

Community Radio in Africa

Cost effective ICT Tool to Connect Geographically Dispersed Communities

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Abstract—In this paper, we discuss the potential and contribution of community radio to the developmental process in developing countries by exploring a case study in the form of networking project implemented in Liberia. The project entailed establishing a wireless network to connect six community radio stations in the country to exchange programming and share content and reporting. Community radio is often overlooked as a powerful and cost effective ICT tool that can be leveraged to disseminate information to large audiences in geographically dispersed communities. Radio transmission and reception devices are affordable for populations characterized by low income, and they have little dependency in established infrastructures. Moreover, radio accessibility is extremely high compared to other ICT tools, making it the technology of choice in communities with high illiteracy rates or low ICT skills. We discuss the development of community radio as an important tool and outline its evolution in developing countries. We focus on the spread and utilization of community radio in Africa, and highlight its role in areas like peace building, women participation, good governance and economic growth. We provide a detailed account of the project network, which includes the technologies implemented, the tools used and the challenges faced. We discuss ways in which community radio in general, and networking projects in particular, can impact the livelihood of many communities in the developing world, and providing pointers towards further work and research on this topic

Keywords—ICT for development; community radio; networking; wireless networks; cost effective ICT;

I. INTRODUCTION

Africa is faced with many difficult challenges and it has been affecting the livelihood of its inhabitants for many decades. These include high poverty rate, health care, child mortality, basic education, gender equality, drought, famine, women empowerment, economy and it's not difficult to add to this list. Most African nations have consistently been occupying the last places in any list that documents economic activities, such as income per capita or GDP per capita. For example, more than 90 percent of countries identified as having Low Human Development on the 2009 United Nations' (UN) Human Development Index were located in Sub-Saharan Africa. In terms of health, mortality rates in Africa are significantly higher than any other region in the world. Moreover, Africa is characterized by the dramatic inequality in the distribution of wealth, with rural communities there living

in extreme poverty and most are literally forgotten from development agendas. The sheer scale and effects of these challenges are very well documented in the disturbing statistics of the United Nations and other NGOs. There are concrete evidence that those challenges have constituted a hindrance to African stability, democratization and development. Addressing these challenges is a daunting task and requires significant resources. Therefore, development work in Africa has been at the heart of governments work and, most importantly, NGOs' activities to lessen the effects of the mentioned challenges and allow rural and remote areas in Africa to maximize benefit from development initiatives. Awareness is another important dimension that NGOs are striving to offer to rural and remote communities in Africa. Enabling local communities the access to important information that is specific to them can improve their livelihood and can contribute to a safer community. Awareness in issues such as health, HIV and human rights are essential to tackle the terrifying rates of incidents reported due to lack of knowledge and information.

There are many obstacles and challenges for personnel and workers of governments and the NGOs who work and contribute to development projects. It is highly desirable to obtain information on how development projects are impacting their target stakeholders. Thus one major challenge is reaching out to communities scattered across the large African land. This is quite a hard task given the limited number of human resources available as well as limited knowledge of local languages (particularly when foreign development workers are involved). To reach out to those people is essential not only to gather requirements but also to gather valuable feedback. Requirements are essential for decision makers and planners to focus the scope of their development projects on key challenges facing the communities. Proper identification of these requirements is essential given the quite limited resources and the sheer scale of the challenges being addressed. Equally, the lack of an accurate and inclusive feedback to record the outcome and impact of development projects will prevent corrective measures to the scope of development projects and their impact. Another obstacle that is facing development workers is illiteracy rate in rural Africa. Statistics show that literacy rates among African countries are the lowest in the world. This forms a restriction to the means for communicating with these communities. Leaflets and printed materials will be

of little use in many situations. To a lesser extent, language diversity can constitute an obstacle to communication with and between communities. Localization is quite a necessity to enable communities to easily express themselves and establish support groups.

