Pro-poor Satellite Broadcasting Reality or Myth?

Final Research Report

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By the Research Team:

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Cover picture: abstraction from photograph of women and children of Pala Village, Central Kanyamwa, Western Province, Kenya.

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[1] During the compilation of this report *Worldspace Foundation* was in the process of changing its name to *First Voice International*. The text of this report uses Worldspace Foundation throughout.

1. List of Acronyms

ALC – Africa Learning Channel

ALIN-EA Arid Lands Information Network - Eastern Africa

CBO – Community Based Organisation

CDW – Community Development Worker

CETRUD – Centre for Environment Technology and Rural Development,

DFID – Department for International Development

FURA – Foundation for Urban and Rural Advancement

FADECO -Family Alliance for Development and Co-operation

IRIN – Integrated Regional Information Networks (UN)

ITDG – Intermediate Technology Development Group

MTCEA – Multi-Purpose Training and Community Empowerment Association – Iganga, Uganda

NAYODE – National Youth Organisation for Democracy

NGO – Non-Government Organisation

RANET – Radio and Internet (climate and weather information)

VITA – Volunteers in Technical Assistance

WS – Worldspace

WSSD – World Summit on Sustainable Development

2. Executive Summary

People living and working in remote or marginalised communities in East Africa require information that is specifically relevant to their community's context, and that can be applied in a very practical way to overcome the real and immediate problems that poor people are experiencing in their lives. They also want to feel connected to the outside world and are interested in world affairs. They want to feel up-to-date and informed about current international news and issues.

Poor people in East Africa know they have limited access to external information and are highly dissatisfied with this situation. The most marginalised members of rural communities in East Africa have acute constraints concerning their access to relevant and understandable information, other than that that is generated locally. Their information exchange is principally based upon oral communication and their information sources are almost exclusively local (excluding radio). A common request is for more information that is appropriate to their specific context, meaning it must be locally relevant and applicable. Many people prefer information to be exchanged orally in their own mother tongue, and appreciate practical face to face demonstrations and follow-up.

Does Worldspace (WS) work for the poor?
The image of poor people sitting happily around a WS Radio in a remote East African village, listening to entertainment programmes and valuable information for their livelihoods, is a compelling one, but is **unfortunately not a reality**.
WS is a global broadcasting technology and its obvious strength is in its wide geographical coverage. However there is an interesting dichotomy here. Although the technology can reach ever corner of the remotest country with crystal clear broadcasts, the broadcast content and presentation is not local, and is therefore not offering what the listeners most want. The technological strength of the system is therefore somewhat at odds with the broadcast content requirements of the rural listeners.

There are no obvious failures in the technical capacity of satellite broadcasting and its ability to reach the most remote and isolated locations, but instead WS suffers from several more commonly recognised technology and communications constraints:

Language
WS broadcasts are mainly in English (with some French, Arabic and Spanish etc.). This fact alone means that the majority of poor rural East Africans will either be completely excluded from understanding WS broadcasts directly or at best will have some problems with the language.

Information Content
Community level users of WS radios consistently express the desire for **more local content**. There is a strong demand for broadcasts drawn from African experience and preferably from similar communities to their own.

Cost and availability of equipment
WS equipment costs far more than conventional radio sets, and is far too expensive for most individuals in East Africa to afford. It is therefore positioned in the market as a product for richer individuals and organisations. Most organisations investing in WS equipment would regard it as an asset for shared use.
The number of retailers selling WS radios in East Africa remains very low and is principally confined to a few specialist electronic outlets in major urban centres and some airports. Computer adapter units and computer cards are available in very few retail outlets.

Power availability
Powering the radios represents the one recurrent running cost. WS receivers use significantly more power than conventional radios and dry cell batteries do not last long. In locations which do not have grid or other electricity services powering the equipment is a major constraint.

Technical and institutional barriers.
When used in conjunction with a computer, WS equipment requires technical expertise that is not available to most rurally located organisations in East Africa. Technical support is therefore required, but is not commonly available.
The worldspace equipment is also a valuable asset at community level and can impact upon the management dynamics of a small organisation. Issues concerning the ownership of access to the equipment and user knowledge, and security are important,

When is worldspace effective?
Worldspace is dependent upon local support services being in place which can provide a bridge over the five key barriers identified above. **Where these services are available WS can be considered as a useful addition to fulfilling the information needs of the poor.**

Intermediaries
Direct users of WS equipment (in this research the CDWs) often perform sophisticated translation and interpretation services which allow WS information to reach the poor in a form that is understood easily. These services include literal language translations either aurally or on paper, and the interpretation and explanation of technical and unfamiliar terminology and jargon.

Information Flow Restrictions
One final, but very important issue concerning WS content is the fact that information flow on WS is only one-way. There is no mechanism in place for users to feed-back to WS and there is no possibility of asking questions or doing sophisticated personalised searches (unlike the Internet). Furthermore, the idea of contributing to the satellite content with one's own information and becoming an information provider in one's own right was something that no research respondents had thought possible.

Summary
Worldspace satellite broadcasting technology has proven to be an effective technical solution for transmitting radio programmes and data to vast regions of the world, however remote. Unfortunately the content and presentation of the broadcasts and the lack of local facilitating resources mean that significant barriers still have to be overcome before WS can be viewed as a significant provider of information appropriate to the needs of people living in poor and remote communities.

3. Background and Purpose of the Research

In July 2002, ITDG initiated a one year research project entitled; 'Pro-Poor Satellite Broadcasting in East Africa, Reality or Myth?' with research funds from DFID. The purpose of the research was to assess the impact of, and potential for, satellite broadcasting technologies – specifically Worldspace (WS) technology, to enhance the sustainable livelihoods of poor people in isolated rural communities. The research was carried out in four countries of East Africa: Kenya, Uganda, Tanzania and Ethiopia.

The research design built on a longstanding partnership between ITDG and ALIN – EA (Arid Lands Information network – East Africa). ALIN – EA is a regional membership NGO involved in promoting information for development among its members who are Community Development Workers (CDWs) operating in arid lands in Eastern Africa. Over the last two years ALIN sought and secured donor funding to buy and distribute WS radio equipment for a number of its partners on a cost-sharing basis. ALIN's aim was to enhance the information provision for CDWs and the poor communities with which they work, through the installation of, and training in the use of WS receivers.

Project purpose
An objective assessment of the impact of, and potential for, satellite broadcasting technologies to enhance the sustainable livelihoods of poor people in isolated rural communities.

Project outputs
1. The content of satellite broadcast material assessed in terms of origin (info providers), relevance, timeliness, accessibility (language etc.) and reliability.

2. The constraints upon community level access to satellite transmitted information compared against conventional information systems. (technical, financial and social)

3. Regional policy and legislation restrictions (present and pending) regarding satellite broadcasting researched and documented.

4. Introduction to Worldspace Satellite Broadcasting Technology

Worldspace Satellite Radio Technology is a new broadcasting system which started operations in Africa in 1999. WS radio sets receive radio programmes from several satellite beams which cover huge areas of the world. Three beams cover the whole of Africa and another three cover Asia. This means that if you own a WS radio set you can receive strong and clear reception in almost any location covered by the satellite beam, including very remote and isolated areas. A few places suffer from poor reception because of the 'shadow' effects caused by features such as mountains which block the 'view' from earth to the satellite.

WS radios receive a large number of channels (about 20 to 40, or more depending upon your location). Most of the channels broadcast in English or French and offer principally music or news programmes. Some channels broadcast in other languages and offer specialist development programmes.

WS radio sets receive satellite signals through a small antenna which is supplied with the radio sets. Radios can also be connected to a computer using an adapter unit which allows certain text and image material to be accessed. This material can be downloaded and saved onto the computer and printed as required. (For more details see www.worldspace.com).

5. Research Methodology

5.1 Map of Research Locations

- ● Major Towns/Cities
- ■ **Capital cities**
- △ Research Sites

ETHIOPIA

- △ Meket
- ● Gonder
- △ Woldia
- ● Bahir Dar
- ■ **Addis Ababa**
- ● Jima
- ● Awasa

UGANDA

- ● Moyale
- ● Marsabit

KENYA

- △ Kasese
- **Kampala** ■
- △ Iganga
- ● Entebbe
- ● Kisumu
- △ Isiolo
- ● Mbarara
- ● Nakuru
- ● Bukoba
- △ Rongo
- **Lake Victoria**
- ■ **Nairobi**
- △ Kayanga
- ● Mwanza
- △ Shinyanga
- ● Arusha
- ● Mombasa
- ● Tanga

TANZANIA

- **Dar es Salaam** ■
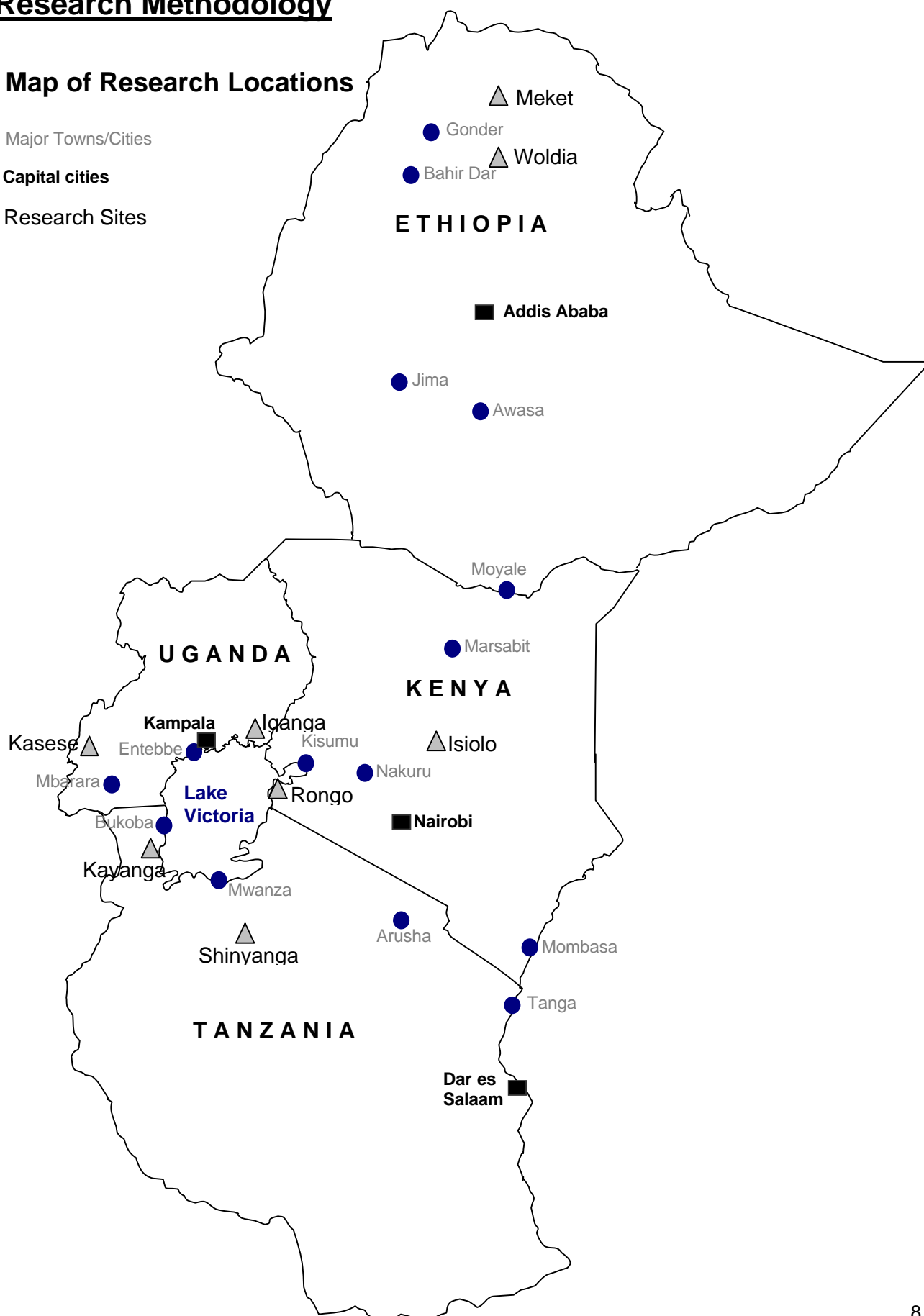
5.2 Research Approach

The research methodology was designed to assess the relevance and usefulness of the WS broadcasting system in the context of marginalised communities and the local development organisations that serve them. The methodology looked both at:

a.   *Access;* whether WS derived information was reaching those with most limited access to information, and

b.   *Content;* whether the broadcast content on WS was relevant and useful to the most marginalised people.

The research team recognised from the outset that no very poor families are able to own a WS radio set themselves, however the researchers were aware that WS derived information could potentially reach the most marginalised people through indirect means (eg a CDW) working in a conventional 'outreach' community support programme.

