



MAINSTREAMING ICTs

Digital futures of ACP agriculture

Special CTA 20th anniversary edition

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ICTs are shaping the future of ACP agriculture



Technology pundits have proven time and again to be poor at predicting actual uses of ICTs, as their utilitarian views are often superseded by the creativity of ICT users. In the mid-1990s, for instance, forecasters predicted a glut in throughput capacities of international telecommunication networks and expected that telecommunication costs would come down to almost zero by 2005. This scenario caught the attention of the international development community and provided the basis for many international and

regional policies to connect ACP countries – via the Internet – to global markets and to international knowledge networks. However, in spite of enormous international efforts, Internet access in 2004 is still very limited in most ACP countries, especially in the rural areas. Also, the costs of access have remained excessively high, inhibiting any use of the Internet other than for sending and receiving email.

In spite of continued connectivity restrictions, agricultural practitioners and researchers in ACP countries have not stood still. They have begun to pioneer ICTs other than those based on Internet technologies. For example, market information service providers in Senegal decided to utilize the opportunity provided by the rapid proliferation of mobile phones. They now offer 'multi-modal' mobile phone services that provide farmers and traders with the latest market price information. Researchers in Kenya are using satellite imagery and geographic information systems (GIS) to predict outbreaks of insect pests. Further afield, representatives of a microfinance institution in Ecuador are using hand-held computers (or personal digital assistants) to process loan applications during visits to remote villages.

Some practitioners have also developed systems consisting of multiple ICTs integrated into one application. For example, together with pastoralists in the Sahel, these practitioners have developed practical ways to apply GIS-based maps, hand-held global positioning system (GPS) devices and mobile phones to manage the movements of cattle in order to minimize overgrazing.

These and many other appropriate ICT applications – conceptualized and developed under grassroots conditions and not in focus groups of technology pundits – have been featured in recent issues of *ICT Update*. These examples prove that in spite of limited Internet access, appropriate ICT applications can play an important, supporting role in the revitalization of the agricultural sector in ACP countries.

Of course, there remains the challenge of developing practical, sustainable Internet strategies that exploit the power of the technology whilst remaining mindful of the infrastructural and regulatory constraints. In the 1990s, it was predicted that the Internet would rival and eventually replace, conventional media such as books, journals, newspapers, radio and television. This early scenario, which in retrospect may appear a little naive, has been replaced with an imperative to use the Internet hand in hand with conventional media. For example, it is fairly commonplace for today's northern based TV broadcasters to launch websites for particular programmes, providing background information, in-depth analysis, archives and areas for on-line debates. Open universities offer distance education courses on television, supported by textbooks and interactive training materials on CD-ROM, and complemented with online tutoring sessions.

CTA has responded to the opportunities and challenges of using different media when determining its distribution policy for its information products. Its regular publications (e.g. *Spore*, *ICT Update*, *Agritrade*) are available in a variety of media, including print, email, web, CD-ROM and more recently via WorldSpace satellite.

Innovative, appropriate ICTs will help boost agricultural production. New information and communication strategies, integrating conventional media, the Internet and other ICT applications will transform agricultural extension services. This process of change is already in full swing. Policy makers should promote these winds of change, encourage practitioners to continue their imaginative and innovative uses of ICTs, make the identification of promising ICT applications part of their daily routines. Above all, they must engage with the people that matter most – the users themselves. ICTs are indeed shaping the future of ACP agriculture.

Carl B. Greenidge (cbgreenidge@cta.int) is Director of CTA.



A word from the editors

The editors of *ICT Update* congratulate CTA on its 20th anniversary. This special issue is different from the regular *ICT Update* in that it focuses on the forward-looking theme *Mainstreaming ICTs, digital futures in ACP agriculture*. The theme has been chosen to pay tribute to CTA's pioneering role in putting 'ICTs for ACP agriculture' firmly on the ACP-EU policy agenda.

