

March 2005 – April 2006

NARRATIVE REPORT



celac a project brosdí sponsored by hivos

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ABOUT BROSDI

BROSDI, Busoga Rural Open Source & Development Initiative is an not for profit organization that works with government and the civil society in improving rural livelihoods. This is through the use of ICT and open development mediums that include effective knowledge sharing, information management and use of FOSS in rural settings. The execution is effected her thematic areas of health, agriculture and education. BROSDI's headquarters are situated in Wainha Village, Baitambogwe sub county, Mayuge District; and it was incorporated in 2003; and was an outcome of the South to South Exchange held in Uganda in 2002 supported by Hivos, IICD and IDRC.

VISION: A liberal community empowered to assess its existing environment with the aid of ICT to embrace sustainable knowledge sharing and information management so as to derive practical means of steadily improving their homesteads in the effort to reduce household poverty.

MISSION: To empower the civil society to create and support a habitable environment through emphasis on effective use of ICT mediums (both traditional and modern) and use of sustainable open development mediums, in a socially just mode and system

THEMATIC AREA: The ICT Program is the core of all programs and projects of BROSDI. It is a support program that aids the other programs, projects inclusive in incorporating ICT in their planning, implementation, project monitoring, evaluation and accountability. Use of both modern and traditional ICT methods are applied

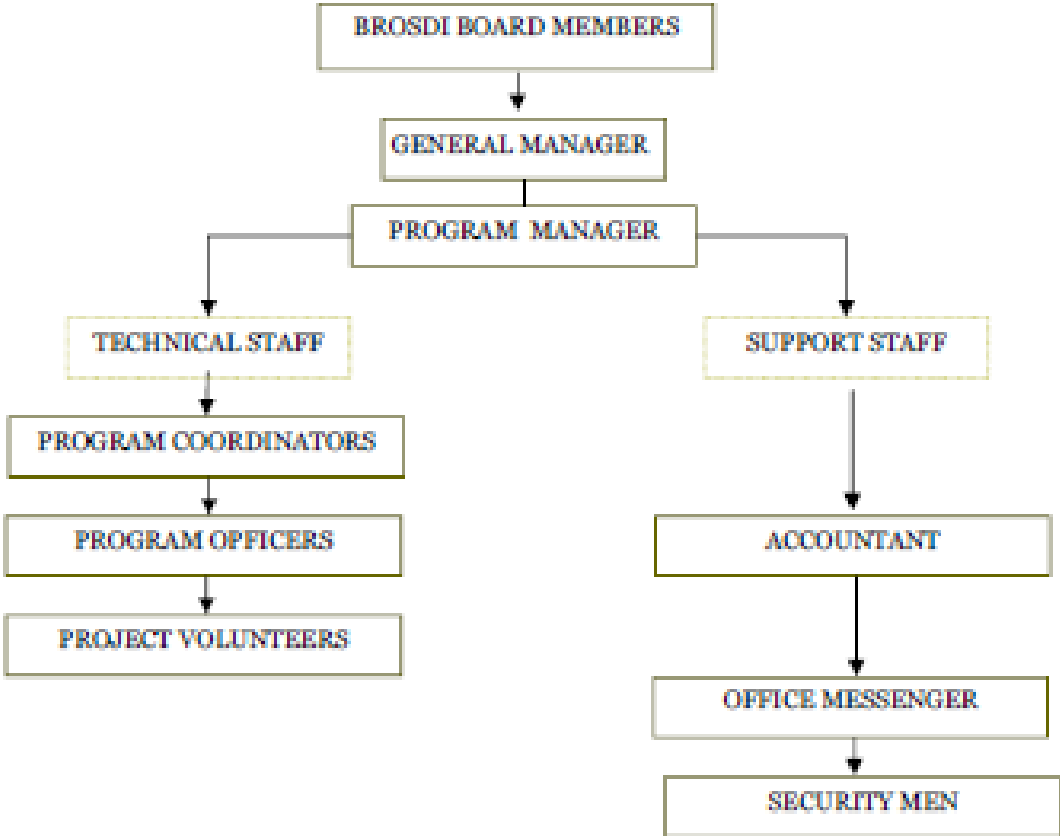
AGRICULTURE - The CELAC Project engages the rural women farmers into a culture of Collecting and Exchange of Local Agricultural Content for improved food security and subsequently their livelihoods.

EDUCATION –The Hope Childrens Club Program, HCC targets empowering the rural children, especially the orphan child realize their potential, build self esteem and self confidence while targeting at improving their livelihoods for self and community enrichment, and contributing positively to the world we all share

HEALTH - The YOHAAP, Youth & HIV AIDS Awareness Project aims at creating awareness on HIV AIDS among the rural communities with particular focus on the youth. This is through peer to per knowledge sharing and information Management using ICT methods.



ORGANOGRAM



CELAC CONCEPT & OBJECTIVES

Purpose

This is an End of Phase One report that serves as an overview of the practices, successes and challenges of the CELAC project in rural Uganda as well as an instructive guide at how similar ICT and Knowledge Sharing projects can be implemented across a spectrum of desired development initiatives. This evaluation will be used as a planning foundation for Phase Two of the CELAC Project. It can also be used as a resource for future initiatives and other organizations focused on ICT for Development.

Summary of CELAC Concept and Objectives

One of the greatest challenges faced by development professionals is the task of facilitating knowledge sharing in communities that lack the skills to gather, store, manage and disseminate information. Without the ability to record and duplicate texts, drawings, photographs, audio, video, and digital information, these communities are left at a severe disadvantage in their efforts to exploit knowledge systems necessary for productivity in the modern world. Information is power and Information and Communication Technologies (ICTs) represent the most effective tools and methods for managing and disseminating it. However, the gap in ICT usage and competency that separates rich from poor, urban from rural, and developed from developing only accentuates the challenges confronted by communities who already lack information sharing skills and resources.

The CELAC (Collecting and Exchange of Local Agricultural Content) project has proven to be a successful initiative aimed at bridging this gap and empowering rural communities in Uganda through effective information sharing.

CELAC was first implemented in April 2005 within the Busoga Rural Open Source Development Initiative (BROSDI; <http://www.brosdi.or.ug>) in order to integrate ICTs use with a project aimed at facilitating information sharing amongst rural farmers in Uganda.

BROSDI is a national NGO in Uganda that is involved in community development by empowering the civil society through use of appropriate ICT mediums. BROSDI's main aim, through the CELAC project, is to impart knowledge sharing skills to farmer groups with the aim of increasing agricultural productivity and subsequently improving their livelihoods through exchange of the enormous information they possess. The initiative has a particular focus on female farmers, who represent a vital yet marginalized majority of agricultural producers and serve as important liaisons for information sharing in rural communities.

BROSDI seeks to empower the civil society to create and support a habitable environment through sustainable information sharing, knowledge management, and effective use of ICTs to improve rural livelihoods. This objective is shared by the Dutch organizations HIVOS, which funds the CELAC project and considers it an integral part of their mission "to contribute to a free, fair and sustainable world where citizens, women and men, have equal access to resources, opportunities and markets and can participate actively and equally in decision-making processes that determine their lives, their society and their future" in Uganda and across the developing world.

CELAC Implementation within BROSDI March 2006 marks the completion of Phase I of the CELAC project. At its inception, four main objectives were drafted:

- 1) Develop Content For Agricultural Digital Dissemination:

This was a recommendation made at the South to South Exchange in Uganda 2003. It is common knowledge that the vast compiled agricultural content is for the literate, technologically advanced and economically privileged, leaving farmers with little to salvage in terms of knowledge. The project seeks to adopt content that is suitable for rural users by repackaging existing information to suit farmers and agricultural workers, the majority of whom are illiterate.

- 2) Establish Community Knowledge Brokers:

The project seeks to establish knowledge brokers by empowering women with skills to collect, store, analyze and disseminate agricultural knowledge to their communities. Intermediary organizations and agricultural research centers are key partners and resources in producing accessible content in local languages.

3) Routine knowledge sharing:

In response to another South to South Exchange recommendation, BROSDI takes advantage of its national and international networks to regularly acquire agricultural information from villages, regions, and even nations that can be organized into local content and shared among communities.

4) Create New Opportunities:

Not only does knowledge sharing facilitate community learning and encourage engagement but it leads to new opportunities. Skill development and ICT implementation create an important foundation for future development initiatives within a community.

CELAC Foundations of Information Sharing

The activities involved in acquiring, sharing, processing, and disseminating information that can be utilized by local farmers defines the CELAC project. If successful farming techniques, practices, and ideas can be transmitted to and implemented by local communities, then agricultural wealth and rural development can be positively affected. This success begins with the collection of valuable information pertaining to best practices for specific and locally relevant crop and livestock types.