Information and Communication Technologies (ICTs) are now widely considered by developing countries as the engine of growth, the driver of efficiency and effectiveness and the tool to enhance human development. Recognizing the potential of ICTs, infrastructure initiatives and development of various ICT strategies are being increasingly promoted and encouraged. ICT can play an important role to develop facilities by which people can participate and co-operate in the process of sustainability and social development. There have been many success stories and much reported evidence on the impact of ICT within the fields of socioeconomic development. Most noticeable recently, the Internet and mobile technology are becoming essential when planning any development interventions. However, the ICT readiness in Africa in terms of infrastructure and usage are not promising. There is still a big gap when we talk about technology uses between African countries and developed countries and even some developing countries in ICT usage and access. Voice of America [13] and United Nations [14] provide an example of this gap; only 1 in every 130 people in Africa has a computer and most students in Africa (90%) have no access to a computer. The lack of infrastructure, the restricting high illiteracy rate, language diversity and geographical characteristics rendered radio technology, though old, the most appropriate and most effective method of communication in Africa. Radio has been offering a powerful mean for coordination, a tool to provide information, deliver awareness and warnings and a way for people to express themselves.

II. BACKGROUND

Community radio is a service that is not following the rules and roles of commercial broadcasting or public broadcasting. The main aim of community radio is to serve geographic communities and communities of interest. They broadcast content that is popular and relevant to a local/specific audience but which may often be overlooked by commercial or mass-media broadcasters. Community radio stations are characteristically nonprofit entities operated, owned, and influenced by the communities they are broadcasting to. The aim of community radio has been to enable members of communities, especially those in rural and remote areas, to share knowledge and experiences. Most importantly, community radio acts as a valuable tool for the civil society, agencies and NGOs to serve communities for development aims [6]. As a result of community radio popularity, the World Association of Community Radio Broadcasters (AMARC) was founded in 1983 to act as umbrella organization of community radio broadcasters. The organization has nearly 3,000 members in 110 countries.

Despite the advancement of television and other form of communication technologies, radio remains popular and the number of radio stations has been growing steadily which

demonstrates the popularity of this medium. According to the CIA, the number of radio stations has exceeded 44,000 stations worldwide. Radio is still widely considered the main medium for communities in rural and remote areas. This is because it is the most affordable mass media technology for those communities. The recent decades, especially for third world countries, has witnessed a remarkable upsurge of activities with regard to democratization and decentralization. There has been also a growing sense of appreciation to community radio as an awareness tool to deliver appropriate information to ordinary people, especially with regards to their daily lives. This, together with the relaxation of broadcasting legislation, has led to the rapid increase of the number of community radio stations. In the setup side, starting a community radio station is quite an easy procedure and financially affordable, and the knowledge to establish one is easily available and well documented. Community radio provided another option other than state-owned public broadcasters and private commercial media to compensate for the lack of information specific to local communities.

Community radio has developed differently in different countries given the local needs. Early experiences of using community radios in North America and Europe as well as Latin America have shaped and motivated the use and spread of community radio worldwide. The success reported from those early initiatives has motivated NGOs, such as the UNESCO, to exploit it in many initiatives targeting communities in developing countries. Tambuli (the Voice of the Community) in the Philippines was among the first independent community radios set up with help from UNESCO with the aim to empower residents of local communities through information to take better advantage of existing development opportunities and seek their own development opportunities through discussion and debate. There are many other well documented and well-remembered community radio initiatives serving communities across the globe.

In Latin America, a much known successful example is the community radio that targeted miners in the mining district of Catavi in Bolivia. The experience started in the late forties early fifties of the twentieth century. The usefulness of the station has motivated local residents to financially support the station and ensure its sustainability. The impact of this station has triggered other mining communities in other districts to follow suit. By the beginning of the seventies there were more than twenty five stations serving mining communities across Bolivia.

Community broadcasting has been indispensable to India where there are 18 officially recognized languages, many more local languages, and a considerable percentage of population are under-privileged or minority cultures. Radio technology has been enabling those communities to have access to information specific to their communities such as weather conditions, coverage of cultural events, public announcements on electricity and water supplies, disaster warnings and health alerts.

Another example that had a profound impact has been the important role community radio played as a tool among

communities in East Timor to gain independence and move towards reconciliation and maintaining peace. Even in developed countries, community broadcasting is widely used to support the activities of local communities. In Australia for example, community broadcasting is a key media player with The Community Broadcasting Association of Australia (CBAA) having more than 440 member stations.

