

# **MEDIA MANAGEMENT FOR DEVELOPMENT: NEW PARADIGMS**

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## **ABSTRACT**

*The media have been used as components of social and economic development strategies for decades. However, media content design and distribution for development – for example, as part of public health campaigns, for adult education, for food security – have been considered separately from the management of media facilities and services. And one-way broadcast media have been considered the most cost-effective means of reaching target populations in the developing world.*

*Two trends are changing this paradigm and requiring new approaches to managing media for development. The first is the proliferation of interactive information and communication technologies (ICTs) from basic mobile phones to Internet access through smartphones, Internet cafes, and community telecenters, as well as connections to work places, schools and residences. The second is the emergence of social entrepreneurship – using business skills and strategies in nonprofit settings to accomplish development goals. Social entrepreneurs are learning to use ICTs as key components of strategies to achieve their goals.*

*This paper presents the strategies and outcomes of an African project using radio plus ICTs to increase the productivity of small farmers and marketability of their crops as part of strategies to improve food security in Africa. With core funding from the Gates Foundation, the AFRRI (Africa Farm Radio Research Initiative) project developed farm radio campaigns and market information services to help small-scale farmers. Using targeted radio programs plus mobile phones, MP3 recorders, and Internet access, AFRRI projects reached farmers in Ghana, Mali, Malawi, Tanzania and Uganda. The project was rigorously evaluated, comparing results in farming communities with radio plus interactive ICTs, radio listening only, and no access to the radio programs. AFRRI with both radio and ICTs not only greatly increased awareness but also adoption of new farming practices.*

*This paper presents the outcomes and lessons of this multi-year, multi-country research project that are among the first in-depth studies of rural radio in Africa. It then presents the lessons learned for managing media for development and for social entrepreneurship, and the training programs that have been developed to disseminate these management techniques<sup>1</sup>.*

#### KEYWORDS:

ICTs, development, Africa, rural, social entrepreneurship, Internet, mobile phones, broadcast, evaluation

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<sup>1</sup> Research reported in this paper was carried out by Farm Radio International (FRI) with support from the Bill & Melinda Gates Foundation. The author is a member of the board of FRI, and was an advisor on the project evaluation.

## 1. INTRODUCTION

Developing regions face many critical challenges, of which the most basic is producing sufficient food for their people. Some 240 million people in sub-Saharan Africa don't have enough to eat; three quarters of them live in rural areas. They depend on farming to feed themselves and to generate income for other needs on land that is often prone to natural disasters such as drought or floods. Development agencies such as the UN's Food and Agriculture Organization (FAO) state that Africa is in a food security crisis<sup>3</sup>.

Many strategies that could address food security have been developed, such as selecting crops that provide more nutrition, using seeds and techniques that resist drought, using local products as fertilizer, and using improved methods of processing and storage. In addition to improving crop yield, farmers may need new strategies to generate income from their crops and livestock. Improvement in food security therefore requires transmission of information, so that farmers are aware of these new practices and techniques. Yet awareness alone is not sufficient; farmers must actually adopt these new practices.

Radio remains the most widely used medium in rural Africa, reaching people without electricity and those who are illiterate. In the communities participating in the project described below, approximately 76 percent of households owned a radio (Farm Radio International, 2011). Radio therefore seemed an appropriate choice for creating awareness of best practices to enhance food security among African farmers.

## 2. RADIO FOR DEVELOPMENT AND ICT4D

Electronic mass media have been used as means of disseminating development information since the early days of radio broadcasting. Radio programs, often in conjunction with agricultural extension and other outreach activities, have been frequent components of agricultural

campaigns. Radio broadcasts were included in development campaigns and as components of distance education curricula. Interactivity was found to increase learning and adoption of new practices through such techniques as listening groups, call-in programs, and classroom activities to accompany instructional radio programs. See, for example, the writings of Wilbur Schramm (1964) and the recent synthesis on media and development by Emile McAnany (2012).

In the past decade, mass media have been joined by other information and communication technologies (ICTs) that have been used for development initiatives, and are referred to as ICT4D. See a summary of this research by the author (Hudson, 2006). Development agencies such as the Food and Agriculture Organization (FAO) drew attention to the potential of new applications such as radio streaming and websites and other materials available online (Girard et al, 2003). In 2008, the Panos Institute of West Africa (PIWA) carried out a survey of 220 radio stations in seven West African countries concerning ICT use and Internet connectivity. The study noted the need to strengthen human capacity to use these new technologies for development: “The limitations are often due to the lack of awareness of the possibilities offered by ICTs, as well as a skill gap in the staff able to deliver expected services” (Ndiaye et al, 2008).

