Global Scientific JOURNALS

GSJ: Volume 6, Issue 2, February 2018, Online: ISSN 2320-9186
www.globalscientificjournal.com

SOCIO-ECONOMIC TRANSFORMATION OF UNDER-PRIVILEGED COMMUNITIES BY COMMUNITY RADIO IMITATING ANCIENT TRADITION OF ORAL TEACHING

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KeyWords
Community media, community radio, democracy, development, empowerment, inclusive growth, poverty alleviation, social development,

ABSTRACT

This In this world of 7.3 billion people, about 795 million, or one in nine, suffer from chronic undernourishment or hunger (FAO 2015). The main cause of this poverty and hunger is unequal income distribution, lack of resources, and absence of knowledge and skill to earn the livelihood. These people are not able to take the benefit of ICT which in several studies have been found to have a direct relation with the wealth creation. In absence of their skill to read and write, the ancient method of oral imparting of knowledge is the only way to train them fo livelihood generation and social upliftment. This includes training them in improved farming, cattle breeding, entrepreneurship for selling their product profitably, health and hygiene, guidance about government schemes for their benefit, financial facilities etc. Community Radio (CR) is an excellent tool to reach them in their own language/dialect and motivate them to participate and learn. The paper examines the history of development of CR in the world, regulatory processes to obtain license and finally the case studies with focus on two countries namely India and Ethiopia where the tool was used to derive immense benefit to the community in poverty alleviation.

1. INTRODUCTION

The world population was 7.35 billion in 2015 and out of them 10.7 percent population lived in extreme poverty on less than $1.90 a day [1]. World Bank data further indicates that 45.5% of population lived in extreme poverty in low income countries (LIC) in 2013. In Sub Sahara, African region 769 million population lived below extreme poverty rate in 2013. Several studies have indicated that women have a higher incidence of poverty than men [2]. Higher percentage of the hungry and malnourished people live in rural areas in developing countries. Efforts to raise growth in agriculture and the rural sector is vital strategy for promoting inclusive growth and improving food security and nutrition. Further, World Bank accepts that literacy is key to sustainable development as it enables 'greater participation in the labour market; improved child and family health and nutrition; reduces poverty and expands life opportunities'[3]. The global literacy rate as in 2016 was 86.24% with large variation in African and Asian regions; India 69.3% (2011), Ethiopia 39% (2007) [4]. The people deprived of education suffer from hunger and poor health due to ignorance and lack of knowledge to earn their livelihood. These people can understand only their native language orally, but cannot read and write. The challenge with the informed society is to communicate with them in their own language and impart knowledge and skill to enable them to earn their livelihood and improve their living conditions. The power of oral communication to impart knowledge is inherent in ancient tradition of many countries of the world. The ancient system of education in India has been by way of storytelling for knowledge, skill, introspection, critical analysis and self-realization which was considered the ultimate goal of human life [5]. Aesop (5th Century BC) and Homer thrilled their audiences with oral tales ranging from the fall of the Trojans to fables [6]. Osayimwense Osa and Hale both described the importance and functions of oral storytellers in western sub-Saharan Africa, the griots, which involved 'advising, diplomacy, and instrumental music.' [7]. Use of oral stories to convey messages imbedded with knowledge has been common across most of the civilizations. The history goes back in time to days before people developed the ability to read and write. An evolutionary advancement of traditional systems is to integrate the modern technology to communicate with that segment of population which is still illiterate or suffering from digital divide. One such tool is Community Radio with the dynamism and adaptability of life as lived in organic communities to support local economic development, social justice, and political empowerment. Variety of formats such as stories, rhymes, riddles and proverbs can be used.

Radio is the most powerful tool of communication with the communities suffering from digital divide. It is economical, crosses geographical barriers, communicates with people in their own language and can be received on a receiver costing one dollar. It does not need electricity and runs on battery. The radio receivers with crank shaft can be used for a long period without need for replacement battery. Radio transcends the literacy barrier. Radio is also known as 'women's medium' since they can perform their tasks even as they listen to the radio. The term 'community radio' was first coined by Powell in1965 in a leaflet entitled Possibilities for Local Radio [8]. The Community Radio (CR) provides an avenue for free flow of beneficial information aimed at uplifting the plight of the various sectors of the community. It opens possibilities for everyone, especially communities, to express themselves socially, culturally, politically and spiritually, thus preparing every member of the community to participate in decision-making. Variety of programmes on entrepreneurship, farming, health & hygiene, woman empowerment, entertainment can be launched in local language. The communities themselves can be trained to record the program and events and broadcast fostering spirit of comradeship.

Most of the CR operate in Frequency Modulation (FM) mode of broadcasting. The FM broadcasting was first demonstrated in US in 1937. The FM Radio was developed by Edwin Howard Armstrong. FM broadcast operates in a frequency band extending from 87.8 MHz to 108.0 MHz. CR is a low power FM broadcast meant to cover a specific community in the local language. The power of transmitter ranges from a few Watt to Kilowatt (50 Watt in India, 700 Watts in Ethiopia). The area lf coverage depends upon the power of transmitter.

