International Telecommunication Union
World Summit on the Information Society

WSIS Stocktaking:
Success
Stories 2011

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WSIS Stocktaking: Success Stories 2011

Case Studies

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Table of Contents

Introduction

This is the first edition of the success stories publication prepared within the framework of World Summit on the Information Society (WSIS) Stocktaking Process. It contains set of case studies to be presented at the WSIS Forum 2011 in Geneva. The WSIS Forum builds upon tradition of the annual Cluster of WSIS Related Meetings, and since 2009 is held every year following an open consultation process which brings together different stakeholders involved in the WSIS Process who shape the information society of tomorrow. Following Para 109 Tunis Agenda on the Information Society (TAIS) the WSIS Forum serves as an unique platform for annual meeting of the moderators/facilitators of action lines to coordinate the implementation at global level and to assess the progress that has been made so far. The WSIS Stocktaking Process, as requested in paragraph 120 of TAIS , serves as effective tool for assisting with the follow-up of the WSIS Process, beyond the conclusion of Tunis phase of the Summit. It has complementary function to the WSIS Forum letting the stakeholder highlight their stories accessible online and serving as reference material while discussing implementation of 11 WSIS Action Lines.

Therefore the main role of the WSIS Stocktaking is to maintain a public database which showcases the wide range of reported actions undertaken by different stakeholders to achieve the targets set in the WSIS Outcome Documents. Similarly, this publication *Success Stories 2011* aggregates several voluntary contributions from around the world that were collected during the period 2010-2011, and illustrates key lessons drawn from the management of these projects. By sharing these case studies, stakeholders are intending to facilitate transfer of knowledge, experiences and models for project implementation. Success Stories 2011 aim at encouraging the others to share their experiences from the WSIS implementation.

The management of the challenges that have been overcome by a country can serve as a basis for other stakeholders facing similar situations and seeking for possible solutions. Even though some of the case studies included in this publication address very specific and country-oriented solutions, they can certainly be transposed and adapted to different contexts. They are emphasizing on innovation and sustainability of project implementation towards building an inclusive information society.

It is worth noticing that more projects can be consulted in the online database of WSIS Stocktaking (www.wsis.org/stocktaking). It is strongly believed that knowledge sharing can enhance international cooperation and problem solving. Following the 2010 ECOSOC Resolution on "Assessment of the progress made in the implementation of and follow-up to the outcomes of the World Summit on the Information Society" all WSIS stakeholders are encouraged to continue to contribute information to the WSIS Stocktaking database (www.wsis.org/stocktaking). This specific set of case studies presented in this publication was compiled on a voluntary basis and provides valuable knowledge that could be transmitted to other stakeholders.

Summaries of the success stories collected from the period 2010-2011

Reaching Out for Rural Development

In September 2009 Intersat Africa and Voices of Africa for Sustainable Development joined their forces into a partnership. This project aimed to provide ICT capacity building and infrastructures in rural regions of Africa who faced important difficulties regarding education and youth employment. In order to successfully achieve these goals, there was a need to choose the right and most affordable technology and also to build the capacity of local population to use it. Intersat Africa and Voices of Africa implemented the Rural Internet Kiosk (RIK) which uses solar energy and satellite connection; due to these characteristics it can be set up in the most remote areas. In the end, this project obtained a tremendous success with ICT training classes booked months in advance and the request for stakeholders to build new training centres in ten different locations and demand of advice for five more similar projects.

Green ICTs in the Republic of Korea

The Republic of Korea launched a "national strategy for green ICTs" in 2009 and the "framework on low carbon Green Growth" in 2010. Based on its strong ICT policy and infrastructure, the Republic of Korea aims to realize a new ICT growth engine with the creation of green industries, transportation, technologies. The ambitious goal of the Republic of Korea is not only to adapt to climate change and reach energy independence but also to create a green growth model providing a green revolution of life for the population and the foundation of a green economy for businesses.

Case Study E-TIC.net: Use of Technology by Farmers in West Africa

The E-TIC project in Sahel region of West Africa is a multi-stakeholder initiative coordinated by ICVolunteers. The aim of this project is to empower small farmers, stockbreeders and fishermen through the use of ICTs to be more informed and sell their products better. For this project a survey has been conducted in order to find the relevant technologies considering the numerous obstacles (such as low literacy rates) for the use of ICTs in this region. In addition to this survey, the E-TIC web portal has been launched in five languages (French, English, and also the local Wolof, Fulani and Bambara) and ICT trainings have been organized for local intermediaries. In the end the E-TIC project has highlighted the benefits of ICTs to local populations of West Africa (especially through mobile phones and local radios). Regarding the web platform, the training sessions have proved to be very useful.

Awareness-raising campaign and formation of ICTs for entrepreneurial women

The training of Female Entrepreneurs in Mali is a collaborative project of COFEM (Collective Of Women From Mali), Women Entrepreneurs and PARHEF (Support project for Gender Equity). The aim of this project is to contribute to reducing gender gap regarding ICTs in Mali by providing basic user skills of computer devices, software (Word, Excel) and the Internet. The training was carried out by Internet Society – Mali, and 20 women entrepreneurs participated. They each created their own blog and e-mail address and each woman was awarded a participation certificate.

Colombian Case study: Computadores para Educar "A road to knowledge"

In Colombia, the Computadores Para Educar initiative was launched by the Ministry of Information and Communication and the Ministry of Education. The initiative is aimed at providing computer devices and ICT training in schools, as well as preventing pollution and electronic waste since the computer provided to the schools are recycled ones. By reducing disparities in ICT education, CPE allows Colombia to set up the background for development with many outcomes from providing ICTs into schools such as less desertion and better admission into higher education.

ICT revolution in the Sultanate of Oman

The Sultanate of Oman has implemented numerous initiatives regarding ICTs and e-government in order to provide better public services by saving time, energy and frustration. In August 2008 the Information Technology Authority launched National E-Payment Gateway which provides public and private sector a secure way for online transactions, this initiative has been a major success with nearly 100 000 transactions in two years for an amount of almost USD 8 million. Business registrations has also been facilitated through the launch of One Stop Shop by the Ministry of Commerce and Industry in May 2006. Education in Oman was improved thanks to two important initiatives from the Ministry of Education: the Electronic Educational Portal which provides useful resources for teachers and the Higher Education Admission Center which had greatly eased the life of students applying for Higher Education Institutions. Other major progress has been made regarding health with the Al Shifa information implemented by the Ministry of Health which centralized information, turning hospitals in an almost paperless environment. Also, regarding employment, the initiatives of the Manpower Registration System (from the Ministry of Manpower) and the E-recruitment Project (from the Ministry of Civil Services) have facilitated the job application process for foreigners for the former and local for the latter.

Mada (Qatar Assistive Technology Center): working towards an inclusive digital society

In June 2010, ictQatar opened Mada, the Qatar Assistive Technology Center for disabled people. Mada provides a showcase of assistive technologies related to ICTs in order to increase the awareness of them. The main aim of the project is to provide a better education and more employment opportunities for people with disabilities. Mada provides a team of experts to assess needs and abilities of individuals in order to customize solutions. One of the other goal of Mada is to provide assistive technologies and ICT literature in Arabic. This project has been set up as a public-private partnership and as such involves the Supreme Council of Information and Communication Technology, ictQATAR for the public part and for the private part Qtel, Vodafone Qatar, Microsoft and Qatar National Bank.

WI-FI covering of the Republic of Macedonia

The "WI-FI covering of the Republic of Macedonia" project aims to bring Internet access in rural areas of the Republic of Macedonia facing stagnation in this matter due to a lack of economic interest from Internet providers. Internet kiosks have been installed in entrances of schools, providing wireless Internet access in a range of 250 metres. The main goal of this project is to create the enabling environment for the development of the Internet within the Republic of Macedonia. Such a development is allowed by wireless technology for significant lower cost than cabled technologies. The Republic of Macedonia has identified five major benefits from international competitiveness for foreign investors to improvements regarding democracy, businesses, education and mobility. The

implementation phase of this project is already a success with 680 Internet kiosks all over the country.

"Ecole des Sables" in Mali

The project "Ecole des Sables" (*School of Sands*), created by the Ag Assarid brothers in 2002, aims to develop education and the acquistion of official languages within the Touareg community in order to achieve a better integration in the Malian society. This initiative has been and continues to be a great success: ten years after the creation of the first school in Taboye, 110 pupils, including 86 nomadics, attended the school with an amazing success rate of 99 per cent for elementary school and 100 per cent for high school. Also two other schools in the regions of Kidal and Tombouctou have been implemented with the support of the Ministry of Education and local communities. Regarding communication around this project, a partnership has been established with French schools in order to develop exchange between French and Malian pupils and teachers.

E-Krishok, Bangladesh

E-Krishok is an e-agriculture initiative launched by BIID (Bangladesh Institute of ICT in Development) in Bangladesh. The goal of this campaign is to provide information to farmers: general information through a web portal and answers to specific requests delivered by an agriculturist. The major innovation in this project is that the telecentre which provides information is usually set up by a local entrepreneur thanks to micro-credit organization. This project is a success; starting with just ten locations at the launch of the project in October 2008, there were 100 locations in February 2010, e-Krishok became the preferred source of information for many farmers who were reached by the campaign. The goal is to attain 5,000 locations all over Bangladesh by 2015, not only in telecentres but also through the Internet and mobile phones in order to reach a critical mass.

Reaching Out for Rural Development

Submitted by Intersat Africa and Voices of Africa for Sustainable Development

In September 2009, Intersat Africa and Voices of Africa for Sustainable Development joined in partnership to brainstorm on how to reach every rural village in Africa with Internet connectivity. This huge dream, shared between these two organizations, is to bring change through ICTs to those who need it most whether they live in the furthest corners of the continent or not.

Voices of Africa VOA has visited and worked in Kenya, Uganda, Tanzania, South Africa, Senegal and Libya. These countries have large agricultural rural populations with high youth unemployment and limited educational resources available to the poor. The goal is to provide the solutions to these needs. Intersat Africa provides Internet access solutions in rural and remote areas. The NGO partnered with Intersat Africa to assist the Research and Development of products and services that would provide information and communications access in extremely limited areas. The Partnership was started with the introduction of the Rural Internet Kiosk.

It was a struggle to create a device that would provide public Internet access and computers that work in any environment regardless of the infrastructure. Currently more than 80 per cent of the population is without electricity, especially in the rural areas, so Intersat Africa and Voices of Africa for Sustainable Development decided to use solar power.

The Rural Internet Kiosk (RIK) has three industrial access terminals, a solar panel system, and the Get2Net satellite Internet system. The first installation was set up at school in Nairobi. Based on this experience, the company started to learn about the difficulty in deciding on the right technology to be included and to try to create a product at the lowest price possible. The cost was a very important factor as the people who would be the end-users are some of the poorest in the world. Another factor was showing people how to use the Internet as a tool of development. The heart of the challenge was to bring about social change using a business model as the backbone. The appropriate education and consultation with the people involved proved to be a necessary requirement.

In February 2010, a grant was received from the Internet Society to install a pilot Rural Internet Kiosk (RIK) in the coastal area of Msambweni, Kenya. It was implemented with a youth group named "Voice of Diani" that represents people who would be exactly like the RIK operators anywhere else in the world: young and unemployed with limited access to education. An American volunteer came to teach at the RIK for six months. RIK had many technical difficulties with the harsh environment and the youth group did not make much money. However, the project was continued despite these difficulties. The group continued to run RIK and earned only 300 Kenyan Shillings per day – just enough money to keep the project running. Ali Bwengo and Gideon Mulandi were the first LIVE RIK operators. Ali says, "The Internet has completely changed my life and I teach many people each day on how to use (technology) to change theirs as well." Gideon added, "Before the RIK project we had problems engaging with the youth in the community. Since we began this project, our youth group has grown and members have started many new projects including a jewelry-making collective that sells internationally; a mentoring programme named STEM for local secondary schools; and have been working to make low cost nutritional supplements for those with HIV/AIDS, vulnerable children, and schools."
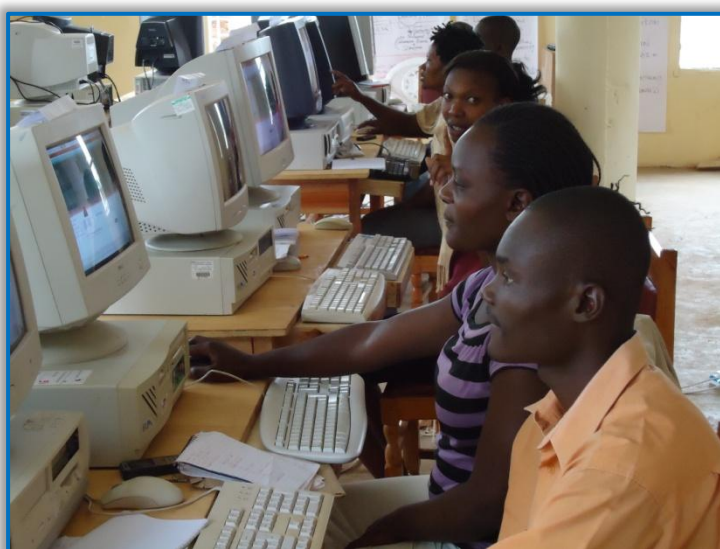
Based on the pilot results from Diani, VOA determined that there was a need to create a unique, one of a kind training system that would teach people how to use the latest devices, what ICT for development can do, how to run a social enterprise and how to use social media. VOA decided to build a training school for unemployed rural African youth. In September 2010, VOA opened the Webuye Youth Empowerment Training Center that was built in a rural community with lower education levels, extreme poverty, and a large variety of development needs. The training center teaches a minimum of 40 youth per month on Basic Computer Skills and ICTs for development training. VOA found that it took several months of Basic Computer Skills training to build up the local

capacity to a level high enough to utilize ICT4D. First, VOA trained more than 200 youth to a high enough capacity level, then in February 2011 VOA trained 20 youth in ICT4D. These youth are now teaching others in their community about development and technology. The success of these training classes was enormous and the classes are booked for the next several months.