The articles in this issue explore the future of ICTs for rural development in ACP countries. **Carl Greenidge**, Director CTA, argues that *ICTs are shaping the future of ACP agriculture*, but that the development of appropriate and effective ICT applications must be guided by the users rather than by focus groups of technology pundits. **Kevin Painting**, CTA's ICT Programme Coordinator, discusses the issues related to *Mainstreaming ICTs* and explores the challenges that CTA will have to meet. **Rutger Engelhard**, *ICT Update*'s coordinating editor, gazes into a crystal ball and speculates on how the working day of an extension worker might look in 2015 – using innovative ICTs applications identified in *ICT Update* over the past year. Finally, **Mike Jensen**, ICT for Development policy adviser for South Africa, argues that government officials and NGO leaders must become much more proactively involved in the national telecom policy dialogue. In particular, they must emphasize the need for adequate, affordable access to the Internet in rural areas as a precondition for exploiting the development potential of ICTs.

In the spirit of *ICT Update*, this issue also contains two reports on innovative ICT initiatives that are of immediate relevance for ACP agriculture. **Shaun Ferris**, coordinator of FOODNET Uganda, describes how the project's information and communication strategy is based on the integrated use of FM radio, mobile phones, WorldSpace radio and the Internet in order to ensure the timely delivery of accurate market information to 7 million people. **Gesa Wesseler**, CTA's programme coordinator for gender issues, reports on the enormous worldwide response to the GenARDIS project, a small grant fund established in 2002 to promote attention to gender issues in ICT-supported development projects.

This special issue includes a CD-ROM containing all 17 previous issues of the web magazine, including their substantial information resources of over 1200 annotated links to relevant projects, articles, websites and databases.



FOODNET: information is changing things in the marketplace

Shaun Ferris explains how FOODNET is delivering reliable market information to farmers in Uganda, using a mix of conventional media, the Internet, mobile phones and other ICTs.

Four years ago farmers in Uganda were at the mercy of traders when it came to selling their produce. Traders were able to force down prices, as farmers had little idea of price movements and even less appreciation of market trends. Middlemen were able to pocket excessive commissions by exploiting unnecessarily large price differences between nearby markets. The results of this asymmetry in access to market information were low prices for farmers and high prices for consumers.

Today, things have changed. FOODNET,¹ a regional agricultural development network, has introduced three low-cost services that enable farmers, traders, and consumers to obtain accurate market information whenever they need it. In Uganda, FOODNET's market information services currently reach over 7 million people each week.

The national market information service is run by FOODNET in association with the Ministry of Trade, Tourism and Industry. Each day, agents collect price information on 32 commodities from four markets in the capital Kampala, and each week data on 28 commodities from 19 market centres across the country. This information is rapidly collated and relayed back to a range of clients including farmers, traders, processors, development agencies and policy makers via FM radio, mobile phones, email and the Internet.

FM radio and mobile phones

The main clients of the service are the many millions of small-scale farmers and traders scattered across the country. The best means of accessing these rural communities, where many people cannot read, is through FM radio. Each week, a 15-minute radio programme is broadcast to the nation via 12 FM radio stations in eight local languages.

In six districts of Uganda, the National Agricultural Advisory Service (NAADS) has linked up with FOODNET to provide a localized marketing service. This service, which is based on a pilot project funded by CTA, produces radio programmes and training specifically related to local marketing opportunities. FOODNET and the BBC are supporting this process by developing educational programmes that encourage farmers to adopt 'collective marketing' techniques, as group action enables farmers to use market information more effectively.

In the past five years mobile phones have been widely adopted in Uganda –



FOODNET allows farmers to check commodity prices by mobile phone. Photos: FOODNET

there are now more than 800,000 phones in circulation. FOODNET has cashed in on this trend by establishing a commodity price database that can be accessed by SMS. In addition to voice communication, mobile phone users can now type in a key word such as 'maize' and send a text message to the MTN² 197/198 service provider and receive an instant update on the prices of maize on markets across the country. This information is used by farmers, farmers' associations and also by travelling traders who can identify market price differentials and shift lower-priced goods to higher-priced markets. It is these activities that make markets operate more efficiently.