2. COMMUNITY RADIO MOVEMENT

Voicelessness and powerlessness have been key dimensions of poverty. Social injustice and poverty lead to a movement of creating a channel for voiceless in 1946. Low power FM CR was a tool to articulate the demand for better and fair working condition to the mining community. This resulted in Radio de los Mineros (Miners' Radio Station) in Bolivia and Radio Sutatenza in Colombia [9]. The credit of using radio for education to peasant farmers goes to Father Joaquín Salcedo who established Radio Sutatenza [10]. Latin American Association for Radio Education (ALER) was the first Latin American Association for Educational radio [11]. Number of pirate radio stations were established in Western Europe during 1960s &1970s. In Africa and Asia, several countries started regulating the licensing of CRs. The growth of community radio since then has been a story of people and communities striving to speak out and to be heard.

3. INTERNATIONAL LAWS

International authorities have accepted now that the CR is dedicated to the principles of free expression and participatory democracy, and committed to enhancing community relations and promoting community solidarity [12]. This flows from several articles and

principals. Article 19 of the Universal Declaration of Human Rights adopted in 1948 [13] & International Covenant on Civil and Political Rights guarantees freedom of opinion and expression and the freedom to receive and impart information and ideas through any media which includes 'freedom to seek, receive and impart information and ideas regardless of frontiers'. Article 13 of the American Convention on Human Rights and Article 10 of the European Convention on Human Rights guarantee the right to freedom of thought and expression and 'stipulate that this right may not be restricted by indirect methods or means, such as the abuse of government or private controls over frequencies or equipment used in the dissemination of information, or by any other means tending to impede the circulation of information and ideas'. Supreme Court of India delivered the landmark judgment in 1995 that under Article (1)(a) of the Constitution 'a citizen has a fundamental right to use the best means of receiving and imparting information.' Similarly, the Inter-American Declaration of Principles on Freedom of Expression states that 'freedom of expression in all its forms and manifestations is a fundamental and inalienable right of all individuals'.

4. REGULATION AND LICENSING

The establishment of large number of pirate Community Radio Stations in Western Europe led to the Governments enacting Rules and Regulations for licensing them. The CR by very nature was thought to be a non-profit endeavor and as such the licenses in most countries are offered to non-profit organizations namely, non-governmental organizations (NGOs), educational institutes, agriculture development centers etc. These radio stations are known with the names based on main application like farm-radio, educational-radio or non-profit radio. Several countries across the globe made their own rules and regulations for issuing the license from the related authorities. Countries also allocated spot frequencies within the FM band for CR stations. Several associations and networks are also in operation to help the cause [14].

5. CASE STUDIES

This paper shall examine in detail the use of community radio stations in two countries, namely India and Ethiopia where the CRs were established in several sectors in rural areas to boost the agriculture and socio-economic development, education, health & hygiene and increased community participation. It shall further examine the impact of CRs in several countries in the world.

5.1 India

India with a population of 1.324 billion (2016) has about 282 million people (21.9%) living below the World Bank laid down poverty line of $1.25 per day on purchasing power parity in 2011 [15]. About 50% of its workforce works in agriculture, forestry and fishery sectors but they contribute only about 13% of the GDP [16]. Frequent drought and floods in many part of the country badly affects the farm income. India's global hunger index in 2017 is 100 with 194.6 million people remaining hungry everyday [17]. India has 194.6 million undernourished people [18]. The average literacy rate in India in 2013 was 74% with 23.2% people only being computer literate in 2013 [19]. Many people living in the rural areas have limited access to electricity, clean water, food, and educational opportunities. The data given by Government of India in Parliament suggests that 239 million people (19% of the population) are consuming water with a high content of arsenic susceptible to poisoning leading to cancer of skin, bladder, kidney and lungs [20] [21]. Many states like Jharkhand, West Bengal, Uttar Pradesh, Assam, Bihar, Chhattisgarh, Manipur etc. are extremely damaged by arsenic contamination of groundwater much greater than the permissible level of 0.01 mg/l (10 µg/l) [22] [23]. This amount of arsenic in water affects the quality of crop irrigated, food prepared and also shellfish, fish, poultry, meat, dairy products that rely on this water. World Health Organization (WHO) also links arsenic content in water to diabetes, hypertension and reproductive disorders. The lack of adequate sanitation, nutrition and safe water seriously impacts the health of people living in the regions.

The lack of education and knowledge about the improved methods of farming, facilities available for their health and hygiene, the loan and advances they can get from banking institutions are the prime factors for their continued pathetic condition. CR is a tool to help these people by providing relevant information. Other challenge is to motivate them to participate in the process and create trust in the system.