A report by the UNESCO suggests that community radio can be an effective tool in the provision of the important democratic rights of citizens to have access to reliable, accurate, and timely information [11]. This statement reaffirms the potential of community radio in enabling access and promoting participation. The same report also claims that community radio can play an important role in the inclusion of minority and marginalized groups, and support diversity in the public deliberations. It summarizes the functions of community radio in: reflecting and promoting local identity, character and culture, creating a diversity of voices and opinions, providing a diversity of programs and content, encouraging open dialogue and democratic process, promoting development and social change, promoting civil society, promoting good governance, encouraging participation and sharing of information and innovation, providing a social service as a replacement for the telephone.

Kitty van Vuuren [14] explored the link between community radio and social capital in a study she conducted at three community radio stations between 1998 and 1999. Her findings show that the success of a community radio station corresponds to the station's ability to emphasize community development and broad participation. In this sense, the community radio station becomes a generator of social capital for its host community, which then can be converted into other forms of capital.

III. COMMUNITY RADIO IN AFRICA

In Africa, a significant percentage of the people live in rural communities and scattered villages. They are isolated with high level illiteracy rates and lack of effective communication. Communication in Africa is characterized as “a rare and precious resource” [3] with the limited presence of mobile and fixed phones lines and with the ineffectiveness of post-delivery. Radio is perhaps the most important medium in Africa and has been main tool that people in rural and remote communities use to get in touch with outer world; a tool for NGOs to reach for rural and remote communities. Another important dimension for community radio in Africa is its contribution to the democratization of communications in Africa. Many activists and community workers now see community radio as a tool to allow participation by the majority of the people.

The relevance of community radio as the appropriate technology for communication in Africa is obvious since it addresses many challenges facing communication in the African continent. Community radio offers a solution to tackle the language diversity issue where large numbers of different local languages in African countries. “In Africa it is not just a question of whether people can hear broadcasts but rather

whether they can understand the broadcasts” [5]. Community radio provides the most viable solution to many human rights issues as it provide tools for education, debate, exchange of ideas and “satisfy people spiritual and psychological wellbeing much better than any other form of broadcasting” [3].

Community radio has witnessed a rapid development with the political and social changes in Africa in the 90s. Number of independent community radio station has risen from only 10 stations in 1985 [3] to reach several hundred nowadays. Radio has been serving as a social tool where people gather to listen to broadcasts, advices, information and recently contribute and share experiences. Radio started up as a government controlled media broadcasting form the capital city or other big cities where challenges and problems are significantly different from those of rural and remote communities.

In 1982, Homa Bay Community Radio Station one of the most well-known and perhaps Africa’s first community radio was established [7]. The station served the East African Homa Bay rural community on Lake Victoria in Kenya. The station was a joint initiative by the Kenyan government and UNESCO. This station, though short lived, is considered a landmark in the history of community radio usage in Africa. The station provided valuable experience in decentralization of structures and programming and the use of low-cost technology and localization for rural communities’ development.

With the benefit and effectiveness of such low-cost technology and its appeal to local communities, the use of community radio spread quickly to other countries and region. International organizations such as UNESCO and UNICEF were focusing on the use of radio as important tool for their development project and initiatives. This has been evident in many initiatives in Liberia, Mozambique and other countries [7].

IV. VOICES FROM LIBERIA

According to Search for Common Grounds, a non-profit dedicated to conflict resolution, Liberia has 57 registered community radio stations, 37 of which were active in 2007 [10]. The organization conducted an assessment of the role of community radio in peace building and development in the country, and concluded that these radio stations constitute a significant contributor to these initiatives through targeted programming towards community inclusiveness and non-violent conflict resolution [10]. The study also found that community radio can play an important role in diffusing local conflict, which prevents backsliding into violence. Additionally, community radio stations in Liberia act as promoters for inclusive development processes that include good governance, effective communication, security and local economic growth.

Some researchers argue that community radio has a much higher cost to benefit ratio for poverty alleviation and development programs than access to the Internet [4]. The low cost of radio receivers and their ease of use resulted in a penetration rates that exceed 40% of rural households in the low income countries of sub-Saharan Africa. Operational costs

for community radio stations are very low, and because of their unique local positioning, many stations were able to achieve sustainability through community support and advertising. In Liberia, for example, it is typical for people to pay \$1 to read an obituary on the local radio station. Community radio stations can also play an important role as an intermediary between rural communities and the Internet, interfacing between the global information resource and citizens in remote locations in developing countries. The radio stations can also add significant value to the communications by translating content to the local languages, contextualizing the information and overcome the language barrier. In one example, the radio station has a daily one hour live show in which listeners call the station and request information from the web. The presenter and a support panel would execute the search and read the results on air to the listener [4].