Examples of recent ICT innovations to support radio in developing regions include GRINS (Gramin Inter-Networking System), a software suite developed in India for community radio integrating mobile phone technology, and Freedom Fone, an open source Interactive Voice Response (IVR) System developed in Zimbabwe (Farm Radio International, 2011). The latter was included in the pilot projects described below.

### 3. THE AFRICAN FARM RADIO RESEARCH INITIATIVE

Could radio also help to increase adoption of agricultural practices intended to improve food security in Africa? And what about newer technologies that might enhance radio’s effectiveness, such as mobile phones, portable

digital audio recorders, and Internet access at radio stations? Farm Radio International (FRI), a Canada-based NGO which had provided training and agricultural program content for African radio stations for several decades, undertook a four-year project called AFRRI (the African Farm Radio Research Initiative) to answer these questions, with support from the Bill & Melinda Gates Foundation. Specifically, AFRRI addressed the following:

1. How effective is radio in enabling smallholder farmers in Africa to address food security challenges they face, with a particular focus on increasing/diversifying food production, improving land use management, and reducing post-harvest losses?
2. How can new technologies, such as cell phones and MP3 players, increase the effectiveness of radio as a sustainable, interactive development communications tool? (Farm Radio International, 2011).

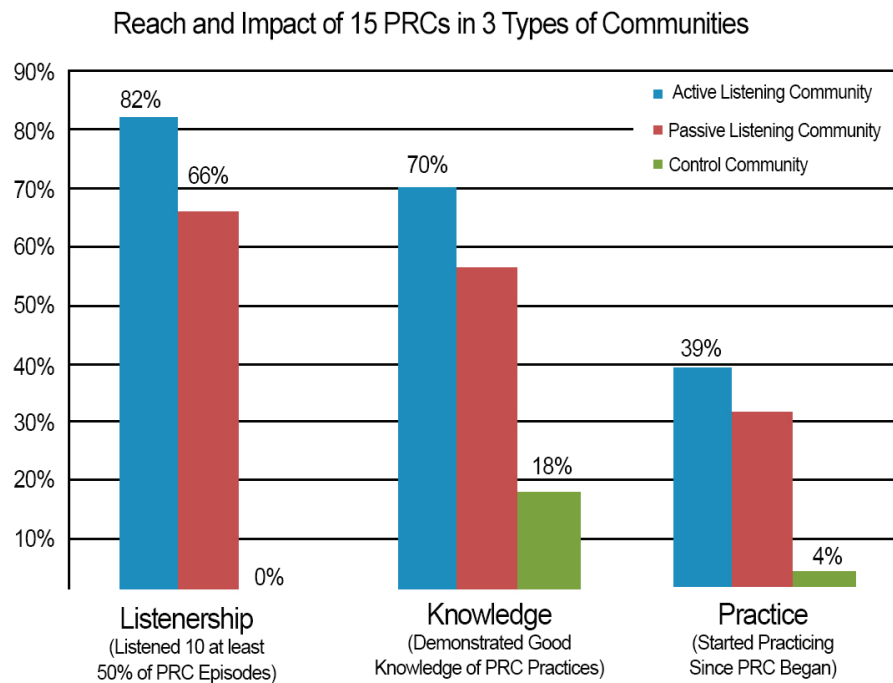
AFRRI partnered with 25 radio stations reaching an estimated 40 million farmers in five countries: Ghana, Malawi, Tanzania, Uganda, and Mali. One of the key elements of the project was participatory radio campaigns (PRCs) designed to involve farmers in every aspect of the planning and production of agricultural radio programs. A second was a radio-based information service to help farmers obtain current and relevant information on markets and prices for their production. A third key element was an ICT-enhanced farm radio, which involved testing various equipment packages at the radio stations.

The research methodology for the participatory radio campaigns involved identifying three clusters of communities for each of the 25 radio stations. Active listening communities (ALCs) included farmers who were interviewed about their agricultural practices and needs, and their radio listening habits. They then were invited to be involved in the design of a series of radio programs addressing a particular agricultural practice to help improve their livelihoods, and ultimately their food security. A second cluster was designated passive listening communities (PLCs), where farmers listened to the programs but did not participate in planning or any interactive follow-up. A third cluster consisted of control communities that did not have access to the radio programs. Follow-up surveys after each of the two

16-week campaigns were designed to collect data on the extent to which farmers learned about the agricultural innovations and actually adopted the new agricultural practices.