5.1.1 Regulation and pilot scheme

Ministry of Information and Broadcasting, Government of India issued the guidelines for Community Radio stations in early 2003. The Rules were modified several times and the CR license is now available to NGOs, Universities, Educational institutes and Agriculture Development Centers (known as KVKs) [24]. The main objective of granting the license is to impart the education through FM Radio to the students, farmers and communities living within the locality. These stations can broadcast educational, social and cultural programmes to develop the community. Limited commercial has been allowed to sustain the CR. World Development Foundation, India [25] and Media Lab Asia, Ministry of Communication and Information Technology [26] undertook a pilot and established five CRs in State Agriculture Universities with the primary objective of increasing the income of farming community in different re-

gions of India by broadcasting programmes on various themes such as farm technology, animal husbandry, climatology, agronomy, plant disease management, post-harvest management, warning for flood/cyclone etc. The idea was to link farming community and agriculture Universities to promote mutual learning and generate, share, and utilize agriculture-related technology, knowledge, and information. In addition, motivational programme on social development such as health and hygiene, women empowerment, cookery, children story, traditional songs and music were intermixed to enthuse the community for active participation.

5.1.2 Implementation

Five State Agricultural Universities (SAUs) were selected in different linguistic zones, soils, harvesting seasons and produce. The regions selected were in the States of Bihar, Uttar Pradesh, Chhattisgarh, Jharkhand and Tamil Nadu where agriculture and farming are the main occupation for the people. Universities were, Narendra Deva University of Agriculture & Technology, Faizabad, U.P., Tamil Nadu Agricultural university Coimbatore, Birsa Agricultural University, Ranchi, Indira Gandhi Agricultural University, Raipur, and Chaudhary Charan Singh Krishi Vishwavidyalaya, Hissar, Haryana (Fig.1). The common design for the studios acoustic and identical broadcast equipment were used to establish the 50W low power transmitters with a service area of about 10-15 km in all the directions from the University (Fig. 2 & 3).

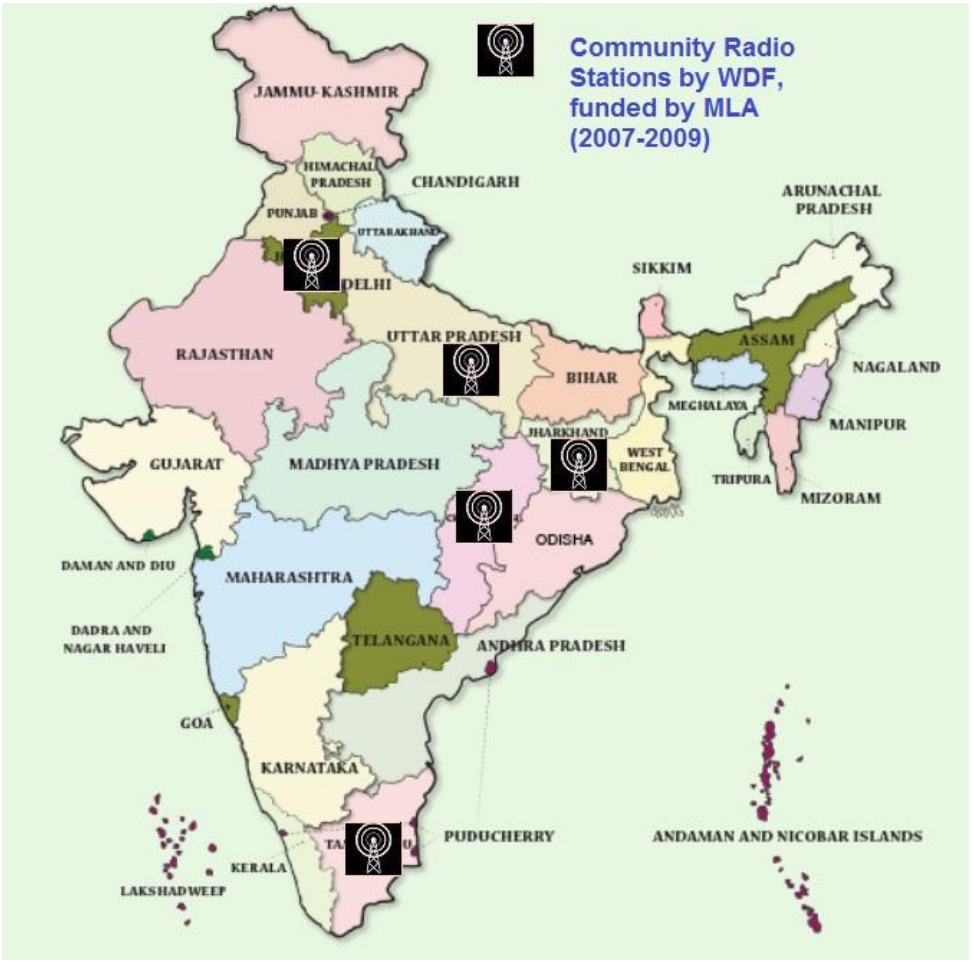

Fig.1 CRS established in India in SAUs (2007-2009)