Acquisition

CELAC' staff and farmers gather information deemed relevant from a variety of sources with the aim of using it as the starting point for dissemination. To achieve this, focal persons with information access are utilized and mobilized. These are mainly farmers who are engaged in the targeted crop/livestock type and are using unique, local and practical methods to improve their farm produce. These farmers are then assisted in creating a presentation of their method and then invited to a knowledge sharing forum.

Also invited are the extension workers and relevant persons from the strategic partners, community and government.

Forums

Forums have proven to be a vital platform where information is both collected and disseminated. The forums are designed to capture information on either crop and livestock farming procedures, post processing and marketing of the product. These forums are attended by farmers, government agricultural officers and at least one resident CBO and NGO.

Processing

Information from the forums is documented and processed in a manner to suit the end user. ICTs are utilized at this point as data storage and processing tools.

Dissemination

CELAC employs a variety of modern and traditional ICTs in order to disseminate information. This is done on a one-to-one, one-to-many or many-to-many status. The following ICT methods are used as key tools for information dissemination to farming communities:

Discussion Forums: In addition to the information gathering forums already discussed, the project takes advantage of alternative social gatherings and village meetings to share the acquired knowledge with targeted groups.

Knowledge Fairs: The Project organizes Knowledge Fairs annually. These are conducted in the chosen districts and are attended by the project and organization partners, farmers from the priority districts, district leaders and other members of the civil society. It is a one day event and activities include debates and discussions, as well as exhibitions that run concurrently. Awards are also given to the best exhibitor, and in 2005, the award went to Luwero District. The Fair has deemed an excellent avenue to get the farmers and project partners together to not

only interact but also for future corporation. It is also a platform for mass dissemination as well as a face to face interaction.

Cell phone Text Messaging (SMS): SMS texts of agro related information and advise are sent from the Hub at BROSDI to farmers and other partners who are part of the CELAC information database. Among the farmers are Village Knowledge Brokers (VKBs). The VKBs are selected community leaders (with a focus on women) who are able to receive the message and are in the best position to disseminate the information to the rest of the community. VKBs are also tasked with storing the information in a format that can be easily accessed by the rest of the community within a centralized location. The information sent out is in both English and Luganda.

Website: Information collected is availed on the project website for access by local, national and international partners and interested parties that have access to the Internet. the website URL is: <http://www.celac.or.ug>. Information includes download versions of the SMS' sent, How to Guides brochures, newsletters and more information about the project and other relevant agro farming information.

Print Media: Selected, valuable information is compiled monthly and organized into a Newsletter. The Newsletter is bi-lingual with both English and Luganda articles and hard-copies are distributed to all actors in the information sharing process. Brochures and How-To Guides are additional forms of print media that are distributed to relevant participants and partners throughout Uganda.

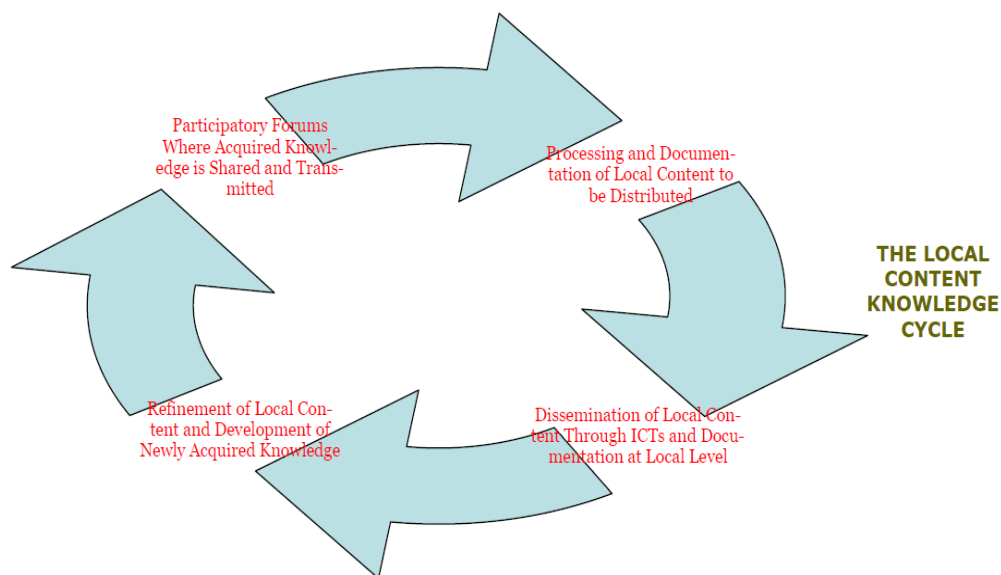
Radio: Information is shared and shaped through interactive radio call-in programs as well. Farmers can learn about agricultural news and methods across communities and regions, and have the chance to voice their own experiences and views as well. In addition, these programs are recorded on cassette and can be replayed at community centers for farmers unable to listen live. These are conducted in Luganda and it is the farmers that take lead in the radio program discussions.

Digital and Non-Digital Storage: CDs, diskettes, and cassettes are employed to ensure that information is permanently recorded and can be disseminated as widely as possible to all social economic groups.

Refined Local Content

The Local Content Knowledge Cycle has stages within; these are knowledge collection and construction, knowledge sharing, knowledge repository updating, knowledge access, knowledge use and knowledge revision.

The Cycle represents the learning process within the project and is applicable to both tacit and explicit knowledge. All stages in the Cycle contribute to effective knowledge sharing and information management. See figure below.



REALIZING REAL IMPACT THROUGH THE 12 HABITS

Information in Focus

Effective acquisition and dissemination of information is defined by the value an individual places on the information they receive. With this in mind, CELAC set out to research what was the most valuable information and what was the best way to deliver it for each community served, down to the level of the individual and the types of agriculture they produce. This approach is in line with recommendations from Bridges.org's (<http://www.bridges.org>) Real Access / Real Impact framework for improving the way that ICT is used in development. This guide provides a comprehensive set of best practice principles for implementing ICT initiatives within development projects. The CELAC initiative adhered to the guide's prescribed 12 Habits of Highly Effective ICT-Enabled Development Initiatives in order to achieve its mission of effective acquisition and dissemination of locally valuable information.

CELAC and the 12 Habits

The 12 Habits of Highly Effective ICT-Enabled Development are not only instructive in project development; they also serve as a valuable tool for project evaluation. With this in mind, the CELAC Guide looks at the ways in which the project adhered to the principles of The 12 Habits:

Habit 1. Start by doing some homework. Look at what has worked and what has not worked, study good practices in the area, and build on what you have learned. Homework for the CELAC project involved in depth consultations and interactions with the farmers that the project intended to serve. Initially, BROSDI's aim was to encourage these farmers to adopt modern farming methods, but the lack of investment resources inspired project officers to focus on the wealth of agricultural knowledge that these individuals did possess.

Comprehensive research and analysis of how to extract and disseminate this local content followed. Forums with local community members were aimed at defining BROSDI's mission and CELAC's objectives for the specific community. Local input was welcomed and project outlines were adapted based on this input. These forums also served as an opportunity to survey local capabilities, literacy, and access in terms of ICT use.

Further research into what has worked and what has not worked for other organizations undertaking similar rural development and/or ICT integrated projects was conducted through partner organizations like AITEC, LINUX, and INetwork. Additional civil society representatives and development practitioners from around the world provided input and ideas that inspired the CELAC project through the South-South Traveling Workshop, the Community Creation Content (C3 Net) Discussion Group, and the ICT For Rural Knowledge Management and Sharing Workshop. These forums addressed the pertinent issues on ICT-enabled information sharing and knowledge management for (rural) development and equipped BROSDI with the necessary case studies and pertinent research to proceed with an ICT-based initiative that would enhance rural poverty reduction.

Habit 2. Conduct a thorough needs assessment of the community to be served so you can plan to do what is actually required. A needs assessment is the foundation of the content development aspect of the CELAC project. One of the project first-steps was a brainstorming session with local leaders, farmers, and government officials from the Mayuge District, home of BROSDI's head office. Further sessions with potential participants and the knowledge forums themselves represent needs assessment initiatives that help officers identify relevant agricultural practices for specific communities.

Needs assessments for appropriate ICT implementation are also an ongoing aspect of CELAC. Literacy, accessibility, and effectiveness are constantly taken into account and evaluated on the local level in order to ensure that the most effective ICTs are being utilized. After Action Reviews (AARs), bi-annual reports, and general evaluations like this Guide are an important part of these assessments.

Habit 3. Make it local: ensure local ownership, get local buy-in, work with a local champion, and be context specific. CELAC's goal is to facilitate and enable a culture of knowledge sharing on a local level that improves livelihoods for rural communities.