Farmers engaged in the design and development of farm radio programming were almost 50 per cent, more likely to take up agricultural practices deemed to improve their food security than passive listeners. Those in the active listening communities (ALCs) were 10 times more likely to adopt the practice than those farmers who had no access to the farm radio programs. See Chart 1.

**Chart 1**  
 COMPARATIVE IMPACT IN 3 TYPES OF COMMUNITIES



Source: Farm Radio International, 2011

#### 4. LESSONS FROM AFRRI'S PARTICIPATORY RADIO CAMPAIGNS (PRCs)

Farm Radio defined a participatory radio campaign (PRC) as “a planned, radio-based activity, conducted over a specific period of time, in which a broad population of farmers is encouraged to make an informed decision about adopting a specific improvement selected by their peers, based upon the best available **information, to improve the food security of their families. It then provides the adopting farmers with the information and other support they require to implement the improvement**” (Ward, 2010). **This definition is not necessarily limited to farming; it could obviously be broadened to apply to a strategy to foster adoption of any practice by a specific target population.**

**Similarly, the lessons from the AFRRI's PRC activities could also be generalized and adapted to other contexts. Among the best practices identified from the first set of campaigns were:**

**Using the farmers' language:** More generically, it is important to use the language spoken and understood by the target audience.

**Role of audience participation:** Consulting representatives of the target audience about the campaign and the programming can increase participation in the campaign.

**Importance of audience voices:** Listeners like to hear their voices and voices of others facing similar problems. There are many ways of capturing these voices, through taped interviews, call-in and call-out programs and other techniques discussed in the ICT section below. As AFRRI points out: “These voices provide credibility and attractiveness and encourage farmers to engage in the campaign... They reveal the struggle each farmer undergoes as s/he works towards a decision about implementing the improvement. And these voices of farmers explain how they are implementing the improvement, and overcoming problems that crop up while they implement” (Ward, 2010).

**Role of expert information and advice:** Target audiences also need to hear from experts with knowledge relevant to the campaign. Experts can be interviewed in the studio or in the field with a target group, or wherever they may be using mobile phones. To be effective, these experts must have good presentation skills and use language and examples familiar to their audience in order not to bore or confuse the audience.

**Role of entertainment:** Effective programs must be entertaining; in addition to relevant and well-presented information, they can include local music, stories, drama, humor, or other entertaining content.

**Regularity and repetition:** Programs should be broadcast according to a regular schedule at a time when most of the audience can listen. Repetition is also important to catch audience members otherwise unavailable. In addition to repeat broadcasts, making programs available on portable audio players, or where facilities exist, through podcasts and audio streaming can increase audience access. Other techniques and media such as flyers, songs, and discussion groups can help to repeat and reinforce the campaign messages (Farm Radio International, 2011).

## 5. ICT-ENHANCED RADIO EXPERIMENTS

Another major component of AFRRRI was a series of experiments to determine whether a combination of radio plus other information and communication technologies (ICTs) could enhance the effectiveness of the participatory radio campaigns. Radio is a one-way medium, whereas participation, as noted in the results of the PRC project above, can increase both awareness and adoption of new agricultural practices. Mobile phones are becoming increasingly available in Africa, including in rural areas, and provide a means of interacting with the radio audience, such as for call-in questions, call-out interviews, and text messages to remind farmers about program schedules. Could they be part of a participation strategy? Radio



stations in Africa typically have not had access to integrated mobile phone technology that would facilitate these applications; many may also not be able to afford significant mobile phone charges.

Also portable digital recorders (MP3 players/recorders) could be used not only for interviews with farmers but also to get their feedback on the radio programs. Digital players could also provide a form of radio on demand for farmers who missed the scheduled broadcasts. Software that runs on personal computers can be used for digital editing. However, as FRI notes: “There are still many radio stations in Africa that rely on tape recorders, large expensive batteries, and often broadcast direct-to-air. They lack editing equipment, and the skills to produce and prepare shows in advance of a broadcast. These processes limit the ability of radio stations to produce good farm radio programs for their listeners”. Internet connectivity could provide the radio stations with access to agricultural content, training materials, and inexpensive interaction with experts and colleagues through email and Skype. Neither have smaller stations had access to the Internet, nor to digital tools such as portable MP3 recorders, desktop editing, and, in some cases, computers.

