Sustainable initiatives

An Information and Communication Technology case study

Kumasi Information Database (KUMINFO)

Geographic Information System (GIS)
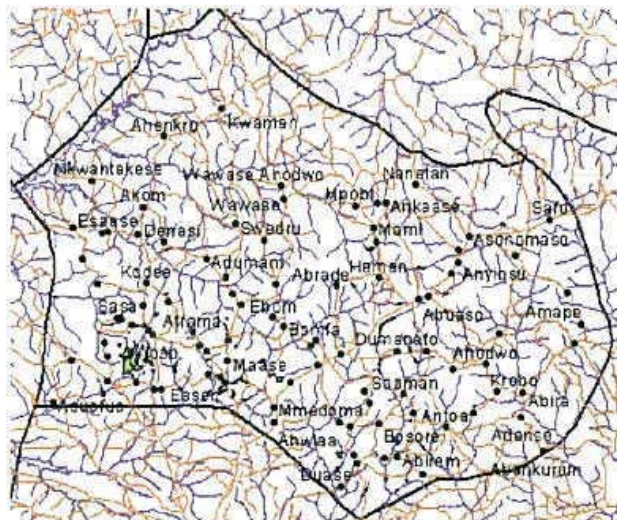
KUMINFO

Introduction

This case study has been generated as part of a research programme into Information and Communication Technology (ICT) sustainability factors. Funded by the Department of International Development, the research programme identified activities that sought to benefit the poor and had an ICT component. In particular it considered programmes where ICTs had enhanced ongoing development activities, the ICT activity could be replicated without sizeable investment, and there was a measure of sustainability. Sustainability was taken to be more than financial cost recovery. Drawing from lessons learned in other development sectors, sustainability involves a combination of factors including among others, clear objectives, institutional frameworks, local capacity and development benefits. While perhaps not fulfilling all the features of a strong sustainable activity, the following case was felt to hold points of interest for the wider global development community.

Description of case Study

KUMINFO is an integrated geographical information system for peri-urban natural resource research, which brings together information from individual research projects and organisations in Ghana. Established at the Institute for Renewable Natural Resources (IRNR), Kwame Nkrumah University of Science and Technology (KNUST), KUMINFO replaces a pre project Geographic Information System (GIS) proto type developed by Geographical Data Support (GDS). It provides users with access to maps of Ghana, the Ashanti and Kumasi region, as well as integrated vector, raster and attribute data. KUMINFO also provides structured access to key elements of individual studies, and ergonomic and intuitive interfaces for data analysis. The goal of KUMINFO is to make data available and accessible to stakeholders in natural resource management, such as lecturers, researchers, district planners and farmers. Thus, its success depends on careful organisation of datasets, provision of information on available data, data quality, and education of users on the use of the system. The strategies developed to educate users on the KUMINFO system included the organisation of workshops, seminars and training sessions, and the preparation of media products such as leaflets, manuals and newsletters (Geographical Information Systems for the Management of Natural Resources in a Peri-Urban Environment, KUMINFO.)

KUMINFO is demand-driven and proving to be very important as a tool for addressing the informational needs of institutions and communities for natural resource management in peri-urban Kumasi. For example, the inclusion of the KUMINFO component in the Kumasi Natural Resources Management Research project (KNRMP) was born out of identified information gaps in the natural resources sector in Kumasi and its peri-urban districts. The gaps were identified through extensive consultation during the identification and

design process and related especially to the availability and dissemination of information. This was seen as one of the key problems or constraints to natural resources management in peri-urban Kumasi. Thus, it was realised that what was needed was not just the generation of information through research, but in addition, the storage, retrieval and accessibility of such information. Cognisant of the above shortfall, it was decided that all the information generated and collected under the KNRMP, as well as any other relevant research findings, should be fed into a GIS database and the outputs made available on a regular basis.

Map: KUMINFO makes information available to a range of organisations involved in planning, such as the Environmental Protection Agency (EPA), who have a programme working with primary schools to monitor the quality of water supplies—this map of Kwabre District shows streams, alongside roads and villages.

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Development benefits

For KUMINFO the information and communication outputs are used mainly for research work and therefore there is little development work associated with it.

For GOAN, development benefits are limited due to problems of access by target groups to the database. Contradicting this, the communities members claim that access to maps caused their communities to start planting trees along the rivers to protect the rivers, and stopped farming and building houses along the river too. Thus helping them tackle forest and land degradation.

The Kwabre District Assembly claim very little has changed. Whereas the Environmental Protection Agency claim that KUMINFO has opened communities eyes to their impact on the environment.

KUMINFO have recently merged with another organisation IN-Concert.

Key Strategies

Through the collation and presentation of data, KUMINFO provides a peri-urban natural resource data base number for a number of stakeholders from government planners to farmers.

Hindrances

Technical:
Hindrances to the project include the lack of access to ICTs by target groups – both for the collection and accessing of data; non-reimbursement of expenditures associated with data collection and delivery by target groups. This has become a disincentive to collecting the data; there are problems in the formatting of data received for input, sometimes in the wrong format

Second hand computers from Canada have proved to be more of a hindrance through frequent need for repair then a help.

Socio-economic:
The lack of access by target groups was compounded by non-reimbursement of expenditures associated with data collection and delivery. One final hindrance is the lack of knowledge of how to use the ICT and the database by the target groups. There was also a general feeling of poor or no follow-up.

What helped it Succeed

Technology:
The use of standard computer equipment enabled service and support to be found locally.