In March 2011, VOA launched a partnership with Africa Nazarene University (ANU) and their Advanced Centre for Communications, Enterprise and New Technologies (ACCENT) project. Through this partnership VOA launched a new classroom in Nairobi to train 20 additional students per month in ICT4D. These students come from all over East Africa and will be the operators of the latest version of the RIK renamed the Solar Powered Advanced Rural Communications (SPARC). ANU and ACCENT have five additional training centres where the curriculum will be taught starting in July. Voices of Africa has received requests to build training centres in ten additional locations in Uganda, Tanzania, and Sierra Leone with requests for consultation on how to build similar projectS in Ghana, South Africa and Nigeria.

New corporate partners have recently come into the partnership for knowledge sharing and sustainable development. At the launch the Huawei corporation showed its commitment to ICTs for development by donating their new IDEOS Android platform smartphones to be taught in class in conjunction with the SPARC. The small mobile devices can create a small Wi-Fi network to eight additional devices setting up the base of a wireless mesh system. Ralph Sarjoo, CEO of Promote Africa, another corporate partner came to discuss the Ijelo low cost electronic pads targeted at the African education market. The wireless-mesh networks are to contain walled-garden constantly updated educational materials for all age levels, from primary to university, and on development topics such as sustainable agriculture, health, and business. VOA plans to partner with more device manufacturers to ensure that the poor have access to the technical devices required to support development. Currently, a fund is being established in Kenya to give

microloans to all course graduates to acquire the best low-cost educational devices on the market. All of these devices require the connectivity and solar power provided by the SPARC for their products to enter the rural market.

With the impending proliferation of small bandwidth-sharing devices Intersat Broadband Services – with assistance and guidance from the Plexus Group, a consulting firm of highly talented telecommunications industry leaders – is leading the way by developing a prepaid platform for Wi-Fi that can turn every SPARC into a community-wide cybercafé and provide access at the lowest possible cost. Coupled with the training and an "each one, teach one" philosophy, it is expected to see results in the near future.

The SPARC is an advanced version of the RIK, which has built-in Wi-Fi with a radius of 500m and the advantage of more solar power, better technology, and advertising monitors on three sides to play rotating advertising spots. The training programme is directly tied to the software installed on the SPARC; consequently operators are equipped to teach and reach before they have the equipment. The new advertising displays will greatly reduce the amount that the rural youth will have to pay for the SPARC as they will be sponsored by corporations and local businesses.

The concept is to create a rural market for the Internet through the desire for sustainable social, economic, and political development. All rural communities want to earn more money, to educate their children, and to see real change. By using the SPARC as a community access point and provider of Wi-Fi for the community, it will create employment, knowledge sharing, and long-term sustainable development.

The step from pilot to manufacturing has been a challenge due to resource constraints which have now been overcome through the first venture-capital investment. In April of 2011, it is planned to implement ten SPARC in Kenya, Uganda, and Congo Brazzaville. In May of 2011, another ten will be implemented in South Africa, Sierra Leone, and Afghanistan. By the end of the year, it is expected to have more than 120 installations and ten training centres.

The commitment to change and to meet the social objectives make this project and partnership different from others. Through the process of implementation and feedback, the goal of the created projects was to increase the impact over time and create the change that the rural people want to see. The triple-bottom-line approach of VOA is to empower the community to create social change that makes a profit for the community. That is the key to sustainability.

Green ICTs in the Republic of Korea

Submitted by Korean Communications Commission

The Republic of Korea is the ninth biggest country increasing its rate of energy consumption, and at the same time is strengthening regulations for Greenhouse Gas (GHG) discharge. The country needs a new ICT growth engine, particularly a framework act on low carbon green growth that adequately allocates resources. In addition, international cooperation should be reinforced to share valuable experiences that will enable the improve of quality of life and environment.

The Republic of Korea organized "Green Growth Commission" in February 2009. The President called for the above initiative, as well as the "National Strategy of Green ICT" and "National Strategy of Green Growth and a five-year Plan". The strategy for the three initiatives was published in 2009. The government also enacted and enforced the "Framework Act on low carbon green growth" in 2010. There are ten policy directions under the three main strategies:

- First, to adapt to climate change and to reach energy independence which can be achieved by efficient GHG reduction, energy independence, and adaptation to climate change.

- Second, to improve quality of life; national reputation, which can be achieved by fostering green homeland and transportation; and green revolution of life, realizing the green growth model.

- Third, to form a global environment, which can be achieved by development of green technology, green industry advancement of industrial structure, fostering a green-economy foundation.

Since 1994 the Republic of Korea has developed a strong ICT policy focused on strong broadband Internet infrastructure, world-leading ICT technology, and nationwide information policy. Korea developed a target management system for climate change and energy that included a system for trading emission rights. The strong ICT infrastructure and the Framework Act on low-carbon green growth made it possible for a synergy effect that enabled a strong driving force for green ICTs.

The Republic of Korea utilizes a Business as usual (BAU) approach. The approach calls for a 30 per cent reduction of national greenhouse gas emissions by 2020 and is developing a comprehensive management system to manage the greenhouse gas energy target. For achieving this goal, a GHG management system was established. The Republic of Korea developed an ICT inventory guideline and emission reduction plan, and will develop four telecom operator inventories in 2011. In addition, broadcaster's inventory will be developed in 2013.

The Republic of Korea also introduced a Green-Certification system with administrative and financial incentives through tax exemptions, as the framework for energy saving. The certification is categorized by green technology, green business and green-venture enterprise.

For example, there are some projects using green ICTs. First, there is a remote-medical services that combine medical and ICT technology. Telemedicine increases the treatment effect for chronically ill

patients such as diabetes patients. It also leads to cost reduction for elderly patients (from 65 years old) and in the case of Korea this cut can be around KRW 1.5 trillion.

Second, by providing remote educational services using ICT network technology the Republic of Korea can bridge the information gap and reduce greenhouse-gas emissions by reducing transport costs.

Third, the IP-based Ubiquitous Sensor Networks (IP-USN) centre collects and provides the environmental information in real-time over the broadband network. This centre facilitates the monitoring and provision of climate- and environmental-pollution data.

Case Study E-TIC.net: Use of Technology by Farmers in West Africa

Submitted by ICVolunteers

Authors: Viola Krebs, Kate O'Dwyer, Namory Diakhate, ICVolunteers.org

The E-TIC project aims at providing training tools and elements so that small **farmers**, **herders** and **fishermen** may sell their products better. Through the setting up of the Internet portal www.e-tic.net and of a series of training sessions destined for local intermediaries (**young people**, **women,** community radio **journalists**), the E-TIC project aims at sharing knowledge relevant for effective farm management.

The E-TIC project is an initiative involving various role-players coordinated by ICVolunteers, a non-profit organization. It has been implemented in Senegal and in Mali (Sahel region), with the support of the *Fonds Francophone des Inforoutes* and a series of other partners. The setting up of a network in the agricultural domain is also an underlying objective of the project. The intermediaries in the field play the multidisciplinary role of connectors that provide a link between small farmers and new technologies.

An extensive enquiry and case study provide information about the effective use of technologies in rural areas of West Africa (Mali and Senegal). By far, community radio and mobile phone technologies are the two means that are most effective to get messages to local populations. Given that an important percentage of the population is illiterate and/or speaks a language other than French, which is taught at school, pictograms and other visuals provide the right alternative to communication.

The work is structured according to seven points: 1) a **survey** with the help of **questionnaires**; 2) (audio and/or filmed) **interviews**, as well as exchanges by interest groups; 3) a **study** in order to place the work in a **methodological and theoretical framework**; 4) organization of **meetings** with interest groups; 5) organization of **training seminars**; 6) setting up of **collaborations** with the authorities of the two respective countries; and 7) setting up **strategic partnerships** for the SMS messaging service and the research work ,which accompanies the actions in the field.

Although the project is still underway, some **observations can already be outlined** concerning the use of new technologies in the domains of agriculture, stockbreeding, and fishing in Senegal and in Mali. The exchange meetings, the first training sessions, and the field survey in connection with farmers, herders and fishermen confirm that a large majority of people in these sectors today own mobile phones. Also, Internet access is available in some remote localities and community radio journalists use the Internet as an important source of information for their programmes. Overall, farmers do not appear to be advised enough of the often dramatic consequences of conventional agricultural practices such as the use of too much fertilizer and/or pesticides. Too much of the above eventually generates soil impoverishment and a decrease in the harvests. Information concerning market prices is very useful for small farmers and breeders who often do not have the possibility of knowing the current prices of their products.

The E-TIC project focuses on the use and utility of information and communication technologies (ICTs) in the domains of agriculture, stockbreeding and fishing. Its work has shown that ICTs are only a means, but one that can empower people if used in such a way that they can help themselves. Finding the right tool needs to take into consideration the local situation and context, for example, the fact that the adult literacy rate (age 15 and above) is just 26.2 per cent for Mali and 41.9 for Senegal.[1]

Apart from the farmers, herders and fishermen themselves, other stakeholders in this project include universities for data collection; community radio journalists for the dissemination of information, be it through community radio, written press or television; mobile phone operators; volunteers; government; local authorities; and NGOs, all of whom cooperate in sharing information relevant to the project.

Through the network of local professionals and volunteers, ICVolunteers carried out a field study in six regions of both Senegal and Mali. In Senegal, this involved the localities of Guédé-Chantier (Saint-Louis Region), Meckhé (Thiès Region), and Mbam (Fatick Region), and in Mali, the Timbuktu, Ségou and Sikasso Regions. In each case, particular focus was given to the role of ICTs for agriculture, stockbreeding and fishing.

ICVolunteers were interested in finding out what kind of issues farmers, herders and fishermen had, what was the role of technology, and what could technology do to address future issues such as information to obtain comparative market prices, information about sanitation, organic farming practices, health issues for plans, animal and humans, etc. The information was collected by means of a standardized questionnaire distributed to local connectors (governmental representatives, community leaders, volunteers deployed in the six above-mentioned localities, journalists). A second questionnaire was specifically developed for journalists. The questions asked related to the main activities of the respondents, products and markets, the ownership of cultivated lands, products used on the lands and the selling of product information and communication. Given that the majority of people interviewed from the first group were not fluent in written French, the questionnaire was filled out by connectors (field volunteers). These volunteers were deployed in six main localities. For Senegal, it was Guédé-Chantier in Podor, Méckhé in Tivaouane and Mbam in the Fatick Region. For Mali, the field connectors-volunteers worked in the Timbuktu, Segou and Sikasso regions.

A series of training sessions were organized, in particular, for local intermediaries (young people, women, community journalists). The training sessions included ICT training that focused on the use of the Internet for reference and research purposes, the use of mobile phones for sending and receiving SMS messages, as well as the dissemination of information through networks.

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[1]   UNDP, Country profile of human development indicators,
http://hdrstats.undp.org/en/countries/profiles/MLI.html and
http://hdrstats.undp.org/en/countries/profiles/SEN.html, consulted on April 11, 2011.

Objectives of the E-TIC.net project

General objectives

- To acquire sound knowledge of the farming sector and to understand the issues associated with it;

- To be in a position to extract relevant information for the distribution of information on the field (notably the use of information and communication technologies, or more precisely the web and mobile phone);

- To appropriate the methodological tools allowing for the analysis of problems of distribution and logistics of agricultural markets and of their functioning;

- To understand the organization and functioning of various distribution circuits for agricultural production;

- To get to know modern logistics methods in order to be capable of managing the flows and information;

- To appropriate tools adapted for the collection and gathering of data on the field.

Specific objectives

- To formulate projects in order to improve the conditions of pastoral and urban agriculture and its profit;

- To launch initiatives to ensure and diversify the diet and well-being of economically-weak populations in an accessible way;

- To integrate the notion of sustainable development through waste management;

- To make populations aware of health risks;

- To promote likely policies, technologies and work methods;

- To improve productivity, accessibility and the support of rural production systems. The productivity, accessibility and support of these production systems must take into account the economic profitability, the support of service, supervision and evaluation services, the participation and the appropriation of the activities developed by the producers, access and the institutional context.