The project team identified different levels of community information users:
At the 'higher' community level are **CDWs** who typically search for and receive information from a variety of sources, and adapt and re-present information for the benefit of their target group. Their target group are the 'lower' level, usually the local **marginalised population** which live within much less diverse local information systems and have the least access to information.

Control group
Research was also undertaken with a limited sample of CBOs which did not have access to WS technology. This formed a control group against which to compare the findings from the CBOs that did have access to WS .

Private owners
In addition the researchers interviewed a sample of private owners of WS radios, including individuals and those using it for other applications, such as FM radio in the community.

5.3 Research Tools

a. Information Mapping – generic group exercise

> Purpose: To establish the existing information systems. The mapping exercise was designed to give an overall impression of the information sources and flows within a certain location. This would help to determine how significant WS technology was within the existing information and communication context.

> Description: the exercise allows local people to 'map out' the ways in which they gather, and share information. It should result in a fairly detailed visual map/picture of where people get their information, and in what ways it is communicated. Respondents work in groups of about 4-6 people and should be given at least an hour to complete the exercise.

b. Information Source Ranking – group exercise

> Purpose: To build on the mapping exercise in order to reveal the responding group's opinion of the importance of different information sources related to different subjects. For example, the importance of extension workers as a source of information on the topic of agriculture, or the importance of newspapers to the topic of HIV/AIDS.

Description: in the information mapping groups, respondents are asked to select 4 or 5 information topics which are most important to them. Then they are asked to rank (in terms of usefulness) the information sources that they identified during the mapping exercise. The result is a matrix which often clearly shows the most important information sources for a given location.

c. Questionnaire – specific for each group

Purpose: To verify the information gained through the mapping exercise and to develop this with specific focus on WS technology.

Description: The questionnaires focused on the respondents' direct use of WS technology (where that individual respondent was using it) and their opinions concerning WS derived information content. Five different questionnaires were designed to suit the various groups of respondents.

d. Pros and Cons Exercise - group consultation

Purpose: to summarise, as a group, the main advantages and disadvantages of WS technology and its broadcast content, from the perspective of the responding group.

Description: this was a simple group brainstorm type activity in which the respondents' observations and opinions were documented in two columns – pros and cons.

	CDW with WS. Radio	CDW without WS. Radio	CDO Managers	Marginalised community	Private users
Mapping	X		X	X	
Ranking	X		X	X	
Questionnaire	X	X	X	X	X
Group pros & cons	X		X		

Table showing which research tools were used with which type of research respondents

5.4 Critic of the Methodology

Information mapping
This tool worked fairly well, however it should be noted that the process must be carefully introduced by the researcher/facilitator. In the experience of the researchers, community respondents can be easily led, and are likely to interpret explanatory examples very literally and this can result in predictable information maps. Although tempting, the facilitator should not put pen to paper during the explanation as this will also result in copied mapping styles from respondents.
None of the respondents in the four countries had experienced an information mapping exercise before. Many of them said it was an interesting way of looking at their community. The mapping excise was more revealing at the lower community level than the higher level, as this is where the most acute information access constraints are usually experienced.

Information source ranking
This technique was successful in clarifying the relative importance of information sources. However the process was rather time consuming and could probably be simplified.

The Pros/Cons exercise
This was a rapid and effective means by which to collect opinions concerning WS. It was also simple to correlate and analyse across the four countries

Other methodology issues and Recommendations

From the outset, 'Courtesy Bias[2]' was identified as a potentially compromising feature of the research methodology. For this reason it was important that the research team carefully explained their status as completely independent to the Worldspace Corporation / Foundation and as having no vested interest in the technology under scrutiny. This was particularly important given that some of the responding CBOs had been donated radios by ALIN in the past. The research team does not believe that 'courtesy bias' played an unduly influential part in compromising the impartiality of the research results.

The two CBOs selected to assist with the research in each of the four countries were identified by ALIN staff and were organisations that had previously had a positive professional rapport with ALIN. For this reason they were prepared to offer full co-operation and assistance in the research process. This historic good will was a prerequisite to the research methodology working quickly and effectively in each location. This is an important observation for those contemplating similar community level research approaches.

The research was designed to investigate and understand an existing situation. It was therefore an extractive process in which the respondents did not directly receive any tangible benefits. This extractive dynamic relied upon the research respondents giving their information and time freely without compensation. In some instances this put the research staff in a situation in which they felt uncomfortable. In future a form of remuneration for responding organisations and individuals should be considered in the methodology design.

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[2] The tendency for respondents to tell researchers what the respondents presume the researchers want or expect to hear.

6. Findings

6.1 At Community Development Worker Level

Findings from the information mapping exercise:
All the CDW groups and the managers of the CBOs involved in the research felt that they lacked information. Some felt reasonably well connected to useful information sources such as Government Ministries, advisory professionals and in some cases electronic sources such as the internet. However the general impression the CDWs gave in rural East Africa was that they felt they were not able to access the quantity and quality of information that they required. In some instances the CDWs said they had been stumped when asked by members of the community some questions which they could not answer because of lack of information. For example, Mr. Richard Kaingo of IDAAC, Iganga says, *'I know the pest, but I don't know how to control it, for example, the cassava meal bugs, the [locally available] powder doesn't control them and the farmers also want better methods to control root rats and coffee wilt.'*

The information mapping exercises showed that most CDWs have a fairly diverse set of information sources, including local, national and international sources. Researchers found that the expected variations in quality and quantity of information sources from location to location were evident. The remote communities visited in Ethiopia were especially restricted in terms of information sources. In Meket for example, in North Wollo region, the inhabitants have no electricity or telephone services and newspapers never reach them. One researcher described them as living in an information vacuum. The CDWs here identified books, newsletters, workshops, training, field visits and radio as their most important sources.

Most other CDW groups visited during the research had access to diverse information sources- these typically included:
- Television
- Radio
- Newspapers
- Video
- Newsletters / journals
- Training and conferences
- Workshops, seminars
- Exchange visits and demonstrations
- Shows and exhibitions
- Other development agencies
- Professional Colleagues /friends /relations

Other sources mentioned less often were:
- Information emanating from the traditional local sources including farmers
- Live theatre
- Community meetings (Barazas)
- Local gatherings eg. Funerals, Weddings.
- Faith-based organizations
- Shopping trips to larger towns
- New guests / new comers
- Magazines
- Attendance at international conferences
- Internet
- Worldspace radio
- CDs
- Radio cassettes

CDW's information map at MTCEA Iganga, Uganda.

As a whole WS did not feature prominently on CDW's information maps. Very few CDW groups isolated WS as a separate information source on their maps. When asked about this, a few groups said WS was included under the heading of radio on their map. It was clear however that in most cases WS is not yet considered by CDWs as a main information source, even in those organizations which own a WS radio set.

Radio
Conventional radio, and in some locations local / community FM radio, was highly rated by CDWs as an appropriate information dissemination medium for reaching marginalised communities. Radio is appropriate for communities who predominately use the oral tradition of communication, and in the case of local radio programmes can be broadcast in the local language, with locally relevant content.

Internet
Few CDWs identified the internet as a major information source for them, even though some had internet access at work and others had access through local internet cafes. In most of the research locations that had internet people complained of high costs of telephone bills when connecting to the internet, and in some cases slow and unreliable connections. However, a few individual research respondents were enthusiastic internet users despite the constraints. One CBO manager had set up a website for his organisation.

...are well known for owning at least one bicycle and one or two radio sets.

Communication methods
Postal services and telephone were identified as important communications services to CDWs and some use e-mail. In areas where mobile phone services are available the uptake amongst CDWs is dramatic. Many CDWs now have their own mobile phones, and these are used for personal and professional use. They were viewed as a very useful advance in local communication. In Shinyanga for example all the CDWs in the research group owned their own mobile phones.

Exchanging mobile phone numbers, Shinyanga, Tanzania.

Communicating directly with marginalised people
During the information mapping in Shinyanga, Tanzania the CDW group made a clear distinction between communication methods which could reach rural communities directly, and those that usually required translation and interpretation.
Local radio, video, TV. demonstrations and meetings and workshops were identified as examples of means by which information could reach communities directly. WS, the internet and print media (especially English language) where seen as requiring translation and interpretation before they could be used directly by people in rural communities.

Important Information Topics
Amongst CDWs the perceived importance of information subject matter varied from person to person depending upon their profession. The following areas were identified as important (not ranked):
- Agriculture and livestock – including horticulture, bee-keeping and skins and hides
- Environmental conservation / Natural resource management
- Education
- Health – including HIV/AIDs, Malaria, disease outbreaks
- Water – and soil and water conservation
- Politics
- Social welfare
- Home science
- Gender issues
- Good Governance
- Weather
- Disasters
- Entertainment including sport

Gender
In the East African context, professional women's information maps looked very similar to those of groups of men. Non of the women interviewed identified any constraints to information access which were specifically gender related. However, the challenges of being a professional and playing a central role in domestic and childcare responsibilities do impact upon women's ability to spend time and energy in using and developing information systems.

Findings from CDW questionnaires (WS specific questions)
The research clearly showed that there are several levels at which CDWs and CBO managers interact with WS:

The most active users.
Only 3 or 4 people across the 8 research sites were seen to be using the WS system to its full potential. These were individuals who were using both the audio and data facilities offered by WS. These people were also tending to download information and were sharing this with CDWs and others. The researchers saw examples of were downloaded information had been collected, shared and stored as a bound booklet or filed as resource information. In Rongo in western Kenya the CBO C-MAD had a very competent and active information officer who appeared to be using the WS system to its full potential. He would regularly search for and download new information that might be useful to the C-MAD extension workers. In this case the extension workers themselves did not often come into direct operational contact with the WS equipment, but they were making frequent use of information derived from that source.
The extension staff explained that they were not always aware of the origin or communication channel through which the information they used had come. They built up their own knowledge and information resources from various sources and WS was obviously contributing to their knowledge systems. In some instances they were aware that certain information had been found on a WS data site (such as VITA technical sheets) but in other cases they were not aware of the original source. Some CDWs said they had downloaded and copied sheets from WS and distributed them amongst colleagues.

Less active users
The majority of CBOs visited during the research were not making significant use of the data facilities offered by WS. There were two main reasons for this:
1. Constraints on access to the required equipment and electricity supply. In Uganda for example MTCEA staff in Iganga had lost the use of a WS linked computer when the computer owner had left the organisation.
2. Technical know-how was another limiting factor. In Ethiopia for example at ENDA, the WS radio had not been used for over four months. This was because the old computer that had the WS software installed was donated to another organisation and the staff did not know how to install the WS software on the new computer.

The questionnaire results showed that 30% of respondents said they had had problems using the technology, whilst 70% had not (many of the 70% were listeners only). Most of the problems with the operation of the WS equipment were experienced when users were attempting to use the data casting facility.
Problems mentioned included:
Software / navigation problems, problems downloading, lack of spares and maintenance services, lack of computer skills, lack of training, receiver easily damaged, power consumption high and expensive in dry cell battery use.
Over half of the respondents (58%) said they had had no training in the use of WS. The remainder had received either 'on the job training' or assistance from ALIN. None had received assistance from WS themselves.

Audio Users
Many of the CDWs interviewed were aware of the data features on WS but said that they only used it to listen to audio programmes. They listened either in the CBO office or in some cases had borrowed the radio to take home. In one or two cases the radio had been taken 'into the field' to allow community groups to listen. Questionnaire results showed that almost all listener only users rated the operational easy of the radio as 'very easy'.

Favoured Channels
Those that use WS as a listening medium said they frequently listened to the following channels:
ALC, KIE, KBC, EMA- educational
CNN, BBC– for news,
Ngoma , Kiss for music entertainment

In Ethiopia and Tanzania where English is not widely spoken the channels with Kiswahili (KBC and KIE) and Ahmeric (EMA) content were highly favoured.

Data sites most often mentioned as useful were VITA, RANET, Helen Keller, Farm Radio and IRIN
(see content providers section 6.7 for more detail)

Information Content
The big issues for respondents regarding information content on WS were those to do with language and local relevance. CDWs wanted more information tailored to their local needs, and that drawing upon African and preferably local experience. They wanted this material in their local languages, not only so that they could understand it easily but so that it was easily passed on to their beneficiary communities.

The questionnaire results showed mixed levels of satisfaction with the information found. Respondents said that some of the information on the data casting channels is not up-dated frequently enough and it is presented in technical language which is sometimes difficult to understand. In some cases the information required was not available, especially that that is location or country specific.

Over 90% of CDWs said that they did 'change and adapt' information from WS so as to make it appropriate to their local context. CDWs in East Africa frequently translate material from English into local languages and simplify the technical information into explanations that are more easily understood. In addition some CDWs devise their own demonstrations and training courses, some of which incorporate information derived from WS.

Accuracy and reliability of information:
About 80% of CDWs accessed the information on WS as 'very' accurate and reliable and the remainder rated it as 'fairly' accurate and reliable.