Fig. 2 Studio for Community Radio

Fig.3 Transmission cum recording booth for Community Radio

The regulatory clearances in India are in four stages. The application in the prescribed proforma is submitted to Ministry of Information & Broadcasting (MIB), Government of India. After scrutiny and clearance by several government departments, a letter of intent (LOI) is issued. This follows with an application to Wireless Planning Division (WPC) of Ministry of Communication and Information Technology (MCIT) for spectrum allocation, which means allotment of frequency in the FM band on which the CR shall be operated. The next stage is to get the clearance of Standing Advisory Committee for Frequency Allocation (SACFA) of WPC which is approval for erecting the tower. This is followed by signing of a MOU known as Grant of Permission Agreement (GOPA) between the applicant and the MIB. After all these stages, the installation of studios, transmission system and tower including a specially designed low-cost acoustics was undertaken. Thereafter WPC was approached for getting 'Operating License'(OL). The local staff from the related community were recruited and trained. As a part of capacity building, training courses were arranged at all the Universities for Radio Jockey and station management and 106 people were trained. Though all the trained persons were not used by the local stations but they could get employment in other commercial stations or public broadcasting stations. Special attention was paid to deploy the staff from local community after suitable training who could easily communicate with the community in local dialect and language. Two National Workshops were conducted at Delhi which were attended by officials of MIB, MCIT, Ministry of Agriculture (MoA), WPC, concerned Universities, All India Radio (public broadcaster), NGOs, self-help groups (SHGs), community representatives, farmers and other stake holders. The philosophy and method of propagating improved methods of agriculture, health, farming, non-formal education using Community Radio Systems (CRS) were discussed and the topics of content decided. Innovative programmes in the local language were developed after a thorough survey and feedback from farming and other communities. The program was recorded in the field with the help of local communities. A Programme Review Committee was constituted to oversee the broadcast of programmes on continuous basis by undertaking surveys, getting feedbacks and making changes in the content, format and schedule of broadcasting.

5.1.3 Programme type and format

The programme content were based on following main themes.

- Agriculture programmes, seasonal farming (group discussion), gardening in home, growing of flowers, medicinal plants, aromatic plants etc. weather and season for crops, information to farmer based on Argo-met Advisory Service of Department of Agricultural Physics and Meteorology, transfer of technology to the farmers from University and research centers, format for reply to questions of farmers etc.
- Whole-sale market rates (on daily basis), business linkages with SHGs / NGOs of different villages, programs related to Piggery farm/ Goat farm/ nurseries/ dairy farm, sharing of programs of public broadcaster and different media houses and institutions.
- Interview of legal advisors, career counselors, bank officials, scientists, experts, block officials, health educators, doctors, physiatrists etc.

- Gender sensitization and woman empowerment programmes • Local songs sung by local singers, folk songs and music.

Format of the programme is of paramount importance. Content was produced in local dialect intermixed with culture and livelihood programmes. Participation of community including women and children in programme production and running was given higher priority. The style of storytelling, traditional motivational and educational songs and local music was adapted. While planning content, focus was also on the quality of programmes to generate enough interest among the targeted segments of population and garner enough business interest to use it as a medium for advertisements for self-sustenance.

5.1.4 Broadcasting schedules

In the beginning, three transmissions with a total of five hours duration was started. The fixed time chart was developed as per details given in Table 1, 2 and 3.

Table-1. Morning Transmission 7.00 to 9.00 AM

(Targeted to farmers and rural community)

Programme	Time
Jingle/ Call Sign	7.00 to 7.02 AM
Folk Song	7.02 to 7.25 AM
Local News & events	7.25 to 7.30 AM
Address by agriculture Scientists	7.30 to 7.45 AM
Carrier selection for youth	7.45 to 8.00 AM
Tips for farming	8.00 to 8.15 AM
Horticulture/Floriculture	8.15 to 8.30 AM
Weather prediction	8.30 to 8.35 AM
Success story by farmers	8.35 to 8.45 AM
Market tips	8.45 to 8.55 AM
Self-employment	8.55 to 9.05 AM
Jingle/ Call Sign	9.05 to 9.07 AM

Table-2, Afternoon Transmission 1.00 – 2.00 PM

(Targeted to Rural Women)

Programme	Time
Jingle/ Call Sign	1.00 to 1.02 PM
Devotional/ Local Song	1.02 to 1.06 PM
Cookery classes	1.10 to 1.25 PM
Self-employment	1.25 to 1.35 PM
Health & Hygiene/ Beauty Tips for women	1.35 to 1.45 PM
Kitchen garden	1.45 to 1.55 PM
Jingle/ Call Sign	1.55 to 2.00 PM

Table-3. Evening Transmission 4.00 to 6.00 PM

(Targeted to farmers and rural community)