A study of community radio in Liberia confirms its impact as a viable communication channel for the dissemination of news and information and as an enabler for public participation. The study reported positively on "the capacity of community radio to enhance the popular participation of citizens... and involve them in such critical processes as poverty eradication, anti-corruption, transparency and accountability" [2]. A report published by Liberia Media Center suggests that more than 55% of the Liberian population listen to the radio every day, with the most popular programs being news (48.5%), entertainment (31.0%), religion (12.2%) and political (12.2%) [8].

While the impact of community radio is clearly evident in several important areas, many consider its potential to be much higher and still only partially realized [1, 8]. This higher potential, some argue, can be attained by increasing the quality and quantity of available programming, building the capacity of the staff of local radio stations, and establish connections among the stations to share resources, and programming, learn from each other and exchange information relevant to their respective communities.

The West Africa Democracy Radio's (WADR - www.wadr.org) project was conceived to contribute to the achievement of these goals by creating a network connecting several local community radio stations across the country, and link this network to the outside world through WADR's head office in Dakar, Senegal. In the following sections, we describe the project and the local community radio stations involved, and present the design of the project's network. We also report on the impact of these stations on their local communities based on the interviews conducted with the stations' management and staff during the project data collection and design phase.

V. CONNECTING COMMUNITIES

A. The Pilot Project

The project aims to establish a network among WADR member community radio stations in Liberia. This network would enable the exchange of information, content and programming between these stations and WADR's head office

in Dakar, Senegal. six community radio stations participated in the network: Peace FM, Magic FM, Radio Kergheamahn, Radio Gbarnga, Radio Bomi and Radio Veritas.

WADR is "a trans-territorial radio station that aims to facilitate the exchange of development information between and among countries of West Africa including Mauritania, Chad and Cameroon. As a first phase, it targets mainly the Mano River Union (MRU) countries of Guinea, Liberia and Sierra Leone" [9]. WADR has an office in Monrovia, Liberia. The office is staffed with 2 full time employees. In the designed network topology, this office would act as the Internet gateway for the network, connecting one of the community radio stations via a Wi-Fi connection to WADR's headquarters in Dakar, Senegal. The nominated radio station will act as the connecting hub for the remaining stations, enabling them to receive content, programming and information from WADR and share content and information among themselves.

B. Design Approach

Liberia suffers from severe shortcomings in its infrastructure after several years of war. The poor and unreliable infrastructure creates significant challenges that must be considered during the design of the network. One of the most important challenges is the lack of a reliable source of electric power to support the network equipment. Despite its location in the capital city, WADR's office could only secure its power supply by installing a private diesel generator. However, the expensive price of gasoline in the country (more than 5 US\$ per gallon in 2008) places significant strain on the office's budget, and forces the use of the generator to be kept at the absolute minimum. To overcome this challenge, a solar power system was designed to provide electrical power to the network equipment installed at WADR's office. The system would operate for the daily broadcast period of WADR of 5 hours.

The design approach adopted for the project is based on maximum reuse of off-the-shelf components such as network gear, computing equipment and broadcast software applications. To manage costs, the system was designed in such a way as to make the most use of locally available resources and equipment. For example, the wireless access points, the solar panels and the cabling supplies were all available in the local market.

C. Locations

In addition to WADR's office in Monrovia, which will act as the central hub for the network, six other locations were connected to the network. The following is a brief description of each of these locations:

Peace FM

Peace FM is located in Harbel, about 40 kilometers south of the capital Monrovia and few kilometers away from Roberts International Airport. The station is very close to Firestone Rubber Plantation, the second largest in the world. The presence of Firestone in the area brought several advantages to the local community. The company provides a school system,

housing and transportation for its employees. Peace FM broadcasts for 16 hours daily: from 4:45 – 11:30 AM and from 2:45 PM to midnight. The station was designated by the Press Union of Liberia as the Community Radio Station of the Year 2006/2007.