The purpose of the ICT experiments was to test how new ICTs could be integrated with radio to provide better interactive communication between the radio stations and their target farmer audience. AFRRRI provided eight customized ICT packages in experiments with the 25 radio stations in the project. The following were included in the various ICT packages:

**Computer and Internet access:** Each partner radio station received a desktop computer and Internet access. Participating broadcasters received training in basic computer literacy, Internet search skills, and virus protection techniques. Some 68 percent of 51 partner broadcasters surveyed identified the Internet as the most important ICT tool for production of farm radio programs (Farm Radio International, 2011).

**Digital recording and editing equipment:** Rechargeable MP3 recorders were provided to all broadcasters participating in AFRRRI. They were very popular with the broadcasters, enabling them to capture high quality audio such as interviews with farmers and

extension agents, which could be edited into the radio programs. FRI notes: “The portability of MP3s allowed radio hosts to visit farmers in their fields and in their homes, increasing farmer participation in the radio broadcasts” (Farm Radio International, 2011).

**Phone call-outs to extension agents and experts:** Although many radio stations had started to include call-in comments from listeners with mobile phones, they had not used phones themselves to reach pre-identified resource people for interviews and commentary. Using mobile phones enables extension agents to participate in the programs without having to travel to the stations, which was both time-consuming for the agents, and often expensive for the stations if they had to pay travel expenses. Of 41 extension agents surveyed, 61% believed that the reach and impact of their extension work was substantially improved because they could be heard on radio programs through call-out programs.

**Phone call-outs to farmers:** Call-outs to farmers with mobile phones enabled farmers to learn from other farmers. Typically, broadcasters made pre-arranged calls to two or three farmers per weekly episode. AFRRI found that call-outs to farmers can significantly affect farming adoption rate of agricultural improvements (up to 14%), increase their level of knowledge about the agricultural practice (up to 50%), and improve their overall listenership (up to 22%), when compared with stations that do not make call-outs to farmers. There were also significant cost savings compared to traveling to villages; AFRRI found that the cost of calling three farmers for 5 minutes each was approximately \$US8 compared to \$US75 to travel to three villages for interviews (Farm Radio International, 2011). However, radio stations required funding support even for the modest phone expenses.

**SMS Alerts for Farmers:** AFRRI provided access to services that enabled broadcasters to send SMS alerts to listeners’ mobile phones 30 minutes before the program. Recipients were asked to share the reminder with their neighbors. AFRRI found that these weekly SMS alerts were a cost-effective means of increasing listenership by up to 20 percent; in turn, listening to more episodes was correlated with

higher levels of adoption of the practices in the programs. Messages cost about \$US.05 each, so that reminding a farmer who in turn shared the information with neighbors cost less than \$US1 for an 18 week campaign. However, several steps are required to implement this procedure, such as compiling a database of phone numbers of farmers willing to participate, and accessing a service that would automate the mass SMS calls (Farm Radio International, 2011).

**Local agents with Solar-powered radios/MP3 recorders and mobile phones:** Some communities nominated a local resident to be a radio agent to host listening sessions during campaign broadcasts, record programs for repeat listening at a later time, and provide access to a mobile phone for communication with the radio station. (This is a model of community listening groups with a long history in radio for rural development). Radio agents were typically women; PRC research had found that in some communities men took family radios to the fields, thus depriving women of the opportunity to hear the programs. A radio with recording capacity enhanced the value for the listeners, as programs could also be recorded for later or repeat listening. Of farmers surveyed, 73 percent reported that group listening helped them better understand the content through discussion with the group, while 46 percent of the same group of farmers stated that listening in a group gave them encouragement to start practicing the agricultural improvement (Farm Radio International, 2011).

**Interactive Voice Response (IVR):** Two radio stations, one in Ghana and one in Tanzania, experimented with using IVR, enabling farmers to call in from mobile phones and access agricultural information on demand through a series of menus. This experiment indicated that some farmers were willing to use mobile airtime to access agricultural information on demand or leave messages about content, but users tended to be younger males with secondary education, indicating that this type of ICT application was not as readily adopted as voice calling and text messaging. Also, some respondents including 35 percent of women said they could not afford the calls.

**Connectivity – Satellite terminals and fixed wireless:** For some radio stations access to the Internet via satellite was the only

option. AFRRI experimented with technology that could enable such stations to sustain the costs for satellite access. Two radio stations, one in Tanzania and one in Mali, were equipped with VSATs (small satellite terminals) and fixed wireless to extend Internet access. The stations set up and sold wireless access points to local customers, and shared the Internet connection for a monthly fee. The Mali station set up a cybercafé at the radio station (Farm Radio International, 2011).