This bottom-up approach ensures a local impact and aims at local ownership (specifically for women farmers) of the means of and proceeds derived from agriculture. In addition, a local champion is embodied in the role of the Village Knowledge Broker who is empowered as a local leader and focal person for information dissemination. Content is designed to be context specific based on local language, crop/livestock focus, and CELAC's determination to focus on women who have previously been under-privileged in the community. Furthermore, the Information Forums, lead by local 'conveners' (who are selected by participants attending that day's session), are designed to engage participants on the village level who will determine context specific content that is of value to their community.

This structure allows for the development of content transmitted through ICTs that is locally relevant. With an eye towards local ownership and local buy-in, CELAC Phase II aims to build capacity of local members who will eventually take-on the roles currently served by project officers. These roles include coordinators and event organizers, database input, and community-based ICT users.

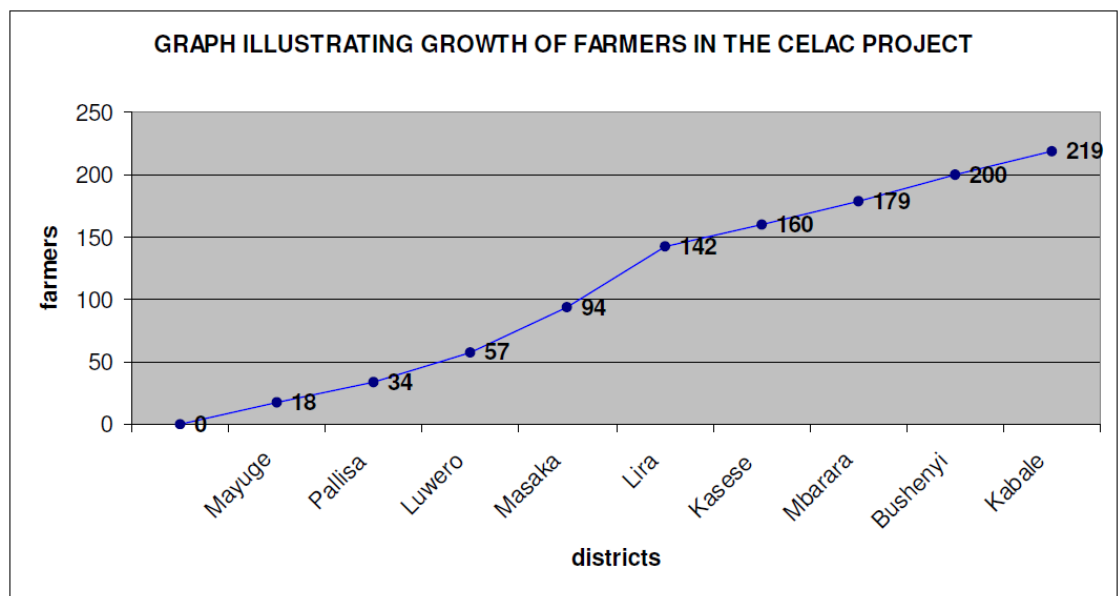
Habit 4. Engage a local problem-solver with some degree of responsibility, and involve them sufficiently so they can identify and address problems as they arise. Local problem-solvers are engaged and empowered throughout the project through their roles as content sources, forum conveners, and Village Knowledge Brokers. Additionally, Resident District Commissioners, Agricultural Officers, Government trained Extension Workers, and other local government officials are utilized in their positions of power and influence to organize forums, assist in implementation of new farming methods, and to assist in promoting Knowledge Sharing among their specific communities. Local opinion leaders – village elders and other influential community members are an important resource in this capacity as well.

Allowing participants to elect their conveners and their VKBs further empowers them and makes them accountable on the local level. For example, communities vote for their respective VKBs and are asked to consider the following criteria when making their selection:

- Sociable and Willing to Share Knowledge
- Active and Accessible (living in the community)
- Experienced Farmers; Preferably Women

All participants are engaged as the project's problem solvers by BROSDI officers who seek out and value their input.

GRAPH ILLUSTRATING GROWTH OF FARMERS IN THE CELAC PROJECT



Habit 5. Form sound partnerships and collaborations, and be good partners and collaborators. and be good partners and collaborators. BROSDI identified, involved, and depended upon a wide variety of partners for the CELAC project, including:

- Local and regional government officials who are a resource for organizing forums
- Religious leaders who are utilized for their networking capabilities
- Representatives from academic institutions and other experts who provide content and advice
- Civil Society members working within the agricultural sector who provide resources and networks and are part of the group that receives content.

The organization freely offers its services as a partner and collaborator through its determination to share content used for the project, information vital to local livelihoods, and experience gleaned from the initiative that can be valuable to all of society.

Habit 6. Set concrete goals and take small achievable steps. Be realistic about outputs and timelines. BROSDI defined the following macro objectives:

- Encourage a culture of knowledge sharing
- Create a sustainable network that can improve livelihoods for the long term
- Create and maintain a knowledge and participant database that can be utilized by
- BROSDI in the role of consultant.
- Increase market access for poor as a result of knowledge they gain
- Introduce ICT tools for knowledge sharing to communities that lack them and ensure their local preservation.

These are broad but attainable goals that are inline with the organization's desire to improve rural livelihoods. Inherent to this approach is the small achievable steps concept: CELAC is a project focused on information acquisition, dissemination, and improvement of agricultural production by individuals as a result. This bottom- up, holistic approach adheres to the Habit.

Habit 7. Found your initiative on technology- neutral concepts so it can be adapted as needed to accommodate technology change over time. Local content acquired by CELAC is text-based and can be adapted to multiple technologies. The focus is on what technology is available to and accessible by rural people in Uganda, thus it is very adaptable and accommodating. One of the hallmarks of the project is that it can evolve in-line with farmers desires and capabilities. Thus, the ICTs that are most highly utilized by the project are the technologies that are most accessible to the farmers at any given time.

Habit 8. Involve groups that are traditionally excluded on the basis of age, gender, race or religion. The CELAC project seeks to benefit traditionally excluded groups who have been marginalized based on their profession (farmers), location (rural), class (poor), and gender (women). Poor, rural farmers have traditionally been excluded from Information Sharing resources and ICTs because of their location, access to necessary finances, and cultural norms that tend to facilitate Information Hoarding as opposed to Information Sharing. Most of the farmers who benefit from the CELAC project make less than \$1 US per day and lack sufficient funds to invest in expensive farm equipment. However, these farmers are enriched by knowledge and stand to only benefit from the transmission of that knowledge between individuals, villages, and regions. Likewise, the farmers face financial barriers in utilizing ICTs for this transmission, so the introduction of these IS techniques and technologies at a subsidized cost holds infinite advantages.

Female farmers in rural areas of Uganda are particularly excluded from the ownership of and proceeds from agricultural land. In the villages where CELAC was implemented, it was common practice to find that whereas the man owns the land, the woman tills it. Also, the proceeds from the farm are sold off by the woman and the money given to the man who then decides how to best apportion it. By empowering women with agricultural and ICT knowledge and elevating them as knowledge brokers, CELAC seeks to reverse this trend.

Habit 9. Identify and understand the external challenges you face, and take practical steps to address them.

The project considered challenges of illiteracy (in regards to both text and technology) as well as the lack of access to certain ICTs to be among its greatest challenges. Workshops, tutorials, and the Information Forums themselves are utilized in addressing these challenges, but the project is also adapted to suit farmers who lack these skills. For example, focusing on the VKB greatly reduces the number community members who need access to literacy and technology without reducing the number of community members who can benefit from it. Also, use of forums, SMS, and Radio were stressed because rural farmers have more access to these ICTs and methods compared to others (for example, internet access and literacy).

Among the cultural challenges faced by CELAC, gender discrimination and information hoarding were the most noted. While attempting to address the gender gap, as noted above, BROSDI's officers were also careful to never exclude male farmers or jeopardize the projects potential impact on the entire community.

A constant challenge has been identified in farmers' traditional inclination to hoard information. CELAC promotes a culture of Information Sharing where it was previously absent through forums, fairs, and other events that are instructive on IS benefits. The Dramas and radio programs also aim to reveal the value of IS to all participants.

Habit 10. Monitor and critically evaluate your efforts with effective tools, report back to your clients and supporters, and adapt your approach as needed. Field visits, AARs, bi-annual and mid-term reports, and constant communication with participants are all aspects of CELAC's self-evaluation process, which is ongoing. In addition, Information Forums and Knowledge Fairs serve not only for content dissemination, but are also utilized as feedback sessions on project effectiveness. An interactive and inventive technique for project adaptation is the use of the Garden Multiplication Project. The Garden is located near BROSDI's head office, and it is an ideal site where the agricultural techniques transmitted by CELAC can be monitored for effectiveness and new techniques can be developed as well. In addition, further monitoring is scheduled during CELAC Phase II, including livelihood surveys and research into specific ICT effectiveness in among rural farmers.