Information relevant and useful to the poorest:
Over half (54%) of CDWs accessed the information on WS to be 'very' relevant and useful to the poorest, and the remaining 46% of respondents rated the information as fairly useful to the poorest. However many respondents reiterated that they have to interpret and adapt the information to make it accessible to their target communities.

Almost all of the questionnaire respondents said that they did search, or listen to WS for information on particular subjects.
Examples given included:
- Environment, -waste management, global warming and agriculture
- Water and sanitation –water storage technologies
- Small-scale irrigation
- Use of solar power
- Crop protection
- Population and geographic information –(not really satisfied as there was little information specifically on Ethiopia)
- Agriculture- crop varieties- poultry, livestock
- Nutrition
- HIV AIDS
- Basic Health
- Engineering related subjects – civil engineering
- Pre/post harvesting technologies

In some cases, especially in Rongo and Woldia the CDWs were able to give a number of solid examples of WS derived information which they had passed on to the village community. In one instance for example a CDW had designed a demonstration in silage making using WS data cast information which was used with a womens group of 60-70 people.

Feedback / interactivity
None of the respondents had ever contributed their experiences or local information to WS neither did they know how to if they had wanted to. The CDWs saw this as a serious constraint of WS. Some of them expressed a wish that WS technology be developed into an interactive system like the internet.

Overall difference in the quality of CDWs work
80% of questionnaire respondents said that access to WS had made them 'more effective in their work' with 10% saying they were 'much more effective'. Another 10% recorded 'no difference'.

Pros and Cons
The table below is a compilation of the Pros and Cons of WS as derived from the CDWs and in some cases the representatives of marginalised communities in the eight research sites visited.

Advantages (pros)	Disadvantages (cons)
Good quality reception even in remote locations	Language barrier – most content is in English and needs translation into local languages
Cheap to run if you have mains electricity	Not as appropriate as local FM radio for rural communities.
Radio sets are easy to operate for audio use	The information flow is one way – the system is not interactive and feedback cannot be sent.
Wide choose of channels radio sets are portable	Equipment is expensive.
Good link into global news and issues	High consumption of dry cell batteries.
Educational channels and development information on specific subjects eg. ALC	Requires electrical power that we do not have.
Information is up to date	Equipment and spares not readily available.
Good for entertainment, especially music	Lack of local expertise for advice and to do repairs.
Can download, print and build library of information for dissemination to poor communities	Information does not reach rural communities directly.
	Thief risk – especially the antenna
	Few locally produced programmes

	Information on data channels is sometimes too technical
	Data casting system requires high specification computer
	Requires computer literacy
	Difficult to operate the data system
	Programme schedule not always accurate

6.2 At Community Level

Mapping and Questionnaires

The questionnaires used at the lower community level were designed to determine the extent to which WS derived information was reaching the villages. It was clear to the researchers in most research sites that only a very limited volume of WS information was getting beyond the CDW level, with the exception of Rongo in Kenya and to some extent Woldia in Ethiopia. The lower level questionnaire was therefore only administered in a limited number of cases.

Researchers found that the difference in information systems between the higher (CDW) level and the lower (marginalised population) level was marked. The village information mapping showed, as might be expected, that the sources of information used by marginalised people are limited in number and mostly local. The only ICT widely used by villagers at present is radio, although telephone was occasionally mentioned. WS did not feature on the lower level information maps at all.

The inhabitants of all the village locations visited said they did not have enough information, and their communication options were felt to be unsatisfactory. Some complained of a lack of telephones and newspapers. At this level differences in information systems associated with gender and educational levels were more evident.

The information sources identified by marginalised groups were: (not ranked)

- Ourselves (ie. relatives, neighbours, friends, elders)
- Visiting professionals (outreach workers both NGO and Government)
- Schools
- Churches / mosques (God was mentioned as an information source)
- Health centres
- Community meetings of all kinds (including Clan meetings, Funerals / burials, savings groups etc)
- Notice boards
- Letters
- Newspapers / newsletters
- Radio (including local /community FM)

Women in Seseko Village, Shinyanga, Tanzania, listing their information sources

Information Topics

When community members were asked if they received information about subjects that are relevant to their lives the responses were inconclusive, a few said *always* or *seldom*, but most (about 70%) said *usually* or *sometimes*.

Respondents identified a range of information subject areas which were most important to them. **A common theme was that the information must be appropriate to their specific context; that is it must be locally relevant and applicable.**

Below are examples of topics most frequently mentioned as important:

- Alternative livelihoods to agriculture
- Income generation especially about marketing
- Food processing options (for adding value to farm produce)
- New technologies
- Health –medicine and local health care -malaria,
- Livestock management
- Pest management
- Weather forecasts (particularly in drought prone regions)
- Education *(frequently expressed as a general information need)*

Communication methods
When asked about the methods of information exchange (means of communication) used at village level respondents said word-of-mouth was by far the most common. Traditional communication systems are also commonly used, such as raising an alarm by yelling loudly from person to person, to spread the alarm throughout the community. Drumming and the ringing of bells are also used together with singing and dancing, proverbs and storytelling.

Villagers also said that they preferred to receive information in their own language and liked face-to-face practical demonstrations and exchange visits as ways of learning. They also liked books and other publications.

Presenting a community information map in Bulowoza village, Eastern Uganda

Indigenous Knowledge
The teaching and use of indigenous knowledge is still common place in most communities, for example all Maasai men are taught how to treat their livestock, and village midwives are a local source of knowledge in reproductive health. However the research confirmed that formal preservation and wider sharing of indigenous knowledge is not widely practised. Systems which allow knowledge to flow 'up from the village' rather than 'down to' the village are weak and the issue remains neglected. Some villagers expressed a wish to share some of their experiences, but did not know any mechanisms for this.

Cost
In some cases cost is a constraint to information access. This may be the cost of travelling by public transport to a town for information or in some cases paying the costs of visiting professionals. Woman from Bulowoza village in Uganda for example said; '*When we want advice about agriculture we cannot ask the local Ministry of Agriculture people because they always ask us to pay their transport fares. We prefer to ask local NGOs because we don't have to pay them.*
Many information needs are tied in with very practical difficulties which are impossible to tackle with information alone: For example one woman from Igombe village said: '*I have orphans to look after, I am poor, but the government says that I have to send them to school otherwise the children can take me to court. How can I answer this question of poverty?*'

In most cases, the information needed is very location-specific. The following were some of the questions voiced in villages during research visits:

- Where and how to get scholarships for children's education
- Where to get help for the disabled, widows and orphans
- Where to get improved banana suckers
- When and where to go for tetanus jabs.

New technologies

No community member mentioned WS as a source of information. Very few had come into contact with the technology and the vast majority were unaware of its existence. New technologies are beginning to have their influence in rural villages. For example in Seseko village near Shinyanga, Tanzania, people have no local access to a telephone line and do not have electricity so only watched TV at public places in Shinyanga town 20kms away. However the area is now covered by vodacom mobile phone reception and some of the local men we spoke to are considering buying mobile phones.

6.3 Is WS information reaching the poor?

After applying the research tools with the CDWs and CBO managers, the CDWs assisted the research team in identifying and determining the impact of WS derived information on marginalised people at village / farm level.

To achieve this the researchers tried to identify a specific topic or 'package' of information which the CDWs in each research location believed had been passed onto their target beneficiaries. The researchers then endeavoured to follow the path of the information package to determine if there was evidence of its existence and application in the farm.
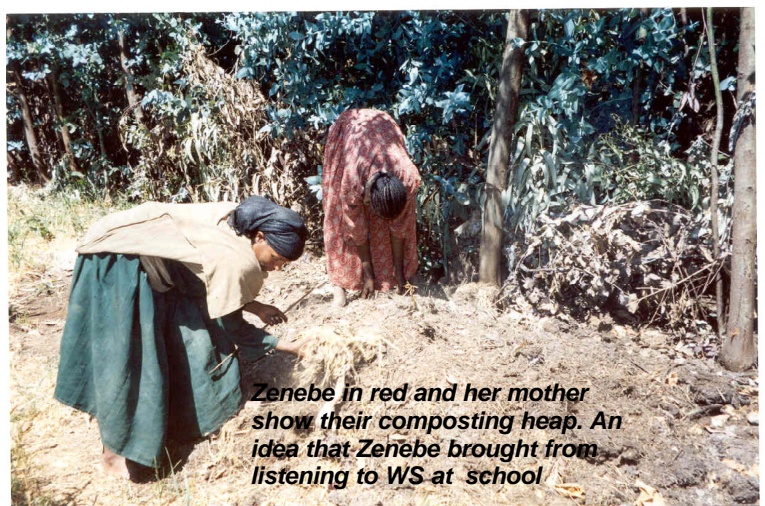
In the villages around Rongo this evidence was reasonably easy to find. Researchers visited some near by small scale farms and saw examples of farmers using new drip irrigation techniques and green mature methods which had been featured on WS data sites.

However WS could certainly not take all the credit for this successful information exchange. The outreach programme in this location was active and well organised and it is arguable that these small farmers were benefiting in most part from the outreach programme's effectiveness as a whole, to which WS was only a contributor. In the Rongo case information derived from WS was most often passed on to the community level by face to face interaction between CDWs and their target groups. Practical demonstrations and training were usually used as the communication method, with follow-up visits being seen as important. Demonstrations could be to large or small groups or one-to-one with individuals.

Drip irrigation plot, Pala village, Western Kenya

In other research locations it was more difficult to find evidence of WS information reaching the most marginalised community members. In the Ethiopian research sites a few examples were found. At Agret primary school an environmental club had been set-up. Through the club, some of the information from WS had been effectively used beyond the school boundaries. Researchers visited the home of a pupil at the school. She had introduced some

Zenebe in red and her mother show their composting heap. An idea that Zenebe brought from listening to WS at school

composting techniques for vegetable production in her home. Her mother *Mrs. Thsehay Fetene* informed the researchers that she had learned a lot from her daughter. They jointly initiated a vegetable garden in the compound and grew local vegetables and cabbages. According to *Mr. Sintayehu*, the project leader, this is a great achievement since parents have started recognising some of the practical things their children learn at school. In addition to composting, an improved institutional stove had been installed at the school using wood fuel conservation information from WS.

In one exceptional case in Karagwe, Western Tanzania, Joseph Sekiku of FADECO had taken the WS radio set to his home village and set it up outdoors to allow the local population to listen to channels they could not receive on conventional radio. He used electricity generated by a wind generator in his home to power the radio. He has also arranged demonstrations of the technology in numerous villages, but as yet there have been no signs that people are taking it up themselves.

Although these examples were encouraging, researchers also found that in Isiolo, Kenya, and in the four sites in Tanzania and Uganda there was very little significant evidence that WS information was finding its way to the most information poor members of the communities. The reasons for this are discussed in section 7 - Analysis Of Findings.

6.4 Control group

Questionnaires were administered with several staff of community organisations which were not using WS. The results of these interviews (particularly in Ethiopia) showed that compared to active WS user organisations, the non-WS organisations were more information constrained. However findings were very much context specific. Some non-WS user organisations did have periodic access to the internet and they felt that WS data-casting would not additional contribute to the internet material they were already receiving. There was little difference seen between the information access patterns of less active WS owning organisations and non-WS users. The key observation here is that WS will only make a significant difference if the context is conducive and the potential of WS is being realised. (See section 7 -Analysis Of Findings).

6.5 Private users

At least two private owner / users of WS were interviewed in each of the four research countries. These were principally professional people who could afford relatively expensive personal entertainment equipment. They had all bought the radios in major urban centres far from their own homes or from abroad.

Most of the private owners used the radios at home but a few were using them in hotel and bar businesses for customer entertainment. One bar manager reported an increase in customer numbers since purchasing the WS radio. Only one of the respondents interviewed used the data-casting service, whilst all of the others used WS solely for listening. (see case study 1 appendix E).

Private owners were generally very happy with their purchases; they all rated the WS radios as good value for money. One said it was 'worth every cent'.
The main features appreciated by the owners were: The wide choose of channels, the good reception, and the ease of use. They spent most time listening to music and news but would also tune into information channels such as ALC which was regarded as very educational. Private owners particularly liked the international news channels such as BBC and CNN and the wide choice of music channels, particularly Capital, East FM, GOMA and Kiss 100.

Private owners did have a few reservations about the radios. In Tanzania and Ethiopia more non-English channels are required, with more national content. Some owners were concerned about the security of the antenna (one had been damaged by a dog).

Private owners did not feel that WS was promoting itself widely enough. They said that most people still do not know about the technology and it is difficult to find retailers that stock the equipment.

6.6 Community / FM radio

During the research field visits in several locations it became evident that WS is being used in various locations as a supplementary technology for community radio. Although an investigation of this application for WS was not a core objective of the research project from the outset, the research team did identify community radio stations as potentially very effective intermediaries between WS and information poor populations.