## 6. LESSONS FOR BROADCASTERS: PRODUCTION AND OUTREACH

As summarized above, there are many lessons from the AFRRI project strategies to combine radio plus ICTs to increase adoption of agricultural practices that enhance food security. In addition, there are also findings applicable for management of media in rural and developing regions, addressing techniques, technology, sustainability and entrepreneurship.

Adoption of the participatory radio campaign (PRC) model requires acquiring new knowledge not only in radio production, but in outreach to audiences such as farmers. Many of the skills and techniques involved in participatory radio campaigns are likely to be new to broadcasters. FRI has developed week-long courses accompanied by training materials to help African radio broadcasters learn techniques they can use in participatory radio campaigns. FRI is now developing an e-course to provide broadcasters with tools to design effective and engaging agricultural programs. Key topics will include:

- identifying the audience and addressing the needs of small-scale farmers;
- developing content, program structure, and multiple formats to present different kinds of information;
- identifying and finding the resources needed to sustain agricultural programming;
- gathering audience feedback.

To graduate from the course, participants will be expected to submit a complete design for a regular radio program for farmers, with the best designs eligible for seed funding to help produce the program (Farm Radio International, 2012).

FRI is also producing Farm Radio Resource Packs (FRRPs) available online that will focus on African agricultural value chains defined as “the people and activities that bring a basic agricultural product ... from production in the field to the consumer, through stages such as processing, packaging, and distribution”. The resource packs will include information documents, sample radio scripts, materials on key issues, and other resource materials (Farm Radio International, 2012). These training materials and courses could be adapted to meet the needs of broadcasters in other developing regions who could put these concepts to use in other settings.

## 7. TECHNOLOGIES: TRAINING IN USE OF ICTS

As AFRRRI points out: “Technology on its own cannot improve farm radio’s reach. Introduction of ICTs must be integrated with appropriate training on the use and maintenance of equipment, combined with sustainable ways for broadcasters to fund and own the technology” (Farm Radio International, 2011). Most broadcasters will need training in technologies and software which are new to them such as digital editing software, point-to-multipoint SMS, and interactive voice response (IVR) systems that were introduced in the AFRRRI project. However, broadcasters will also likely need training in how to use equipment that they are familiar with, such as mobile phones, MP3 recorders, and Internet access to apply them for participatory media campaigns.

Practical matters may include mastering software, dealing with power outages, preventing virus attacks on computers, learning how to find reliable online resources, and so on. Use of mobile phones for call-outs as well as call-ins, doing field interviews that engage audiences, and using techniques such

as multipoint SMS and interactive response systems to support programming are likely to require hands-on practice and field campaign activities.

AFRRI offered weeklong hands-on training at the radio stations. Bringing the trainers to the broadcasters may be prohibitively expensive for many stations, but centralized training courses for several stations could be effective if they simulate actual conditions broadcasters experience. The AFRRI evaluation noted: "Training on ICTs is essential to ensure a degree of sustainability of the technologies. If station staff, especially technical people, is not comfortable with the equipment, they are less likely to be able to continue operating the ICT for their station needs after the specific project has ended".

## **8. SUSTAINABILITY AND ENTREPRENEURSHIP**

### **8.1 CAPITAL COSTS AND OPERATING COSTS**

In the AFRRI project, participating radio stations were given the equipment they would be using during the project period, and told that they would be able to keep the equipment afterwards. In some cases, this approach of donating equipment can lead to lack of concern about taking care of equipment or replacing worn out or damaged parts. However, AFRRI researchers reported that ownership contributed to a sense of responsibility for the equipment, and encouraged some to explore innovative ways of using the technology. AFRRI concluded: "When the station believes that the equipment belongs to them and not to an NGO or the government, and they see its value, they are more likely to take it upon themselves to seek solutions and fix problems" (Farm Radio International, 2011).

Of course, most radio stations would have to find the funds to buy their own equipment. But in the long run, the operating costs are likely to be much more of a significant challenge, whether or not the participants had upfront funding for equipment. Foreseeing operating costs can involve making sure that someone on the staff has the training to maintain the

equipment, and budgeting for usage charges, replacement parts, and repairs. For example, the author found in evaluating telecenter projects that some managers did not budget to replace printer cartridges, although printing, photocopying and desktop publishing were often the maintain revenue generator for the telecenter. In the AFRRI project, one of the ongoing costs was for connectivity – for Internet access and for mobile phone airtime for call-outs, call-ins, SMS reminders, and staff coordination. Although mobile phones turned out to be very cost effective, airtime in many African countries can be expensive relative to salaries and other operating costs.