Habit 11. Make your initiative sustainable over the long term -- either by bringing in sufficient income to be self-sustaining, or by delivering on a social mission so effectively that it is worthy of continued donor funding. CELAC's long term objectives aim to effect a culture of knowledge sharing where one previously did not exist. Likewise, the role of women in agricultural production and profit will increase and effect poverty reduction and gender-based exclusion in positive ways. All of these developments will increase local productivity, ingenuity, and investment. Increased familiarity with ICTs will parallel these developments and will improve future access and integration of the technologies. As part of the project's capacitybuilding, farmers will become more involved with the administrative and technology-based roles of information disseminators.

Most of all, the project, though implemented by BROSDI, is owned by the farmers. Farmers run the Knowledge Forums, determine the value of content, and decide to what degree they will adopt a culture of Knowledge Sharing.

Habit 12. Widely disseminate information on what you are doing and what you have learned so others can avoid your mistakes and build on your efforts. In line with BROSDI's mission as an Open Source Initiative, all of the content and knowledge transmitted in the CELAC project is readily available to interested parties via the internet or through any of its dissemination tools. There are no restrictions placed on parties who want to receive SMS, radio broadcasts, stored digital knowledge, newsletters, brochures, or any other medium of content-exchange produced by the CELAC project. Also, secondary information pertaining to CELAC as a rural ICT development project is shared with relevant partners, local and national officials, and is documented through evaluations like this Guide. Project analyses and surveys scheduled for Phase II will likewise be available to all relevant and interested organizations.

IMPACT EVALUATION OF THE CELAC PROJECT

Focus on Impact: an Evaluation of CELAC’s Efforts to Improve Rural Livelihoods

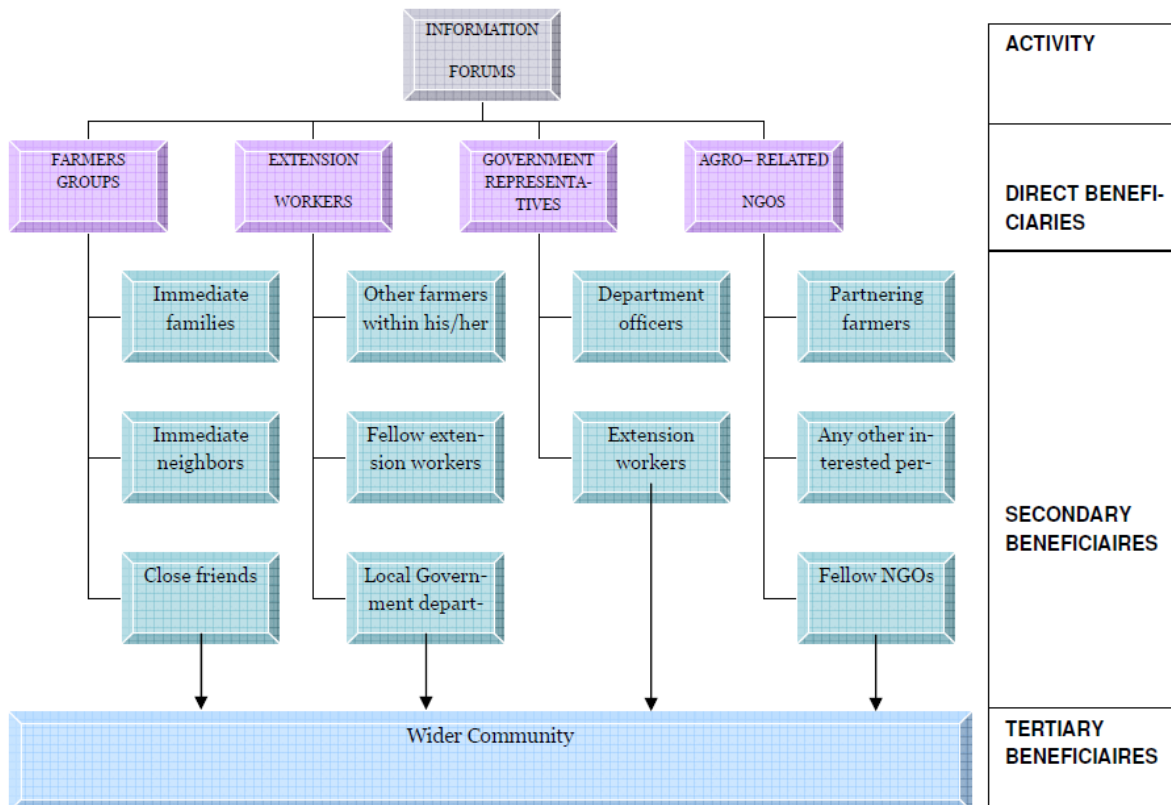
The 12 habits model targets improving the way that ICT is used for development (ICT4D). The CELAC project is set up to make a real impact on rural livelihoods in Uganda. In order to better inform the project’s future progress and adaptations, this Guide will examine the level of impact as well as the challenges faced by the project. This evaluation should also be viewed as an instructive resource for other ICT4D projects.

Knowledge Focused Means People Focused

Adoption of a bottom-up approach to development implies that the project will not only be people-focused, but also incorporate the elements of project ownership and sustainability. The CELAC project, by name, stresses Local Content, and as such, it is very much focused on the community members who are the sources of that Local Content. It is through participatory methods and two-way exchanges that participants share knowledge freely.

The history of agriculture is the history of knowledge transmission across generations and peoples and all boundaries that artificially separate them. Rural farmers all over the world have developed and transmitted successful agriculture techniques without the aid of a publishing industry, an annual workshop, or the use of widespread communication technologies. Nonetheless, vital knowledge to agricultural livelihoods is transmitted every day. BROSDI’s approach, however, is that more effective knowledge sharing, management, and transmission across communities will have a larger impact on rural livelihoods. This transmission must start with content.

The diagram below represents the path of content and the groups who will benefit from the ensuing knowledge exchange: *The Path of Content begins with the forums, organized by BROSDI, which represent the foundation of the knowledge exchange that takes place through the CELAC project. This section of The Guide details how knowledge is transmitted over this path from the participatory forums to the community at large.



Increase Participation For Increased Benefit

Participatory knowledge forums, fairs, and surveys have proven to be successful methods for eliciting local content. Thus, the CELAC project itself is introduced to the community through such a knowledge forum. Open meetings are held and efforts are made to ensure key community leaders are present. The attendance of influential community members ensures increased attendance at future forums as well as the participation of leaders who are in the best position to transmit knowledge. Interest from these leaders ensures follow-up and increased interest from the community at-large.

However, attendance does not necessarily translate into content extraction. Farming communities are traditionally averse to knowledge sharing. Agricultural techniques are valuable commodities in such communities and sharing them is viewed by many farmers as giving something valuable to your competition.

These community members are hesitant to view knowledge sharing as a beneficial exchange that provides valuable information for improving current methods and creating new ones that will lead to more sustainable and diversified agricultural practices.

As a result, participatory methods must be utilized in order to elicit the maximum amount of knowledge from the group and benefit all of those involved. With this in mind, CELAC's officers begin each community's initial forum by introducing the O-seating arrangement where participants and facilitators sit in a mixed group in a ring-formation. Participants are then asked to choose between the O-seating arrangement and traditional classroom row-seating; every community group has preferred the O-seating arrangement.

Knowledge Sharing group discussions are then facilitated through a variety of participatory methods, including:

- The O-Seating Arrangement
- The Banana Method – Only participants in possession of ‘the banana’ or another specified object are allowed to speak and must speak
- The Matchstick Method – Participants light a match and are allowed to speak only while it is burning
- Card Sorting Method – Participants write opinions and contributions on cards that are then presented to the group anonymously
- Frequency Tables – Used as a survey tool in group settings
- Knowledge Trees – A pictorial-based problem solving method in which participants contribute to the illustration
- The Analysis Matrix – A visual tool for analysis of local issues where participants contribute information to the matrix and interpret results
- Drama and Song – Used to demonstrate the power of Knowledge Sharing and to elicit creative participation

Different methods can be utilized depending on the character of certain groups. For example, the Card Sorting Method encourages anonymity and should be utilized by groups who desire it; while the Banana Method is meant to encourage participation that is more accountable and should be used with more confident public speakers. All of these methods have proven to be successful in stimulating broad-based discussions and eliciting valuable content from rural farmers.