Programme	Time
Jingle/ Call Sign	4.00 to 4.02 PM
Folk Song	4.02 to 4.06 PM
Local News & events	4.06 to 4.10 PM
Address by agriculture Scientists	4.10 to 4.25 PM
Carrier selection for youth	4.25 to 4.40 PM
Tips for farming	4.40 to 4.45 PM
Horticulture	4.45 to 5.00 PM
Meteorological prediction	5.00 to 5.10 PM
Success story by farmers	5.10 to 5.25 PM
Interview	5.25 to 5.40 PM
Children story	5.40 to 5.55 PM
Jingle/ Call Sign	5.55 to 6.00 PM

5.1.5 Evaluation of the field deployment in India

Evaluation of usefulness of CRs was undertaken with the help of Universities and participation of communities. It was found that the CR changed many lives by enhancing the knowledge, use of new farm technology- hitherto confined to University Professors and scientists, changing the attitude and improving the quality of life by livelihood generation. We reproduce the report submitted by the Birsa Agricultural University, Ranchi, Jharkhand, a less developed State, in Table-4. Another CR in Tamil Nadu was used for woman empowerment and capacity building, in addition to the other programmes as given in Table-5.

Table-4. Response from community members about CR changing their life

Case-1 Ram Lagan Mahli, Pithoria Village, Ranchi, Jharkhand, India

- He is a farmer as well as collects money for the local 'Hat-Bazar' (market). Initially he was a simple traditional farmer with no idea for his development. He came in contact of community radio staff during their visit to his village. He started using new techniques.
- The update information about agricultural practices helped him a lot and through radio he came in contact with the wholesalers and started selling his produce mainly vegetables directly without middlemen. The feature on improved rearing animal broadcast helped him to adopt new methods. Goat husbandry has become one of his major earning source and his life style is improving day-by-day.
- He takes help from the University scientists. Radio staff has also interlinked him with some progressive farmers of the area and he is being benefited a lot.

Case-2 Balkishore Munda, Manatu, Ratu Block, Jharkhand, India

1. Balkishore Munda a farmer, has established a mango orchard after getting information from CR. He has lot of land which was not good for crops and he utilized it for pomology.

Case-3 Mrs. Anita Devi, Boreya Village, Ranchi, Jharkhand, India

- She is a vegetable seller. She owns a small holding in which she grows cauliflower cabbage, etc. as the main vegetables and her source of income was confined to it. She had to perform all the activities herself which was very difficult as she has three small children and her husband was not sincere.
- Apart from vegetable cultivation, she contacted the mushroom scientists of the University and after undergoing a short training she started mushroom production.
- The radio staff talked to her and linked her with the local market. She now produces vegetables as well as mushrooms. From the income accruing from these ventures, she manages the house and sends her children to school.

Case-4 Ms. Khusbu, Nagri Village, Ranchi, Jharkhand, India

- She is a school girl studying in class X and listens to CR
- Initially she used to help her parents in household activities and used to go to school but after hearing CR programmes she started taking active interest in the field in assisting her parents and asking them to follow the new information.
- She insisted them to try the new techniques broadcast by scientists and progressive farmers. The result was improved farming.
- The best part was that she started taking keen interest in her studies and even educating the others. Time to time she visits Radio Station and broadcasts message to the other children to co-operate their parents and try the new information.

Case-5 Tribhuwan Awasthi, Ranchi, Jharkhand, India

2. Tribhuwan Awasthi opened his nursery on a plot he was not using earlier for crops and now he is having a successful business.

Case-6 Deepak Chourasia, Ranchi, Jharkhand, India

3. A teacher, Deepak Chourasia, a teacher, considered agriculture as a menial job but after regularly listening to CR, his views and ideas changed and he moved towards fields. His life has changed and he is now a good farmer and his barren field is full of crops.

***Source*:** Inputs provided by Director Extension, Birsa Agriculture University, Ranchi

Table-5. Woman empowerment and capacity building by CR

- A model programme on Precision Farming has been developed by the CR with the help of the Women field Officers.
- The CRS is running training programmes to all types of clients, the developmental officers, farmers, entrepreneurs, Village Leaders and like.

***Source*:** Head, Community Radio Station, Tamil Nadu Agricultural University

5.2 Ethiopia

Radio has the power to reach people in rural settings, people who may not meet or converge in any other place. Much of the population of Africa is rural. Ethiopia is a landlocked country located in Eastern Africa. Ethnically, one hundred million population of Ethiopia is extremely heterogeneous. The economy of Ethiopia is based on agriculture, which accounts for 85% of total employment and 46% of GDP. 15 million people (25 percent of population) rely on coffee production for their livelihoods. Ethiopian economy is precarious as a bad harvest (due to natural factors, such as drought—a constant threat), export earnings may severally decline. It has 75 million heads of livestock and exports leather, beeswax and honey. The country confronts several environmental issues such as deforestation (depletion of forests), over-grazing (depletion of pastures), soil erosion (depletion of quality soil), and desertification (extensive drying of the land) [27]. It is a low-income country with 78% of Ethiopians struggling with an income below US$2 a day. Almost two-thirds of its people are illiterate [28].