In Uganda, where FM radio licensing has been liberalised, there are about 43 operational FM stations. 4 of these are officially categorised as community radios (Radio Apac, Kagadi-Kibaale (KKRC), Busoga and Messiah). Researchers visited these four stations and found that, apart from radio Messiah in Kasese, the rest are using the WS receiver to compliment their daily programmes. In Tanzania, Orkonerei Local FM radio station was also visited, and although they own a WS radio set the staff were not familiar with its operation.

At the 3 Uganda stations the mixers are connected directly to the WS receivers allowing WS programmes to be directly re-broadcast to the local listeners. This is done mainly for international news especially from the BBC.

The advantage for these local radios is that investment in the WS receiver is a one-off cost which allows them to plug directly into international channels, which they can re-broadcast to a large local audience. The drawback is, of course, that most of this material is either in English or Kiswahili, which is only understood by a minority.

Radio stations report that programmes such as the BBC's Focus on Africa are very popular with their more educated and younger listeners. CNN is also used for news, especially, 'when there's a crisis' (according to Radio Apac) and WS sports channels are used extensively during large events such as the Football World Cup.

At Radio Lira a WS receiver was bought by the manager, Gordon Bell, who told researchers that drama scripts are downloaded regularly from the WS Farm Radio Network data channel and are translated and dramatised for broadcasting in the local language. This, apparently,

Kagadi-Kibale Community Radio (note the WS receiver top left)

happens on a weekly basis. At Radio Apac, journalists access the WS data channels and search for information on agriculture, politics, technology, the regional security situation and weather forecasts. They use this information as a reference to enhance their development programmes, such as their daily 'Women's Forum' and their bi-weekly 'Farmer's Forum' programmes.

At KK Community Radio in Kagadi, the international new on WS has enhanced their own programmes on human rights and other international issues. They sometimes pre-record WS programmes and broadcast them with local language translations spoken over the English background. This has been done recently, for instance, using the direct broadcast from the WSSD in Johannesburg as a starter for discussion programmes.

In all the research communities which had their own local FM reception, the people rated the stations as very valuable information services, whether using WS or not.

6.7 Worldspace content providers

Researchers interviewed, either face to face or by telephone 9 organisations who provide developmental content on WS. The organisations interviewed were (in alphabetical order):

1. ALIN (Arid Lands Information Network) based in Kenya
2. FRN (Farm Radio Network)
3. EMA (Educational Media Agency) Ethiopia
4. FEWS (Famine Early Warning System) Ethiopia
5. IWR – (Interworld Radio) Panos Institute, UK
6. KIE (Kenya Institute of Education)
7. RANET (Radio and Internet for Communication of Weather and Climate Information to Rural Communities in Africa) Uganda and Kenya
8. SARI - Tanzania
9. Straight Talk – Sexual/Reproductive Health Education, Uganda

(For a description of the activities of the organisations listed above see appendix D)

Why these organisations use Worldspace
Most of the above content providers use the ALC channel to disseminate their information; either posting it in data-casting format for viewing on computer or in audio format. The exceptions are EMA and KIE who have their own channels on the Afristar satellite through an agreement they have negotiated directly with the WS Corporation.

In most cases the WS Foundation has approached the organisations and invited them to upload their material onto the ALC, in order to feature as much developmental content on the channel as possible. For some of the organisations (eg. FRN and IWR), this means minimal work, as it is the WS Foundation which takes responsibility for taking material from their websites and uploading it to the ALC via the Afristar office in Johannesburg. For others (eg. ALIN and RANET), it is a more active relationship involving regular communication with the WS Foundation and Corporation.

In most cases there is no payment involved: the WS Foundation features most of the above organisations' work on the ALC for free. There are exceptions: for example RANET pays an annual fee to the Foundation, but this is still 90% cheaper than using a commercial satellite provider. KIE pay the WS Corporation an annual fee for their own dedicated audio channel on Afristar.

All the content providers we interviewed use WS as just one of their means of communication. Most of them also have a website, a newsletter or magazine, a postal mailing list and, in some cases, their own means of broadcasting via conventional radio. In most cases, (except possibly KIE and RANET) WS is by no means the main dissemination means. For many, it is still the tried and tested non-electronic communications channels like print and post which work best. For example, the FRN still relies on printed mailings to its 500 broadcasting partners, and Straight Talk's main vehicle is still its newspaper.

For these organisations WS adds the possibility of reaching into really remote areas and, if the information is in data-casting format, the text and pictures are immediately useable and downloadable. For example, the FRN say that the few partners they have who are equipped with WS like receiving FRN's agricultural scripts via the ALC channel straight to their computers. This is because they can translate and edit the scripts directly, without having to transcribe them first, as they would have to do with printed material.

Another advantage of the WS broadcasting system is its clear audio quality; and this is especially important for educational organisations like EMA and KIE who need to ensure their audio programmes are comfortable to listen to and are properly understood in a crowded classroom setting.

Interestingly, KIE prefer using WS because they say it is less expensive and there is less interference from politicians as compared to conventional terrestrial radio ie. Kenyan Broadcasting Corporation (KBC).

Some drawbacks of the WS System
Experiences vary, but some of the content providers interviewed felt that the WS had its drawbacks. The main issues remain those of cost and lack of reach. In other words, they felt that more conventional dissemination methods were better because the high cost of receivers and the fact that the technology is not widely used in rural areas or among the poor means that WS is not really reaching these organisations' target audiences. However, ALIN, RANET, KIE and SARI who have helped to set up designated community-based groups to use the technology, were not so concerned about this issue.

Other concerns include:
- The fact that the ALC data channel does not always seem up to date: some content providers observed that the WS Foundation was not updating their materials regularly, even though the information on their Web site *was* up to date.
- A perception that there is only limited space on the satellite
- Import duties on audio and visual equipment for WS are high, which therefore impacts on those content providers (such as RANET) who are also involved with equipping partners with the WS technology.
- Power sources and the fact that WS receivers are 'greedy' in terms of power, was a general concern.
- The fact that WS is a closed system which does not allow for feedback was felt to be another drawback.
- The fact that many of these content providers' partners and target audiences are not familiar with computers or internet technology, and find this a barrier when it comes to using the WS multi-media formats.
- The fact that it is almost impossible to know who is accessing information via WS as opposed to other systems (ie. websites, newsletters, FM radio) was somewhat frustrating.
- The fact that the ALC channel's audio material is too English dominated and too generic - ie. not sufficiently local - for community radio stations to be able to use creatively.

Views on the Effectiveness and Future of Worldspace
Researchers asked some of the content providers to rate how good WS was as a means of information dissemination. 3 felt it was 'very good' and 2 felt it was 'fair'. Content providers were asked whether they thought the future of WS was secure: 3 felt it was fairly secure, 1 thought it was 'not very' and 1 said they could not judge.

Summary of Content Issues
It seems that those content providers who have engaged directly with the WS Corporation or the WS Foundation have a more positive view of the actual and potential impact of WS than those who are just allowing their materials to be uploaded onto the ALC. The two scenarios are quite different, because where a dedicated listening or users' group is involved on the ground with the direct or indirect support of the Corporation or Foundation, there can be much more feedback from and support to members. The alternative scenario is that content providers are just disseminating 'into the blue' with WS and hoping that someone, somewhere is benefiting. It is therefore inevitable that issues about lack of feedback and impact measurement arise.

It will be interesting to watch how the planned changes to the ALC (ie. three separate offices for the three separate Afristar beams) will impact on the content providers. Content providers will be watching the evolution of the Foundation, as it changes its name to 'First Voice International', as well as the financial future of the WS Corporation in the next months and years. If reaching the poor is their main objective, they will be weighing WS against other information delivery systems, particularly the ever-advancing penetration of the Internet, the growth of V-SAT technology, mobile telephony and community radios.

6.8 Broadcasting Policies in East Africa

Brief overview of broadcasting and telecommunications policies:
In common with most low income economies, the Governments of Kenya, Tanzania, Uganda and Ethiopia continue to experience external pressure to liberalize policies across many sectors. The broadcasting and telecommunications sectors are no exception. In fact all four countries now have new telecommunications and broadcasting acts, resulting largely from pressure to liberalize and privatize. At present Uganda appears to have the most liberal and progress policies, and the new Kenyan Government has promised significant change. Ethiopia and Tanzania have relatively restrictive policies and procedures. In Ethiopia the regulatory body responsible for broadcasting is known as the Ethiopian Telecommunications Agency where as in the other three countries broadcasting is regulated by their respective Communications Commissions.

None of the four research countries have generated legislation specific to satellite broadcasting. Satellite signals do not respect national boundaries and once anyone possesses a receiver, it is very difficult to control their access to the content. Some countries such as Saudi Arabia and Iran have tried to regulate the import of receivers, and have put internal restrictions upon the promotion of the service. In East Africa though, the restrictions seem to result more from prohibitively high import taxes on satellite equipment, rather than freedom of information restrictions. In Ethiopia for example, there was reluctance on the part of the government to allow the sale of the WS digital data adaptor card (DDA) and this had to be obtained from Kenya.

In practice all four Governments of the countries researched show recognition of the potential for WS to contribute to strengthening rural education initiatives. In all four countries Ministries of Education are working with WS to disseminate information to remote rural areas through both institutional and informal initiatives.

Regulation of satellites and satellite broadcasting is governed by international broadcasting law. Permission is required from the International Telecommunication Union to launch a satellite into space.

Policies By country

Uganda
Uganda is one of only a handful of African countries which has a relatively open and permissive policy towards the press and the electronic mass-media. It openly encourages competition and has not hindered the recent growth of a large number of local FM radio stations. WS is able to operate without any restrictions, so long as it abides by the rules of morality and legality which bind all broadcasters in the country under the Broadcasting Council.
The Communications Commission which manages the broadcasting spectrum and encourages competition has a positive policy of promoting ICTs for development and regards WS as 'good for communities and for development'. Given Uganda's media openness and the consequent range of choices which listeners enjoy, WS has arguably less of a role to play in terms of information provision than it does in other, more restrictive countries (for example Kenya, where restrictive legislation discourages local FM stations). It also means that the audience may be becoming used to tuning into relevant and lively programming in their own language, such that they will have less use for the kinds of foreign, English-language stations which WS carries.

Kenya
The new Government in Kenya has pledged significant policy changes designed to liberalise the broadcasting environment. These changes may result (as in Uganda) in WS becoming less distinctive as a source of international news and information. As local FM radio licensing restrictions are reduced, local / community radio in local languages will become more common in Kenya and WS may need to consider more formal and effective partnerships with local and national broadcasters.
That said KIE has bought its own dedicated channel on WS Afristar to broadcast educational content in Kiswahili. KIE have already distributed 2,000 WS radio sets to rural schools, and plans for a total of 13,000 for Secondary schools and 17,000 for Primaries.

Tanzania

Tanzania has a history of restrictive policies concerning freedom to information. The researchers were told that even owning a radio was viewed with suspicion until relatively recently.

Now things are improving slowly, and this is perhaps illustrated by the recent end to high import taxes on computers. WS Corporation obtained a licence from the Government of Tanzania in 2001 to broadcast and sell WS equipment. However professionals working in the broadcasting and media industry commonly express the view that the neighbouring country of Uganda is much more progressive as concerns the information and communication environment.

Mr Sikuki of FADECO (Family Alliance for Development and Co-operation) Kagera in North Western Tanzania for example, has often used internet cafes in Kampala when travelling through the city. These he says are cheap and fast. He was frustrated that Tanzania is falling well behind Uganda in this field. He also pointed out that policies and licensing etc are all dealt with centrally in Dar-a- Salaam. He said that Dar-a-Salaam bore no resemblance to the western side of the country and the centres of power did not understand the challenges of his region (Kagera). He said he was totally fed up with having to travel to Dar-a-Salaam for every official task. He advocated decentralisation of administration

Ethiopia
Of the four countries researched Ethiopia is the least liberal in its policies which govern broadcasting and the media. Educational Media Agency (EMA) of Ethiopia is the lead agency in implementing distance learning, and in this case at least, the Ethiopia government is very keen to use WS to improve EMA's services and when the researchers were in Ethiopia, the government was still negotiating with WS Corporation concerning the mass purchase of WS radio sets for schools.

The issue of re-broadcasting
A moot issue arises over the legality of small FM stations re-broadcasting channels (such as BBC, CNN etc) carried on the WS signal. Researchers were told by the WS Business Manager in Ethiopia that this was 'piracy' but that a 'blind eye is being turned at present'. However, we also asked the head of BBC Africa programmes who believes that this sort of re-broadcasting is allowed under the terms of the BBC's agreement with WS. Whatever the facts of the matter, there needs to be some clarification of the situation, because it is likely that more local radio stations would buy and use the WS receivers if they were certain of the legality of re-broadcasting.