With regards to the specific communication tools put in place for this project, one of the first was the E-TIC.net website, to be translated into multiple languages – French, English, Wolof, Fulani and Bambara, as well as a number of other work and exchange tools (wiki, distribution list, etc.) for communication between project stakeholders. The Internet platform aims to provide information regarding agricultural activities, including production, marketing and promotion techniques, market prices and other useful data, both for the farmers themselves and other stakeholders, including researchers in this domain.

As far as the use of mobile phones is concerned, research has been carried out through partnerships with mobile phone operators such as Manobi, Jokko and Trade at Hand, that can provide technical solutions to facilitate the use of mobile phones for the collection and sharing of information in order to improve the economic, financial and commercial transactions of the populations in their activities of agriculture, stockbreeding and fishing. Manobi has developed a range of mobile and web-based applications focused on improving weaknesses in value chains. T2M enables farmers to check market prices on their mobile phones via SMS, WAP, MMS, or mobile Internet—all of which are designed for low literacy. The information is updated by a team of market researchers who map and enter it into their mobile phones.

There has been a significant increase in the use of mobile phones amongst populations in Africa, as is also the case with community radio stations, another popular means of communication, especially as it does not require the users to read or write information, which is provided in the local language understood by all.

An AgriGuide is currently under development. It aims to provide all the information collected in a simple way, accessible in local languages and communicated through illustrations and simple explanations in the local languages. This guide aims to serve as a work tool and a reference document creating a link between information and communication technologies, agriculture, stockbreeding and fishing in Senegal and in Mali.
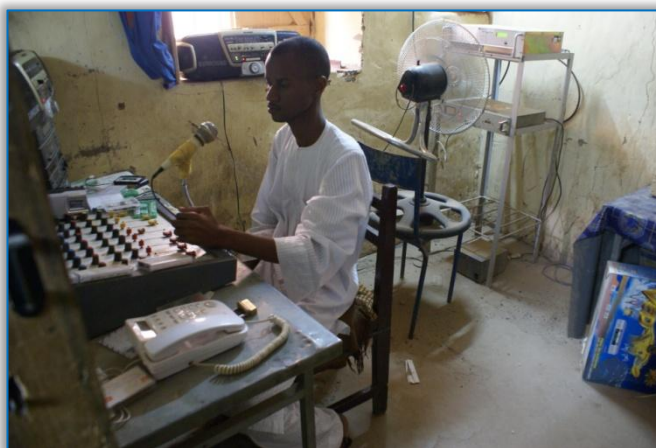
Highlights

Throughout the project, various actors were involved in seminars and meetings, coming from both Senegal and Mali, who work in the domain of rural, urban and peri-urban agriculture. For example, in Senegal, meetings took place at the Ministry of Stockbreeding of Senegal, the National Civic Service of Senegal, as well as a large communal meeting in the presence of numerous mayors of communes and villages, which were later broadcast on the RTS television channel. In Mali, a hearing took place with the Secretary-General of the Ministry of Youth and Sports of Mali and workshops took place in February 2010 in the presence of various authorities, including the Mayor of Bamako and representatives of the Ministry of Stockbreeding, Agriculture and New Information and Communication Technologies.

Several interviews were carried out with various authorities and stakeholders, including mayors, representatives of associations, farmers, herders and fishermen, in both Senegal and Mali and were recorded on film and documented.

Results

Information gathered so far through the field study indicates that both mobile phones and community radio are the best adapted means of communication currently available. Where accessible, the Internet also constitutes a significant source of information. However, while many cybercafés have sprung up in cities over the last decade, the use of the Internet in rural areas of Senegal and Mali still remains marginal. This may evolve over the next few years, with the mobile

web developing new and adapted applications (such as information about the weather, markets and animal health transmitted through a mobile phone). When ICVolunteers first started its work in Timbuktu in 2002, there was one cybercafé available, but no mobile phone coverage. Today, many of the herders out in the desert use phones and solar panels to recharge them.

A survey carried out by means of a standardized questionnaire revealed that the main activities of the respondents are: agriculture (46.5 per cent), stockbreeding (42.6 per cent) and river fishing (14 per cent). Responses were obtained from 132 different families of farmers, herders and fishermen in Guédé-Chantier, Méckhé and Mbam (Senegal) and Timbuktu, Segou and Sikasso (Mali).

The majority of people interviewed sell their products in the local market or neighbouring villages. Of all the products sold, 28.6 per cent of the respondents sell directly to the consumer, as compared to 46.4 per cent who deal with intermediaries, and 25 per cent who do both. While the vast majority of traders get most of their information from direct discussion with other traders, many of them indicate that they also use mobile phones to share information obtained. Traders see a use in SMS services and mobile payment applications.

Of the people surveyed, 52.4 per cent said that they determine the price of at least one of their products, while 40.3 per cent of the respondents said that they work with intermediaries who determine the prices, and 12.1 per cent indicated that they refer to a cooperative or association. Ten point four per cent declared that they apply the prices proposed by fish wholesalers, or factory – or government-centralized entities such as SAED[2] in Northern Senegal.

Respondents point out that it would be useful to obtain weather information, market prices, animal health-related information and practical tutorials for farming.

In Senegal, approximately 70 per cent of the working population are involved in agriculture (including forestry, stockbreeding and fishing). The following languages are spoken by the population in Senegal: French (official), Balanta-Ganja, Hassaniyya, Jola-Fonyi, Mandinka, Mandjak, Mankanya, Noon, Pulaar, Serer-Sine, Soninke and Wolof. The average literacy rate in the country is 39.3 per cent (51.1 per cent for men and 29.2 per cent for women).

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[2]   Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal

Even though Guédé-Chantier has been a member of a network of eco-villages in Senegal since 2007, the agricultural practices are mainly conventional, with the widespread use of fertilizers and pesticides. Farmers in the region do not have sufficient knowledge of organic farming practices. Often farmers sell their products and foodstuffs such as tomatoes and rice at lower prices than what could be obtained if the farmers had more complete and accurate information regarding the markets. "Sometimes we feel our village is isolated," points out a local farmer. "We have problems selling our products. Speculation forces us to sell at very low prices." Herders generally sell their animals on the local market, as is the case with the river fish sold by fishermen. Eighty per cent of the inhabitants of Guédé-Chantier are farmers and twenty per cent are fishermen, traders or municipal employees.

Background Information

The mobile phone is the most common means of communication; however, it is thought that the setting up of a community radio station would be very useful. There is one Internet connection in an Internet café which is not widely used. A new computer training centre was set up by EREV, a non-profit organization. The centre is managed by a local management association and is equipped with 30 computers.

As far as Meckhé is concerned, agriculture also plays an important role, with the main crops cultivated being groundnuts and cassava, mainly due to the fact that these crops do not require an enormous quantity of water, especially as the village only gets three months of annual rain. As in Guédé-Chantier, the agricultural practices are traditional. The lands have become impoverished due to overexploitation and the use of pesticides and chemical fertilizers. Many of the farmers know that pesticides are not good for their soil. They notice that each year they have to add more and more chemicals. Thus, alternative solutions would be most welcome, but many of the farmers do not possess the required knowledge to implement change. Sharing of agricultural best practices, is thus, important for the preservation of the environment and natural habitat. Information and communication technologies can play an important role in this information sharing. An information technology training centre has been set up in the village as well as a private Internet café, but further efforts are needed to make these tools accessible to the population.

In Mbam, the groundnut represents the most widely cultivated crop despite how difficult it is to distribute. Millet is also cultivated; however, both crops are mainly cultivated for the direct use of the inhabitants themselves and only a part of the harvests is sold. Market gardening also represents an important part of the agriculture of this region. Farmers tend to use chemical fertilizers which lead to land impoverishment. Stockbreeding is also an important activity in the region; however, herders are faced with problems of animal diseases. This is partly due to the animals not being vaccinated often enough and not receiving vitamins or de-worming treatments. The most present communication tool is the mobile phone, largely used for SMS communication, much more so than for actual phone calls. As Mr Sarr, the local representative of the global Eco-Village Network (GEN) in Mbam points out, "If it is to talk to my neighbour, why waste credits on my phone? But if I have customers that are living outside the village, I may call them to let them know that my crops are ready to be sold."

With regards to Mali's economy, agriculture and stockbreeding represent essential sectors in the country. However, only the southern part of Mali is favourable for agriculture and less than 2 per cent of the country's surface area is cultivated. Mali is faced with the environmental problems of drought, deforestation, soil erosion, desertification and an insufficient supply of drinking water. The languages spoken by the population of Mali are: French (official), Bambara (Bamanankan), Bomu, Hassaniya Arabic, Maasina Fulfulde, Mamara Senoufo, Kita Maninkakan, Koyraboro Senni Songhay, Pulaard, Songo, Soninke, Syenara Senoufo, Tamasheq, Tieyaxo Bozo, Toro So Dogon and Xaasongaxango.

In the Timbuktu Region of Mali, wheat and rice (irrigated with Niger River water) are the main crops cultivated, and stockbreeding represents an important activity with almost 60 per cent of the population involved in it. The types of stockbreeding practised are transhumant, nomadic and sedentary stockbreeding. Animals are sold at the Timbuktu market, bought by merchants who then sell them further in the large animal markets held in Mauritania and Algeria. Speculation is an issue here, where local herders are paid a fraction of what animals are sold further down in the value chain. Therefore, for herders who wish to sell their animals, it would be useful to be able to obtain information in advance regarding the prices, so as to receive an equitable price at the outset. Especially as many of the herders are illiterate, the most useful means of communication for them, in this sense, would be the community radio. There is a community radio station, "Radio Boctou" as well as a regional radio and national television network. Mobile phones are also widely used and there are several points of Internet access in Timbuktu.

In the Segou Region of Mali, the population is largely made up of nomads and semi-indigenous and indigenous peoples. Segou was found to produce the largest proportion of foodstuffs in Mali. Cereals, including millet and wheat, vegetables and tubers (potatoes, sweet potatoes) are cultivated here. It was found that farmers, herders and fishermen are all in need of training in new techniques and methods in order to increase the profitability of their production. As far as communication is concerned, there is a number of Internet cafés in the region.

Significant agricultural activity takes place in the Sikasso region of Mali. It acts as a crossroads between the coastal countries (Togo, Benin, Ghana, Côte d'Ivoire) and the coastlines of Mali and Burkina Faso.

From a communication point of view, Wolof is the most commonly represented language among the targeted populations of Senegal, as is Bambara for the targeted populations of Mali. To reach these populations it is important to find means of using these languages, both on a local level, through the use of community radio stations and mobile phones and on a more global level, through the translations of the E-TIC website and Internet platform.

Mobile phones in West Africa

- In 2009, the estimated population of Senegal was 13.7 million inhabitants.[3] The number of mobile phone subscriptions (for the most part prepaid cards) was 5.4 million in 2008. This means that one out of every 2.5 inhabitants approximately has a mobile phone. In a context where 42.2 per cent of the population is under 15 years, this ratio is doubled for people over 20 years.

- For Mali, this ratio is slightly lower, but remains significant. For a population estimated at 13.4 million inhabitants (2009), 3.4 million mobile phone subscriptions were counted (including prepaid cards). This means that approximately one out of every four inhabitants have a mobile phone. With 48.3 per cent of the population under 15 years, the use of mobile phones for those over 20 years is almost 50 per cent of the population.

- In Mali, there are 168 radio stations including 121 community and associative radio stations, 38 commercial radio stations and denominational radio stations (figures from the *Union des Radios et télévisions libres du Mali* – URTEL). The complete list of independent radio stations in Mali is available as an appendix of the present report.

Project at a glance

Location: Region of Timbuktu, Segou, Sikasso (Mali) and Region of Guede Chantier, Mbam Méckhé (Senegal).

Technology: Internet and mobile phone.

End users: Farmers, even if the groups remain an indispensable intermediary links to new technologies. You must press the field connectors.

Key to success: Working in groups and between groups.

Challenges: Limited access to technology today, the fact that the majority of the people concerned communicate orally with only very little writing. French-speaking context with partner languages (especially Wolof, Fulani, Bambara, Tamashek, Songhay).

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[3]   Statistics of the ITU on the use of mobile phones: http://www.itu.int/ITU-D/icteye/Reporting/ShowReportFrame.aspx?ReportName=/WTI/CellularSubscribersPublic&ReportFormat=HTML4.0&RP_intYear=2008&RP_intLanguageID=1&RP_bitLiveData=False,

Conclusion

As shown by the case studies and the survey, ICTs have an important role to play for the populations in Senegal and Mali, but the specific applications need to be adapted to local needs and means, for example, low literacy and local languages. Given the relatively low literacy rate in most cases and a strong oral tradition with the use of local languages, the most common means of communication remains direct conversation (whether through farmers, herders, etc. meeting each other or speaking with each other by mobile phone) and community radio stations. Especially with regard to farmers, herders and fishermen being able to buy and sell products more effectively and at a better profit, the use of SMS messaging services and the Internet could be of considerable use to them. Nevertheless, the Internet is not widely used.