5.2.1 Regulation and pilot scheme

"Community Radio Broadcasting Service Directive No 02/2008" [29] laid down by Ministry of Information, Federal Republic of Ethiopia regulates the establishment and use of CR in Ethiopia. The license is either for one year or 5 years and 60% program is required to be directed to the community development. World Development Foundation India established seven Community Radio Stations in Ethiopia at Finote Salem, Diol (Borane), Adela Rede (Goji), Chewbacca (Blubber), Samara, Ari Wierda (Debub Omro) and Cuba Daresay (in Game Gufa zone, Southern Nations, Nationalities and People Region) (Fig.4) [30]. Ministry of Communication and Information Technology, Ethiopia funded the project.

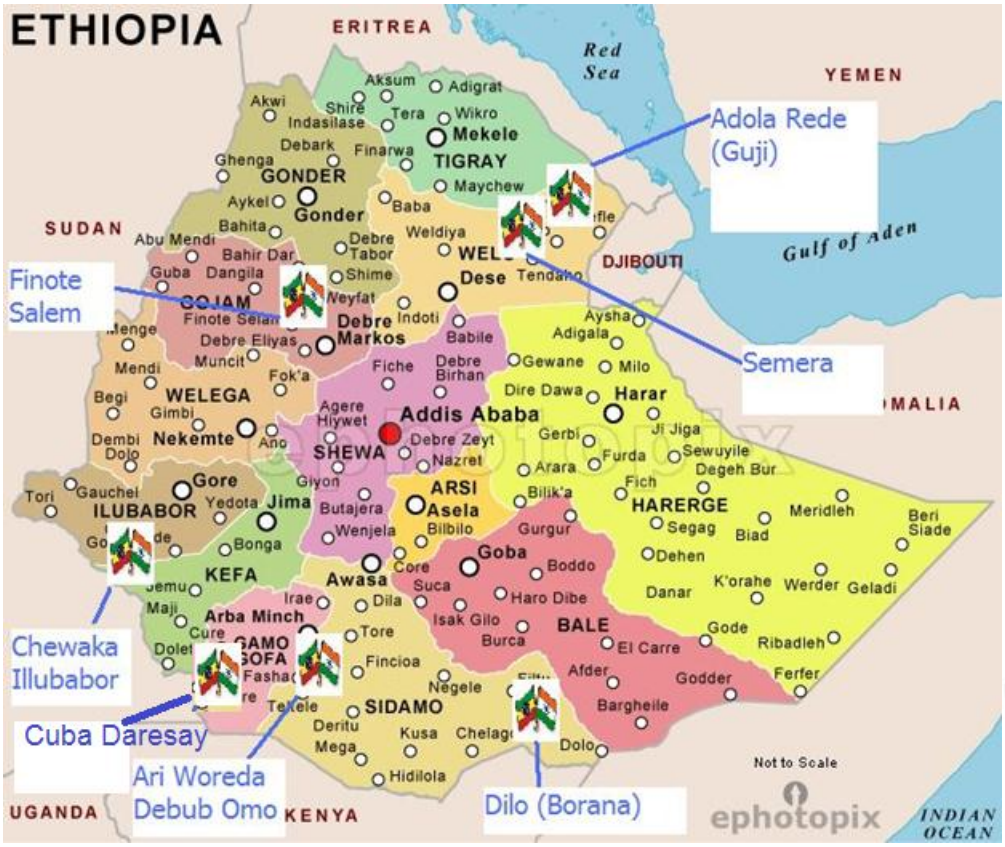

Fig.4 Locations of Community radio stations in Ethiopia

It will be seen from the Fig.4 that the locations chosen were in remote corners of the country inhabited by very poor people with low agricultural income, high poverty level, poor economic development, food insecurity, lack of facility for health and treatment, low education [31]. The CR scheme was conceived by the Government of Ethiopia to serve as an avenue for the free flow of beneficial information aimed at uplifting the plight of the various sectors of the community. The stations were aimed to open possibilities for everyone, especially regular citizens, to express themselves socially, culturally, politically and spiritually, thus preparing every member of the community to participate in decision-making. The main objective of the project was described as below.

- provide a development forum for the community;
- encourage participatory community development;
- promote active involvement of underprivileged groups such as women and young people;
- intensify the sharing of information within the community;
- encourage innovation in community development;
- increase the free flow of accurate and balanced information to, and within, the community;
- provide a forum for local cultural expression; and

- improve people's access to information in local languages.

5.2.2. Implementation

After survey of all the sites, a type design for Lay Out Plan (LOP) for radio station (Fig.5) was developed. This was uniformly applied at all the seven locations. Minimal acoustics was done and equipment for studio and transmission installed. A tower of 21 meter with antenna and coaxial RF cable was commissioned. Identical equipment and installation at all the places were used for ease of maintenance and exchange of personnel.

