radio Network (RURANET)**, composed of representatives from civil society, private and public sectors, bilateral and multilateral partners, NGOs and government, is an innovative project to set up 160 solar self-managed rural radio stations. Today, there are 17 broadcasters in operation. Each rural radio station costs only •15,000, including the premises, broadcasting console, antenna, solar panels and other basic equipment, as well as a WorldSpace (www.worldspace.com) digital satellite receiver. Future plans include further applications of solar and digital technology that will address the expressed needs of the rural population. <http://membres.lycos.fr/nigeradio/>

South Africa: The **BushMail Network** offers email communications using HF radio for commercial pioneers who find themselves beyond the reach of a normal telecommunications infrastructure. Users can connect via their radio and radio modem to one of the enterprise's main 'radio Internet' servers in Africa, which may in fact be thousands of kilometres away. From any such server, the mail is then automatically sent to and received from anywhere in the world via the Internet - all within 60 minutes forwarding time. www.bushmail.co.za/index.php

South Africa: The **Council for Scientific and Industrial Research (CSIR)** is a technology research organization that is committed to sustainable development and economic growth. Focusing on new generation connectivity technologies, the CSIR team

undertakes technology research/architecture design and offers evaluation services. www.cids.org.za www.csir.co.za/

Pan-African: Africa Computing is a French-language association that aims to exchange and transfer practical ICT skills throughout Africa. It offers free Internet access, hosting services and courses. www.africacomputing.org/

CARIBBEAN

Dominican Republic: El Limon, a remote mountain village, is a key rural Internet access project in the Dominican Republic. EcoPartners have donated laptop computers to the community, ADESJO (a regional NGO) has contributed a solar power system, and Cornell University students teach basic computer skills. Several residents carried the project on, and were eventually able to install a wireless internet connection. FreeWave 900 MHz digital radios connect Limon to its modem six miles away in Ocoa, via a hilltop repeater station. www.sas.cornell.edu/cresp/ecopartners/comp/NetCur.htm

Pan-Caribbean: FUNREDES is a non-governmental organization dedicated to the dissemination of new information and communication technologies in developing countries, especially in Latin America and the Caribbean. In collaboration with other NGOs, and public and private institutions, it aims to contribute to regional development by supporting networking and connectivity projects. <http://funredes.org/>

ASIA & THE PACIFIC

Pan-Pacific: The PAN-APCC Coconut Information Network provides email and Internet access for member institutions of the Asian and Pacific Coconut Community (APCC), and assists national programmes by providing training for coconut information specialists. Coconut-related information is packaged for publication on the web, and a pilot programme of electronic publishing and online access to the APCC databases is being developed. The project also aims to test email and Internet connectivity with stakeholders (researchers, producers, policy makers, processors, etc.) to determine future needs. www.apcc.org.sg/

India: The N-LOGUE rural connectivity project links village IT kiosks to central nodes using a low-cost wireless infrastructure. The nodes are then linked to the Internet and the phone system. Shared access at the kiosks and shared spectrum at the central node concentrates digital traffic and ensures high levels of usage and low costs. The result is a phone and Internet service at prices villagers can afford, and a business model that looks very robust. www.digitaldividend.org/pdf/nlogue.pdf

India: The Pravara Village IT Project (PRAGATI) aims to connect 100 villages in Ahmednagar with a wireless MAN solution (WMAN). The programme will help the villages to establish local IT centres to disseminate information on government schemes, agricultural market prices, health care, education, agro-processing, etc. The villagers will be able to contact agricultural experts at Krishi Vigyan Kendra (a knowledge centre for farmers) for information on ways to improve agricultural production, and storing and packing their produce. www.networkmagazineindia.com/200209/tech3.shtml

India: The TARAAhat project is bringing the Internet and its benefits directly into the lives of the rural poor in the remotest villages of India by covering all three components of rural connectivity: content, access and fulfilment. Content is provided by the TARAAhat.com portal, a growing repository of information on issues of sustainable development. Access is provided through a network of franchised local enterprises. Information, goods and services are provided by local courier services. www.tarahaat.com/tara/home

Q&A: Multipurpose community telecentres in Africa

Gaston Zongo, former Executive Director of the Acacia Initiative (email: gzongo@sentoo.sn), explains why multipurpose community telecentres (MCTs) have succeeded or failed, and where they are headed.