However, with the development of tools such as the E-TIC.net website and the "Réseau VERT" platform, and with adequate training provided, it is hoped that this technological tool will become more accessible to the local populations involved in farming, stockbreeding and fishing, especially as the information is provided in the local languages, as well as French and English. The training sessions for local intermediaries (young people, women, community radio journalists) have, therefore, been a useful step in this approach. The use of mobile phones, and in particular, SMS messaging services has been examined and encouraged through partnerships with various mobile phone operators active in both countries. As a considerable number of people own a mobile phone, it is worthwhile for them to learn how to use them for the purpose of enhancing their economic and commercial activity.

Other projects of ICVolunteers

Other projects in which ICVolunteers is involved include:

GreenVoice: This project aims to increase awareness of environmental issues through the collection and display of photos from throughout the world. In 2011, following the third call for creative photography issued by ICVolunteers, a photographic exhibition on the topic of "Water and Forest, Citizenship and Volunteering" will be organized at Quai Wilson in the heart of Geneva. For more information, see http://www.icvolunteers.org and http://www.greenvoice.info.

MigraLingua: This project aims to provide a service of linguistic accompaniment to migrants who do not master the local language. Volunteer community interpreters are deployed, in order to assist migrants in their daily tasks in areas such as education, health and administration. The programme is aimed at migrants (whether families or individuals), interpreters and institutions. For more information, see http://www.migralingua.org.

Maaya: ICVolunteers is a founding member of Maaya, the World Network for Linguistic Diversity, the aim of which is to enhance and promote linguistic diversity in the world, through the empowerment of language communities worldwide in developing and using their own languages, through the promotion of bilingual/multilingual education, localized software, equal access to all languages in cyberspace, and through its contribution to the creation and sharing of language resources. For more information, see http://www.maaya.org.

Awareness-raising campaign and formation of ICTs for entrepreneurial women

Submitted by Conseillère pédagogique à la DNP/MEALN, The Republic of Mali

COFEM (Collectif de Femmes du Mali)(Collective of Women from Mali)

The Collective of Women from Mali (COFEM), in collaboration with "Women Entrepreneurs" and with the financial support of PAREHF (Projet d'appui au renforcement de l'égalité homme-femme) has organized the training workshop on ICTs for women entrepreneurs.

The COFEM objective is to establish equity for everyone (men and women) and promote Malian women's the use of ICTs by drawing attention to the emergency for women entrepreneurs in Mali.

In general, the majority of female entrepreneurs lack knowledge in ICTs, hence women miss out on ICT opportunities. Subsequently, COFEM's mission is to make women entrepreneurs familiar with the use of ICTs, especially the Internet.

Female entrepreneurs have limited access to ICTs repressing their involvement as entrepreneurs in e-business.

This project contributes to the reduction of the gap between male and female entrepreneurs and to increasing competitiveness of women for economic and social promotion. The target population of the project is the female entrepreneur regardless of age or area of specialization. The project covers Bamako district and Kati circle, located 15km from Bamako.

The leading committee of three members from the executive bureau of COFEM was set up. The leading committee ,in collaboration with the president of the female entrepreneurs' association (L'association des femmes entrepreneurs) listed 20 female entrepreneurs from different areas of

specialization to be trained in Bamako and Kati for a period of five days. The women already had basic IT knowledge.

One day was dedicated to training, with presentations followed by debates dedicated to ICTs, ICTs in education, ICTs in health with the cyber pharma experiment, ICTs in business, and ICTs in agriculture. The four other days were used for training the women and young girls. The training took place in the "cyber espace" at Information and Communication Technology Agency (AGETIC). Internet Society (ISOC-Mali) carried out the training. The goal of the training was to brief participants about the use of the Internet, computer devices and software such as Word and Excel.

Ms AWA said, "With the knowledge of ICTs, there is a possibility to present products on the web to many more customers. Price variation may occur during an interval of 24 to 48 hours. With the Internet, it is possible to know about variations of prices and take orders accordingly. The information is particularly essential to and helpful with perishable products such as mangos, green beans and other similar products. Moreover, ICTs aid with awareness-building, so that one is up-to-date about what others are doing in your field. Examples from others in the same field help to improve business practices.''

There is a need to involve a large number of women in this sort of training. At the end of the training these selected women created and managed electronic addresses by sending emails to other people. In addition, they were able to create their own blogs, where they posted the pictures of their products on the web, indicating their email address in order to find potential new customers.

During the five days the women and young girls in the training were taught about the different range of services that ICTs could offer and e-business issues that could arise. The training allowed 20 female and young entrepreneurs to create and manage electronic addresses. A discussion list was created on Yahoo for them. Each of them also opened a blog that they update regularly. The 20 women who were selected for the training were extremely motivated and often stayed after working hours to learn. A participation certificate was given to each woman after the training.

Computadores para Educar "A road to knowledge"

Submitted by The Republic of Colombia, Ministry of Communication and Information Technology, Ministry of Education www.computadoresparaeducar.gov.co

"Since Computadores para Educar reached our school, there have been some remarkable changes: The children are happy to come into the classroom, the teacher finds it easy to transmit knowledge and there are the dynamics and personal relationships, because we have made the Systems Room a space for coexistence of the development of values"

Testimony of teacher Héctor José López Quintero

Santa Rosa de Cabal – Risaralda

Summary

Computadores para Educar (CPE) is a social programme of the Ministry of Information and Communications Technology and the Ministry of Education in Colombia that seeks to reduce social and regional gaps and to help improve education quality based on the incorporation of ICTs in basic and intermediate public education. This was evaluated in a study conducted by Universidad de los Andes in 2010, concluding that variables such as desertion and academic achievement, which were measured through the Colombian Institute for the Promotion of Higher Education ICFES scores, and access to higher education were positively impacted by ICTs, provided that the teachers were also properly trained. The integral strategy of CPE indicates that there are clear impacts in educational quality and reduction of gaps; the challenge is to increase CPE's reach and magnitude, which will be achieved with the targets of Plan Vive Digital.

Introduction

CPE is a pillar of the incorporation of ICTs into basic and intermediate public education in Colombia. Over ten years of evolution, the lessons taught enabled the management model to be adjusted in the field to make it more efficient, with a stronger cost–benefit ratio, and a more inclusive, integral, sustainable programme. This has also brought benefits in environmental, economic, social and educational terms through strategies, which range from reconditioning, maintenance, and educational accompaniment, through to the efficient management of electronic waste. Since 2000, and up to 31 December 2010, CPE provided benefits to 20,673 public schools; that is, more than 53 per cent of all schools in Colombia, with 291,261 computers, providing access to almost 6,000,000

children or to 65 per cent of enrollments in the public system. Educational accompaniment has been provided to 11,135 schools, encouraging competence among 43,986 teachers, or 15 per cent of the total number of teachers in the country. Furthermore, 78,327 computers have been remanufactured, and the inappropriate final disposal of more than 4,000 tons of electronic waste has been avoided. The social investment altogether to groups in need made by CCPE in Colombia amounts to approximately USD172 million over ten years. This investment has generated a return of 2.41 times to society, according to Econometria (2008).

Plan Vive Digital [4]programme works towards a Colombia without social exclusion guaranteeing access to ICT to the entire educational population before 2014. Plan Vive Digital programme also seeks to provide connectivity, together with capacity for use, allowing learning environments to be enriched. They also seek to obtain new forms of access to knowledge and contribute to knowledge production, so that they can support education activity from a pedagogical point of view. The programme, therefore, is of benefit to public educational institutions, houses of culture and public libraries across the country. The programme consolidates a model of integral management of electronic waste complementary to the strategy for reconditioning and assembly of computers. This places CPE in the forefront of international recognition. With these activities, thousands of tons of outdated computers and peripherals were saved from inappropriate forms of open-air disposal or discharge into sanitary fills, with which there would have been serious environmental consequences due to the hazardous waste they contain.

Further, CPE generates economic benefits for society by placing a value on waste through practices of recovery and use of items and materials for subsequent conversion into robot didactic platforms, which can be used by children and adolescents.

These are some electronic waste materials that CPE found in places like garages. The e-waste are recovered and used as raw materials.
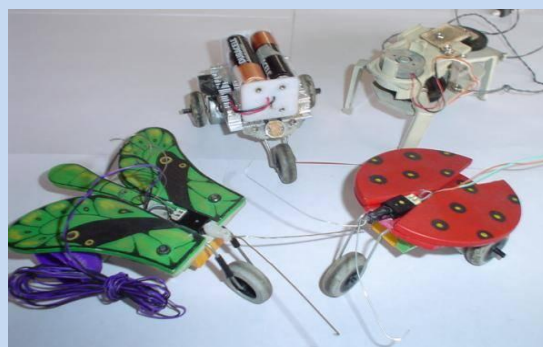
These are some examples of the robots that are made by children with waste materials.

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[4]   Is the Expansion of Broadband technology Plan for next four years of the Colombian Ministry of Information Technologies and Communications

When the computers are delivered to their recipients, they come with a one-year guarantee, and after that, CPE offers a preventive and corrective maintenance service for the following year in order to prolong the useful life of equipment delivered and to guarantee the sustainability of processes initiated with the introduction of ICTs. With this management strategy, the programme also seeks to generate a culture of use and care of computers.

It is not sufficient just to deliver these educational tools to the schools: There is an entire process of formation and accompaniment to be implemented so that the tools may be used effectively, developing strategies designed to incorporate ICTs in the best possible way into the local processes of each educational establishment. The integration of computers into pedagogical processes promotes collaborative learning, creativity, new ideas and the personal and professional growth of pupils and teachers alike. This has a positive impact on the development of communities themselves and their productive processes.

The CPE team travels to extreme rural areas using a variety of modes of transport. In this photo this team is trying to deliver PCs by a canoe through Casanare river in order to reach Hato Corozal in Casanare town.

Reduction of social and regional gaps

UNCTAD has often stressed the capacity of ICTs to reduce poverty, to the extent that it closes the gaps of distance, provides opportunities and generates knowledge. Indeed, WSIS (2003) has stated that ICTs may be tools to promote the achievement of the Millennium Development Goals.

Many of the barriers, which in the past made access to education difficult or even impossible for a good part of the population, have now been dismantled, thanks to ICTs. Today, digital educational content, connectivity and Internet tools such as social networks make it possible for thousands of people, wherever they may be and regardless of their socio-economic situation, to obtain and share knowledge.

ICTs, therefore, arose as a factor of equity, as they increased opportunities for learning potential and the flow of knowledge within a wide range of populations, especially those that have traditionally been considered to be the most vulnerable, as described by Haddad and Draxler (2002[5]).

Therefore, it is impossible today to propose any target in education without taking ICTS into account, or any target in ICTs without taking into account its impact, direct and otherwise, on education. ICTs and education are increasingly becoming two aspects of a single reality. The equitable generation of opportunities for members of society should lead to the eradication of poverty and misery. Today, nobody disputes that education is the best way for people to improve their condition of life. In the words of the famous American thinker John Rawls, "The function of education in a just society is to erase the effects of the differences of their parents from the children, in order to prevent economic and social inequities disparities from being transferred from one generation to another."[6]

However, the simple fact of providing access to ICTs does not guarantee real impact in educational quality (Angrist & Lavy, 2001), or indeed, the closing of gaps. Therefore, more than six years ago CPE initiated the process of formation for teachers and managers, with regard to competences and skills, which are not merely technological, but also cover basic areas. The scheme seeks to support the teaching of natural sciences, mathematics and social sciences to children and the young. The scheme also promotes community development through the formulation and development of productive products, creating wealth for the population living around the schools, who benefit from CPE.

This formation is addressed to teachers, since their role in this process of appropriation and use of new technologies is of primary importance, because that is what turns the teacher into a dynamic agent for the young to learn, and a promoter of collective processes of the construction of knowledge, developing creative and innovative qualities among pupils, by using technological tools. In fact technology reinforces the valuable work of traditional teaching, "potentiating the quality of learning achievements, facilitating the acquisition, of latest generation competences, promoting learning throughout life, and improving institutional management".[7]

CPE makes a decisive contribution to this, according to a recent piece of research from the Center for Studies on Economic Development CEDE, Universidad de los Andes (2010). The research finds that the programme has a positive and measurable impact on students in schools. The students in need have lower desertion rates, better academic achievement, increased access to higher education, and higher levels of income in employment. All of this, according to the University, suggests that the use of ICTs reduces the gaps in knowledge between rural and urban pupils, and between the boys and girls, and at the same time benefits the poorest students and those with parents who have the lowest level of education. The study found evidence that the use of these technologies increases the possibility of access to higher education among the poorest groups. There is a strong capacity for education policy to be a decisive factor in inclusion and social mobility. In summary, the use of technology, with proper appropriation, encourages the reduction of social and regional gaps.

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[5]   Haddad, W.D. y A. Draxler (eds.) (2002). Technologies for Education: Potentials, Parameters and Prospects. Paris: UNESCO and the Academy for Educational Development (AED)

[6]   Cited by MONTENEGRO, Armando y Rafael RIVAS (2005). Las piezas del rompecabezas, desigualdad, pobreza y crecimiento. Bogotá: Taurus, 1ª edición

[7]   Technical document No. 2 "Measurement of ICT in Education", Unesco IEU (2009), page 11.