The Internet and WorldSpace

For larger traders, policy makers and development organizations, market information is posted on the web and data can be emailed to subscribers on a daily or weekly basis (www.foodnet.cgiar.org and <http://radioworks.africacentral.net>). The Internet is also being used to build up a Regional Agricultural Trade Intelligence Network (RATIN; www.ratin.net) for maize and beans traders throughout East Africa. In an increasingly globalized world, traders can only be competitive in their regional markets if they have access to accurate, timely regional market information.

Various new technologies are being tested to support the expansion of market information services into Kenya, Rwanda and Tanzania. For example, to facilitate the transmission of text and voice data, FOODNET has linked up with RadioWorks to establish a regional network of FM

radio stations linked via WorldSpace satellite. Using WorldSpace technology, FOODNET hopes to reach an audience of 25 million farmers by the end of 2004.

What does this mean for farmers?

For many farmers, FOODNET's market information services mean that, for the first time, they have access to reliable price data. Surveys have shown that farmers consider market information their second highest priority after roads. Farmers appreciate the information because it helps them in their negotiations with traders. Farmers' associations are also making good use of the information as they can bulk commodities and can more easily grade their produce. Farmers claim that access to market information has raised farm gate prices by between 5–15 % against general prices. Market analysis by the International Food Policy Research Institute has shown that over the past four years the number of markets dominated by farmers' associations has increased from 4 to 8. This is a very positive trend.

In a recent programme on the BBC World Service, a trader was reported as saying 'It's not easy to cheat farmers these days because they are getting information about market prices from the radio and some have access to a mobile phone. Things are changing'.

¹ FOODNET is an ASARECA marketing and agro-enterprise network for East and Central Africa, funded by USAID.

² MTN is the South African Mobile Telephone Network.

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2020: a wireless video conference in Kenya

Rutger Engelhard describes a day in the life of an agricultural extension worker in Kenya and the ICT equipment that he might be using in the year 2020.

At 5:30 am, Moussa Ong'ayo, an extension worker in Kakamega, is already excited by the prospect of his first wireless video conference in one of his villages. He activates his personal portable assistant (PPA), and tells it to download his mailbox and display the new messages on the flat screen above his breakfast table. Later, over a cup of tea, he reads his mail and dictates responses, which his PPA records, processes and automatically dispatches by email or text message. Then he calls up today's weather map and asks his PPA to download and overlay on it satellite images showing the crops currently being grown in the district. He studies the composite image with interest, and makes some mental notes on what to tell the farmers at the meeting planned for today.

Suddenly, a locust alert from the national IPM centre pops up on the screen. He dictates a message to a colleague at the Kenya Agricultural Research Institute in Limuru, an expert in the field of indigenous practices, to ask for advice on how to protect crops against locusts. He puts on his new multipurpose watch and looks at the time. He should hurry, this will be a busy day.

His PPA displays his 'to-do' list: one meeting with a farmers' association, several farm visits and tasks from his support unit. When the PPA has calculated his optimal travel route, it sends text messages to inform everyone of his schedule, he collects some printed flyers (after a video show, farmers always ask for flyers to take home) and packs them in his

van. He can still marvel over this vehicle – it is equipped with a public address system, a foldable video screen and a computer system with a docking station for his PPA. When he starts the engine, the computer comes to life and automatically connects to two satellite systems, WorldSpace's Afristar for a broadband Internet connection, and the Galileo satellite navigation system.

En route to his first appointment, Moussa passes one of the district's weather monitoring boxes. His computer automatically makes contact and downloads the data recorded over the last month. A tune informs him that the data transfer was successful, so he can continue without stopping. Just before he arrives at the farm, the Galileo system warns his PPA to project onto the windscreen in front of him the farmer's name and the purpose of his visit. He has been asked to assist Catherine Adoyo and her neighbour in solving a land dispute.

After the usual greetings, he asks Catherine to call her neighbour, and together they walk to the disputed boundary. Moussa uses the Galileo receiver in his watch to determine the exact boundary. He starts up his laptop, which has a wireless connection to the equipment in the van, logs on to the computer of the land registry office in Nairobi, and downloads the cadastral information on the two farms, including a detailed map. Moussa notes that their farms are located in an area under customary law, and submits a request for any oral records relating to the two farms. He is informed

there is a video, in which the respected head of the clan who died five years ago explains the rights of the two women to the disputed land. They decide to settle their dispute in accordance with the deceased man's explanation. Using a webcam, Moussa scans their irises, and inserts these biometric signatures into an electronic form to register their agreement.