Can you give a short description of MCTs?

MCTs are shared information and communication facilities for people in rural and isolated areas. They usually offer basic communication services such as telephone, fax, typing, photocopying, printing, training in the use of computers, email and electronic networking.

What is the background to MCTs?

MCTs are key strategic interventions by international donors to help bridge Africa's digital divide. The main programme in this area is a joint initiative co-funded by ITU, IDRC/Acacia and UNESCO, in partnership with local NGOs and the national telecommunication operators.

The countries that have benefited from the programme's pilot phase include Benin, Mali, Mozambique, South Africa, Tanzania and Uganda. Many other international aid agencies have joined the movement, including USAID-Leland, the I-Earn-supported Songhai Centre in Benin, the francophone Multimedia Centres, and the WorldLinks for Development initiative in Zimbabwe.

What is the rationale behind MCTs?

It's a commonly shared vision by researchers that integrating rural development and universal access to ICT tools can empower disadvantaged communities and address sustainable development issues. That's why evaluating the impact of MCTs on the social and economic development of communities is so important. The Evaluation and Learning System for Acacia (ELSA) has been instrumental in this respect, leading to the definition of various indicators and evaluation guidelines, the organization of seminars and workshops, and ongoing online discussions and forums.

What has been the outcome of evaluations so far?

Many pilot MCT projects have failed because of common problems such as illiteracy, language barriers, low incomes, and the lack of or expensive power supplies. Another key problem has been that various projects have focused on the technology and infrastructure rather than on the content. This is not surprising considering the selected areas are usually under-served by national telecommunication networks and require an investment of more than \$500,000 per MCT. That's way above the annual GDP of the MCT's service area — and beyond the management capability of the targeted community.

Also, using a philanthropic rather than market-oriented approach, developers have not paid enough attention to the scalability and cost-

recovery aspects of MCTs. It would have been better to apply the 'village bakery' model, in which investors from African villages build local, scalable bakeries and set a price for the bread that local people can afford. MCTs that have been designed to deliver specific services to a given community, and are operated by the community, have proven to be the most successful. Examples include ENDA-Ecopole's Cyberpop projects, in which community access is designed to help women with their fishing business.

A final stumbling block has been African governments. Contributions from governments have rarely gone beyond the provision of premises, and no important long-term measures have been taken to support MCT initiatives. The sustainability of MCTs has also been dramatically jeopardized by the recent reforms of the telecommunication sector. They have reduced the financial capacity of the incumbent operators to invest in rural areas or to do something about the high costs of line subscriptions and connection charges.

Where have MCTs succeeded?

They have helped raise awareness at various levels, resulting in a greater commitment of African governments to bridge the digital divide. Africa is strongly backed by donor agencies and the international private sector. There is a clear global trend to enhance community access to ICT tools through software with low access costs. The Indian Simputer, a low-cost, hand-held computer based on Open Source software, is a good example. It is an alternative to the PC that allows people to use simple icons to get information via the Internet, and thus overcomes problems such as language barriers and illiteracy. Many African countries have already indicated their interest in introducing the Simputer for disadvantaged communities.

In countries such as Burkina Faso, Mali, Rwanda, Senegal and Uganda, private cybercafé owners are moving into the rural areas because of the fierce competition in urban centres. Meanwhile, many post office companies are planning to transform their rural premises into cybercafés, emulating countries like Brazil and China. These positive developments are supported by continuing World Bank funding for rural telecommunications and new services like Uganda Telecom's Freenet, which makes every landline an Internet line without the need for subscription fees or registration.

In short, there are tremendous opportunities for the development of sustainable community access in Africa. The African governments are starting to define their e-government, e-governance, e-democracy and e-education strategies. And to ensure that most people will fully participate in these initiatives, the governments have started to draft new, nationwide telecentre programmes to be implemented in partnership with the private sector, or at least using business-oriented models.

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