The following are some of the main results of the study:

1. Fewer children out of school. As a result of the educational accompaniment of CPE, the impact evaluation found that the schools that benefited from the programme in 2005, and had previously had no kind of ICT programme, reduced the probability of desertion by four percentage points after three years of benefit from the programme, with an integral strategy for educational accompaniment. For example, if the school had a desertion rate of 10 per cent, after three years of the programme it would fall to 6 per cent.

2. Higher scores for greater opportunities. With regard to academic achievement, the research concluded that CPE also contributed to improvements in the results of state examinations (ICFES), by 18.8 per cent of the standard deviation, eight years after a school started to receive benefits. In other words, any Grade 11 student, whose school has been receiving equipment from CPE for eight years, has a score 2.1 per cent higher than he would have if the same school had not received the integral strategy from the programme during that time.

3. More educated young people make a better country. The study also found that young people, who graduated from the schools where teachers had access to the benefits from CPE, increased their admission to higher education by 2.7 per cent. So, if a school that had been receiving programme benefits for eight years graduated 100 young people in 2009, and 42 went on to higher education, only 30 would have done so if the school had not received the benefits of CPE over the last eight years.

4. Higher income means greater progress. Finally, according to international studies higher academic achievement means higher employment income. Results show that CPE can increase employment income by up to 4.6 per cent for students registered in schools that benefited from the programme. To illustrate this, if a graduate that benefited from the CPE programme did not pass on to higher education, she or he would earn about USD261, compared to USD250 per year, if the school had not benefited from the programme.

The importance of the impact on beneficiaries is even more important, as they are the poorest students in Colombia. The majority of poor students have SISBEN[8] level 11 scores, while the average families in public schools have a score of 13.2. The beneficiaries' parents have an average of 4.7 years education compared to parents of students in public schools, who generally have an average of 5.2 years education. SISBEN helps to identify potential beneficiaries of social programmes. For example, a student with a level between 1 and 3, may have access to state subsidies through a number of programmes, and in accordance with the regulations.

This programme is ready to be rolled out to 100 per cent of the public schools across the country in Colombia. The reason why it cannot be rolled out, however, is that there are more than 11,500 schools, covering almost 1,000,000 children, who live in the most vulnerable regions of Colombia and who have never had the opportunity to see or touch a computer. Moreover, 89 per cent of these schools have only 20 pupils, and 70 per cent do not even have electricity. Furthermore, 60 per cent

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[8] SISBEN is the system to identify potential beneficiaries of social programs. It is a tool for identification which organizes individuals in accordance with their standard of living and allows technical, objective, uniform and equitable selection of beneficiaries for State social programs, in accordance with their specific socio-economic situation.

of the teachers in public schools do not know how to best take advantage of these technologies, Thus, there is also a challenge to increase coverage of the pedagogical formation in ICTs.

Conclusion

Universidad de los Andes confirmed that ICTs, coupled with the strategy of appropriation developed by CPE, have a quantifiable impact in reducing social and regional gaps. As a result, they contribute to improvements in education quality, reduce desertion and increase the probability that the young in public schools will be admitted to higher education. However, the challenge in Colombia the next four years is to roll out CPE programmes to 100 per cent of the 43,000 public schools. In effect, the challenge is to reach the 11,500 students who have never had access to ICTs and to provide formation to 100 per cent of teachers with digital competences. Consequently, the impact of ICTs in Colombia will increase by a significant order of magnitude if ICT CPE programme benefits can be appropriated accordingly.

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4. Universidad de Los Andes (2010). "Evaluación de Impacto y Sostenibilidad del Programa Computadores para Educar"

ICT revolution in the Sultanate of Oman

Submitted by Information Technology Authority, the Sultanate of Oman

Information Communication Technologies (ICT) applications are used on a daily basis in the Sultanate of Oman, often without realizing it. There are potentially no limits to the creative use of ICT applications. The strategy of the Sultanate of Oman regarding ICTs is clearly defined in its 2009 Annual Report as, "the Digital Oman Strategy, or e.Oman for short, at the outset, aims to provide appropriate services electronically to citizens, residents, the private and public sectors and the community; in order to transform the Sultanate into a knowledge-based community that is able to achieve the objectives of sustained development".[9] Whether one is a citizen, resident, visitor, business or government entity in the country, e.Oman offers a wide variety of convenient, cost-effective and customer-oriented electronic services that will empower and transform one's life for the better.

The adopted approach of the strategy is that it encompasses e-government as well as digital society issues. It aims at creating an effective government–community–citizen infrastructure that provides better public services to people.

The past few years have seen a remarkable revolution in the ICT realm in Oman. Jobs that once took several hours to accomplish are now done within the click of a mouse – saving time, energy and frustration. The examples of different projects with regards to e-business, e-learning, e-health, e-employment and e-agriculture are illustrated in order to prove how ICT applications could encourage the development of an effective government–community–citizen infrastructure that provides better public services to people, resulting in a meaningful information flow between the government and citizens.

The National e-Payment Gateway (ePG) launched by Information Technology Authority (ITA) in August 2008 provides an operational component of the e-governance infrastructure and full e-commerce facilities that allow secure online payments (e-Payments). The ePG supports multiple banks and operates as a critical shared service within the e-governance architecture along with Oman's forthcoming Government eServices Portal. The ePG currently supports the Internet and various other electronic channels including mobile phones, IVRs, call centers, etc. ePG is reliable, secure and future-proof with Payment Card Industry Standards. It is a cost-effective and complete payment solution for ministries and private sector merchants.

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[9]   Information Technology Authority Sultanate of Oman, e.oman, *Annual Report 2009*, p19

WSIS Stocktaking 2011: Success Stories

2015
World Summit
on the Information Society
Turning targets into action

A new leap in the world of digital transactions in the Sultanate

This new e-Government initiative enables you to put money in your National ID card or Resident card and make e-Payments at different government offices and private organizations.

There are various entities that are connected to the ePG and could benefit from gateway including Omani banks such as the National Bank of Oman, Bank Muscat, and Bank Sohar and e-commerce portals. A good example is the internet auction website www.omanbay.com, where users can offer their second hand or other valuable items for sale online. Omanbay is allowing users through ePG to pay for the advertisement of their products. The two mobile telecom operators have also connected to the local ePG for their customers to make online payments and top up their telephone Business-To-Consumer (B2C). One of the current online Government-to-Citizen G2C services using this system is Royal Oman Police, www.rop.gov.om, where car owners can pay their traffic fines online. Another example is the online donations portal, www.onlinedonations.org, which is a common portal for several local charities. Users can go online and donate to their desired charities. From the official launch of the ePG on 30 August 2008 (with five merchants) until 30 September 2010, there have been more than 97,707 transactions with a total value exceeding USD 7,943,000.

As part of the Government's effort of bringing in foreign investment for the country, one of the initiatives was to ensure a hassle-free business registration process. It should also be cost-effective and reduce the time needed for business registrations. As such, the idea of the One Stop Shop (OSS) emerged in May 2006, combining different governmental agencies to offer various services to investors.The fundamental element of the new system is a one-stop service, which offers comprehensive services via technology. The project was introduced by Ministry of Commerce & Industry (MoCI).The primary objective of the system is to provide a state-of-the-art, scalable, secure and reliable solution, enabling access through multiple channels, providing feedback mechanisms such as e-mails and SMS to investors. Future ventures will provide value to MoCI/Investors through the official website.

In the past, an investor had to wait for one month for the commercial registration application to be completed and then had to visit each government entity separately in order to get the required approvals for the registration. In some cases, inspections had to be made before the issuance of the registration act. In fact, the time required for each application in any concerned entity was a minimum of two weeks. However, with the introduction of the OSS, each application is processed within one to two working days, which saves investors a considerable amount of time and effort.

The OSS solution is built around a series of functional building blocks and systems designed to meet the MoCI's requirements such as the OSS web portal, the gateway to MoCI's Intranet, and the wider Internet. Such systems include: a self-service system for investors; the MoCI back office system, which allows the MoCI to drive and manage the OSS efficiently; the front office system for the MoCI, which presents a unified and secure set of functions for internal and external users; a document management system to manage the submission and storage of scanned official documents; a workflow system to allow business processes to be automated within the OSS system; an interface to an electronic payment gateway, allowing investors to securely pay fees online; and an interface to the Government System, enabling a comprehensive set of web services. The system has been

successful in achieving the overall objectives as defined in the digital strategy, the vision, and mission, as set by the management of the MoCI in addressing the overall development of services.

> **Story of Sulaiman Masoud Al-Khayari, Director-General and Owner, House of Wisdom for Translation, Sultanate of Oman**
>
> The Ministry of Commerce and Industry (MoCI) has made great strides in facilitating transactions by providing One Stop Shop. Since I am a businessman and an owner of one of the leading institutions in the field of translation, I need to do all transactions quickly and easily in order to save time. Now all transactions can be done electronically. One Stop Shop speeds up the completion of transactions. Thanks to MoCI.

The Electronic Educational Portal has been recently introduced by the Ministry of Education and represents a quantitative leap in the use of modern information technology in education. The portal is an electronic communication system for the exchange of information, ideas, experiences and views on various aspects of the educational process. It contains a database which assists educational sector employees in their decision-making and in the implementation of their plans, programmes and projects that helps to improve the efficiency of educational planning and allows the Ministry to evaluate quickly the results of its development programmes. The project involves the development of a comprehensive system which is compatible with, and complementary to, the Ministry's vision for deep-rooted educational reform in the Sultanate.

The Electronic Educational Portal provides attractive interactive teaching tools using advanced and innovative techniques, supports improvements in evaluation and assessment and teaching methodologies and curricular development. In doing so, it assists in the creation of a quality education system. The portal's electronic teaching programmes train teachers on how to develop self-learning skills among their students and enable interested members of the public to extend their educational opportunities through distance learning and virtual classrooms.

The main obstacles during the implementation of the project are: infrastructure, human resources, e-curriculum, society and culture, financial resources and application solutions (creativity).

Over a number of years, it had become apparent in Sultanate of Oman that the way in which students were enrolled in the **Higher Education Institutions (HEIs)** could be improved. In the past, when students received their examination results, they had to travel to each Institution to submit a separate application. This was a great inconvenience to students and their parents, and it often incurred considerable expenditure. Therefore, the Ministry of Higher Education (MoHE) established a new system that enables students to apply electronically, with one single application, to any Higher Education Institution (HEI), through the **Higher Education Admission Centre (HEAC)**. The new system

operated for the first time in 2006.Through the HEAC system, students do not need to travel to HEIs one after the other to submit their applications. Another change is that applicants apply before they sit their final examinations. The idea is that they will be able to make better suitable choices at a time when there is less pressure and when more people will be available to advise and assist them. Although students will be allowed to change their choices after getting their results, the advice to applicants is that they should not postpone these critical decisions until such a stressful time. The **HEAC** has made the necessary arrangements with all the institutions to enable students to benefit from the new central admission system.

> **Story of Khamail Ahmed Al Balushi, Student, Um Saad Al Ansariya School (8th Grade), Muscat Educational Region, Sultanate of Oman**
>
> I am Khamail Ahmed Al Balushi, a student at Um Saad Al Ansariya School, 8th Grade (Muscat Region, Sultanate of Oman). I believe the Educational Portal is an excellent project implemented by Ministry of Education in the Sultanate of Oman and it is becoming the backbone of the education system in the Sultanate. This portal is very important to me as a student, because it has simplified most of the procedures and it offers a wide variety of services to all the education members. As a student, I can perform many services online such as reviewing my performance appraisal, selecting school activities, viewing my electronic data file and participating in educational forums. In addition, my parents are continuously notified about my absence, performance and related issues through the SMS services implemented by the portal.

The Ministry of Health (MoH) in 1997 developed and implemented a **Hospital Information System, called Al Shifa**, tailored to fit each of its health-care institutions.. Since then, Al Shifa has been implemented in all major health-care institutions. The total number of institutions that have implemented the Al Shifa hospital information system is over 170. **Al Shifa** incorporates all the processes and procedures in the hospital environment to make it almost "paperless". The system is a powerful tool running through a single menu that represents the fundamental components of the electronic medical record. It provides comprehensive online data inquiry reports based on the user-defined search criteria for retrieving and displaying only the desired information that can be viewed from any workstation.

The system has been successful in achieving the overall objectives as defined in the digital strategy, the vision, and mission, as set by the management of the Ministry of Health in addressing the overall development of services. As part of the Ministry of Health Al Shifa electronic system, the Ministry has developed and enhanced this application by developing a unique referral system called **Al Shifa e-Referral System.** The electronic referral engine involves first streamlining the Referral Process itself,

deciding on the clinical documentation standard for referral for treatment, and then adopting the standard for the investigation. Three immediate benefits of this initiative are: the faster speed of processing the referral, the automated feedback received upon submission of the referral, and the presence of local management at each health-care institution in the referral process. This reduces documentation processes and reduces the referral process from three days to a matter of minutes. It further addresses issues such as the lack of transparency in the referral process, the time it takes, the lack of feedback from referral, and the error-prone manual input of laboratory referral results at the referring institutions. The system impacted on the referral of patients in the Sultanate of Oman by connecting all the health-care institutions across the country and providing easy, fast and more transparent referral of cases. Care providers can now track their patients whenever they are referred to other institutions, which leads to better care for citizens.