6.9 Worldspace Corporation

Background
The WS Corporation was set up in 1990 by an Ethiopian resident in the USA, Noah Samara. His 'vision' was to provide digital satellite audio, data, and multimedia services primarily to the emerging markets of Africa and Asia. The company has now built three and launched two satellites covering Africa, Asia and the Middle East. It started broadcasts to Africa in October 1999 and to Asia in September 2000. The launch of the third satellite for Latin America is presently delayed indefinitely. The ultimate aim is for the total system to have a potential audience of more than 5.2 billion people.

The Corporation's objective is: "to create information affluence by providing compelling audio and multimedia services and solutions to targeted consumer and business markets, and to do so in a profitable fashion by way of a subscription based business model"[3]

The AsiaStar and AfriStar satellites each has three beams with each beam capable of delivering just over 40 clear audio channels and a variety of Web content and data directly to portable receivers which are each equipped with a special chip, which enables them to decode the information from the satellite.

The Corporation has its headquarters in Washington DC, offices in Johannesburg and London, and representatives elsewhere around the world, namely: Kenya, Australia, China, France, Germany, India, Indonesia, Dubai, Singapore and shortly an office in Ethiopia.

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[3] See WorldSpace Corp.'s website: http://www.worldspace.com/about/index.html

Many of the audio channels that the satellites carry are WS Corporation's own productions, for example 'Maestro' – a classical music channel, or Ngoma an African dance channel. Others are independent commercial stations like Kaya FM from South Africa or international public service broadcasters such as the BBC or Radio France Internationale. The majority languages represented are English, French, Arabic and Spanish, with some other stations targeting, for example, Tamil, Wolof, Turkish and Thai speakers. None WS broadcasters, (such as the BBC or CNN), are required to pay to lease a channel. Costs begin at around $200,000 per year to lease a basic (16 bit) channel.

Once individual listeners have bought a WS radio receiver they are able to listen to many free channels (including the Africa Learning Channel run by the Worldspace Foundation on Afristar[4]), but will have to pay a subscription for other more specialised services (for example weather channel for sailors, Arabic music, French news) if they want them. The Corporation therefore makes its money principally from leasing capacity on its satellite to other broadcasters and from subscription services to individual listeners.

Current State of the Business and Future Plans
According to the London office of WS Corporation, about 1 million receivers have so far been sold worldwide. Therefore the Corporation estimates current WS listenership is 7 million people worldwide, through sharing of sets. Because the sets are relatively expensive, almost all of these sales have been in affluent countries and to the urban middle classes in developing countries.

As can be surmised by the delayed launch of the Latin America satellite, the Corporation is not doing as well, in business terms, as it had originally hoped. It has had to reduce the size of a number of its offices, including the London one. Furthermore, it has encountered a number of problems, including a slower uptake of the receivers in developing countries than was at first expected. Licensing problems and import constraints in many countries have caused delays, such that in much of Africa beyond Kenya and South Africa, for example, the technology is still not widely known. High rates of taxation on satellite-related products in several countries (eg. Uganda, India) mean that the prices of receivers and PC adaptor cards are high[5].

It would probably be fair to say that the Corporation is currently facing a critical period. The satellites have an estimated lifespan of 12-15 years – they have been orbiting the Earth for four years, but the Corporation knows it must start seeing significant returns on its huge investment in satellite technology very soon, or face economic failure.

At present, the Corporation seems to be choosing to concentrate on the following:
- Selling 'capacity' to big, internationally known, broadcasters[6]
- Promoting subscriptions and 'subscription packages' to individual listeners
- More aggressive marketing of their products and services to the middle class market in Africa and Asia
- Improving programme choice and content with an eye to its core markets

Furthermore (and this is of particular interest from a developmental point of view) the Corporation is also looking keenly at:
- Entering into contracts with developing-country governments to provide communications infrastructure for their education systems in rural and remote areas (such as is already the case in Kenya via Kenya Institute of Education) and
- Targeting NGOs, the medical profession and learning institutions as potential large-volume clients.

There are indications that the WS Corporation is looking at ways to reduce the price of receivers. One well-placed informant close to the Corporation said that its target is to get receivers down to $10 each. To this end,

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[4] At present there is no equivalent of the Africa Learning Channel in Asia.
[5] For example: WS radio sets currently sell for between US$ 140 and 220 in Bangalore, India and for $250 in Kampala, Uganda.
[6] This means that some small local channels will no longer be able to broadcast through WS unless they pay. In the past uploading to WS was free, but this was a strategy the WS used at the outset to add content and to attract listeners. Also, some larger broadcasters, such as NPR (National Public Radio) in the USA have now become encrypted channels (ie. subscription only) whereas they used to be free-to-air.

WS Corporation now have manufacturing partners in (among others) India, Korea, and Indonesia who are producing receivers at lower cost than the original manufacturers who were companies like Hitachi and Sanyo. At present, the model which seems to be most favoured is the BPL from India (which includes a cassette player), but it still retails at around US$150 in Africa.

Although the WS Corporation does not have any direct competitors at present, both the radio and the satellite communications industries are changing all the time. For example, some WS Corporation representatives have said that V-SAT technology is a possible threat. Another strong sector is the growing number of urban commercial FM radio stations, which have burgeoned in Africa over the last decade and are due to rise markedly in India very soon. These will inevitably rob WS of potential audiences, since ordinary FM radio receivers are still much cheaper than those of WS, and there will always be a strong desire among listeners for local content.

Another potential problem for the Corporation is the fact that it has only a limited knowledge of the extent of its audience; it is not clear how many people have got receivers, who they are and how they use them. It is therefore potentially difficult to attract broadcasters if the WS Corporation cannot say for sure who its audience is. Some observers say that WS Corporation over-claims the size of its audience. Some independent estimates put the total number of receivers in Africa at only about 200,000 in total.

Analysis

When WS was first launched Samara made some very high-minded pronouncements relating to its developmental goals such as:

- "The WS goal is to create a new form of electronic media. But our vision is an ancient one: to spread knowledge for the good of mankind."
- "In addition to making countless millions more productive on farms, and in factories and offices, WS can bring to these people the gifts of the best music and literature of their native cultures along with those from the great cultures of faraway lands."
- *"People are as developed as the information they can access," Mr. Samara says. "We are committed to creating information affluence. Radio also reaches out to people where other media simply can't. It goes deep into people's minds, appealing to their imagination, rather than overwhelming their senses. Radio gives people the space to create. When we listen to words, sounds and music via WorldSpace, we become active participants in the creative process; we remain active without being tied down."*

Since then, it would seem that much of the developmental work has been passed over to the WS Foundation, while the Corporation itself has concentrated on a different market; namely the affluent elite. To that extent, the original pronouncements ring slightly hollow. However, though they have not succeeded in accessing a mass-market among the poor rural majority, there are some interesting developmental aspects to the Corporation's work:

One of these is the partnerships with African ministries of education, such as in Kenya and Ethiopia. For example, an agency like the Kenya Institute of Education (KIE) or the Ethiopian Educational Media Agency (EMA) enters into an agreement with WS Corporation whereby the government (or a parastatal company) agrees to buy a large number (thousands) of WS receivers, usually at reduced prices, and to lease a channel or some capacity on the Afristar satellite, in return for a dedicated channel or slot and guaranteed nationwide coverage, even to the remotest areas. The potential for distance learning is obvious and has clearly attracted the Kenyan government, to the extent that KIE now has its own dedicated channel on Afristar in Kiswahili, and has already distributed 2,000 radios to rural schools, and plans for a total of 13,000 for Secondary schools and 17,000 for Primaries.

It will be interesting to follow the KIE experiment, (it is slightly too early to assess its impact at this stage) because it is a significant step in favour of satellite technology by a national body for bringing education and information to rural schools. It is significant that KIE chose WS over the national radio broadcaster KBC for two reasons; cost (KBC's airtime charges are notoriously high) and because of 'less interference from politicians as compared to KBC.' It is also important to watch how Kenya fares, because Worldspace Corporation seems to

be quite aggressively marketing itself to both the Ugandan and Tanzanian ministries of education, as well as in Ethiopia.

Another project which the Corporation is developing is a technology package called an 'edukiosk', which consists of a self-contained unit (about the size of a telephone box) incorporating a computer, a PC adaptor, a small recording studio and a WS receiver. Schools in Africa are apparently the particular target-market for these kiosks, but they are expensive at £250,000 per unit. At present it is unclear what the potential up-take of these kiosks is.

One issue is that of maintenance and local African or Asian buy-in. At the moment WS is a very external solution and a foreign technology. There is very little technical know-how locally – for instance few technicians or repair centres who understand the WS system and spare parts are expensive to buy from abroad and slow to arrive. Schools or training institutions considering investing in 'edu-kisosk' must be alert to this. However, there are signs that WS Corporation are aware of this problem and are starting to support dealers to open up repair centres (eg. in Ethiopia).

In summary, cost and content remain the main issues:
For content providers, the leasing of capacity on the satellite is a big investment decision, which cannot be made lightly. The content on WS seems to have attracted the urban educated middle classes in Africa and Asia, who tend to be able to speak colonial languages (English, French, etc.) and are attracted primarily by the international news providers (BBC, CNN, Radio France etc.), and by Western music styles and programme formats. The way the Corporation has made its content decisions, and the fact that it is dropping several of the smaller, local stations, and is charging high prices to would-be educational content-providers, therefore reflects the fact that it is increasingly turning its back on the rural poor majority – the audience that Noah Samara originally claimed he would be reaching with this new technology. It would seem that the development remit has simply been left to the Worldspace Foundation.
(Key Informants for this section – see appendix B)

6.10 Worldspace Foundation *(recently re-named First Voice International)*

Background
The Worldspace Foundation was created in 1997 as the charitable arm of the WS Corporation. It was endowed with 5% of the capacity of the Afristar and Asiastar satellites, for the purposes of promoting development through the provision of health, agricultural, educational and general developmental information and materials. The Foundation is based in Washington DC and has six full time staff, with several volunteers (interns). The Corporation provides the Foundation with office space, some IT support, but no funding. The Foundation has to find core funding and financial support for its various projects from trusts and international donors. Much of its funding at present comes from Rockefeller and Ford Foundation. It also has support from USAID, UNICEF and UNDP for specific projects in Africa (see below).

Some of the content providers on the ALC pay for capacity (space) on the ALC, but at only 10% of what would have to be paid to a commercial satellite carrier. These include RANET, World Bank Institute and UNICEF. The rest of the content providers - eg. Farm Radio, VITA, Interworld Radio etc. are not charged to broadcast or to have their multi-media materials featured on the ALC.

The Foundation's mission is 'to help improve the lives of disadvantaged persons in developing regions of the world by providing access to education and other information broadcast directly to radios from satellites.'[7]

The core of the Foundation's output is the ALC. which is both an audio and a data casting channel. It is broadcast in English, and is free to access by anyone with a World Space receiver (it requires no subscription). The ALC is the Foundation's main platform. It is both an umbrella for other NGOs' content, and a vehicle for the

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[7] See WS Foundation's website – now www.firstvoiceint.org

Foundation's own productions. At present there is still spare satellite capacity which could be used by ALC, so there is room for more content on ALC. The Foundation also facilitates the broadcast of a French developmental channel on the Afristar satellite called the Canal Educatif Francophone, which is uplinked from Toulouse, and is produced and funded independently by the French Government's 'Francophonie' Agency[8].

Projects

Apart from managing the production and the content of the ALC, the Foundation has a number of special projects and about 300 partners in Africa These partners are CBOs, community radio stations and international NGOs. Some of the partners organise listening groups, others are networks of community radios with WS receivers. The Foundation sees itself in a facilitative role and provides training and backup on the use of the technology as well as, in some cases, specially targeted programme content on the ALC.

The following are a selection of the other projects the Foundation has initiated or collaborated with. (For more information, consult the website www.firstvoiceInt.org

RANET: This is WS Foundation's biggest project to date. RANET (New Radio and Internet Technology for Communication of Weather and Climate Information) is an international collaboration to make weather, climate, and related development information more accessible to remote and resource poor populations. It is primarily funded by OFDA[9]. RANET uses WS both to upload climate information gathered locally in Africa, and to disseminate climate information on the ALC channel, via field sites, equipped with WS equipment. In some places, (eg. Niger) RANET has set up a large network of community radios equipped with WS receivers which receive, translate and contextualise RANET's information for listeners in remote rural communities via their FM signal. At present RANET provides meteorological information to 35 national weather services in Africa. WS has been found to be the preferred vehicle for such information. Even weather services based in African capitals prefer it, because the size and complexity (ie. charts, maps, satellite images etc.) of the information can be very time-consuming and expensive to access via the Internet. RANET currently broadcasts at the beginning of every hour on the Afristar satellite using the ALC data casting channel.