Socio- economic:
Some of the successes were where KUMINFO had enabled villagers to see land degradation in their area and take action; where the results have shown a high standard of organisation and quality of data, alongside educating users in use of the software; and where the data available has met demand of user groups.

Sustainability factors

Objectives

To make data available and accessible to stakeholders involved in natural resource management.

Policy environment

KUMINFO is not aware of any national policies regarding ICTs, but indicated that the Government is interested in modernising the sector.

Institutional arrangements

The Institute for Renewable Natural Resources (IRNR) at KNUST (Kwame Nkrumah University of Science and Technology) first initiated KUMINFO with funding from the Department for International Development in the UK.

The KUMINFO Coordinator is answerable to the Director of the Institute of Renewable Natural Resources (IRNR). Below the co-ordinator is the Data manager and In-Concert GIS scientist. Below them are the service users. The service users include the GOAN, where farmers can go directly to access the database.

KUMINFO is directly responsible for the collation and presentation of data on the database.

Target groups

According to KUMINFO any organisation that is involved in natural resource management in Ghana is a potential target group. These include government agencies, local communities, and District Assemblies.

According to the various target groups interviewed, the low level of ICT technology available in Ghana limits access to KUMINFO.

The role of target groups is to provide quality data for building up the database. In return the target groups gain access to both the database and the Geographic Information service. However, according to KUMINFO, new data has not been forthcoming, as target groups are

not reimbursed for the cost incurred in the collation and delivery of data. The EPA and the community members, however, point to the lack of ICT facilities in their area as well as a lack of finance. Whereas the KDA said that non-participation was due to no longer knowing what its role was.

User groups also pointed out that they often lacked awareness and familiarity with the technology involved.

KUMIFO data appears to transect the various groups within society, including women. According to KUMINFO, women outnumber the men in showing interest in the project.

Technology

KUMINFO has 3 PCs, 3 Printers, 1 laminator and 1 scanner.

Of the users interviewed, GOAN has 5 PCs and a telephone, KDA has one computer and the EPA has two computers. The community groups however, had very limited access to an ICT.

A local computer supply company, Sambus ltd, supplies and repairs KUMINFO's ICTs. Sambus staffs are trained in the UK and Ghana. The organisation operates without external funding, with soft and hardware being purchased through South African and American companies. They currently have a cross sector customer base.

However, the IN-Concert computers are supplied second hand from Canada. A policy that has caused frequent technical problems.

Finance

DFID provided equipment, software, consumables, and allowances for manager and co-ordinator. IRNR provided space, furniture, air conditioners, staff and pays for utilities.

KUMINFO are at present trying to work out how much to charge for services.

The issue of cost recovery for project staff and equipment is still to be addressed.

Photo 1: Organisations involved in natural resource management can gain access to the KUMINFO database and services, such as this digital photograph showing a portion of the layout of Aburaso village.

The project process

The mechanism used for communities to apply for ICTS is by writing or visiting the office. The most preferred channel is verbal description as it is easier to understand what the communities really want and leaves no room for misunderstanding.

There are no limits to data collection what is considered is availability and usefulness of the data.

All of the user groups interviewed have been involved in the project for over two years. They all commented on poor follow-up, and that no alternative technological access has been offered.

Monitoring is carried out by way of a research collaborator on the KUMINFO project and through a review of stakeholders' responsibilities.

Anecdote

Community members: In one area the chief used the information obtained to enact a law against the cutting of trees, farming and houses along rivers.

Some of the data collected for KUMINFO has been used to map water bodies and its quality in Kumasi and the peri-urban area around it. In one community, the water testing involved in collating the data revealed huge amount of bacteria presence and on investigation it came to light that a community member had directed their septic tank to the stream (River Akosua).

No participatory training has been given to KUMINFO staff.

Stakeholders Consulted

This case study information has been gathered through the assistance of KUIMINFO staff, who facilitated interviews with a range of stakeholders. The team consulted a number of KUMINFO user groups, including 3 KUMINFO staff, 10 users from 4 different target groups – Ghana Organic Agriculture Network (GOAN), community members, the Kwabre District Assembly and the Environmental Protection Agency – and the local computer repair and supply company, Sambus Ltd.

Key linkages

KUMINFO claim their key linkages are with CEDEP, Bureau of Integrated Rural Development (BIRD), Geodetic Engineering Dept. KNUST, Kumasi Metropolitan Assembly, Statistical Service of Ghana, School of Medical Sciences - Kumasi Centre for Communicable Diseases Research (KCCR). The links are mainly in the form of participation in generation data of interest to KUMINFO and the organisations for digitisation.

For the community members key linkages are generally with the district assembly.

Intermediaries

According to the community members KUMINFO representatives pay informal visits to where the information is being obtained. However, they sometimes do not meet with the people who are providing the information.

The KDA complained that they never knew when someone form the community or from KUMINFO was going to visit and therefore are not able to always provide their visitors with appropriate information.

There is no limitation to the sorts of data collected. Final editorial and presentation control rests with KUMINFO.

Capacity

KUMINFO's previous data manager was trained in the UK, whilst the current one was trained in Canada

A couple of Users have been trained by KUMINFO in the use of the database. According to the KDA, their staffs were able to attend a lecture on the use of KUMINFO at a workshop but had problems understanding the directions given.
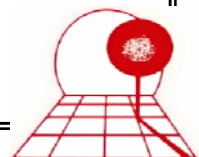
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