Before the implementation of the **Manpower Registration System (MRS)**, the work permit and application process for the hiring of foreign talent in Oman was tedious, time-consuming and labour-intensive. According to 2007 statistics, the Sultanate of Oman has a total of 840,000 foreign workers to complement the current workforce. To apply for work permits for expatriate workers, companies or sponsors were formerly required to complete the application form and submit the completed form to the Ministry of Manpower in person, then the Ministry would manually process the forms. The normal time to obtain approval for the work permit was between one to three months under the manual system.

With the development of the electronic MRS, the Ministry of Manpower has greatly improved customer service to the companies and other ministries' organizations. Today, it takes only one week to obtain a work permit for a foreign worker, and through the system the companies can easily update foreign workers' information regularly. Furthermore, the system is integrated with other ministries thereby providing efficient Government-to-Government (G2G) application. The Ministry of Manpower provides information about the labour force to different government sectors in an effort to help expedite their related services to citizens and residents. The integration of applications within the Ministry of Manpower along with other ministries is valuable to the community. It demonstrates a working example of integrated e-Services and information sharing between government ministries. The system has been successful in achieving the overall objectives as defined in the digital strategy, the vision and mission, as set by the management of the Ministry of Manpower in addressing the overall development of services.

The Ministry of Civil Service (MoCS) introduced the project **e-Recruitment**. The recruitment process of MoCS is done at least three times a year to notify jobseekers of available vacancies, and advertise for upcoming vacancies. The MoCS used to get more than 20,000 applicants per advertisement. Thus, according to the old procedures, applicants were required to submit their applications and CVs by hand to the MoCS recruitment department located in Muscat, the capital of the Sultanate. This meant that the applicants had to travel from various regions to the capital city. In addition, after submitting the applications, all applicants had to take a paper-based written qualification examination. Based on the high number of applicants, it often took a long time to grade, pre-qualify the candidates and select them for formal interviews. The candidates who cleared the written exam would then be called for an interview, which was also manually documented. The whole recruitment process would take six months on average and sometimes could take up to 12 months.

The new recruitment system, launched in 2006, has eliminated many of these inconveniences. Using SMS technology, jobseekers can apply for jobs in the civil service by sending an SMS with their Manpower Registration Number and the corresponding job identification number published in the

advertisements. Through integration with the Ministry of Manpower's National Manpower System, the system validates the applicant's data in seconds. Jobseekers can apply for jobs in the civil service at any time and from anywhere, eliminating the need to travel to the capital just to submit the applications and sit for the entrance examinations. From an initial six months, the whole process is shortened to less than a week, from notification to nomination. This is a huge savings of 23 weeks, plus the elimination of having to travel or queue for approval, as well as the anxiety of waiting for examination results. The citizens now can get the required information by sending the details of the job advertisements to the mobile phone numbers provided. These subscribers will be notified with the dates of job advertisement as appearing in local newspapers. The system offers facilities to inform job applicants about the status of their application, date of scheduled interview or tests and their results. Through this service, queuing is reduced at the Ministry, allowing employees to focus on better service to the public. Applicants benefit by saving their time and effort in physically visiting the Ministry for all their enquiries.

The Ministry of Agriculture (MoA) acknowledged the importance of ICTs by introducing e-agriculture services and projects such as an **e-Permit system** that assists the Veterinary Quarantines Department in overcoming issues related to generating permits. Such permits are essential to ensure that the country of origin, as well as export and transit countries have good zoo sanitary and environmental preventive measures. A total of 48 services are available on the MoA website such as registering beehive certificate, requesting support for modern irrigation systems for farmlands and requesting change of use of an agriculture land. These services help citizens and business in their daily life by easing the process of performing agriculture-related services.

Mada (Qatar Assistive Technology Center) working towards an inclusive digital society

Submitted by The State of Qatar

Author: Ahmed Habib

Since opening its doors in June 2010, Mada (Qatar Assistive Technology Center) has served as a critical resource to people with disabilities in Qatar.

Located in the heart of downtown Doha and open to all, Mada offers an interactive environment showcasing a wide range of ICT-related assistive technologies (AT). These include, to name a few: adaptive keyboards; Braille readers; text-to-speech software for the blind, low vision and people with learning challenges; hearing induction loops for the deaf; and cutting edge eye gaze devices that are hands-free remote human–computer interfaces, which can be used by people with severe mobility challenges by using only their eyes.

Creating awareness about the potential of AT is a key component in promoting its wider use, and forms an essential part of Mada's work. Assistive technologies have a great impact on bridging the digital divide for people with disabilities, which means greater social inclusion, integrated education and employment opportunities. As such, Mada allowed thousands of community members in Qatar to learn about various ways in which people with disabilities could benefit from the use of ICTs.

Throughout the scope of its work with a variety of social actors such as Disabled People's Organizations (DPOs), schools, employers and government agencies Mada committed to empowering people with disabilities to become active participants in a knowledge-based economy building confidence and security in the use of ICTs as a mechanism for social change.

For people with disabilities who are facing challenges in using ICTs, Mada allows them the opportunity to have their needs and abilities assessed by a team of experts.

By customizing solutions for every individual, Mada provides a service that is empowering to the end user. The Centre's staff works closely with individuals and organizations to ensure that people with

disabilities are connected, wherever they are – whether in learning institutions, at home, or in workplaces throughout Qatar.

Mada also provides extensive training programmes for professionals, caregivers, and users of assistive technologies. This includes workshops on the latest trends and thinking in AT and individual sessions for members of the community. Topics covered by the training team included: disability awareness, AT for visual impairments, dyslexia, voice recognition software and accessible design.

Edwin is 16-year-old who visits the Mada resource centre regularly. As a person with low vision and learning difficulties, Edwin uses Assistive Technology to connect to ICTs and gain much needed literacy skills.

Anirban Lahiri.

Since graduating in Computer Science from Carnegie Mellon University in Qatar, Anirban Lahiri worked to improve the lives of others. His knowledge of technology coupled with passion for encouraging greater use of ICTs by people with disabilities drove him to become an integral part of the Mada project.

Anirban is an avid user of ICT-related Assistive Technologies. He uses a screen keyboard to type, and a computer interface to control his smart phone that facilitates WHAT??? His experiences have shaped his intimate knowledge of AT and made him an advocate for further innovation in the field. Currently, he is the Senior Assistive Technology Specialist at Mada (Qatar Assistive Technology Center), where he works to actively connect people with disabilities to the world of ICTs.

Anirban ensures that the latest AT is available to people with disabilities in Qatar. He directly supports the Mada's assessment and training teams to ensure that the solutions offered are impactful, wherever they may be applied.

The Centre's name, Mada < مدى >, means "horizon" in Arabic, and reflects the limitless potential of assistive technologies to impact the lives of people with disabilities. An important element of Mada's vision is the research and development of localized AT solutions by increasing the availability of software and other forms of access technologies in Arabic. The Centre is currently working with a number of manufacturers to test and launch various localized assistive technologies. For example, Mada is working with Toby Churchill, a British manufacturer of portable text-based communication aids for people who cannot speak, to develop an Arabic version of the Lightwriter, which is a popular Augmentative and Alternative Communication (AAC) tool. Innovation in the field of Arabic language solutions will bridge the gap between Arabic speaking people with disabilities and the world of ICTs, and provide the tools necessary to people with disabilities to create more digital Arabic content.

Government Vision

The center is governed by the Supreme Council of Information and Communication Technology, ictQATAR, which enables and regulates the ICT industry in Qatar; the country's two telecommunications operators (Qtel and Vodafone Qatar); as well as Microsoft and Qatar National Bank, the leading national bank. This enables Mada to be driven by a national policy, whilst benefitting from the expertise of industry leaders that are shaping the ICT infrastructure in Qatar. Dr Hessa Al Jaber, the Secretary-General of ictQATAR, announced the establishment of a dedicated Assistive Technology Center in 2008, the year when the International Telecommunication Union (ITU) called on Member States to connect people with disabilities.

The Qatari Government's role in establishing Mada is a tangible manifestation of its own belief in the role of connecting people to the technologies that, "enrich their lives, drive economic development and inspire confidence in the nation's future", according to ictQATAR's vision statement. Mada also provides a proactive mechanism of guaranteeing the right of people with disabilities to access digital content, as outlined in the UN Convention on the Rights of Persons with Disabilities, to which Qatar became a signatory in 2008.

Mada's work is carried out in tandem with the outward-looking vision of the Qatari Government related to human and social development. The Centre's vision is aligned with the country's National ICT Plan 2015, and more broadly, Qatar's National Vision 2030.

Qatar is developing an e-accessibility policy in collaboration with Mada and G3ict (The Global Initiative for Inclusive ICTs). The e-accessibility policy will ensure that licensed telecommunications operators, government agencies, and publicly funded organizations provide ICT services that abide by accessibility standards.

Some of the more prominent national initiatives coordinated by Mada in order to implement this policy include:

- The "Connected" initiative in partnership with Qtel and Vodafone Qatar aimed at reducing the barriers facing people with disabilities in using mobile technology through the provision of AT, greater in-store and web accessibility; and

- Web accessibility audit services that will assess websites and portals in Qatar according to international standards set by the World Wide Web Consortium.

International Cooperation

As a public–private partnership, Mada recognizes the importance of international collaboration with organizations that have developed best practices in the area of connecting people with disabilities.

Mada's mission is based on the International Telecommunication Union's vision of a world with Information and Communication Technology for All (ICT4All). Since participating in the World Summit on the Information Society (WSIS) in 2005, Qatar has actively worked towards meeting the goals outlined within the WSIS Plan of Action. The plan's commitment to the universal provision of ICTs is reflected in the mission and vision of a Center such as Mada.

Qatar's vision in establishing Mada demonstrates many positive implications of the ethical dimensions of the Information Society and constitutes a vital step towards achieving the Millennium Development Goals.

The "Books without Barriers" initiative is an example of how global public–private partnerships can benefit people with disabilities in Qatar. By using Bookshare, a project of US-based high-tech firm Benetech, people with disabilities in Qatar will be able to download tens of thousands of electronic books in an accessible format for the first time. The implementation of the Bookshare initiative in learning institutions such as Qatar University enhances the educational experience of students with visual, learning and physical disabilities. It exemplifies the way in which ICT applications benefit people in all aspects of life. An important focus of the joint initiative between Bookshare and Mada is to develop and provide Digital Arabic Content. The two entities promise to produce 500 Arabic accessible e-books in 2012. This will ensure that accessible e-books take cultural diversity, identity and linguistic diversity into account.

As a centre that is built on the principles of cooperation, Mada's long-term success will rely on its ability to engage other partners in building an accessible ICT ecosystem.

Mohammed Shafeea By the age of 13, Mohammed Shafeea was presenting a television programme, a Qatar Television's flagship children's show called "Our Little Planet." He was also regularly contributing to Qatar Radio while attending the Al Noor Institute for the Blind in Qatar, where he excelled in his studies. More recently, Mohammed began working with Al Jazeera Children's Channel through a work placement programme with Mada aimed at using Assistive Technologies (AT) to encourage the employment of people with disabilities.

Mohammed's ability to excel in all his endeavours stems from the fact that he has integrated ICTs into all aspects of his life. Instead of using slow and heavy Braille note-takers, Mohammed uses the latest AT to navigate through the information superhighway. As an advanced user of AT, he is setting the pace for other members of the blind community in Qatar to get fully connected.

As an advocate for accessible ICT ecosystems, Mohammed actively challenges many of the barriers that face blind and low-vision ICT users. He has used his media skills to record audio-instructional guides on AT for users who cannot read Braille. In his work with Mada, Mohammed conducts advanced user testing for new technologies, and holds training sessions for users on a variety of AT.

For its part, Mada has supported Mohammed's ambitions. Through its partnership with ictQATAR, Mada has sponsored Mohammed in his academic career, where he is in his first year of media studies at Qatar University.

Mohammed is a trailblazing example of a young generation of Qataris that utilize the benefits of ICTs to open a new world of opportunities. Mohammed is a true ambassador for people of all disabilities who strive to use ICTs as tools for improving their quality of life.

Conclusion

Mada is a non-for-profit organization based in Doha, Qatar that is committed to connecting people with disabilities to Information and Communication Technology (ICT) as a way of fostering greater equity and empowerment, and creating public awareness around best practices in Assistive Technology (AT).

Mada is committed to providing solutions that are based on impartial-expert advice and assessment to ensure best practices in ICT-related Assistive Technologies. This also includes providing up-to-date information and training for people with disabilities, parents, and professionals. Mada believes that people with a disability have the right to find a way of connecting to digital information in the way that they choose and prefer. This is the guiding vision for Mada's aspirations of connecting people with disabilities. ICTs take many forms, including computers, mobile phones, e-book readers, games consoles, etc. This vision is one that is shared by many people and nations across the globe. Mada plays a part in contributing to finding innovative and creative solutions to help connect all people with disabilities.