The World Meteorological Office has said about RANET "The Conference noted with satisfaction …the relevance of the RANET initiative, which has proven to be simple and easy to operate, affordable, convenient and an effective tool that meets the needs of the NMSs (National Meteorological Services) to deliver meteorological information and products to the end users, even in remote rural areas. Its low cost and portability makes it handy and would allow the NMS to contribute fully in poverty alleviation in rural Africa, in natural disaster preparedness and mitigation.'[10]

Africare HIV/AIDS partnership: This project, funded by USAID, is being piloted in Zambia and Uganda. It involves a 24-part series of specially made one-hour documentaries, produced by the Foundation, on various aspects of HIV/AIDS (stigmatization, voluntary testing and counselling, people living with AIDS etc.). These are broadcast on the ALC. Africare's local offices in Uganda and Zambia coordinate focused listening groups around the programming and provide local staff to facilitate discussions following each show. Worldspace Foundation's production team then incorporates feedback from the discussions in subsequent broadcasts.

Entitled 'Beyond Breaking the Silence', these campaigns involve the strategic selection of programme sites where community members can meet to listen to the Worldspace Foundation's documentaries and engage in discussions with facilitators and each other about the information they have received. Phase 1 is currently being implemented in 10 sites in the Ntungamo District in western Uganda and 10 sites in Chipata and Lundazi Districts in Eastern Province, Zambia. The project was officially launched in country on May 31, 2002 and as of March 2003, 12 separate programmes have been broadcast and over 300 community events held.

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[8] Initial reports from consumers about the Canal Educatif Francophone are somewhat negative – (too much emphasis on entertainment as opposed to education) – and the Worldspace Foundation are considering reviewing their decision to carry this channel.

[9] Office of Foreign Disaster Assistance of the US Government.

[10] World Meteorological Organization, "Regional Association I (Africa) Thirteenth Session, Mbabane, 20-28 November 2002: Abridged Final Report with Resolutions," WMO-No. 954, Secretariat of the WMO, Geneva, Switzerland, 2003.

According to a mid-term evaluation by an external consultant: 'Community interest and involvement have been overwhelming. The AWI community activities have reached over 13,000 participants in the 10 months of project operation.' [11] The evaluation goes on to say: 'The success of this initiative to date stems from its synthesis of traditional communication methods, including drama, poetry, and song, with the proven advantages of radio broadcasts, which are delivered though crystal clear digital satellite broadcasts that can reach communities anywhere on the African continent. Combining this technology with the energy of the rural communities and the effective management and facilitation of Africare staff has resulted in significant progress toward project objectives and provides a model that can be replicated and scaled up around the continent.'

RECA: This is an example of one of the Foundation's smaller projects. RECA stands for Relief and Environmental Care Africa. It is a pilot project in Western Kenya, consisting of 10 community listening groups and 6 schools which the Foundation has equipped with WS radio receivers and PC adaptor cards, with funding from Johnson and Johnson.

Listening group leaders are selected by the community for their good command of English and their ability to translate into the local language, Dholuo. They run regular listening session with the community (based in community banks at times when clients come to deposit or repay their loans) who listen mainly to the ALC audio channel and the KIE service in Kiswahili.
Early reports suggest that these sessions are very popular, to the point where leaders have had to turn away would-be participants and limit the numbers at listening groups to 10-15 listeners at one time. The project also reports that 'schools listening groups are well organized and pupils are attentive. The programme enabled teachers and those in charge of the topics such as HIV/AIDS to learn new developments in the fight against the disease.' [12] The report also notes: 'Through this project and micro-finance program, it is possible to mould and build an informed rural and peri-urban society capable of making rational decision(s) on life supporting systems and issues.'

Future prospects
The WS Foundation has recently renamed itself 'First Voice International'. This is because it wants to become clearly distinct from the WS Corporation, for reasons of fundraising and identity. The Foundation has been linked with the Corporation from inception, but the Foundation has found it difficult to raise money, as donors have expected the Corporation to be subsidising the Foundation, which it does not do. Even when the Foundation provides projects in developing countries with WS receivers, it must buy them from the Corporation.

Another reason why there is an uneasy relationship between the Foundation and the Corporation is that the Corporation is increasingly looking for marketing opportunities in the development sector. This obviously encroaches upon the Foundation's traditional territory. For example, the Corporation has recently turned its attention to marketing its receivers and its subscription-based broadcasts to ministries of education in Kenya, Uganda and Ethiopia.

Although the Foundation is changing its name it will maintain its 5% share of the satellite capacity of WS, and, in fact has an agreement that should the Corporation ever be bought out by another company, the Foundation would still retain this agreed share. Therefore, the future of the Africa Learning Channel is, in theory, safe – regardless of what happens to the Worldspace Corporation as a business.

The Foundation has a plan to create three small nodal offices in East, West, and Southern Africa to correspond to the three Afristar beams. This will mean that the ALC will probably split into three separate schedules which will enable each one to be region-specific. For example, it will enable timings of educational programmes in Zambia to correspond to when children are in school, instead of there being one standard time for the whole of Africa. This could also mean that the three beams could be more language-specific; eg. some Kiswahili in the East, some Pular in the West, and so on. The Foundation is also looking at expanding their developmental

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[11] Fleming, W. O, and Mboyane, J., 2003 *Midterm Evaluation Report Africare WorldSpace HIV/AIDS Initiativ*e, Africare, Washington DC
[12] Odhengo, P., undated, *Report on a pilot project on Establishing Listening Groups around Information Broadcasts in…Western Kenya via Worldspace Satellite Radio Receivers,* RECA, Nairobi

output to other languages; for example Portuguese and Bambara as well as Pular and Kiswahili are under consideration

The Foundation is also keen not to limit itself to just the WS technology; it is looking at other satellite providers as well, as it is conscious that other ICTs and delivery systems are offering new opportunities all the time. Furthermore, the Foundation is moving into other communication areas, such as building its first 'community' radio station in Kisumu, Kenya.

Analysis
Although it was not this project's aim to evaluate the work of the WS Foundation, it is clear from external evaluations that it is doing a great deal of good work in favour of the poor, especially in the context of its special projects (of which a selection have been highlighted above). The question, as always, is can these projects be scaled-up and be made sustainable.

The Foundation sees its niche as in remote areas of developing countries where the internet is unlikely to reach for the next five or six years, and where WS technology can be combined with local media (eg. community radios or organised listening groups) or with on-the-ground extension agents to bring useful developmental information to poor, isolated people. Its model of 'one receiver many listeners' is central to this approach, and as such, is almost diametrically opposite the Corporation's plan which is, basically, to sell as many receivers as possible.

WS Foundation acknowledges that local content and local voice are very important – but that ultimately WS Foundation is a service which is produced and funded outside Africa or Asia. In terms of grass-roots level, where it works best, it has partnered with local organisations (such as RECA above) which are dynamic local community groups with a thirst for information and knowledge, and where there is strong local facilitation (eg. teachers and listening group leaders) with a good command of English, and where programming can be made as locally relevant as possible.

WS Foundation's name change and its desire to distance itself as much as practical from the Corporation are interesting developments. As the projects described above show, the fact that WS Foundation is committed to using a *combination* of communications means, both old (ie. word of mouth, FM radio, print) and new (digital satellite radio and multi-media content) is encouraging. Furthermore, the fact that it recognises the need for making content much more locally relevant (more programmes in local languages is a step in this direction) is obviously the most sensible way forward. Meanwhile, its special relationship with WS Corporation is a strong point which must be weighed against the market place confusion which has arisen over these two very different organisations.

7. Analysis of Findings and Recommendations

7.1 Cost and availability of equipment

WS equipment varies in price from model to model and country to country. In broad terms a radio receiver will cost between £60 and £150. To connect to a computer an adapter is required costing about £50. This means that WS equipment costs far more than conventional radio sets, and is far too expensive for most individuals in East Africa to afford. It is therefore positioned in the market as a product for richer individuals or as a purchase for organisations or institutions. Most organisations investing in WS equipment would regard it as an asset for shared use. Private and organisational owners that were surveyed during the research generally regarded the equipment as good value for money, and felt that the wide range of channels and clarity of reception were worth paying for.
Worldspace Corporation has never manufactured radio receivers themselves and has no wish to prioritise the supply of WS radio sets as a business activity. The Corporation is increasingly interested in being seen as a broadcaster rather than a hardware supplier. This has been something of a problem for the Corporation, because although not wanting to invest heavily in hardware promotion, the fact is that nobody can tune into WS

broadcasts without purchasing the special receiver. In practice, in East Africa the WS sales representatives have in fact been pulled into the receiver supply chain to retailers, but distribution is still very limited.

The number of retailers selling WS radios in East Africa remains very low and is principally confined to a few specialist electronic outlets in major urban centres and some airports. Computer adapter units and computer cards are available in very few retail outlets. WS regional offices in Nairobi and Johannesburg offer advice on where to buy these. This limited availability of equipment, parts and technical support remains a major constraint to the mass uptake of WS technology in rural locations. Many people interviewed during the research had no idea where WS equipment was available, and they did not know the prices. Confusion over what kind of radio WS is was common and some people were uncertain whether WS is an internet access technology or not. In fact, at present, there is very low product awareness amongst the population of East Africa. Very few people seem to know of the existence of the technology at all.

Many of the private owners interviewed felt that the product promotion was very weak and limited in reach. Those that were happy with their own purchases believed there would be a good market for the technology (amongst the affluent minority) if it where more widely promoted and available.

Recommendation

It has been reported that WS Corporation are interested in drastically reducing the selling price of WS receivers. If the technology is to become accessible and common place in East Africa this must be achieved and much wider distribution through retailers is essential.

7.2 Power supply issues

The Powering of WS receivers in rural locations is a big issue for users. Powering the radios represents the one recurrent running cost. WS receivers use significantly more power than conventional radios and dry cell batteries do not last long. In locations which do not have grid or other electricity services, powering the equipment is a major constraint. Running WS receivers for long periods using dry cells is too expensive. The unrestricted broadcasting coverage afforded by the satellite system is frustratingly constrained by the relatively well established problem of power supply.

Recommendation

The development of receivers that can operate on alternative power sources seems sensible. It is recommended that some feasibility studies be carried out into alternatives such as solar rechargeable units or wind-up power sources as substitutes to expensive dry cell batteries. A receiver unit with an integrally designed power supply alternative would be a significant advance.

7.3 Technical skills and institutional barriers

The research exposed numerous examples of WS users who were either unaware of, or unable to use the full potential of the WS technology, although a few highly competent and proficient users were also found.

When the WS receiver is used as an audio radio alone the problems users had with operation were usually minor(often associated with the antennae), but for those using the computer connected set-up a host of technical (and associated) problems were experienced. First of all a fairly high specification computer is required, and many people were not sure if their existing computer would suffice. Many CBOs have old computers without sufficient capacity to run the WS software. This reliance on old, often second-hand IT hardware is fairly typical of small CBOs all over Africa and is an obstacle to the wider uptake of the WS technology, at least for the moment. Some users did not know how to install the WS

Mr. Asfaw viewing downloaded information using a Panasonic receiver at Woldia, Ethiopia. One of the few examples researchers found of the data casting facility being used.

software or how to arrange the antennae for optimum reception. Many users expressed concern about the length of time involved in searching for and downloading information material and sometimes the downloading process would stall for unknown reasons.

The level of computer literacy and confidence required to install and operate the WS computer connected system is well beyond that of most potential rural users. Levels of computer literacy remain very low in rural East Africa. Even CDWs have problems using computers, including those who have had some training. Added to this there is an understandable degree of 'technophobia', particularly among older and less educated CDWs, who are not used to manipulating a mouse, using a keyboard or reading a screen. They are sometimes frightened to use the technology lest they break it. It is therefore understandable that the computer-linking aspect of the WS technology seems to be little used. The idea that significant numbers of individuals or CBO managers can and will buy, install and operate this technology without any training or external technical support is a misnomer. The operating manual offered by WS is not enough.

Some NGO's such as WS Foundation and ALIN are offering CBO's more comprehensive assistance in set-up and operational support. But even this model has its challenges, especially given that it is time consuming and costly to visit remote rural communities for face to face training, and even distance support communications can be difficult. ALIN have held communal training events in Nairobi, which have been reasonably successful, but some attendees have still not been fully successful in operating the WS system when returning to their own communities.

Other institutional issues arouse from the introduction of WS technology within CBOs. (These issues are not necessarily specific to WS technology but would be true of the introduction of other valuable assets to a small organisation).

The authority afforded to CBO managers and senior staff has to be used responsibly. Because the WS receivers are portable there is scope for staff to borrow the receivers for use in the community or at their homes. In some cases this opportunity may be abused, and receivers have been know to stay at managers homes for extended periods. Additionally those staff that have gained the technical know-how in operating the technology must accept their responsibility as information exchange agents and avoid becoming sole users of the equipment and information 'gate keepers'.

Security is also a consideration with WS equipment, as with any valuable asset. In particular the antenna is vulnerable because it usually has to be positioned outdoors. Several research respondents reported theft of or damage to antennae. In one case it took five months to get a replacement.

The need to guard against security risks can make CBO managers reluctant to let the receivers out of a locked office, which clearly lessens the degree to which it can be used directly by CDWs or by community members in the field.