Once participatory methods have been introduced, participants should be allowed the greatest possible freedoms to lead and dictate discussions. This is initiated at each CELAC meeting through the election, by the participants, of a Convener. CELAC provides each Convener with pens, A4 plain paper, cards, markers, masking tape and manila paper, but how the discussion will proceed and what methods will be implemented is completely up to them. Most Conveners and their groups create innovative participatory methods on their own, which CELAC does not interfere with but always documents.

The Convener steers discussion and keeps the discussion focused on locally relevant crops and livestock. Participants contribute new methods or opinions in regards to their agriculture or respond to techniques presented in previous forums that they may have since implemented. For the case of the crop types, the discussions are

divided into preparation, planting, weeding, pruning, soil fertility, pest and disease control, harvesting, and post harvesting. For livestock, they normally discuss fertilization, birth and looking after the young, feeding at the different levels, housing, pest and disease control and marketing of products. During each session, the farmers concentrate on 'how they do it', 'the good and bad practices' and 'new ideas'.

Through the process of discussion, debate, and experimentation inside and outside of the forums, local knowledge is shaped and its value is determined by the individuals within the community. These lively sessions yield the local content that is the foundation for knowledge sharing.

Content is Key

Though they lack access to markets, loans, and the funds necessary to stimulate investment in expensive agricultural machinery and other resources, Uganda's small farmers' possess a wealth of knowledge. By effectively utilizing knowledge forums and participatory methods this wealth is revealed and local content is extracted. Content from one community represents capital that can be invested in another community and it is also a good that can be traded and transmitted between individuals within the community. Content is the wealth that CELAC seeks to distribute to participants that previously lacked innovative agricultural knowledge.

This distribution process begins with the documentation of local content that is acquired through knowledge forums, information fairs, and from agricultural experts from all sectors. Once documented, a database of knowledge will have been acquired that is of great value to many communities. To shed some light on the distribution process, it is best to analyze the 'content path' that constitutes the transmission of content from one individual or community to another.

[06/03/06 - English]

Onions have a smell that act as a repellent to certain pests. It works as a natural pest control. To control mole rats and rats, plant onions in your garden. Their smell is offensive to the rats and they will run away. Much as they will control the rats you will use them for consumption when they grow. The next SMS will have information on how to grow onions. Please try to teach and encourage others to grow them.

The above excerpt is a typical sample of local content. Utilizing onions as a natural pest control is an agricultural technique produced by local farmers in a particular knowledge forum. Onions are, of course, grown in many locales within Uganda and rats, likewise, are a problem throughout. The technique was thus determined to have value in other communities and was the subject of one of the daily SMS messages sent by cell phone to CELAC's Village Knowledge Brokers.

Subsequently, the following messages regarding onion cultivation were sent to this network:

[13/03/06 - English]

From today we shall look at how to plant onions and look after them. Onions are grown either from seeds, small dry bulbs or transplants. Make a raised bed. Plant onions in rows (lines) 1 to 2 feet apart in a moist seedbed. If Bulbs, plant at 1½ inches deep and seeds ½ inch deep. Place seeds or sets 1 to 2 inches apart in the line for green onions (where you are to eat leaves) and 3 inches for bulb onions. Or you can even plant at the sides of your garden to avoid pests like snakes enter the garden from nearby bushes

[20/03/06 - English]

Last time we looked at how to plant onions. Today we are to look at how to care for them in the field. For each 100 square meters, put 100 to 200kg of compost. Or spray liquid manure periodically on the leaves and the ground. This adds fertility and controls pests that may attack onions. To control pests like caterpillars, cut worms etc, spray the ground and leaves of onion plants with ash. And if no other crops in the garden, intercrop with tomatoes or lettuce.

[27/03/06 - English]

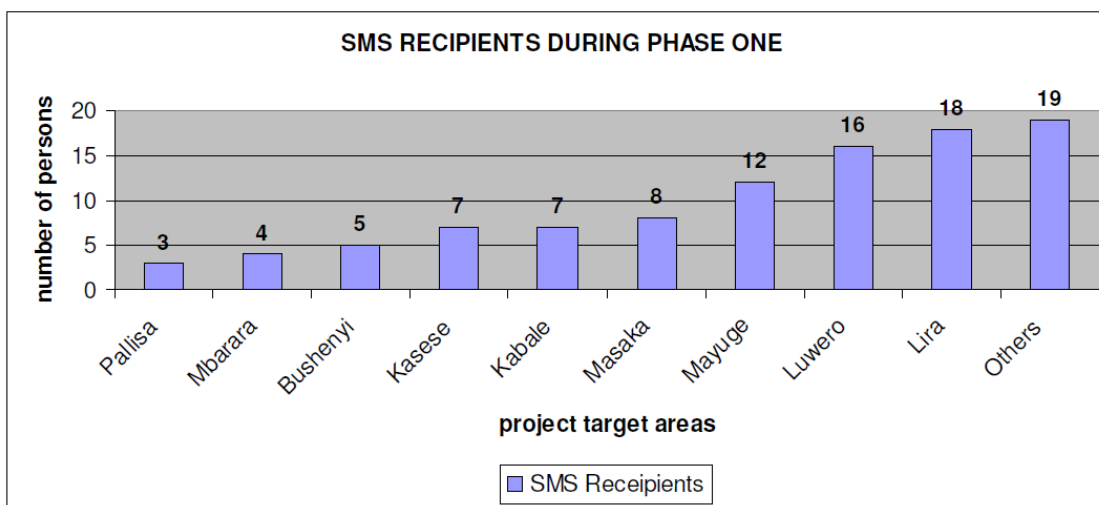
If you planted onion seeds, out plant from the nursery after about 40day when the shoots have a diameter of a pencil size (about 15 cm) with about 5-6 leaves. Also add about 100 to 200 kg compost for each 100square meters. Add wood ash do kill insects. Remember weeding is done whenever it appears.

As the above examples illustrate, sustainable training is encouraged through a holistic approach to knowledge sharing. It is not sufficient to simply supply farmers with a technique for a crop or a market for a crop if they are not using the optimal methods for production of that crop. Because the messages are weekly, participants have time to implement what they learn through Knowledge Sharing. Furthermore, the SMS messages, the knowledge forums, and other modes of KS become central resources within the routines of individuals and communities. As a method of information dissemination to rural peoples, SMS is especially valuable for its effectiveness as an instantaneous form of communication.

An example below reveals how vital these communications can be when issues of local and even global health of humans and agriculture arise:

[03/04/2006 - English]

Bird flu is a deadly disease to humans and your birds. So you should be alert so as you prevent it from attacking your poultry farms. Never sleep with chickens, turkey or other birds in the same house. Once it is recognized in any area, don't move birds, cages, feed or any other equipment from such areas. This will help us not to lose birds and our lives.



Issues surrounding bird-care are stressed through multiple SMS messages, Knowledge Forums, and print media resources. As a result, many farmers are able to better understand the risks of bird flu and related viruses and take appropriate measures, including building separate living quarters for fowl.

SMS serves an important programmatic function as well. Schedules for forums, announcements for radio shows, and general participant mobilization can be coordinated through SMS messaging. This transmission relies on those who have access to cell phone messages and especially the Village Knowledge Brokers to deliver vital information to their communities.

It Takes A Village Knowledge Broker

The hallmark of the CELAC project is its utilization of local knowledge and networks. The symbol of both resources is the Village Knowledge Broker. The aim of the project is to develop individuals to fill this role who are representative of the communities the project serves. Thus, VKBs are elected by the community and are viewed as an individual whose social position and skills are best suited to the role of transmitting knowledge across the community.

CELAC has made great efforts towards promoting women as ideal Knowledge Brokers for their communities. Despite cultural barriers to female empowerment, most communities are very receptive to the notion that female farmers should serve as VKBs because of their access to community networks and desire to gain a larger stake in agricultural production. As a result, over 70% of CELAC's VKBs are women, and this role has added to the education, social standing, and agricultural skill-set of a previously marginalized segment of rural farmers.

While the female VKB is in many ways the symbol of the poor, marginalized farmer that CELAC seeks to benefit, she is by no means the only beneficiary. Communities with successful VKBs will be advantaged by effective access to and transmission of knowledge throughout the community. Participants are thus incentivized to select a VKB who can best spread knowledge to other community members and stimulate a culture of information sharing.

A major function of the VKB is receiving local content through SMS and transmitting that knowledge to their community. Effective VKBs are in ideal social positions to be mobile and communicative within their community. However, this is not necessarily a requirement, as many VKBs utilize centralized sites for knowledge transmission in their communities where they can record and preserve the local content transmitted by CELAC. This site can be a post office, school house, market place, or the community ICT center. This site becomes the epicenter for knowledge sharing in the community and visits quickly become part of the farmers'

Established sites for knowledge sharing also make ideal spaces for distribution of local content through other mediums. For example, VKBs utilize these sites to deliver CELAC newsletters, brochures, How-To Guides, and other print media. Additionally, these sites can be used for viewing digital media and can be access points for farmers' subsequent internet research.