Peace FM started its broadcasting in 2004. When the station went on air, it used a 35 Watt FM transmitter. A more powerful transmitter (300 Watt) was later installed as part of a grant from RNTC in the Netherlands (<http://www.rntc.nl/>). The station setup includes one PC in the studio for broadcast purposes and two others for news editing and management. The station does not have a local area network and information is exchanged between PCs using USB flash drives.

The fact that the station is located close to Firestone's premises enabled it to take advantage of a local hydro power generation system built by the company. This provides a good source of electricity to the station, but due to the reliance of the hydro system on the rainfall in the area, this source is highly seasonal. Although the station has electrical supply from the city power grid, this grid is very unreliable. In cases when no city grid or hydro is available the station uses its own diesel generator, which incurs significant fuelling costs.

Magic FM

Magic FM is located in the city of Buchanan, capital of Grand Bassa County. It broadcasts for 11 hours daily: from 5:45 – 11:00 AM and from 6:00 PM till midnight on FM frequency 99.3 MHz. The station uses an old 30 Watts transmitter, which was expected to be replaced by a newer, more powerful version shortly.

The station does not have a computer, and all tasks are performed manually, including news editing, scheduling and archiving. All production is also carried out manually using cassette tapes and audio CDs. Electricity is provided by a diesel generator donated to the station by the local government. However, the station is responsible for the fuel costs. A neighboring branch of a large bank used to contribute to the fuel costs but has recently decided to end its support. This is placing significant financial strain on the station to sustain its power supply.

Radio Kergheamahn

Radio Kergheamahn transmits from Ganta, in the north-eastern Nimba County (the word "Kergheamahn" in the local language means "Togetherness"). The station was opened in 2004, and broadcasts on frequency 94.5 MHz for 18 hours daily: 4:30 AM – 1:30 PM and from 3:00 PM till midnight.

The station's building is small, but favorably located close to one of Cellcom's (a major mobile phone operator in Liberia) cell towers. This proximity allowed Radio Kergheamahn to secure a stable and dependable source of electricity, which Cellcom provides free of charge from the diesel generator it uses for its mobile equipment. The station also co-locates its transmitter with Cellcom's, which offers excellent housing conditions (such as regulated power supply, air conditioning, cleaning and ongoing maintenance).

Radio Gbarnga

Radio Gbarnga is located in Gbarnga in one of the largest counties in Liberia: Bong. It broadcasts for 13 hours daily on frequency 96.5 MHz. The station enjoys significant support from the local community, which has consistently contributed (through individual and institutional donations) to its sustainability. The station's building was erected thanks to these contributions, and recently, the local community raised 950 US\$ to buy a motorcycle for the station for reporting purposes.

The station benefits from its close proximity to the building of Cellcom (one of Liberia's mobile phone operators) mobile communications cells. Cellcom provides Radio Gbarnga with free electricity from its own diesel generators in exchange for ads placements. The existence of electricity also enables the station to install air conditioning units in the studio. The station has two computers in the studio and the manager's office. Lightning strikes are quite frequent in the region, and several devices were damaged in the past due to the lack of proper protection.

Radio Bomi

Radio Bomi transmits on the frequency 98.9 MHz from a small location in Bomi County. The station was given a large plot of land from the government for expansion, but construction could not be initiated due to serious lack of resources.

The station owns a diesel power generator, which is co-located in a nearby building for the Liberia Refugee Repatriation Resettlement Committee (LRRRC). The station was also permitted to use LRRRC's own generator, given that it contributes to the costs of fuel. Fuelling costs are a recurring problem, and the station is striving to secure its gasoline supply from ads revenue and from airing programs for the United Nations Mission in Liberia (UNMIL) and other institutions.

Radio Vertias

Radio Vertias is located in the heart of the capital city Monrovia, less than 1 kilometer away from WADR's office. The station has relocated into a new building across the street. The building is two stories high and Radio Veritas occupies the second floor. It has the most powerful transmission equipment, with a 3000 Watt transmitter, and broadcasts on frequency 97.8 MHz for 13:30 hours daily.

Among all the other nodes in the network, Radio Veritas has the best setup. Electricity is produced by two diesel generators owned by the station. The station has 2 production studios, a broadcast studio and a news cubicle, all air conditioned. There are 4 desktop computers and 2 laptops connected through a local area network.