7.4 Worldspace as Compared to the Internet

The internet is becoming increasingly prevalent in East Africa. The research team found that almost any small town which has electricity and reliable telecommunications services, will nowadays, very quickly have public internet access services. Internet Cafes are a new business sector and it is not yet clear where the balance will settle between supply and demand, but in most locations at least some of the businesses seem set to establish themselves for the long term.

However, public internet access services do not tend to exist in rural locations and access remains far too expensive for the majority of the poorer people. All the constraints concerning the relevance of internet content and its language and presentation still apply.

That said, there are a minority of people, mostly those who are educated and employed, for whom public access to the internet is a major boost. This includes a significant number of people engaged in formal or self-initiated development work. This research has shown without question that this segment of any community is information hungry, especially in places that have traditionally been cut off from most information sources.

The data casting service offered by WS can in no way compete for volume and diversity with the information available on the internet. The data information accessible through WS is very limited in quantity (in no way comparable with the internet) and is time consuming and cumbersome to search and download compared to the internet. In towns with low cost public internet there are few advantages gained by the addition of WS data casting services.

Disadvantages of Worldspace Data Channels:
- Not interactive
- People find it technically difficult to set-up and operate.
- Content is very limited in quantity and some information is dated.
- Fairly high specification computer and recent software is required

Advantages of the Worldspace data channels
- Telephone infrastructure is not required (accessible anywhere which has computer and electricity)
- Time spent on the data channel is free
- Information is limited in quantity and is therefore pre-selected and the quantity is not overwhelming.
- Undesirable content (such as pornography) is not present.

7.5 The need and desire for information in Rural East Africa.

Rural Professionals
The research findings show that rural community development workers[13] as a general rule, feel that they lack information. Not only do they want access to larger quantities of development information, but more importantly, they require that information to be relevant and up-to-date. Information content is of paramount importance to CDWs. They want information that is specifically relevant to their community's context, and that can be applied in a very practical way to overcome the real and immediate problems that poor people are experiencing in their lives. The language and presentation in which information is received by CDWs is also important. Some CDWs are not comfortable using colonial languages (like English and French) and some feel that technical explanations used in some information are difficult to understand.
In addition to their professional information needs CDWs, like most people, also have a general interest in world affairs, and want to feel up-to-date and informed about current international news and issues.

The researchers found that the information seeking activities of different individuals were highly variable. Some people, although expressing a general need for better and more information, did not exhibit behaviour you might expect of an 'information thirsty' individual. For example some people had affordable access to the internet (often through internet cafes) but do not seem to be learning how to use it as an information source.[14] A small minority of individuals are however actively embracing new ICTs as a means to sourcing information and communicating widely outside their local networks. The researchers saw rare examples of initiatives in remote rural locations where people had erected wind turbines or solar systems to power radios and computers, and small organisations developing their own websites (eg. www.fadeco.org) or using high frequency radio for e-mail in a location without telephone infrastructure. These initiatives show that there are enthusiastic champions of ICTs in many remote locations, and that these people take the approach that the potential of new technologies can only be assessed if they are applied and used in practice.

The Rural Poor
The most marginalised members of rural communities in East Africa have acute constraints concerning their access to relevant and understandable information. Their information exchange is principally based upon oral communication and their information sources are almost exclusively local (excluding radio). A common request is for more information that is appropriate to their specific context, meaning it must be locally relevant and applicable. People prefer information to be exchanged orally in their own mother tongue, and appreciate practical demonstrations and follow-up. Women identify some different topics of information as important when compared to men's priorities and men tend to have greater control over information assets such as radio sets and money and time to travel.
Poor people in East Africa know they have limited information access and are highly dissatisfied with this situation. They sometimes convey the impression that they are searching for 'the answer' to their poverty associated problems, and they often look to external 'experts' such as extension workers for that 'answer'.

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[13] it can probably be assumed that professionals (such as teachers, government employees) living in the same context will feel similarly about their information access and needs.
[14] This may be due to the newness and therefore unfamiliarity of the technology. It would be fair to expect greater uptake as computer based information access becomes the norm.

There are many reasons for the constrained nature of information and knowledge systems of the rural poor. Some are associated with the general 'top down' approach to information dissemination used by most agencies and include constraints in institutional services, mobility and economics. Others are more deeply rooted in cultural traditions and norms.

7.6 Does Worldspace work for the poor?

The image of poor people sitting contentedly around a WS radio in a remote village in East Africa, listening to entertainment programmes and valuable information for their livelihoods, is a compelling one, but is **unfortunately not a reality**. This is not because of any failure in the technical capacity of satellite broadcasting, and its ability to reach the most isolated locations, but is instead a result of well recognised technology and communications constraints.

There are several main barriers which make this scenario false:
- **Language used for broadcasting**
- **Content offered by WS**
- **Cost and availability of equipment**
- **Power availability**
- **Technical and institutional barriers.**

This does not however mean that WS cannot work for the poor in East Africa and elsewhere, but that it is dependent upon local support services being in place which can provide a bridge over these five key barriers. **Where these services are unavailable WS cannot be considered as an appropriate technology for the poor.**

The Language Barrier
The research findings consistently show that the language barrier is a very important communication constraint with regard to poor people making direct use of WS. WS broadcasts are mainly in English (with some French, Arabic and Spanish etc.). This fact alone means that the majority of poor rural East Africans will either be completely excluded from understanding WS broadcasts or at best have some problems with the language. (The Kenya made Kiswahili broadcasts on KIE and KBC were much appreciated in Tanzania).

Even educated professionals in non-English speaking countries may have problems. The research showed that many of the CDWs are not comfortable using English and if these are the people who are expected to disseminate WS derived information, then the language communication barrier is evident even at this level.

7.7 The 'Intermediary' services

Language translation and interpretation services
Direct users of WS equipment (in this research the CDWs) often perform sophisticated translation and interpretation services which allow WS information to reach the poor in a form that is understood easily. These services include literal language translations either aurally or on paper, and the interpretation and explanation of technical and unfamiliar terminology and jargon.
The research also showed the large extent to which CDWs use information from all sources to devise and produce their own demonstration and training materials which are appropriate for use at village level. This service is invaluable to the poor. Unfortunately these materials seldom get shared 'upwards' to larger audiences. Feedback of this type through WS is not possible.
CDWs frequently use translation and interpretation skills, but these activities are time and resource consuming. In some cases CDWs do not find time to transform WS derived material for field application and some said that translation can sometimes open the way for misunderstandings.

Literacy
Not all CDWs are highly literate, especially in English. This is obviously problematic when it comes to translating and interpreting the written materials that are available on the WS data casting channels (particularly ALC). Consequently non-English speaking CDWs do not take as much advantage of the written parts of the data casting channel as they could. The literacy rate in Uganda for example is about 65%, which means that a large

proportion of ordinary community members is also unable to read printouts made from the material on the ALC, even if it were translated into their own language.

7.8 Content offered by WS

Community level users of WS consistently expressed the desire for **more local content**. There is a strong demand for broadcasts drawn from African experience and preferably from similar communities. These would be more culturally relevant and familiar. Many research respondents highlighted the fact that very few WS broadcasts were made or recorded in their own countries (the most often-cited audio programme on the ALC channel in Uganda was Museveni's speech about HIV/AIDS. A *Ugandan* figure, talking about a *Ugandan* problem).
In some cases the information found on WS was shown to be relevant to the lives of poor people and could be applied with positive benefits to the poor. This was most successful when the 'raw' information was supported by interpretation, translation, explanations and demonstrations by intermediaries.

WS is a global broadcasting technology and its obvious strength is in its wide geographical coverage. However there is an interesting dichotomy here. Although the technology can reach ever corner of the remotest country with crystal clear broadcasts, the broadcast content and presentation cannot be local, and is therefore not offering what the listeners most want. The technological strength of the system is therefore somewhat at odds with the broadcast content requirements of the rural listeners.

Research respondents ranked WS development information highly for accuracy and reliability as compared to their other information sources. It is not clear exactly why the information on WS was regarded as such, but the fact that it is largely supplied by international organisations (especially on ALC) which have been vetted by WS seemed to give people confidence in the legitimacy of the content. Additionally, some CDWs said they had verified the information from WS by applying it locally, and it was proven to be reliable.

Some concerns arose about how current the WS information content seems to be. Many of the active data-casting users said that the information content (on ALC especially) was not always up-dated properly. They also cited examples of technical information dating back many years. Some active users of the data casting service spend significant time searching the data channels for new information, which they often download and share. The searching process is cumbersome and slow (as compared to the Internet) and users get frustrated if fresh information is not forthcoming.

The content on the WS is limited in both quantity and diversity of subject matter. Searching the WS data channels is like fishing in a small pool which holds a very limited number of fish. It is dissimilar to the internet which in comparison is an huge ocean with infinite varieties of fish to be found. This can be seen as an advantage of the WS service in that a limited but highly relevant information source may be more manageable and efficient than a huge and infinitely diverse alternative. Some users said they liked the small quantity of specific information on WS ALC channel, but at the same time many others gave numerous examples of information subject matter which they had not been able to find on WS at all.

7.9 Information Flow Restrictions
One final, but very important issue concerning WS content is the fact that information flow on WS is only one-way. There is no mechanism in place for users to feed-back to WS or the ALC and there is no possibility of asking questions or doing sophisticated personalised searches (unlike the Internet) Furthermore, the idea of contributing to the satellite content with one's own information and becoming an information provider in one's own right was something that no research respondents had thought possible. Respondents were asked if they would know how to contribute material which could be incorporated into WS broadcasts. None knew how this could be done (except through ALIN who are already content providers). One respondent, who was very conversant with the technology, highlighted the lack of interactivity as a serious constraint especially when compared to the internet.
The absence of a mechanism for the capturing and wide broadcasting of community level experiences and knowledge is an opportunity lost. It means that WS is not currently able to facilitate the sharing of locally

generated content, which as we have seen is in high demand. This is a technical constraint of the satellite system, but other more interactive competing ICTs such as internet / e-mail may begin to serve this purpose.

Information flows *FROM* WS are relatively strong but *FEEDBACK* mechanisms from the community are very weak.
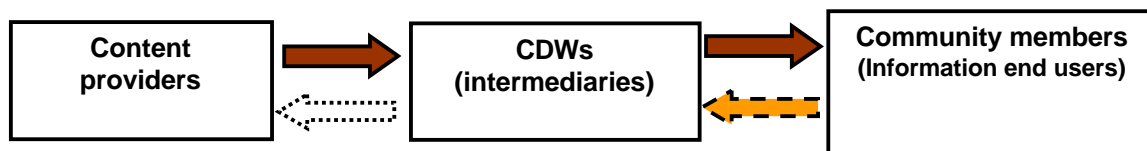
7.10 Recommendations concerning content and language

The local content issue is a difficult one for WS as it aims to broadcast relevant material into remote rural locations. In this respect the technical success of WS is far higher than its ability to offer appropriate broadcast programme content. WS seems to be a global broadcasting technology attempting (in some cases) to meet local needs. WS will remain weak as a rural broadcaster unless it can find new ways of capturing and broadcasting locally generated experiences and knowledge (from the villages to the villages) and in more locally appropriate languages and presentation styles. There are some examples of where Kiswahili programming is used instead of English (eg. KBC) and in rural Tanzania for example, this is greatly appreciated by the listeners. But much more priority has to be placed upon investigating the possibility of extensive use of minority languages featuring subject matter that is of specific interest to that listenership. WS must find ways of allowing some for of feedback from their customers if they are to understand how this can be done. This is a model which is working well for many local FM and community radio stations who often broadcast in the local language, and have been successful at reaching grassroots listeners. But it is not clear whether WS is the right medium with which to tackle this challenge. Again, there seems to be a conflict between WS's strong broadcasting range and clarity of reception as against its inability to understand and fulfil the local demand. It seems doubtful whether Worldspace Corporation has the inclination or ability to meet this challenge, or whether it is the right technology for this task at all.