VKBs are also empowered to become project mobilizers in their own right by organizing forums or events in response to information they receive over SMS. For example, a VKB will be notified in advance of a scheduled CELAC radio broadcast and will then create a centralized listening site equipped with a working radio. They will then promote the listening site and mobilize community members who lack radio access to attend.

CELAC MOVING FORWARD & MEETING CHALLENGES

Phase II: Moving CELAC Forward

CELAC has proven to be a successful project because it effectively marries local content – the wealth that rural people have always possessed with ICTs and Knowledge Sharing Methods for dissemination of that content. The year-long implementation of the project has succeeded in spreading this wealth to the communities and especially to female farmers who were previously excluded from it. Many of these successes have been detailed in this Guide up to this point.

As CELAC moves into Phase II of the project, officers and mobilizers seek to improve upon and refine these already successful methods. They will also look to adapt to challenges encountered in Phase I of the project and shape CELAC's methods to better achieve sustainability, ICT competence, and improved livelihoods.

Challenges

Discovering aspects of a project that have been less successful and determining ways to improve these aspects is a vital skill for any development organization. With this spirit in mind, CELAC cites the following areas where the project encountered acute challenges:

- Cost-effective use of dramas recorded on DVD technology for content dissemination
- Ability to sustain updates to project website
- Implementation of FOSS (Free Open Source Software)
- Development of effective methods for monitoring project impact

Determining what ICTs are most-effective for specific groups of participants

Each challenge is covered in detail below and the following section contains suggested improvements that will be addressed through CELAC Phase II.

Dramas and DVD

The use of instructive dramas and their reproduction on DVD technology was seen as a creative alternative for content dissemination. CELAC's officers viewed drama as an Information Sharing Method that could potentially be more engaging and effective for some participants.

Dramas as edutainment represent a less didactic mode of dissemination where the value of Knowledge Sharing can be revealed in a more effective manner for participants who prefer not to be “talked-at.” Just like television and radio programs stimulate cultural debate, it was hoped that these edutainment forms would incite a dialogue on the value of Knowledge Sharing that could help make it a part of local culture. While drama as edutainment has proven to be an effective method of dissemination for some participants, the production process has not proven to be cost-effective enough to justify its use in the CELAC catalog. Equipment costs for recording, reproduction, and viewing combined with the over all investment-cost of a quality production are the main challenges in this respect.

To overcome these challenges, CELAC employed orphans as actors in the dramas. These children are also served by BROSDI’s orphan education program and the benefits of education and leisure for these participants were considered valuable. While the project should be lauded for this creative attempt at facing one of the challenges in production costs, equipment costs for reproducing the drama proved too high for it to be cost-effective and sustainable.

Website Maintenance

Improvements to and constant updates of a website are a challenge to any organization. This is particularly true, however, for an organization focused on rural development because the officers are less incentivised to invest resources into the website when the population they serve lacks access to it. The CELAC project has been challenged in this respect and continue to make needed improvements to their web site, <http://www.celac.or.ug>

While the project website is understandably underutilized by its participants, it can still be a valuable resource for program officers, partners, and other organizations who could utilize CELAC’s findings. Thus, in the interest of Information Sharing on the top-level and promoting a culture of KS for development professionals, it serves CELAC and the development community to have a comprehensive and up-to-date website. While challenges of connectivity, electricity “load shedding,” and poor internet infrastructure that afflict all organizations in Uganda and the developing world are a part of this problem, more can be done on the part of the organization to contribute to website updates and more comprehensive coverage of the project.

Utilization of FOSS

The use of Free and Open Source Software is a stated objective of BROSDI and an intended tool in the CELAC project. Utilization of FOSS is in line with the mission of Real Access/Real Development because it promotes collaborative efforts and software tools that are sustainable and socially conscious. However, implementation of these tools proved to be very difficult in the context of the CELAC project.

Despite their many benefits, FOSS is currently an underutilized resource by technology users around the world. This is particularly true for technological neophytes whose limited engagement with computer-based technologies has been with main-stream, non-FOSS programs and applications. CELAC’s participants would definitely be considered part of this group. As a result, extra resources had to be dedicated to FOSS training and implementation, and despite this investment many participants still refuse to use FOSS and choose other applications, Microsoft’s Windows for example.

Promoting the use of FOSS and ensuring its utilization as a sustainable tool means including it as content to be transmitted in the Culture of Knowledge Sharing. Of course, this is not “local agricultural content” per say, but FOSS tools do allow for the highest degree of local input and should be viewed as an investment in the education of rural communities. Thus, CELAC must seek to incorporate FOSS promotion into its catalog.

Monitoring

A hallmark of the Real Access/Real Development framework is critical evaluation. While the CELAC project embraced this approach and BROSDI was highly critical of every aspect of the project, appropriate and effective tools and measures for monitoring were not established. Such tools and measures would gauge different aspects of the projects impact and allow for effective reactions and adaptations to be implemented by project officers. During Phase I, CELAC lacked such a gauge and there was little in the way of concrete, statistical objectives that could be utilized as benchmarks.

More concrete methods of evaluation for the impact of the CELAC project need to be established in order for future improvements to be made in an effective nature. Such an evaluation proves particularly challenging for a

project with the holistic goal of improving livelihoods, something that can't necessarily be measured in a simple, quantitative fashion. Monitoring a project with this type of progressive objective requires more of an effort, a creative approach, and a broad-based qualitative analysis.

Specific ICT Impact

Throughout its implementation in Phase I, the CELAC project made major inroads towards ICT literacy and utilization among rural farmers in Uganda. SMS proved to be a very viable tool for participants because it was affordable, available, and sensible in terms of their income, experience, and skill-set. However, formal research into what ICTs can best be utilized by specific segments of the communities is called-for in order to ensure maximum impact.

An essentially organic, common-sense approach led to the utilization of the specific ICTs used in the CELAC project (especially SMS and Radio). To balance this approach, in-depth research into what tools are best for the demographics that make up the participants will be helpful both to CELAC's future sustainability and to interested parties seeking Real Rural Development initiatives. Surveys, discussion groups, and preexisting literature on the topic should be utilized to determine, for example, which technologies suit female farmers as opposed to male; or which ICT is most accessible to Government Extension workers; or which is best for intra-community dissemination as opposed to intercommunity. Such in-depth research could answer a variety of questions surrounding specific ICT impact.

Phase II: Responding To the Challenges

As it moves into Phase II, the CELAC project plans to address all of the above challenges while it moves, in addition, to facilitate capacity building among participants and achieve its objectives of sustainability, improved livelihoods (especially amongst women), and development of a culture of knowledge sharing among rural Ugandan farmers.

Capacity Building

A vital step towards the above achievements will be a capacity building initiative aimed at strengthening the roles of participants on the programmatic level. This means developing skills amongst participants that will allow them to take on a variety of responsibilities that will sustain the project. Building the capacities of the rural agriculturalists will mean increasing their role as knowledge sources, content disseminators, community leaders, and ultimately CELAC officers. There are multiple opportunities for this capacity building within the framework of the CELAC model. The benefits of knowledge sharing, especially for those who take on leadership roles like the VKBs, provide management skills, communication skills, technological expertise, and promotion as a community leader. Once inspired by the potential of Knowledge Sharing, participants are thus empowered by the acquired skills and can facilitate future knowledge sharing initiatives while they act as educators on the value of local content and its dissemination.

As ICTs become more prevalent in these rural communities, CELAC envisions participants acting as local officers and operators of Local Content databases. Such individuals would also be in ideal positions to organize forums, manage content for a variety of dissemination tools (radio, SMS, locally-based websites), and archive local content at knowledge centers that would be maintained by the community. Ultimately, CELAC's role will be a responsive one, where a small staff provides transport, consultation, and training to the participants responsible for producing, processing, and disseminating local content within communities where Knowledge Sharing is highly valued.

This level of Capacity Building, which CELAC sets out to achieve as part of its Phase II objectives, services the objectives of project sustainability and promotion of knowledge sharing to a high degree.

Market Access

Though the term improved livelihoods implies a myriad of benefits beyond economic gains, improved incomes for participants is a part of CELAC's objectives. If Knowledge Sharing of local agricultural content does in fact improve the farming methods of the entire community, then that community will necessarily create a surplus in agricultural output as well as the potential for increased capital gains resulting from this surplus. However, such gains can only be realized if rural farmers have access to markets where they can make the most of their surplus produce. As a result, a natural next step for any such project should be to seek out markets for its participants

where appropriate economic gains can be obtained. CELAC plans to utilize a number of methods, tools, and approaches already in place to help participants gain access to these vital markets. These include:

Knowledge Forums: The forums represent an excellent starting point for market development. Farmers already a part of these forums are aware of each others common crop/livestock concentration and these sub-groups could empower farmers desiring to enter the marketplace. Market Cooperatives could be one of many results from such collaboration.