To achieve universal access for people with disabilities, a number of actions needs to be taken into consideration to achieve the vision. Mada recognizes that ICT4ALL is achieved when:

1. People with disabilities receive independent advice on the best technology to meet their needs.

2. People with disabilities are helped to acquire the technologies they require.

3. People with disabilities are provided with the training and support they require to implement the technology effectively.

4. Digital content is designed to interact effectively across platforms and with a full range of access technologies.

5. A communications infrastructure based on national and international policies is implemented to facilitate full access for all.

We welcome partnership and participation from all who share this vision of ICT for All.

Please visit our website at mada.org.qa or email info@mada.org.qa

WI-FI covering of Republic of Macedonia

Submitted by the Former Yugoslav Republic of Macedonia, Ministry of Information Society

After an assessment was conducted of the current situation and level of internet technology development in the Republic of Macedonia, and specifically in the rural areas, as well as the internet access possibilities of the population in those regions, it was concluded that the rural environment was significantly underdeveloped compared to rest of the country. The main reason for this stagnation is insufficient economic interest from internet providers, as well as the hardly accessible terrain.


Taking in consideration these findings, the primary motive for "WI-FI covering of Republic of Macedonia" project is to stimulate the progress of the information society in such areas. It is also a sort of subvention for the operator which will have a positive impact for further investments.

The criterion for defining internet kiosks' placement is the location of peripheral schools all across the country. The kiosks are installed outside the main entrances of these schools, and so are available to everyone. Internet kiosks are also an open-access point for wireless internet network which is accessible in a range of 250 metres.

Because of the fact that this network and the kiosks themselves are open and available to anyone, as a necessary security measure, offensive contents (Nazism, pornography, anti-Semitism, aggression and others) are filtered, with the purpose of protecting the young population from bad influences.

The monitoring system included in this project provides utilization statistics and alarms about eventual defects. It supports fast and accurate 24/7 maintenance service provided by contractors.

In recent years, popularity and utilization of wireless networks have primacy due to their availability and price. They can be installed anywhere. The reason of wireless networks' success should be also considered from an economic, financial and low-cost aspect. Wireless network installation is cheaper than the wired network, because it does not request construction work, such as digging streets and laying cables, which drastically reduces the expense. The installation only requires the setting of a few access points.
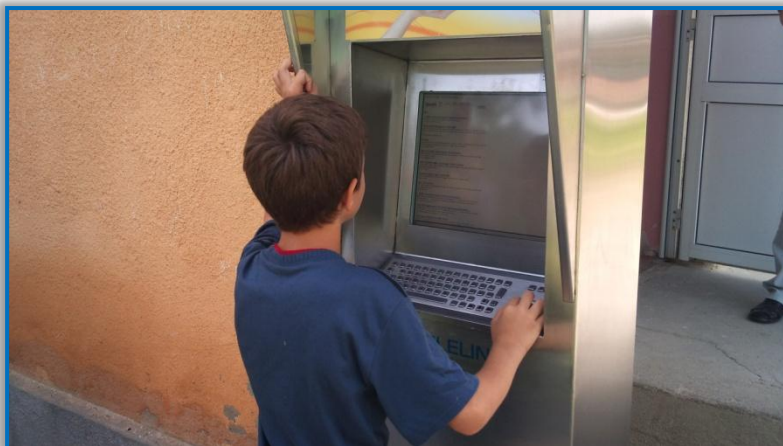
The main characteristic of wireless networks is flexibility. This feature allows changes to be made in the environment while all network components remain connected.

Popularity, availability, price and flexibility are wireless networks' advantages. A disadvantage of these networks is security. The data is transmitted though a certain frequency, which makes it accessible to anyone near an access point. Anyone who possesses a laptop and a wireless card can connect to a company network in an easy way, and can reach sensitive data. Therefore, good strategy, technology and network protection methods are necessary. The security level can be raised only with proper strategy and technology.

The main priority of the project "WI-FI covering of Republic of Macedonia" is to offer further motivation and support in developing the ICT sector in Republic of Macedonia. The project's goal is to prepare Macedonian citizens for the modern IT economic market and global competitive economy. The project would focus on increasing the percentage of Internet users in Republic of Macedonia, thus making the Internet an available tool for all citizens. Improvement of the business and economic climate in the Republic of Macedonia is also expected. The low cost of WI-FI technology is a significantly important and favourable precondition for its use on the territory of the Republic of Macedonia, compared with the expenses that would emerge from setting broadband cables over the whole territory.

There are several benefits to be expected during the implementation of this project:

1. *National identification by modernization and citizens' IT skills – WI-FI nation.* One of the expected benefits from the launch of the project for WI-FI cover is the promotional effect on a country level. With the successful realization of this project, the Republic of Macedonia could be affirmed as a country innovator in the Balkans with an extremely high level of IT capacity. Enjoying the reputation of a country with implemented contemporary WI-FI technology, Macedonia could even expect improved attractiveness for foreign investments, as well as more prestige on an international level.

2. *Stimulating democracy.* Internet helps to include citizens in the decision-making and governance processes through new platform forums, blogs and social networks. New internet media allow displacement of the focus from the centralized media system to an essential civil democracy, as well as participatory, transparency and stimulus for civil activism.

3. *Increasing benefits offered by internet technology in education field*. By using internet in education, students will acquire knowledge and experience, will be able to share ideas and will have the chance to learn about many different cultures. Internet can be useful for parents and teachers as well. The interactive teaching with the use of the Internet will assist students and teachers to be mutually involved in the learning process.

4. *Improving business*. Utilizing internet on a general level creates conditions for opening new markets and services which can procure new economic and social benefits. The Internet, as a tool, benefits productivity and efficiency in the business sector and public administration. E-commerce and e-business, thanks to the availability of wireless internet, can ensure faster conclusion of business deals, changing the way business is conducted. The country's economy would be stimulated by the increased information and knowledge exchange, as well as by the improved competition which the Internet offers.

5. *Users' mobility*. The main strong side of WI-FI wireless connection is users' mobility towards internet accessibility. Rural areas, which in the past were deprived of Internet connection because of the terrain, will now have the possibility to exploit the benefits which mobile accessibility of internet information offers.

All the locations are divided into 13 regions, and assigned to three operators, depending on their offers in an online bidding system. Taking into consideration the immense dimensions of this project, with 680 Internet kiosks with access points installed across all the country, the process of implementation is successfully closed.

« Ecole des Sables »in Mali

Submitted by Moussa AG ASSARID, Écrivain – Consultant en Développement et Communication

The Touareg community is one of the oldest communities in the world, but the absence of education for children restrains the development of the region. Action towards a better future must be taken, and education is one of the only ways to resolve the impasse. Hence the Ag Assarid brothers decided to create École des Sables in 2002. This project offers nomadic children an access to quality education. École des Sables in Taboye gives children, whose parents continue to live as nomads, an education at a residential school which is open all year around. At the beginning of the school year 2010–2011, 110 pupils attended the school, from which 86 were nomadic boarders. There are three classrooms and six teachers, including three women and three men remunerated by the state of Mali. The school applies a teaching method that targets excellence respecting local cultures. The rate of success at elementary school is 99 per cent and at high school is 100 per cent. Access to education is necessary for integration into Malian society and for Touaregs to learn the official language, which are French and national languages.

Ten years after the creation of the École des Sables Saint-Exupéry in Taboye in 2011, the project was expanded to two other schools in the regions of Tombouctou and Kidal, still in northern Mali. All of these three schools are supported by the Ministry of National Education and local communities, which demonstrates the credibility of the project. For the last two schools, classrooms have been rebuilt and a residential school and high school have been set up. Those three schools are located in northern Mali, where the lowest school enrolment rate in the country is found.

To finance the schools, Moussa, a writer, sold his books through his blog (*http://moussa-blog.azawadunion.com*) and then gave a part of his benefits and royalties towards the funding of École des Sables residential schools.

The purpose of this projects is to develop a winning partnership between Écoles des Sables and schools from other countries around the world. The establishment of correspondence by different means of communication, including the Internet, is essential in order to make this project successful. The Internet basically enables the exchange on teaching methods, pedagogy and personal cultures between Touareg community and schools in France.
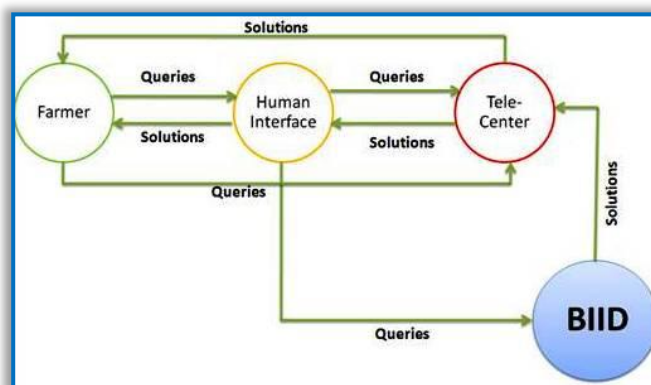
e-Krishok

Submitted by Bangladesh Institute of ICT in Development (BIID)

Background on e-Krishok

Bangladesh Institute of ICT in Development (BIID)launched an ICT-based initiative known as e-Krishok (e-Farmer) in October 2008 in the agricultural sector in Bangladesh. The idea for e-Krishok arose out of the need to provide effective extension services in the agricultural sector in Bangladesh.

BIID has been supporting local cellular network operators and telecentre networks in more than 500 locations all over the country in order to reach rural communities with various ICT-based informational and advisory services. It was, therefore, logical to use this platform to introduce e-Krishok to the wider farming community. e-Krishok evolved as a major campaign to bring the benefits of ICTs to the grassroots level in rural Bangladesh.

The information delivery model applied by BIID is quite simple. A rural telecentre owner/operator is trained to use the user-friendly Bangla content available on the e-Krishok website. It includes farming technology, new verities, disease prevention, input information (source and price), best practices and Frequently asked questions FAQ on agri-problems. A number of success stories from e-Krishok members are also being featured on the web. Many of these centre's were set up by local

entrepreneurs with micro-credit obtained through various micro-credit organizations such as Grameen Bank. The centre operator browses the web portal to locate the solution to a farmer's problem or query. In case she or he is unable to find a solution, she or he sends an e-mail to info@ekrishok.com. An agriculturist managed by BIID responds to all queries sent to this address on a daily basis. Hence, in about 24 hours, the centre operator finds a solution, which she or he passes on to the farmer. Farmers in the locations where e-Krishok was activated (100 locations all over Bangladesh) are mobilized using a local contact known as e-Krishok brand promoter, or BP. A BP communicates with farmers in two stages. In the first stage, a group of farmers (approximately 30–50) are organized in a courtyard for a meeting. In this meeting, the BP, along with identified local elderly farmers and opinion leaders, make farmers aware of information services available through their local telecentre.

To ensure sustained communication with a number of identified farmers, a BP would also encourage those who gather at the courtyard for a meeting to enlist as e-Krishok members and would take note of their most urgent problems in their current agricultural activities. In the next step, enlisted farmers would be contacted directly in their field or at home to further understand their farming problems or to help them reach solutions to problems already recorded. The role of the BP is to create a first-time trial of the service. For further inquiries or problems, a farmer would be required to come to the telecentre.

Launching and initial outcome of the e-Krishok campaign

As it was mentioned previously, e-Krishok was launched in October 2008, in ten locations around Bangladesh. At this initial stage the priority was on learning and addressing specific local needs such as appropriate varieties of seeds and technology, etc., plant diseases, input (pesticide and seed) sourcing, local experts, market information including price and contacts of retailers, wholesaler, bulk buyer, building the optimum delivery mechanism and fine-tuning the entire process so that the best possible service provision model could be built and implemented. The major questions were: 1) would the farmers accept this new technology?; 2) could e-Krishok gain the trust of the farmers?; and 3) was it an initiative that could reach critical mass so as to become sustainable?

The initial stage began in October 2008 and ended in April 2009. The major milestones in the piloting of the campaign were to: understand the local setting and farming-related issues; recruit BPs; set up the groups and create e-Krishok member ID; establish crop calendar-based problem identification systems; and organize problem specific information and advisory services, to enable online video-conferencing.

The key achievements of the initial stage are summarized in the table below:

The campaign key achievements	Farmers	Queries
Farmers reached (direct and indirect)	2500	
Registered Members (direct reach)	756	
Total queries from farmers handled by TELECENTREs in 10 locations (Trial of Services)		550
Total of farmers who benefited by applying information/advice obtained from telecentres (Beneficiaries)	150	
TOTAL	**3406**	**550**

The most crucial lesson learnt during the pilot of this project was the importance of earning the trust of the farmers, so that they would be motivated to seek the services of a telecentre or any other ICT-based service-delivery platform as and when needed. In some areas the project was more successful than in others. The factors that contributed to better outcomes were that: a) the entrepreneurs were motivated and participated wholeheartedly to reach farmers effectively through the campaign that helped the local entrepreneurs to promote their centre among

the local communities and get an edge over other local competitors; and b) the BPs were active and successful in connecting with farmers.