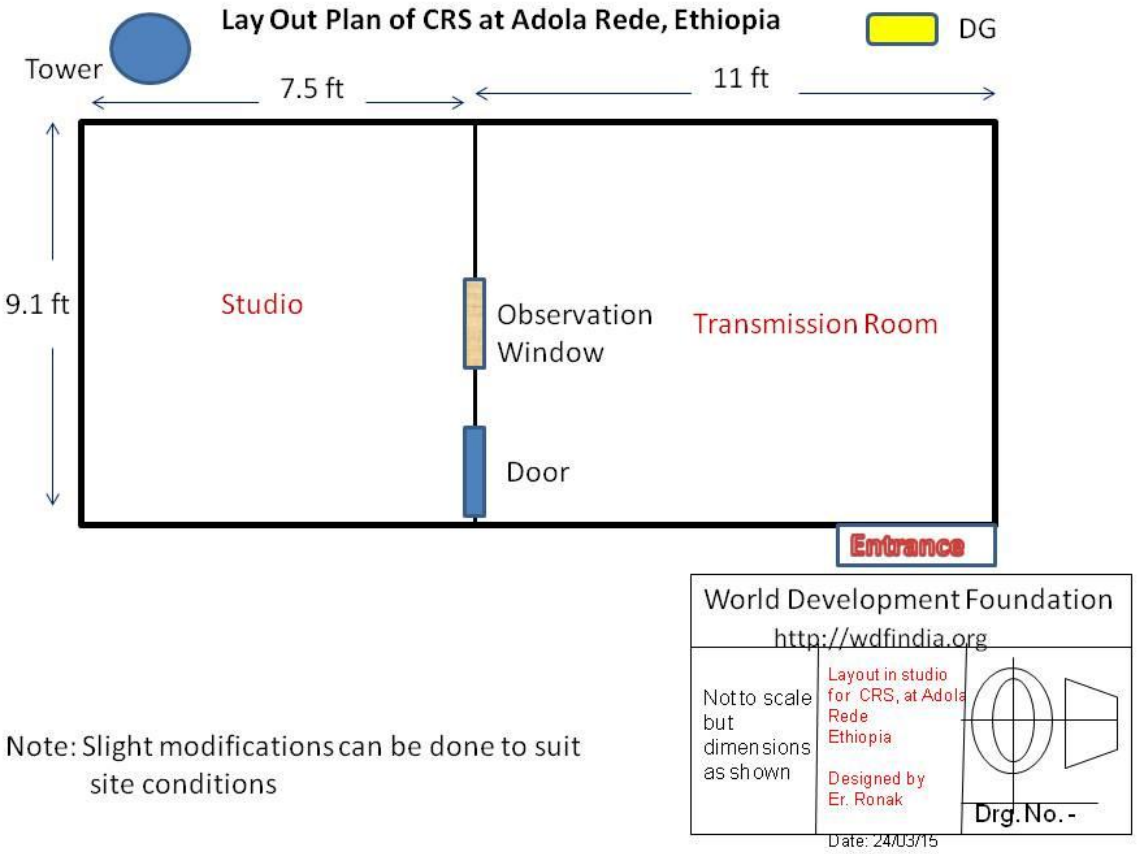

Fig. 5 Typical LOP for CR in Ethiopia

The equipment was mainly imported from India, Europe and USA. The 700Watt power transmitter was of great advantage. The transmitter was installed in a separate enclosure (Fig.6). The coverage area was 50 km on all sides of the station. One split Air Conditioner was used to cool the transmission cum recording room. Diesel Generator of 5 KW with auto start system along with two UPS of 1500 VA were used to provide power to this area and to take care of irregular power supply.

Fig.6. Transmitter system

5.2.3. Training and operationalization

One-week common training was conducted at Community radio station in Finote Salem to equip the staff with radio broadcasting skills and competencies to enable them to use the radio facilities established to operate as well as train other upcoming volunteers (Fig. 7). The training document was submitted to MCIT in advance. The objective for training was to provide.

- Full range of accredited training on the usage of the equipment, hardware and software including hands on training on operation.
- Simplified processes for equipment maintenance by the broadcaster's trainees to maintain the equipment's in good working condition
- Basic skills in recording, editing, production and field recording.

Fig. 7 Training at Finote Salem, Ethiopia

A cue sheet which is the time schedule for operating the CR was drawn and the broadcast transmission was started from each station. The typical broadcast from Cuba Daresay by local woman after training is shown in Fig. 8. The programme was directed towards educating the community in health and hygiene, farming, selling their products, woman empowerment etc. The format was traditional story- telling, folk dance, rural drama and musical variety used by the communities in their daily life. The language was local namely Amharic, Oromo, Hebrew, Arabic and Tigrinya.