D. The Network

Based on the geographic distribution of the radio stations, Radio Veritas was selected to act the main hub because of its proximity to the WADR office and the feasibility of establishing a wireless Wi-Fi link between these two sites. The link was established using low-cost, off the shelf wireless

access points and two high gain panel antennas. This wireless link will facilitate information sharing between WADR (through its office in Monrovia) and the affiliate community radio stations. WADR's office will be connected to the Internet to stream content and programming from WADR in Dakar. This content will then be streamed to Radio Veritas through the Wi-Fi link to be broadcast through the network to the other community radio stations.

From the connections' hub at Radio Veritas, analogue FM links will connect the stations in order to facilitate information exchange. For this purpose, each station was equipped with an FM receiver connected to a directional Yagi antenna in a hub and spoke configuration. The network contains 5 FM links.

While a case could be made for the use of long distance Wi-Fi links to connect all the participating stations, the design choice was to utilize the existing FM broadcast equipment in each station, and only connect the hub station to WADR's office through Wi-Fi. Reliability of the long distance Wi-Fi connections was a major concern, along with the high cost of the networking equipment and antennas that would be needed. As the project had no requirement to connect each station in the network to the Internet, and as the broadcast scheduling allowed for content to be seamlessly shared between the stations, utilizing the existing FM transmission equipment, and installing high gain FM antennas to connect the stations was a much more viable option.

Information and knowledge sharing between WADR (through its office in Monrovia) and the affiliate community radio stations will be enabled by the use of CampCaster, an open source automation system for radio stations (http://www.campware.org/en/camp/campcaster_news/).

CampCaster is currently distributed under the "Airtime" brand. In order to operate this system, two PCs were installed at both ends of the Wi-Fi link (one in WADR's office in Monrovia and one in Radio Veritas). The tough operating environment has significant implications on the design of these PCs. Due to the scarcity of electrical power supply in Monrovia, power consumption was the single most important factor in the selection of these PCs. To satisfy this requirement, low-cost, low power consumption notebooks were selected for the task. Using smaller form factors and more energy efficient hardware, these new notebooks provide reasonable computing power at affordable prices.

The expensive cost of fuel and the overhead of operating the diesel generator at the WADR's office in Monrovia made it an impractical and unsustainable option. Solar power seemed to be the only feasible solution to the power provision problem. A solar power system was designed to provide autonomous operation for 3 days. The system consists of two 40 Watts solar panels connected to a lead-acid battery for power storage.

VI. FROM PROGRAMING TO IMPACT

During the field visit to each radio station in the data collection and design phase, the project team interviewed management and staff of the radio stations, as well as members of local communities. The interviews focused on understanding

the programming strategy of these stations, their areas of focus and their impact. Community involvement and participation was also gauged as an indicator of the outcomes of the inclusive, open and participatory approach adopted by these radio stations.

Important areas in the programming of the local community radio stations are education, peace and reconciliation, agriculture and health. Most of these programs are provided by international organizations such as the United Nations and USAID. There are also programs that are contributed by the local communities. Education-related programs intend to raise awareness about the important role of education in the emerging Liberian society, and the benefits it affords for families, communities and the nation's economy. Health programs focus on messages designed to encourage healthy lifestyles which could have great potential for preventing illnesses by actions as simple as using a mosquito net during sleep. Peace and reconciliation also features high on the priorities of local community radio stations. Programs that fall within this category encourage dialogue and promote peaceful engagement, and provide frequent updates about the country's rebuilding efforts and peace process.

The community radio stations also play an important role in raising awareness about the prices of crops produced by local farmers, giving them higher negotiation power when they sell these crops. Correspondents of the radio stations inquire about the prices in the main city markets and feed that information back to the station to be broadcast to the local community.

Women constitute an important target group for the programming of all the radio stations. One station, for example, runs programs that promote women dignity and development, and help protecting them from domestic violence and exploitation. Programs targeting youth include Youth Forums that focus on youth activities and give them the opportunity to discuss the issues affecting them and explore the problems facing the nation as a whole.

Another interesting theme among all interviewed stations is their proactive approach to community engagement through which the stations reach out to the local communities and gauge their views and opinions regarding issues of interest such as the economy, the infrastructure, education, society and agriculture. The connectivity project will play a critical role in enabling this valuable information to be shared with other radio stations in Liberia and with the outside world through WADR's offices. In the tough environment on the ground that obstructs many data collection activities, providing a channel for sharing information across the country is perceived as enabling better planning and management of the already scarce resources in the country.