## 8.2 APPROPRIATE TECHNOLOGY

Identifying criteria for equipment selection that will help to minimize costs but also assure usability can be important in minimizing overall equipment costs while maximizing benefits. These criteria will vary depending on many local factors including equipment availability and pricing, physical conditions where equipment will be used in the studio and in the field, and ICT literacy of staff and of other users.

In the AFRRI project, considerations included availability of equipment and parts; serviceability, affordability and simplicity of use. There are numerous examples in the developing world of donated equipment lying unused because spare parts are not available or are prohibitively expensive to import, or no one has the technical expertise to fix the equipment. The AFRRI project attempted to procure equipment that was both durable and repairable locally; AFRRI also provided technical training to those who would be using the equipment.

Affordability is key. Less expensive equipment that can be repaired or replaced locally may be a better solution than more expensive professional equipment. For example, AFRRI provided rechargeable MP3 recorders rather than professional-grade recorders. Simplicity of use and maintenance not only contributes to longer equipment life, but also may result in more use by practitioners who have many other professional responsibilities. AFRRI points out: “ICTs should run as seamlessly as possible at the station. As tempting as it is to opt for ICTs that can ‘do it all’, this often comes at



the expense of complicated processes that can frustrate users” (Farm Radio International, 2011).

### 8.3 SUSTAINABILITY AND ENTREPRENEURSHIP

Small and nonprofit radio stations face the challenge of ongoing sustainability to cover their operating costs, regardless of whether they receive donated equipment or supplies. Of course, paid advertising and announcements are well-known means of generating revenue, but they may not be appropriate for nonprofit stations or generate much revenue in small markets. The AFFRI project explored some innovative approaches to generate revenue using ICTs:

**On-air classified ads:** A radio program in Tanzania announces classified ads received throughout the day by SMS messages sent to the broadcaster’s phone. The customer who wishes to place an ad on the radio program must pay 2000 Tanzanian shillings (about \$US1.25). The payment is actually made by sending mobile phone airtime credit to the broadcaster’s phone. Once the ad and the payment are received, the ad is read on the air.

**On-air greetings via SMS:** Another Tanzania radio station charges for messages such as prayers and greetings sent to family and friends around the country. A person who wants a message read on the air pays for a premium SMS (approximately \$US.30) sent to a special number at the radio station. The revenue from this SMS is then divided between the radio station and the mobile phone company (Farm Radio International, 2011).

**Hosting Interactive Voice Response (IVR) Services:** A Ghanaian radio station that continued to provide IVR services which farmers could access to get information on demand found that other organizations and businesses became interested in offering IVR services. Freedom Fone technology used for AFFRI’s IVR experiments allows radio stations to host and support IVR services virtually by assigning a unique SIM card for each local client. The station planned



to develop other value-added services such as co-designing the IVR for clients, supplying information for the audio menus, recording/producing the audio menus and offering discounts on radio spots to advertise clients' IVR service and phone number (Farm Radio International, 2011).

**Cybercafé at the radio station:** A radio station set up an Internet café on its premises, and used the revenue to cover its own Internet costs and pay an in-house technician.

**Wireless internet service provider:** A radio station may be able to become a Wireless Internet Service Provider (WISP) by setting up a WiFi transmitter and selling access to its Internet connection. For example, an AFRRRI radiostation used wireless access points to make its internet connection available to surrounding businesses, government offices and schools. This cost-sharing model enabled the stations to cover the \$US250 monthly Internet fees plus additional revenue to pay technical staff at the radio station. (Reselling Internet access may not be legal in some jurisdictions).

## 9. CONCLUSIONS: BEYOND TECHNOLOGY

Radio may be considered an old technology that is new again. Participatory radio campaigns plus interactive ICTS can enhance radio effectiveness for development. To successfully implement participatory campaigns, station staff will need training in production and outreach techniques as well as technical skills. They may also be able to adapt new technologies and services to generate revenue for sustainability of the radio stations.

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See: <http://ecourse.farmradio.org/> Support for the e-course is from the Commonwealth of Learning.

See: <http://www.farmradio.org/radio-resource-packs/>.