His next call takes him to Joseph Wambui who has applied for a bank loan to purchase a new tractor. The bank has asked him to assess Joseph's creditworthiness. Joseph explains his future plans and Moussa taps the details into his PPA. Later, he connects the PPA to the computer in his van and within seconds, the machine produces a business plan and an assessment of the economic feasibility of Joseph's ambitions. Within a few seconds, the PPA gathers details of the Joseph's business performance over the past year from the tax office database, and commodity price projections for the next five years from the Kenya Agricultural Commodity Exchange. Moussa emails his report and recommendation to the bank manager, and receives confirmation of receipt, and an assurance that a decision will be made within a week.

Moussa is eager to be on time for his next appointment – a meeting with the leaders of the local farmers' association. The local MP has promised to address the meeting over a video link, and will be waiting in his office in Nairobi. While Moussa installs the video conference equipment, his PPA links up with the MP's office. 'Ladies and gentlemen, the honourable Oscar Chavangi would like to say some words to you from his office in Nairobi'. The MP's familiar face appears on the screen. 'Fellow citizens, your extension worker Moussa has invited me to be with you today...'. The farmers gasp with surprise. Moussa beams. He has just organized the first wireless video conference in Kakamega.

After email, the web, mobile telephones and text messaging, broadband wireless Internet is expected to be the next ICT 'killer application'. All other applications mentioned here are already in use in ACP countries, and have been described in previous issues of *ICT Update*.



Wireless video conferencing technology will greatly enhance the value of meetings in rural settings. Photo: ARC-Animal Improvement Institute

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Mainstreaming ICTs: challenges for CTA

Kevin Painting outlines the enormous challenges for CTA and its partners in ACP countries in mainstreaming ICTs into their programmes and projects.



Moore's law, a prediction made in an obscure article over 30 years ago that computer processing power would double every 18 months, has proved remarkably prescient. It has also

become emblematic of the ICT revolution and the unstoppable proliferation of technologies and applications into our daily lives. In particular, rapid technological advances are apparent in the information technology (hardware, software and peripherals), telecommunications technologies (radio and television broadcasting, telephones) and networking technologies (the Internet, wireless and broadband connectivity).

While achievements in these fields are impressive, statistics starkly show the gap (or 'digital divide') between those who have access to the technologies (mainly in the developed North) and those who have little or no access (mainly in the developing South). Closer inspection of statistics for developing countries also reveals the yawning gap between access to ICTs in urban and rural areas, the latter being agriculture-based economies commonly struggling with a lack of basic infrastructure, and low levels of literacy. In many developing countries the digital divide is also a gender divide between men and women, which is exacerbated by a host of socio-economic and cultural factors that marginalise women even further.

Notwithstanding these seemingly insuperable difficulties, a technological optimism is discernable in the development debate that seems to have its origins in Moore's Law. This optimism, put simply, translates the rapid development of the technology predicted by Moore's Law into the rapid societal development achieved through the swift introduction of the technology itself. Critics have been quick to point out that this gives the impression that developing countries are on an appropriate track for the introduction of ICTs and that the problems are primarily technological – issues that are hotly contested. The prevailing consensus is that ICTs can only gain their true power for economic and social leverage when they are adapted to the prevailing local conditions, with attendant support mechanisms.

What is never in doubt is that ICTs have enormous potential for developing countries, a point that has been repeatedly

driven home in international forums. The potential of ICTs in three related areas stand out in the debate: for information distribution, for communication, and for building social capital. The situation here is quite complex. Depending on the stakeholder group (e.g. policy makers, regulators, industry, NGOs, users/beneficiaries), opinions differ widely on which technologies/applications to adopt (and in which situations) and how these should be supported, monitored and regulated. These are clearly problems when mainstreaming ICTs into programmes. It is worth looking at how CTA has addressed these issues over the years.