This initial phase led the BIID to identify four major areas of greater focus and formulate recommendations within the identified areas for replication of the campaign:

1) Content Provision and Delivery

Scaling up the initiative in more locations would require a stronger expert consultation. Furthermore, greater focus would be required to serve farming activities in livestock, poultry, fisheries and some non-conventional crop cultivation such as strawberries, mushrooms, etc. Above all, fertilizer recommendations for yield maximization were increasingly in demand by farmers. On the delivery front, the BPs role in getting the solutions to the farmers in their fields and/or homesteads would be crucial. The goal of the strategy is to motivate farmers to visit an ICT access point.

2) Capacity Building

The experiences in the pilot phase showed that centres tend to forward queries to the agricultural experts without making adequate use of the information platform available at www.ekrishok.com.

3) Field Coordination and Monitoring

The level of field coordination that was required of the BIID for only ten locations clearly indicates that such field coordination in replication in more locations dispersed all over the country will require decentralized provision for field coordination. Hence, the BIID would employ a regional coordinator to cater to telecentres in each division of the country.

4) Collaboration with the Government

In view of the long-term vision of the campaign to induce behavioral change of farmers as well as to develop a sustainable model of content management and delivery to farmers, the BIID underscored the need for a systemic change that would bring together private resources (ICT networks) and government facilities. The Government's provision of agricultural information and services through the DAE, the AIS and other allied bodies such as the Soil Research Development Institute (SRDI), etc. constitute a huge resource pool that, if deployed effectively in partnership with private sector, would bring about revolutionary changes in the information landscape to farmers.

Replication and scaling-up of e-Krishok nationally

The success of the initial stage convinced the BIID that e-Krishok was a viable initiative, able to reach farmers at the grassroots level with compelling benefits, which encourages farmers to change their behavioral mindset. Farmers at the ten locations increasingly began to look at the telecentres from which e-Krishok is available as their preferred source of information and advice. From BIID's perspective, this achievement of changing behavioral patterns justified expanding the initial intervention to 100 locations throughout Bangladesh.

The replication and scaling up of e-Krishok to 100 locations began in October 2009 and ended in February 2010. In less than five months, the results of the campaign exceeded expectations formed as a result of the pilot project.

The results of this replication and scaling-up phase are summarized in the table below.

The campaign key achievements	Farmers	Queries
Farmers reached (direct and indirect)	14228	
Registered Members (direct reach)	12668	
Total queries from farmers handled by TELECENTREs in 10 locations (Trial of Services)		6793
Total of farmers who benefited by applying information/advice obtained from telecentres (Beneficiaries)	2310	
TOTAL	**29206**	**6793**

During this replication, BIID incorporated a new service called Fertilizer Recommendation Software (FRS), developed by the SRDI and supported by Katalyst Bangladesh. As a test case the software-based fertilizer recommendation was introduced in 20 locations. A tool for precision farming, the FRS has started to show promising uptake by e-Krishok member farmers, providing impetus to the local Krishi offices of the Government for participation in the campaign. This is accomplished through the organization of courtyard meetings for farmers, sharing FRS details from government officials, and then following up by inviting the farmers to additional group meetings at strategically located centres to demonstrate the service online.

It can be said without equivocation that this replication and scaling-up phase was a success. However, in view of the long-term sustainability of the initiative, a few components in the service-delivery model were criticized for not being cost-effective or sustainable. One criticism is the use of salaried brand promoters, and the other criticism is the financial incentives and future direction for the access points. The first criticism targets the sustainability issue – who will continue to pay the brand promoters if they are to be removed from the service delivery model, and how will their role be filled in. The criticism targets the financial issue and ask the question how and when to commercialize transactions between a farmer and a centre. The major outcome of the e-Krishok initiative was to have built trust and confidence among the farmers for an ICT platform to deliver information and advice to farmers.

There are several examples that illustrate how e-Krishok can be applicable in the lives of farmers. These examples clearly demonstrate how e-Krishok is able to bring about positive change in the lives of farmers through the use of ICTs.

Ujjal had an agricultural problem where the potato plants were attacked by pests, which spread rapidly to the healthier plants. A swift solution was crucial, before further damage was done to the harvest and, consequently, the family's food supply. The solution for Ujjal's problem was found thanks to the online agricultural information repository provided by e-Krishok service.

Chaina's case is different and it relates to a disease which attacks bottle gourd plants, resulting in very low yields. She benefited from the e-Krishok service available at a local telecentre from a courtyard meeting organized by a BP of e-Krishok, following the same procedure of e-Krishok as in the previous case.

Previously, Iqram regularly faced agricultural problems and the solution was to use pesticides. This time Iqram found out about the use of agricultural solutions from the local Community Information

Center (CIC) through the e-Krishok Campaign. By applying the solution from CIC, Iqram estimates that he was able to save nearly 90 per cent of his rice crop.

From the beginning of 2009, Mojid Ali was facing problems with his Cucumber's field. Thirty-five per cent of Ali's cucumber field began shrinking gradually and becoming weaker. The cucumbers were attacked by pests. According to Ali he went to CIC and told them what he was experiencing. CIC suggested that he use 'Sex Feromon' to kill pests and 'Sumithion', 'Sitap', 'ripot' to get rid of *Mojaik* disease.

More cases are available at http://www.ekrishok.com/frmListSuccessstory.aspx

The above examples clearly illustrate how e-Krishok is able to change and impact the lives of rural farmers in a positive way. e-Krishok has given them a valuable source of information and advice, which they sorely lacked before. Through e-Krishok, they were able to increase their livelihood and living standard. Now the farmers are able to better plan for the future a clearer frame of mind.

The success of e-Krishok has convinced BIID that it is a viable ICT-based service, which is of real value to farmers. This belief has fueled the hunger and drive to expand the campaign to even more locations all over Bangladesh. Currently, there are 100 locations where farmers can take advantage of e-Krishok; however, this is about to change.

By the end of 2011, e-Krishok will be available in over 500 locations and by the end of 2015 e-Krishok will be in over 5,000 locations all over Bangladesh. Towards this end, BIID is now currently working with various governmental and non-governmental organizations to mobilize the necessary resources required for such a massive scaling-up of the campaign. BIID intends to adopt the following key strategies to achieve its goal of implementing e-Krishok at 5,000 locations by 2015. Innovation plays a crucial role in service delivery mechanism. Farmers need easily accessible service facilities as well as a user-friendly interface to become familiar with the ICT-enabled system. A touch-screen based kiosk is running at pilot level and scopes are being explored to use this technology on a large scale.

BIID is working hard to build e-Krishok as the brand of choice for farmers whenever they are in need of any information and advice. For the farmers, e-Krishok will grow to become a symbol of service, which is dependable, reliable and always there. In the near future, e-Krishok will be available not only in select information centres, but in all places where information is served through the means of ICTs, particularly through Internet and mobile phones.

Concluding Remarks

Past experience suggests that farmers do pay for services once they understand the benefit of said service. As we have seen in the project locations, some centres are already providing information as a transacted service. With branding and standardization of the service provision comes the opportunity to introduce elements of commercialization in the service-delivery model. With that in mind, in the first stage (during the nationwide scaling up starting from March 2011) fee-based registration will be required for farmers to avail services. This will be a nominal fee of Tk. 10 to 15 (or about $0.14–0.21) for an initial trial period (up to 4–6 months). At the end of the trial period, BIID will seek to introduce a standard fee per transaction. It is expected that the telecom partner supported by the Government of Bangladesh (GoB) will be able to add value in developing an innovative-payment mechanism to ensure that the network continues to provide services. One of the means could be "prepaid cards" for farmers only. There are other options for partnerships such as commercialization and expansion of e-Krishok, which are correspond closer to what is happening on

the ground. BIID already signed an MoU with Advance Chemical Industry (ACI), a leading agri-input supplier in Bangladesh, to work jointly to take the e-Krishok campaign nationwide.

To conclude, it should be noted that e-Krishok is first and foremost a campaign in Bangladesh that seeks to provide information and advisory services to farmers through the means of ICTs as the delivery mechanism. e-Krishok is a distinct initiative, which focuses on long-term perspectives, rather than traditional project based initiatives. However, in order to institutionalize the use of ICTs and to make ICTs an everyday, commonplace tool in the lives of farmers, an adjustment in the mindset of the farmers is necessary. This change will not take place in a short time-span. Indeed, it may take more than a generation to achieve. What e-Krishok has demonstrated is that such a service can be of benefit to farmers in rural Bangladesh – it is able to increase the income and opportunities of farmers, thereby, instigating positive growth in the socio-economic development of rural Bangladesh.

BIID demonstrated through e-Krishok that farmers are willing and capable of change when they perceive that change is in their favour. BIID showed that farmers will trust new technology if it was amply demonstrated to work. Now BIID is working hard to ensure that this trust is not lost by gaining a critical mass of users who will ensure the sustainability of e-Krishok.

Conclusion

These case studies have highlighted practices which show the way towards achieving the vision of an inclusive information society, as defined in the WSIS Outcome Documents. The different themes exposed will certainly promote cooperation between stakeholders and encourage others to share their experiences from the WSIS implementations.

The voluntary contributions, coming from Africa, Asia, Europe and Latin America, have given a rough picture of projects taking place worldwide and practical solutions to overcome challenges related to Information Society development.

More projects and case studies can be found under the WSIS Stocktaking platform (www.wsis.org/stocktaking) that follows the same objective of aggregating and showcasing ICT-related projects working towards the vision of the 2015.

List of Abbreviations and Acronyms

AAC:	**Augmentative and Alternative Communication**
ACCENT:	**Advanced Centre for Communications, Enterprise and New Technologies**
ACI:	**Advance Chemical Industry**
AGETIC:	**Agence des Technologies de l'Information et de la Communication Information and Communication Technology Agency**
AIDS:	**acquired immune deficiency syndrome**
AIS:	**Agricultural Information Service**
ANU:	**Africa Nazarene University**
AT:	**Assistive Technologies**
B2C:	**Business To Consumers**
BAU:	**Business As Usual**
BIID:	**Bangladesh Institute of ICT in Development**
BP:	**Brand Promoter**
CEDE:	**Centro de Estudios sobre Desarrollo Económico**
CEO:	**Chief Executive Officer**
CIC:	**Community Information Center**
COFEM:	**Collectif des Femmes du Mali Collective Of Women From Mali**
CPE:	**Computadores Para Educar (Computers For Education)**
DAE:	**Development of Agriculture Extension**
DPOs:	**Disabled People's Organizations**
ePG:	**E-Payment Gateway**
EREV:	**EarthRights EcoVillage**
FAQ:	**Frequently Asked Questions**
FRS:	**Fertilizer Recommendation Software**
G2C:	**Government To Citizen**
G2G:	**Government to Government**
G3ict:	**Global Initiative for Inclusive Information and Communication Technologies**
GEN:	**Global EcoVillage Network**
GHG:	**Greenhouse Gas**
GoB:	**Government of Bangladesh**
HEAC:	**Higher Education Admission Centre**
HEIs:	**Higher Education Institutions**
HIV:	**Human immunodeficiency virus**
ICFES:	**Instituto Colombiano para el Fomento de la Educación Superior**
ICTs:	**information and communication technologies**
ICT4All:	**Information and Communication Technology for All**
ICT4D:	**Information and Communication Technologies For Development**
InterSAT:	**Internet via Satellite**
IP:	**Internet Protocol**
IP-USN:	**Internet Protocol based Ubiquitous Sensor Networks**
ISOC-Mali:	**Internet Society Mali**
IT:	**Information Technology**
ITA:	**Information Technology Authority**
ITU:	**International Telecommunication Union**
KRW:	**Korean Won**
MMS:	**Multimedia Messaging Service**
MoA:	**Ministry of Agriculture**
MoCI:	**Ministry of Commerce & Industry**

MoCS:	**Ministry of Civil Service**
MoH:	**Ministry of Health**
MoHE:	**Ministry of Higher Education**
MoU:	**Memorandum of Understanding**
MRS:	**Manpower Registration System**
NGO:	**Non-Governmental Organization**
OSS:	**One Stop Shop**
PARHEF:	**Programme d'Appui et de Renforcement de l'Équité Homme/Femme Support project for Gender Equity**
PC:	**Personal Computer**
RIK:	**Rural Internet Kiosk**
ROP:	**Royal Oman Police**
RTS:	**Radio Television Sénégalaise**
SAED:	**Société Nationale d'Aménagement et d'Exploitation des Terres du Delta du Fleuve Sénégal National Society of Developing and Exploitation of the Fields of Delta of Senegal River**
SISBEN:	**Sistema de Identificacíon de Potenciales Beneficiarios de Programas Sociales**
SMS:	**Short Message Service**
SPARC:	**Solar Powered Advanced Rural Communications**
SRDI:	**Soil Research Development Institute**
STEM:	
T2M:	**Time to Market**
UN:	**United Nations**
UNCTAD:	**United Nations Conference on Trade and Development**
UNDP:	**United Nations Development Programme**
URTEL:	**Union des Radios et Télévisions Libres du Mali (Union of Mali's Free Radio and Television)**
USD:	**United States Dollars**
VOA:	**Voices Of Africa**
WAP:	**Wireless Application Protocol**
WSIS:	**Word Summit on the Information Society**