The important role played by the community radio stations in empowering citizens and connecting with local communities led the government in several instances to contribute resources when possible to strengthen the stations and support their infrastructure, such as providing diesel generators. Other organizations that provide support include local businesses that support the station by purchasing on air advertising, and

national companies like mobile operators by sharing their facilities with the stations (such as the power generators or antenna towers). International organizations like the United Nations also leverage the community engagement achieved by the local radio stations to communicate awareness campaigns and support programming. In one case, individuals in the local community collaborated to provide their local radio station with a motorcycle for reporting purposes. In another, the local community voluntarily raised US \$1,200 in donations to enable the radio station to acquire a higher capacity transmitter. A very interesting case involved the local community, along with the local authorities, assuming all the costs and manpower required to build an 8 room building that became the permanent broadcasting location for their community radio station. These are all clear indicators of the value and importance perceived by members of the local communities of their radio station.

An interesting feature of the radio broadcast technology is its radical ease of use compared to other ICT technologies. None of the interviewed managers of the community radio stations mentioned any difficulties in recruiting staff for the station. Because of this simplicity, managers were able to quickly train candidates to become presenters and operators in the station. This was a critical feature when radio stations relied on volunteers for some aspects of their operations. The staff skill requirements are an important consideration that should be accounted for in any project that targets rural communities, as these skills may not be readily available in the community, and logistical difficulties might complicate the provision of the required training. Radio technology provides valuable lessons in this regard, as it lowers the skill barrier, and offers a straightforward and intuitive learning curve, both for the broadcaster and the receiver.

VII. THE ROAD AHEAD

The connectivity project is still very young, which makes the evaluation of its outcomes and impact very difficult. However, judging from the interviews conducted with the staff of the involved community radio stations, the project is expected to yield great advantages in improved programming, information sharing and outreach to other remote communities. In order to measure the impact of the project, upcoming evaluation activities should include assessment of the extent to which shared programs and information have contributed to the audience base for each station and the outreach to the local community. This could translate into longer broadcasting hours, more variety in scheduled programs, and increased connections with the other radio stations. Another aspect that should be evaluated is the efficiencies that may be achieved by the pooling of program assets, which might result in time and cost savings for the participating stations.

An area that is still under-researched in community radio relates to the question of regulation and licensing. Because community radio uses a slice of the transmission spectrum in a country, it may be required to obtain certain licenses and comply with specific regulatory requirements to operate legally. This raises many questions. For example, does

government regulation inhibit the proliferation of community radio? What is the impact of a more restrictive regulatory environment on the operation and impact of community radio? How does government oversight affect the freedom of expression at local community radio stations? It is necessary to develop a better understanding of the regulatory environment in developing countries with regards to community radio in order to inform projects and initiatives that aim to exploit this medium in their development activities. Moreover, where the regulatory environment is found to be unfavorable, research could be conducted to influence decision makers with evidence of the value and impact of community radio so that they may consider supporting progressing policy choices.

VIII. SUMMARY AND CONCLUDING REMARKS

Community radio has quickly become an important tool to support development in developing countries in general, and in rural communities in particular. The low cost of receiving devices and the affordable operating expenses of local radio stations made radio the highest penetration rates among all information and communication technologies in developing countries. In addition to the wide user base, the popularity of local community radio can be attributed to its inclusive nature that quickly established connections with the local community and incorporate their needs and feedback in the station's programming. The low production costs for these programs enable the stations to tailor their content to respond to local needs, and adapt foreign content to match the local context. This allows the radio stations to overcome the language and cultural barriers, and strengthens the connections it's established with its audience.

Several studies have demonstrated the positive impact of community radio in community inclusiveness, non-violent conflict resolution, good governance, effective communication, security, local economic growth, women participation, public health and education. However, the potential is believed to be much higher and still only partially realized. This can be achieved by increasing the quality and quantity of available programming, capacity building for local staff and connecting community radio stations to share resources and programming.

This paper described a project undertaken by the West Africa Democracy Radio's (WADR) to create a network connecting several local community radio stations across Liberia, and link this network to the outside world. Liberia has 57 registered community radio stations, 37 of which were active in 2007. The project established a network between six West Africa Democracy Radio's (WADR) member community radio stations in Liberia to exchange of information, content and programming.