When CTA became operational in 1984, its *raison d'être* was '...to provide ACP States with better access to information, research, training and innovations in the agricultural field'. In the early years the emphasis was on supplying information, but this strategy changed in 1995, partly in recognition of the ICT developments at the time, to one where the balance is more heavily weighted towards building capacity within ACP states to help individuals and institutions manage information and communication more effectively themselves. In effect, much greater emphasis was put on a two-way dialogue and on facilitating South–South and intra-ACP exchanges. To address the complex issues of surrounding ICT adoption, in 1998 CTA formed its Observatory on ICTs, a think-tank of technical and policy experts to inform CTA's programme-related ICT strategies and to monitor developments in ACP countries.

Today, the mainstreaming of ICTs into CTA's programmes is conspicuous, from their conception to their delivery. A few examples suffice. In information dissemination, ICTs are used as delivery mechanisms in their own right (portals, electronic newsletters, newsfeeds, etc.), or to complement established print media (such as electronic versions of articles distributed via email and via WorldSpace satellite). In communication, ICTs are used for electronic forums and e-consultations by email, or to allow the participation of a wider electronic community in location-based seminars (through live forums, conference blogs and newsletters). In



Extension workers increasingly use ICTs such as digital video cameras. Photo: COLME

building social capital, ICTs underpin efforts to build electronic communities (for example, in training support) and to promote information sharing among thematic networks.

What are the prospects for the future? To date, the development of the ICT landscape in ACP states has not shown the same exponential growth as the development of the technology as predicted by Moore's law. In the past five years, however, there have been a number of promising developments. For instance, significant changes in the telecoms sector have led to a huge growth in mobile networks and the expansion and modernization of fixed-line telephone networks. Digital, satellite-based radio broadcasting looks set to penetrate even the remotest areas of Africa. Telecentres or phone shops stand to capitalize on infrastructure developments such as low-cost, two-way satellite voice and data services and broad-spectrum wireless links (WiFi).

The potential of such technological advances will only be realized, however, if there is a suitable, enabling policy environment, as well as improvements in basic infrastructure and capacity building at all levels. Capitalizing on these developments is therefore a daunting, but not unrealizable task that will continue to exercise the minds of policy makers and ICT practitioners for years to come.

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GenARDIS: a small grant fund for gender-related work in ICTs

Gesa Wessler reports on the success of GenARDIS and highlights the importance of a gender-sensitive approach to ICTs in ACP agriculture.



A gender-sensitive approach to the design and implementation of agriculture, food security and rural development programmes is fundamental to their

success. This applies in particular to development programmes in which ICTs, with their tremendous potential for improving rural livelihoods, are being applied. Gender is the term used to recognize that women and men play different roles in society. These roles are culturally and institutionally determined, and can change over time (historically) and space (geographically). Women play a major role in agricultural production and rural livelihoods in ACP countries. However, rural women are much less likely than men to have access to new agricultural technologies because they are generally less well educated and hold less economic and political power. Women, with their special responsibilities for children and the elderly, find it less easy than men to migrate to towns and cities. Today's 'digital divide' is adversely affecting women. The urban bias in connectivity deprives many rural women, more than men, of the universal right to communicate. Their problem is compounded by issues of language and literacy, by the fact that their already heavy workloads mean that they have limited time available to use modern ICTs, and by cultural attitudes that prevent them from visiting public access points mostly frequented by men.

CTA's 2002 Observatory on Gender and Agriculture in the Information Society recommended the initiation of a small grants fund, in response to the often-voiced concern over the lack of resources in support of gender initiatives. IICD and IDRC joined CTA to fulfil this recommendation, and the GenARDIS Small Grants Fund was established. The fund is intended to support organisations in implementing innovative activities that will contribute to the understanding and application of ICTs in agricultural and rural development programmes in a gender-sensitive way. It has been set up as a competitive grant programme, with the winners receiving one-time grants of EUR 5000 each.