ICTs: Market skills and general education could be transmitted through ICTs in the same fashion Local Content is. Tips for accessing and utilizing markets would be just as valuable as knowledge of how to grow the products one can sell their.

Partnerships: The broad network of Government, Non-Government, and Civil Society groups that participants of CELAC have access to will be valuable in terms of market access and education. Facilitating market access will mean, essentially, expanding the definition of local content to include contextualized, market-focused, skill based knowledge that compliments and expands on the agri-focused content currently being transmitted.

Monitoring and Research

CELAC has already proposed a number of research initiatives that will allow the project to better suit the needs and desires of its participants. Through such initiatives, CELAC officers will also be able to survey participants, develop quantitative and qualitative measures of their success, and thus better monitor progress and determine more concrete objectives for the project and its participants.

One proposed research initiative will focus on determining specific ICT effectiveness among unique demographics. A survey of participants and which ICTs they find to be most accessible, understandable, and useful will be vital in this regard. Particular attention should be paid to the degree to which ICTs have become a part of the participants daily lives and how their livelihoods have been impacted.

Similar research that will lead to precise measures of the impact of Knowledge Sharing on a community should also be undertaken. The CELAC project is founded on the belief that Local Content is the capital that every rural Ugandan possesses and that an exchange of this wealth will enrich the entire community.

The concept of Knowledge as Capital can even be extended beyond agricultural content. If KS among farmers does in fact enrich a communities agricultural production, then shouldn't shared knowledge in other fields do the same? Rural peoples posses a wealth of knowledge in the areas of health, education, trade, the arts, landscape, mechanics, and a myriad of other fields in addition to agriculture.

It is the belief of BROSDI and the architects of CELAC that a wide-spread culture of knowledge sharing that penetrates every aspect of the community will help improve livelihoods of the individuals within that community.

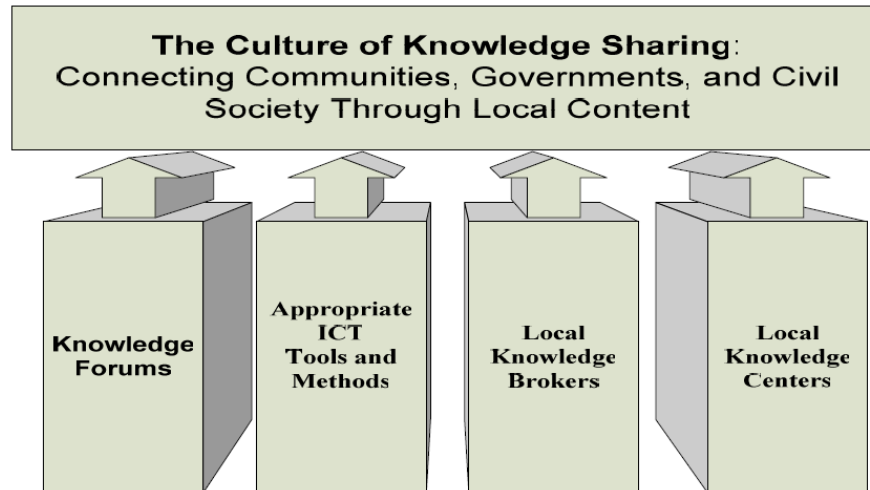
CELAC A MODEL FOR RURAL DEVELOPMENT

CELAC as a Model for Future Projects With the success of the CELAC project, BROSDI hopes its ongoing initiative will inspire new and creative rural development projects focused on improved livelihoods through knowledge sharing and the use of ICTs. This final section of the Guide will examine the CELAC project as a model for such projects and will represent the foundation for a future project focused on KS in the area of Medicines and Public Health.

The Four Pillars of Knowledge Sharing

To start, CELAC has identified The Four Pillars of ICT-Enabled Knowledge Sharing Projects. These pillars represent a broad foundation on which to build a comprehensive initiative that seeks to improve livelihoods through the use of KS methods and ICTs. These pillars are all factors that should be considered in addition to the

The 12 Habits of Highly Effective ICT Enabled Development:



1. Knowledge Forums:

Beginning With Participation Knowledge sharing fundamentally begins with bringing community members together. Local knowledge forums represent a vital first step to this collaboration for any KS-focused development project, where participants begin the process of knowledge sharing and local content can be identified by program officers for future dissemination.

The ultimate purpose of the Knowledge Forum Pillar is three-fold:

- To exchange knowledge and educate participants
- To allow participants to discuss best practices and refine this knowledge
- To identify the refined knowledge as local content

This process will flesh-out true local content and allows participants and project officers to dispel local myths that hinder both best-practices and efficient knowledge exchange. Participatory methods aid this process and can be used to identify local content for any sector. While the CELAC forums focus on agricultural content, Knowledge Forums can be utilized to identify valuable local content in other sectors like public health, education, or Government services for example. Once Local Content has been identified through knowledge forums, the process of knowledge dissemination can begin.

2: Appropriate ICT Tools and Methods: Communication that Suits a Community

At the heart of the successes of the CELAC project is the use of ICTs for knowledge dissemination. The CELAC approach proves that ICTs can be used effectively for information transmission in rural development projects. While CELAC's focus is on the agricultural sector, the value of KS for rural development transcends this sector, and utilization of ICTs for knowledge transmission in any rural development project should be a priority.

Determining the most effective ICT tools, methods, and general utilization for knowledge transmission should be considered before any such initiative is undertaken. As the previous section detailed, a comprehensive survey to determine the most effective ICT should precede project implementation. Just like different sectors demand new approaches to development, they will also call for unique technologies and methods of knowledge transmission. Thus, every ICT4D initiative should take into account the following factors for ICT implementation within the context of the community(ies) they wish to serve [as recommended in Bridges.org's Real Access / Real Impact framework for improving the way that ICT is used in development]:

1. Physical access to technology
2. Appropriateness of technology
3. Affordability of technology and technology use
4. Human capacity and training
5. Locally relevant content, applications, and services
6. Integration into daily routines
7. Socio-cultural factors

8. Trust in technology
9. Local economic environment
10. Macro-economic environment
11. Legal and regulatory framework
12. Political will and public support

A Community-ICT survey will be integral to meeting the above standards for local ICT integration. CELAC Phase II will focus on such an initiative, but implementation of survey-based research should take place as early as possible, even before the project is underway. Thus, identifying sample groups, interviewing all household members, and being receptive to changing community desires should be major tasks of ICT-Enabled Rural Development project.

3: Knowledge Brokers

Knowledge Brokers represent the human pillar that supports a local culture of knowledge sharing. These local leaders connect their communities to vital knowledge and to the technologies that deliver that knowledge. Whatever the local content being disseminated, local knowledge brokers are the first point of access for that content and they are responsible for receiving it through ICT and disseminating it through whatever process and methods are most efficient within the local context.

Because of their function as mediators between project officers and the community through ICTs, knowledge brokers will need a basic skill set that may require training that should be implemented by the development organization or its partners. These skills include but may not be limited to:

Familiarization With ICTs That Deliver Local Content: Should have a working understanding of the technology and be competent and confident in its use.

The Four Pillars of ICT-Enabled Knowledge Sharing Projects represent the primary aspects of a development project that seeks to facilitate a culture of knowledge sharing within and among rural communities. By establishing these fundamental pillars of the project, a community can begin to exchange and refine local content that will improve their education in multiple sectors and can ultimately lead to improved livelihoods

Recognized Position as a Local Champion: Should be established within their community as a source of knowledge and should be in the best possible position to deliver knowledge. This may require project officers to facilitate the establishment of this individuals new social position. The knowledge broker may have specific transportation needs and may need specific language skills as well.

Access To Local Knowledge Center: The Knowledge Broker will need to frequent the Community Knowledge Center where local content is stored and disseminated. This may require special access needs that should be provided by program officers.

4: Knowledge Centers: Utilizing Public Space For Public Good

The Fourth Pillar is the local knowledge center, or the physical space for the dissemination of Local Content. While dissemination to individual community members through a variety of methods will be required by program officers and their local knowledge brokers; storing this knowledge in an accessible community space for future utilization will also be vital.