In interviews conducted with management and staff of the radio stations, the following areas were found to be of high importance in the programming of almost all stations: education, peace and reconciliation, agriculture and health. Most of these programs are provided by international organizations such as the United Nations and USAID, in addition to programs contributed by the local communities. The radio stations also played an important role in promoting

women empowerment and participation, and stimulating engagement among the youth.

The project has provided a strong proof-of-concept and evidence to the added value gained from connecting the radio stations. The benefits of the connections between the local radio stations and their communities have been observed, with the community in many cases providing direct support to sustain the station's operations. Support was sometimes delivered indirectly by purchasing advertising spots and through in-kind contributions. Such connections are clear indicators of the value and importance of the local radio station as perceived by its audience and community.

While the networking project is still young, the evaluation to date has demonstrated that it started to show improved programming, information sharing and outreach to other remote communities. It is recommended that follow up studies focus on evaluating the impact of the connections established between the radio stations and the contribution of the increased capacity for sharing and communication to the achievement of the objectives of each member station. Based on the actual, measurable impact of the project, a model for networking community radio stations could be developed. A different study might explore in further detail the economic sustainability models currently embraced by the stations, and develop recommendations for stations that face similar challenges or operate in similar environments.

REFERENCES

- [1] Ahalt, C. (2010). The Effects of Community Radio on Women's Empowerment in Post-Conflict Rural Liberia. MA Thesis at Georgetown University.
- [2] Arogundade, L. and Randall, L. (2009). Liberia Media Assistance Strategy: A Strategy for Support to the Independent Media within the Framework of Liberia's Poverty Reduction Strategy, http://shelbygrossman.com/wp-content/uploads/2009/10/Final_Copy_Media_Assistance_Strategy1.pdf, accessed 24 November 2011.
- [3] Hickcox, M. (2006). Looking at community radio in Africa. <http://www.speroforum.com/site/article.asp?idCategory=34&idsub=127&id=4464>, accessed 24 December 2011.
- [4] Kenny, C. (2002). Information and communication technologies for direct poverty alleviation: Costs and benefits. *Development Policy Review* 20:141-157.
- [5] Mtimde, L., Bonin, M.H., Maphiri, N. & Nyamaku, K. (1998). What is Community Radio? A Resource Guide. AMARC Africa and Panos Southern Africa.
- [6] Price-Davies, E. & Tacchi, J. (2001). Community Radio in a Global Context: A Comparative Analysis. JISC, UK.
- [7] Quarmyne, A.T. (2006). From Homa Bay to Ada – Lessons on Community Radio, Access and Participation. Proceedings of the Media, Development and Poverty Eradication Conference, 1–2 May 2006, Colombo, Sri Lanka.
- [8] Randall, L., Kpargoi, L. and Pulano, C. (2008). Media Reach and Penetration Study: Summary Report. Liberia Media Center.
- [9] Search for Common Grounds (2009a). Liberia Community Radio Case Study: The Sustainability Myth, <http://www.comminit.com/afrika/content/liberia-community-radio-sustainability>, accessed 24 November 2011.
- [10] Search for Common Grounds (2009b). An Assessment of the Role of Community Radio in Peacebuilding and Development: Case Studies in Liberia and Sierra Leone, <http://www.sfcg.org/programmes/liberia/pdf/New%20Community%20Radio%20Assessment%20FINAL.pdf>, accessed 24 November 2011.
- [11] UNESCO (2001). Community Radio Handbook. <http://developingradio.org/files/UNESCO%20CR%20Handbook.pdf>, accessed 1 February 2012.
- [12] United Nations (2010). Africa takes on the digital divide. <http://www.un.org/ecosocdev/geninfo/afrec/vol17no3/173tech.htm>, accessed 23 December 2011.
- [13] Voice of America (2010). Computers for Africa Launches New Initiative to Help Schools. <http://www.voanews.com/english/news/afrika/east/Butty-U-S-Computers-for-Africa-14april10-90805754.html>, accessed 23 December 2011.
- [14] Vuuren, K.V. (2001). Beyond the Studio: A Case Study of Community Radio and Social Capital. *Australian Community Broadcasting Series* vol. 1, no. 4.