Following the announcement of GenARDIS in mid-March 2003, no less than 360 proposals were received in less

than two months. The following list of winners provides an indication of the diversity of applications and of the many different approaches that can be used to address a relatively narrow topic such as gender and agriculture in the information society.

The submitted project proposals dealt with topics ranging from pure research (e.g. the diffusion of ICTs for communicating agricultural information for rural development in a specific area), to commercial projects (e.g. the promotion of a telecom company among rural women). They also included evaluations of ongoing projects, setting up an empirical social study (e.g. to assess the effects of distributing cellphones to

women in isolated rural areas), and investment in equipment (e.g. providing laptops and cellphones to enable a team of fieldworkers to improve information dissemination and research).

The nine winning projects are now in the process of being implemented. The winners will present the results of their projects in a workshop to be organized in August 2004. That event is also likely to mark the start of the second round of GenARDIS.

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Free CD-ROM attached. Not for retail sale.

Winning project initiatives

- **Benin: Renforcement des capacités des femmes fonctionnaires qui oeuvrent pour l'autonomisation économique des femmes rurales pour la sécurité alimentaire et la réduction de la pauvreté au Bénin** (Strengthening the capacities of female civil servants working for the economic independence of rural women for food security and poverty reduction in Benin), *Alice Djinadou Igue Kouboura*, Institut national des recherches agricoles du Bénin (INRAB)
- **Chad: La radio communautaire au service du développement de la femme rurale au Tchad** (Community radio serving rural women in Chad), *Grâce Agouna*, Audy Magazine
- **Ghana: Participatory Community Planning (PCP)**. ICTs as tools to give rural women a voice in decision making to promote social awareness of their roles in managing natural resources for sustainable agriculture through biodiversity conservation, *Joana Francis Adda*, Participatory Community Development (PACODEV)
- **Jamaica: ICT tools and services in support of the development of organic agriculture in the Caribbean: a regional training workshop for women entrepreneurs**, *Dorienne Rowan-Campbell*, Networked Intelligence for Development
- **Kenya: Health and agriculture community radio network**, *James Onyango*, Kenya AIDS Intervention Prevention Project Group (KAIPPG)
- **Malawi: FarmWise**, *Bessie Nyirenda*, Computer Land Ltd
- **South Africa: Diffusion of ICTs in communication of agricultural information for rural development among women in Kwa-Zulu Natal**, *Joseph Kiplang'at*, Department of Library and Information Science, University of Zululand
- **Tanzania: Mainstreaming gender into information, communication and technology in sub-Saharan Africa: A case study of northern Tanzania**, *Pantaleon Shoki*, Community Development and Relief Agency
- **Uganda: Women's access to and the use of basic ICTs in accessing information on new agricultural technologies**, *Akello Zerupa*, Makerere University, Entebbe



Selected CTA projects and initiatives

CTA's projects focus on supporting ICT capacity building, knowledge sharing and awareness raising of the uses of ICTs in ACP agriculture and rural development.

ICT Update

CTA publishes *ICT Update*, a current awareness bulletin for ACP agriculture. This bimonthly publication consists of web magazine, printed bulletin and an email newsletter. Each issue focuses on a specific theme relevant to ICTs for agricultural and rural development in ACP countries, and features commissioned articles on regionally based initiatives, a resource of relevant annotated projects and links, and more. All back issues of the web magazines, including their extensive web resources, have been compiled on the CD-ROM prepared for this special issue to coincide with CTA's 20th anniversary celebrations.

Issues 1-7 (2000/01) General bulletins
Issue 8 (Oct 2002) Gender and ICTs
Issue 9 (Jan 2002) Market info systems
Issue 10 (Mar 2003) Rural connectivity
Issue 11 (May 2003) Pest management
Issue 12 (Jul 2003) Water management
Issue 13 (Sept 2003) Microfinance
Issue 14 (Nov 2003) Agricultural extension
Issue 15 (Jan 2004) Livestock
Issue 16 (Mar 2004) Fisheries
Issue 17 (May 2004) Land tenure

Forthcoming issues: Forestry management, Post-harvest services, Youth in ACP agriculture, and WSIS: Halfway from Geneva to Tunis.