8. Appendices

Appendix A. List of Reports and Resources (available from the authors)

Field Research Results
- Field results from Kenya
- Field results from Tanzania
- Field results from Ethiopia
- Field results from Uganda

- **Case Studies**
- **Bi-annual progress Reports to DFID**
- **Paper for MIT conference, Bangalore – Interim Project Findings**
- **Article for Basin News 2003– Rural Information Systems – Can Technology Help?**

Research Tools
- Guide for Information Mapping

Questionnaires
- For CDWs
- For Community Members
- For control Group
- For Local Managers
- For Private owners
- For Content providers

Appendix B. People interviewed for WS Corporation Section of the Report

- Eskinder Assefa   WS Corporation representative, **Addis Ababa**
- Dale Bradley   Technical Sales Manager, WS Corporation, **London**
- Jeff Cohen   World Radio Network, **London**
- Gus Haupfleisch   BOC Manager, WS Corporation, **London**
- Patrick Otembo   Business Manager, WS Africa Region / AfriSpace, **Kampala**
- Sameer Padania   Interworld Radio, **London**
- René Roemersma   Radio Consultant, NIZA, based in **Luanda**
- Safia Safwat   Legal Adviser, WordSpace Croporation, **London**
- M. Sebastian   Director Business Development, WS Corporation, **Bangalore**
- Edward Wandera   WS Corporation representative for **Tanzania**

Appendix C. Fieldwork Issues Sheet

The table below introduces the issues that researchers should consider when embarking upon a study of a community's information and communication needs and preferences. *Please discuss these issues within the field research team before undertaking the work.*

Information sources and directions of information flows.	Consider information flows: § Within the community. § From the community to those outside the community. § From those outside the community to those inside the community.
Equity of information access. (what factors limit information access for different socio-economic groups?).	§ Do women have the same information / communication needs as men? § In what way does the level of information access differ between men, women and children? § In what way does the level of information access differ between rich and poor, and marginalised groups such as low castes and disabled people? § Is information access obstructed (are there local 'gatekeepers') ? § Which community members tend to undertake information seeking activities?
How do people receive and share information(what communication media are used and preferred)?	§ In what various types of media do people receive information? (eg. printed text, face to face)? § What are their preferences? § Do people alter or adapt information locally (eg. Language translations)? § What is the role of traditional communication media? § Are there key individuals or organisations that seek / supply information? § In what media do people share / pass on information? § What, if any, modern ICTs are used? § What media, if any, would the community want access to in future?
What information content is required?	§ What do the community identify as important subjects on which they require information? § Why is it important? § What are the gaps in information content? § How is new information tested or verified? § Do people share / pass on information?
Information gaps.	§ Does the community perceive itself as having access to too little or too much relevant information? § What are the problems and constraints?
Information and communications as a commodity.	§ How is the concept of 'information' perceived? i.e. In what cases are information or communication services perceived as a commodity that could /should be paid for? § Under what circumstances are poor people willing to pay for information?

Appendix D. List of WS Content Providers

1. ALIN – Arid Lands Information Network, Kenya
http://www.alin.or.ke

Arid Lands Information Network (ALIN)- Eastern Africa is a network of Community Development Workers (CDWs) who are involved in drylands development. ALIN supports CDWs by encouraging the exchange of ideas, information and their own experience on development work. ALIN members are drawn from government departments, NGOs and CBOs. They include, among others, community mobilizers, health workers, and agricultural extension workers.

2. FRN – Developing Countries Farm Radio Network
http://www.farmradio.org

A Canadian-based, not-for-profit organization working in partnership with approximately 500 radio broadcasters in over 70 countries to fight poverty and food insecurity. It supports broadcasters in meeting the needs of local small-scale farmers and their families in rural communities, and helps broadcasters build the skills to develop content that responds to local needs. Radio is the primary method of communication. It gathers and researches information about successful, low-cost practices in sustainable agriculture, nutrition, health and community development, and produces radio scripts for partner-broadcasters and others engaged in rural development. They, in turn, share the information with an audience of millions of farmers and their family members around the world.

3. EMA - Educational Media Agency, Addis Ababa, Ethiopia

Educational Media Agency (EMA), is under the ministry of Education. The agency broadcasts educational content for schools and also for youth and adults out of school through the Ethiopian Radio and Television. The agency produces materials fro farmers during the weekend. According to the general Manager, Mr. *Bekel Mulugeta*, the agency has been involved in distance education for over 49 years and they now run 11 radio stations for transmitting using two audio channels and broadcasts in 17 vernacular languages.

4. FEWS – Famine Early Warning System
http://www.fews.net/ethiopia/

FEWS NET is a USAID-funded activity that collaborates with international, national, and regional partners to provide timely and rigorous early warning and vulnerability information on emerging or evolving food security issues. FEWS NET professionals in the US and Africa monitor various data and information—including remotely sensed data and ground-based meteorological, crop and rangeland conditions—as early indications of potential threats to food security.

5. IWR - Interworld Radio, Panos Institute – UK
http://www.interworldradio.org

IXR produces ready to broadcast news and features on developing countries and development issues. It is a partnership between The Panos Institute and oneworld.net. InterWorld Radio is an editorially independent service funded by a range of donors including the Ford Foundation, NOVIB, USAid and UNICEF.

6. Kenya Institute of Education (KIE)
PO Box 30231 Nairobi, Kenya
Has responsibility for curriculum development in all areas of education below university level.

7. RANET – Radio and Internet for Communication of Weather and Climate Information to Rural Communities in Africa,

RANET is an international collaboration to make weather, climate, and related information more accessible to remote and resource poor populations to aid day-to-day resource decisions and prepare against natural hazards. The program combines innovative technologies with appropriate applications and partnerships at the community level to ensure that the networks created serve the entirety of community information needs and is therefore more sustainable.

8. SARI – Livestock early warning system LEWS,. Information for pasturalists on forage availability. Data collected from the field and interpreted by computer in USA then analysed and translated into Kiswahili in Tanzania for pasturalists. Information reaches communities as data and maps.

9. Straight Talk – Sexual/Reproductive Health education, Uganda
http://www.straight-talk.or.ug/sthm/index.html

Straight Talk Foundation is a health communication NGO that produces IEC (Information Education and Communication) materials for adolescents. The broad objective of the foundation is to contribute to the improved mental, social and physical development of Uganda adolescents (10-19) and young adults (20-24). The programme also aims to keep its targets audience safe from HIV/STD infection and any early pregnancy.

Appendix E. Case Studies

Case Study 1. Private WS owners

Private Use of Worldspace Gaining Popularity in Migori

He first learnt about the WS radio in a newspaper advertisement that promised great programming and crystal clear digital broadcasting. " When I saw the advert, I was attracted to the radio because I was fascinated by the educative and entertaining content it promised to deliver and I knew I had to own one", says Andrew Marigwa, an employee of Sony Sugar Company in Migori district, Western Kenya.

It is in this pursuit that he investigated various distributors of the WS receiver in Nairobi and Mombasa, and finally bought the digital receiver in Nairobi, in the year 2001.Marigwa has now been a proud owner of a WS receiver for the last 18 months, "Through WS, I feel connected to the world, as I'm able to stay abreast with current global events through the daily updates that I receive from the host of broadcasters who broadcast on the receiver"

Previously he had to rely on KBC, which is the only station that has been broadcasting in the area for a long time, but with the WS, he now has access to a wide variety of international and local broadcasters, and with its multimedia service he is also able to download diverse content.

Mr. Marigwa comments, 'Although many people find the cost of the radio prohibitive, in my opinion, it is worth every penny because of its potential, you only need to know how to maximise its many functions, to realise its worth'. In addition he comments 'the radio has excellent reception compared to the local stations'.

Because he has access to a computer he has turned a section of his living room into a 'little cyber café', where he downloads information from the receiver for personal use and sharing with his friends. When the research team visited the Marigwa's one of the sons was using the 'cyber cafe 'with a group of friends. His eldest son, who is also very conversant with the functions of the radio, normally downloads information especially on HIV/AIDS and shares it with members of his youth group within the sugar factory. The Marigwa children said they mostly use the radio for entertainment and educative information, their favourite entertainment channel is Kiss 100 and for educative information, they tune in to KIE and EMA.

In neighbouring Ndhiwa division, Joseph Awour an employee of BAT, sits at home with his JVC WS radio, which he bought through the scheme organized by the company. He says that he is now aware of current events, because he gets information from different sources.

He says that WS radio, 'is very educative, entertaining and a luxury to have, and now my family and friends can get entertained, without having to rely on the local stations, which lack variety and have poor reception'. He uses the radio mainly for entertainment and news, his favourite channels are CNN, Ngoma, Kiss 100, and BBC Africa. Awour commends WS for its excellent reception although he decries the high cost of the system, and the batteries to run it. At one time he had to replace the antenna when a dog decided to chew it up!

Although Awuor has heard about the data-casting function of the system at C-MAD (the local NGO) he has not been able to exploit it, because he does not own a computer. However he told the research team that he would be keen on learning the other functions of the system.

Case Study 2.

Kagadi-Kibaale Community Radio (KKCR) Uganda

KKCR has been using its Worldspace receiver since 2001 to enhance its daily programme of news, music, local information and entertainment. It has been helped by Noah Lusaka from ALIN- EA who gave a short training course on it at the outset. Little use is made of the multi-media computer link, due to a low speed computer at the radio station, but plenty of use is made of the WS audio channels.

KKCR is the first and oldest community radio in Uganda. It is situated in the relatively remote, lush green hills of Western Uganda, in the small market town of Kagadi. It began in 1999, and was specially commissioned and opened by President Museveni. Its function is 'community mobilisation, sensitisation and education for holistic development'[15]. Before KKCR was set up, the villagers in Kibaale reported that although they had access to national radio most of them felt cut off from the basic information they needed, even information that was available within their county.

KKCR's FM signal now reaches about 2 million people in 11 districts – it is on-air from 6am to midnight every day. It broadcasts mainly in local languages known as the 'four Rs': Runyoro, Rutoro, Ranyankole and Ruchiga', as well as a little in English.

Henry Lutaya, the Station manager, explained that the radio is always open to any member of the community who wants to send a message or broadcast some personal news. These range from birth and death announcements to 'lost and found' and record requests for families and loved-ones. It is managed by a community committee, elected by local people. Lutaya estimates that 80% of the local population have radio sets and are avid listeners. Funded partly by SIDA, the radio's running costs are also supported by local advertising (though alcohol and cigarette adverts are banned on principle) and by sponsorship by local NGOs and government institutions. It costs just 1,000 shillings (about 35 pence) to place an announcement, which is within reach of the average villager.

Local news is gathered by 'information secretaries' who are paid by the sub-county councils and who feed their stories up to the Information Manager at the station. International news is gathered largely from the BBC and CNN via the Worldspace receiver. KKCR also runs regular educational, women's and human rights discussions and features. Music and sport are also popular, as is a regular talk show about everyday domestic and family life.

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[15] Henry Lutaya, Station Manager, quoted in Wanyeki ed., *Up in the Air? The state of broadcasting in Easter Africa*, Panos Southern Africa 2000

KKCR makes use of its Worldpsace (WS) receiver to bring international news, music and sports coverage to millions of rural Ugandans. The presenter simply plugs the mixer into the WS receiver when it is time for the chosen broadcast (eg. BBC 'Focus on Africa' or CNN news) and the programme is then simultaneously transmitted on KKCR's FM signal.

This use of local radio as a 'multiplier' of WS broadcasts is an exciting and arguably the most cost-effective use of the WS system in a country like Uganda, where ordinary people cannot afford sets of their own. Radio stations only have to be able to afford the one-off cost of a WS receiver and they instantly have access to clear sound-quality from around the world, as well as discussion and development programmes on the Africa Learning Channel. Listeners, of course, just have to be able to afford an FM transistor (4-5,000 Ug Shillings) and batteries. As Lutaya says: 'Now we can let people know what's happening in Iraq and Zimbabwe, as well as the news from Kampala. We get free programmes - it has done us good'[16].

'World Space helps us to improve our programmes' says Odembos Maloba, Information officer for KKCR. For example he pre-records programmes from the ALC channel about human rights and slots them into some if his discussion programmes. Because most of his programmes are in local languages, he plays the WS-sourced material under the local language 'to give listeners a feel for what's happening on the international scene.'

For example, Maloba he has used material from programmes about child abuse in the USA and about the Nigerian woman sentenced to death by stoning. 'You can talk about human rights more comfortably if you can quote what's going on elsewhere in the world', says Maloba, 'If people hear what's going on elsewhere, they feel their struggle [against poverty and for justice] is not alone.'

Although KKCR's experience of WS has on the whole been positive, they have experienced some problems. Their first set, a small Hitachi, blew during a thunderstorm. Their technician had no training in the WS technology and could not find spares in Uganda, so a new set had to be bought. Furthermore, they find the set quite heavy on energy-use – an extra drain on their 100kv generator, which uses 100 litres of fuel per day. This is not an insignificant expense for a small, community-based project. Another complaint KKCR staff have of WS is that there is insufficient programming about Uganda, and, beyond a little in Kiswahili, nothing in local Ugandan languages. 'More in local languages would help us preserve our culture', says Lutaya.

KKCR journalists also say they would like more in-depth coverage about Africa in general, in the style of the BBC's 'Focus'. The staff say they have been listening avidly, via WS to coverage of Savimbi's death, Mugabe's take-over of farms in Zimbabwe, about women's rights in Nigeria and to the live coverage of the recent World Summit on Sustainable Development in Johannesburg. As a result, they have further questions and points of discussion that they would ideally like to feed back to WS, or to the providers of programmes. At the moment they do not feel that WS is sufficiently interactive.

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[16] However, there is a question mark over the legality of re-broadcasting the WS satellite's signal. The East Africa WS representative regards it as 'piracy'. There is an obvious need for the legal situation to be clarified.

Henry Lutaya, KK Community Radio station manager, explains how the World Space receiver has enhanced his programmes.