The Local Knowledge Center is fundamentally a space where content is displayed and stored. In addition, it can also be a space for further knowledge exchange, interaction with ICTs, and refinement of both local content and community ICT skill-sets. The local IT access center could be an ideal space for a knowledge center where local content can be stored and accessed through a variety of technologies that might be available. If an IT center is not available, any established public space can be used to display text-based local content. The local Post Office, Library, or Public Square are just a few examples of public spaces that could be utilized for this purpose. Research into what space would be most suitable locally may be required for each community involved.

Following the CELAC Model in the Public Health Sector

Just like the sharing of agricultural knowledge spreads the local wealth (content) within that sector and improves livelihoods, the sharing of knowledge concerning public health could also stimulate similar community gains.

Rural, often marginalized, communities possess generations worth of wealth in the local knowledge they have accumulated through treating illness, curing disease, managing pain, improving nutrition, extending life, and generally serving the needs of public health. These practitioners, whether they be professional, official, or amateur, have also built their health-related practices around a variety of myths that have harmed or could potentially harm individuals within the community. Exposing people to other opinions, methods, and techniques is an excellent way to transmit successful practices and dispel myths that lead to unsuccessful practices.

Knowledge forums are an ideal space for exposure to new concepts. They are also a space where a knowledge exchange can take place, best practices can be refined, and poor practices can be discovered. Establishing such forums within the public health sector holds similar potential advantages that were proven through CELAC's work in the agricultural sector. Such forums will be most effective if partners both local, government, and foreign are utilized in the identification of a sector's experts and are incorporated into the forums.

As valuable local knowledge is unearthed through the forums and potentially dangerous myths and stigmas are exposed as well, ICTs can be utilized to transmit subsequent Local Health Content. Following the The Four Pillars of ICT-Enabled Knowledge Sharing Projects will be paramount to the success such a project. This means identifying and utilizing local leaders as knowledge brokers and local public spaces as knowledge centers that are appropriate to the public health sector.

A Culture of Knowledge Sharing: Where Knowledge is Capital

Knowledge is valuable capital for all communities and just as the exchange of capital improves economies, the exchange of knowledge will improve community members' daily lives. As the above example reveals, CELAC's approach to utilizing knowledge as capital and disseminating it through ICTs provides a valuable model for multi-sectoral rural development projects that seek to improve livelihoods through Knowledge Sharing.

A broad challenge that any organization seeking to conduct rural development projects focused on KS can expect to encounter is a culture of knowledge hoarding that will pre-exist in the community. This culture is accentuated by the lack of communication tools, infrastructure, and education available; but it is also embedded in widely held rural-conceptions that rural peoples are, to varying degrees, pioneers destined to be subsistence, self-taught, and independent. BROSDI's officers found this self-perception to be present in almost every participant and it manifested itself in their skepticism of the project and the forums and their reluctance to share information.

In the agricultural sector, participants were hesitant to share knowledge because they feared the local competition for markets and status that could result. While this fear may not be as strong or even relevant in other sectors, knowledge hoarding in one form or another will most likely be encountered.

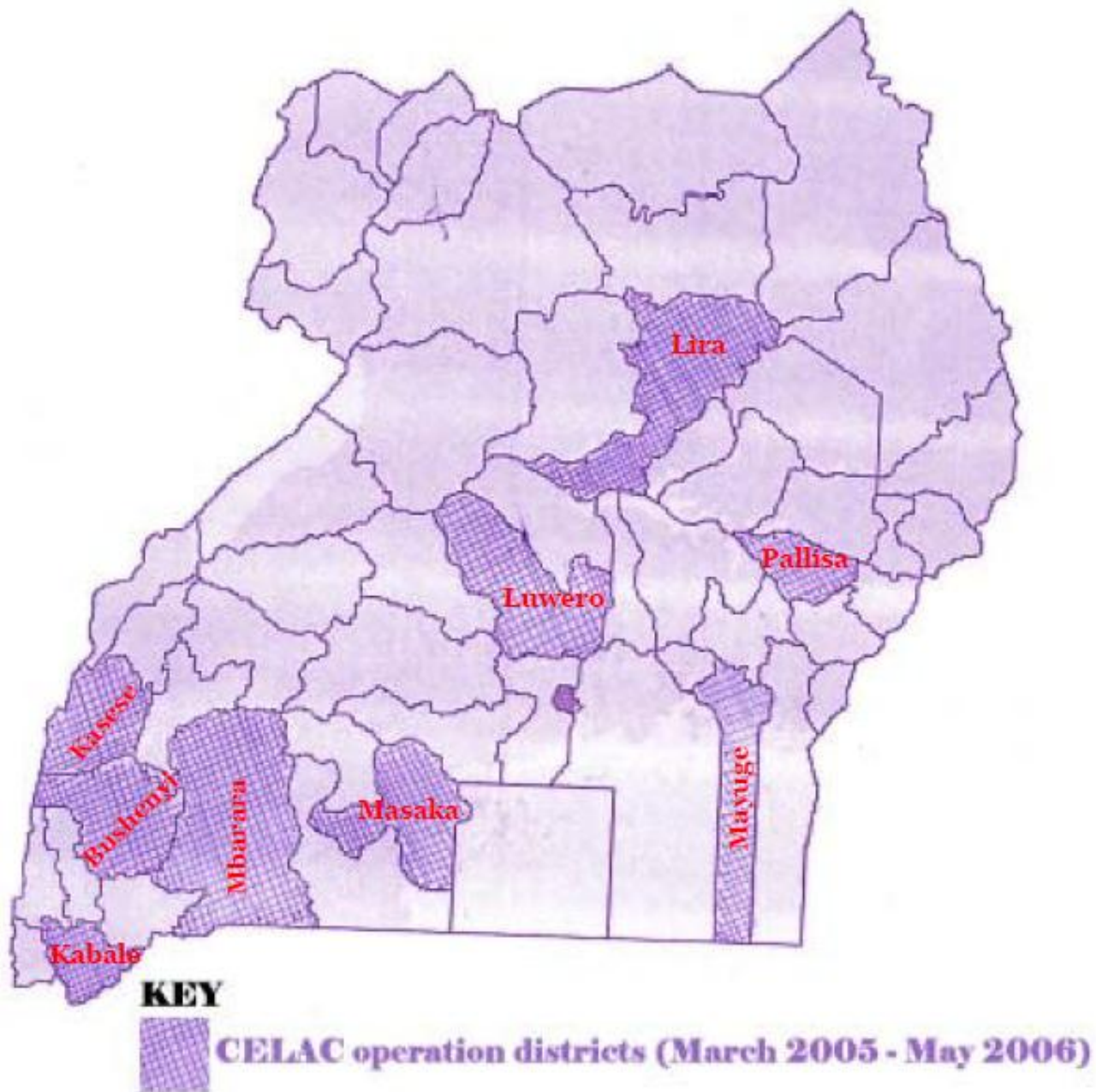
For CELAC, facilitating a culture of knowledge sharing meant convincing people that when they gave knowledge that was beneficial to others, they would receive valuable information in return. As individuals' crop and livestock outputs were strengthened and diversified and the community became more productive, this value became clear.

Promoting the use of ICTs as enablers for KS also helps to break down knowledge hoarding habits. Rural communities already realize the value of ICTs they do possess (like cellular technologies and radio) and are eager to learn about technologies they don't possess (like computers and Internet). Thus, ICT4D projects can help make significant gains in facilitating a culture of knowledge sharing. Furthermore, By making content locally relevant, the ICTs that deliver the content become more relevant to people's lives as well.

The exchange of knowledge and the ability to utilize information and technologies are fundamental aspects of development in the modern world. As a culture of knowledge sharing is achieved and rural livelihoods are improved, communities will be advantaged by their ability to exploit information systems necessary for productivity and market access within the global marketplace. Exposure to ICTs among community members will also aid in efforts to diminish the digital divide that separates rich from poor, urban from rural, and developed from underdeveloped. ICT-enabled Knowledge Sharing projects offer real solutions to the problems that effect rural

communities that lack the resources to successfully exploit knowledge systems and global markets. For these communities, Knowledge Sharing means power, real access, real development, and improved livelihoods.

MAP OF UGANDA ILLUSTRATING THE CELAC OPERATION DISTRICTS IN PHASE ONE



THE CELAC NORMS & MODELS

The CELAC Model

Improving Rural Farmers Lives through Bottom-Up ICT & Open Development Initiatives

The CELAC Equation

Knowledge + Technology = Power

The CELAC Initiative

A Rural Development Model for Improved Livelihoods through use of ICT for Knowledge Sharing of Local Content

The CELAC Rural Development Model

Combining the Power of Knowledge Sharing and Technologies for Improved Livelihoods

The CELAC Mission

Improving rural farmers' livelihoods and food security through engaging the government and the civil society in knowledge sharing and information management of local content using ICT methods

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