Observatory on ICTs for ACP agriculture and rural development

CTA's ICT Observatory identifies ICT issues and strategies relevant to ACP agriculture and monitors the development of ICTs for use in information and communication management. Every year, CTA brings together leading ACP and EU experts in the field of ICTs for development. The first of these expert meetings advised CTA on a long-term ICT strategy that could enhance the outreach and quality of its agricultural information and communication services.

In 2001, the Observatory meeting looked at technologies for wireless access to the Internet via satellite. This meeting identified the enormous potential of small, cheap VSAT satellite applications for two-way communication to bring the Internet to rural areas of ACP countries.

In 2002, the Observatory explored a neglected policy area, 'Gender and agriculture in the information society', and put it firmly on the agenda of the international development community.

In 2003, the ICT Observatory meeting looked at how ICTs could enhance the effectiveness and efficiency of agricultural

extension services. The policy reports that resulted from each of these meetings can be retrieved from CTA's website (www.cta.int).

CAPACITY BUILDING

ICT sensitization workshops

CTA organized awareness raising regional workshops for ACP policy makers for the strategic application and sustainable implementation of ICTs. Côte d'Ivoire (1998), South Africa (1999), Barbados (2000), Mauritius (2001), and Antigua (2003).

Web publishing training courses

CTA conducted advanced training courses on web design, use of databases and access to networks. Guyana (2001), Kenya (2001), Senegal (2000, 2002, 2003), Tanzania (2000) and Zimbabwe (2001).

Resource kits on information management

CTA collaborated with the FAO and other organizations to produce two distance learning CD-ROMs: (1) Investing in agricultural information (FAO, CTA, GTZ, ISNAR) and (2) Building electronic communities and networks (FAO, APC, CTA, Rockefeller Foundation). www.fao.org/imark/

Subscription programme for CD-ROM/Internet agricultural databases

CTA offers access to major agricultural databases for subscribers. 76 institutions receive CD-ROMs and 12 are subscribing to Internet databases. www.cta.int/about/cdrom.htm

Rural Radio Resource Packs

CTA is working to strengthen the links between extension workers and farmers, and to promote knowledge sharing among farmers. CTA's Rural Radio Resource Pack project aims to address the problem of illiteracy by encouraging the use of rural radio to disseminate scientific and technical information. The beneficiaries of the project include rural radio programme producers and managers, extension workers and farmers. www.cta.int/about/ruralradio.htm

Question & Answer services

CTA provides support to regional Question & Answer centres which respond to users' requests, using on and off-line services, consulting subject-matter specialists when necessary. These services also refer users to appropriate sources of information, and advice on sources of finance and training opportunities. www.cta.int/about/qas.htm

PUBLICATIONS

Wesseler, G. and Brinkman, W. (2003) *Bridging Information Gaps between Farmers, Policymakers, Researchers and Development Agents*. Paper presented at the conference on Agroforestry impacts on livelihoods in Southern Africa, May 2002.

Lightfoot, C., Alders, C. and Dolberg, F. (eds) (2002) *Linking Local Learners: Negotiating new development relationships between village, district and nation*. Published by ARDAF, AgroForum, CTA, ISG (also available on CD-ROM).

CTA (2002) *Information for Agricultural and Rural Development in ACP Countries: Emerging stakeholders, new media, and priority themes*. Proceedings of a CTA seminar, Paris, France, 29 May – 2 June 2000.

CTA (2002) *Information and Communication Management (ICM) Strategies for Federations of Farmers' Organizations*. Proceedings of a CTA seminar, Douala, Cameroon, 10–14 December 2001.

These and other resources can be downloaded from CTA's website: www.cta.int

OTHER CTA WEBSITES

Agritrade addresses agricultural trade issues in current and future ACP–EU trade relations. Provides information, on news and analysis of issues and events affecting ACP agricultural trade. <http://agritrade.cta.int>

Knowledge for Development. This observatory on science and technology for ACP agriculture and rural development is intended to support the policy dialogue on S&T for development, and to enable the ACP scientific community to share and review results of the process of harnessing S&T for the development of agriculture. <http://knowledge.cta.int/>

Websites under development:

Agricta-policy will provide collaborative Internet platforms to support networking among ACP agricultural policy makers.

The **Electronic resource centre** is a virtual library of CTA's publications and audio files as well as a web space to support CTA's training courses.

Q&A: Participating in the telecom policy dialogue

Mike Jensen has been promoting ICTs for development for more than 15 years, and has probably seen it all. In the early 1990s he travelled around Africa helping NGOs install their first store-and-forward email systems, which were supported by APC/ GreenNet. Today, he is one of the most sought-after ICT4D policy advisers of African governments and international organizations.

CTA: Mike, in your opinion, which ICT application holds particular promise to provide affordable access to the Internet rural areas of ACP countries?

MJ: Terrestrial (fibre) telecom infrastructures provide the cheapest means to connect to the Internet. However, it will take at least another 10 years before such an infrastructure is in place in the rural areas of Africa. In the meantime, I believe that a wireless ICT application providing broadband two-way Internet access via satellite is the most promising option to meet immediate needs. This ICT application is 'Ku-band VSAT' and was first demonstrated to me during one of CTA's ICT Observatory meetings three years ago.

CTA: What is Ku-band VSAT?

MJ: VSAT (Very Small Aperture Terminal) is a catchy acronym that is used for all types of satellite products, ranging from small components to complete systems. A VSAT is a two-way satellite communication system with very small dishes (antennas) about 1 metre across that uses a specific frequency (Ku-band). Today, the total costs of this type of two-way satellite communication equipment are less than \$2000, and the service charges less than \$100 per month. With such a system, a small business such as a cybercafe, or government or NGO offices anywhere in Africa can get connected to the Internet, regardless of the distance to the nearest connection to the terrestrial telecom infrastructure. Combined with WiFi (wireless local area network application) many people in a village could share such a VSAT system and its costs. Within the next five years, if national telecom regulations on the use of private VSAT and wireless Internet are relaxed, this technology could help to meet the growing demand for Internet connectivity.

CTA: At present, development policy makers and professionals tend to concentrate on ICT applications based on Internet technology. Last year, *ICT Update* began to report on many imaginative projects that are using other ICTs and their applications (geographic information systems, global positioning systems, personal digital assistants, etc.). What could ACP policy makers do to nurture this second wave of ICT4D?

MJ: First, they could promote better and in particular cheaper access to the Internet both in urban and rural areas. Without adequate Internet access many of these new ICT applications featured in *ICT Update* can not be used. There is little point in encouraging the use of tools such as personal digital assistants (PDAs, or hand-held computers), for instance, unless the communication costs are low enough to make them affordable to use. Second, policy makers should promote efforts to build local capacity to use ICTs. Third, they should help raise awareness of the utility of these new tools to enhance the outreach and quality of many rural development services. In particular, they could show how they can be used for decision support and other practical applications such as the weather forecasts and education. In conclusion, I would like to encourage policy makers to take the lead and to start investing in e-government services, such as websites that provide a range of information services for the public.

CTA: CTA has built up an extensive network among development policy makers in ACP countries. How can the Centre help to promote the notion that ICTs are catalysts of economic and agricultural development?



VSAT technology provides affordable internet connectivity. Photo: Hughes Network Systems Europe/SIGNIS

MJ: CTA could collaborate with other agencies working in this area, such as the Farm Radio Network, the FAO, UNESCO and DFID, to develop a common strategy to encourage policy makers to adopt and invest in ICT supportive strategies. Government officials and NGO leaders should become much more proactively involved in the national telecom policy dialogue in order to press the interests of their rural constituencies. CTA could help them by developing a 'telecom advocacy manual' on how to participate in telecom policy dialogues. CTA could further assist them in developing their capacities to lobby effectively for change among the telecom policy makers. Interestingly, it seems that one of the few benefits of the WSIS process has been to promote this sort of multi-stakeholder telecom policy dialogue. Rural people in ACP countries have much to gain from policy changes that will lead to allow private use of VSAT and wireless technologies. We should strike while the iron is still hot.

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