Fig. 8 Broadcast from Cuba Daresay, Ethiopia

6. Social impact analysis (SIA) of India and Ethiopia Projects

In both the cases of India and Ethiopia, SIA was undertaken to understand the impact of strategies for change and mitigation of poverty. While in Ethiopia, it was short period study for predicting probable impacts from change strategies, in India a long-term evaluation of social impact of CR on life of communities especially its ability to mitigate poverty was undertaken. The community was involved in the evaluation and emphasis was made on qualitative evaluation involving individuals and collective stories of social change, as will be clear from the stories provided in Table-3. It was observed that there was great enthusiasm in acceptance of the CR by the community. The community could listen their traditional music and songs in their own dialect being broadcast by the daughters/sons of the soil. They could visit the CR at any time, share their thoughts, ideas, success stories and sell their produce. They could get information on availability of improved seeds, fertilizers, weather condition and method of cultivation. The women enjoyed learning new skills for earning their livelihood apart from knowledge on health, hygiene, their rights and privileges etc. The community radio was a catalyst to change their life. Majority of community benefitted from knowing the facilities available to them in form of financial loans, laws and regulations etc. There were marked improvement in the areas of education, health, culture, knowledge, ethics and human values.

7. Social impact assessment (SIA) of other cases in the world

The impact of local radio stations varies. However, they always provide isolated villages, many of which are not covered by public broadcasting, a means of education, self-expression and communication, while also promoting the community's history, music and oral traditions. SIA involves evaluating social impacts caused by developments, projects, technological change, specific technology, and government policy. By maximizing community involvement in the SIA process, the quality is enhanced [32]. This also helps in planning further implementations [33]. The impact of CR in poverty reduction, development and democracy building has been studied all over the world and it has been universally found beneficial to the community [34]. Community radio has been means of empowerment and of self-reliance. It caters to the need of community in terms of their well-being and their participation in solving the problems. Experiences from East and Southern Africa have proved community radios to be excellent tools for facilitating participation, empowerment, stabilization and positive development. Community media played a major role in restoring democracy in Nepal [35]. Radio Sara Perelman (Women Voice Radio) in Paryatan, West Sumatra, founded by Nutheti Kaha was used for woman empowerment and good governance by having voices of their own [36]. In many countries, it has helped preservation of cultural and linguistic diversity [37]. Peruvian Quechua Radio uses talk shows about problems that plague their communities and to promote their culture. The radio has served Quechua speaking communities to promote bilingual education in their communities [38]. The Kambale CMC in Sri Lanka has used community radio and telecentre with internet facilities. The internet combined with the radio station offers broadcast of the news and interesting programmes directly from the internet. This form of broadcast is known as 'radio browsing', a format that uses internet to get the news and bring it to the radio listeners. The CMC claimed to serve an estimated population of 200,000 people in sixty villages [39]. Community radio VA Peziza Barako in Haiti was set up and owned by a community asso-

ciation to provide a vital community service and is staffed by volunteers. When Radio VA Peziza Barako lost its studio due to storm and hurricane, the station's volunteers set up operations at the side of the road and continued transmission to help the victims [40] [41]. In Portland, Oregon, KBOO Community radio, a regular program on the homeless, 'Hole in the Bucket' encourages the participation of local homeless organizations and individuals [42]. Radio Kwizera in Ngara, Tanzania, bordering Burundi and Rwanda, broadcasts programs with a focus on peace building, refugee relocation, and reconciliation. The radio station was started by the Jesuit Refugee services, and is supported by Inter-Governmental Organization (IGOs), NGOs, United Nations High Commission for Refugees (UNHCR), Red Cross, Norwegian Peoples Aid (NPA), World Food Programme (WFP), Oxfam, Réseau pour le développement soutenable (REDESO), UNICEF and Atlas.

8. Problems in CR establishment and sustainability

All over the world, the CR establishment needs regulatory clearances from the State. Governments in most of the country are slow to act and don't take CR as an essential tool for development of democracy. Uruguay and Argentina have based their legislation on community radios on the telecommunications laws of Canada and France. Uruguay has put limitations of antennas and electric power. In Peru and Guatemala, the advocates of CR are punished with the crime of "aggravated theft" or "theft of frequency". Chile, Brazil and Paraguay have discriminatory regulations that do not meet the inter-American standards. In Brazil, legislation allows community radios to have a coverage of just one kilometer [43]. In India, the coverage allowed is about 10 km using a 50 W transmitter. Ethiopia allows coverage of about 50 km using a 700 Watt transmitter. Many countries charge fee for spectrum. In Peru, the allocations are linked to financial bids. in Brazil, in the case of signal interference, the commercial radio is favored over the CR. The licensing is not a single window clearance and it requires clearance from multiple agencies in several stages. In India, the journey starts with filing application to Ministry of Information and Broadcasting (MIB) which coordinates with about seven Government departments including Ministry of Home to issue a Letter of Intent (LOI). It may take nine to twelve months. The next steps to get spectrum and SACFA from WPC, MCIT, signing of GOPA with MCIT may take 3-6 months. The licensee after installation has again to approach to WPC for getting the Operating License (OL) [44] [45]. The process may take one to several years [46].

The capital cost which includes building modification, acoustic, studio and transmission equipment, transmission tower, antenna, coaxial cable, installation and commissioning is another problem for the licensee to get the funding. The fortunes are so often tied to national and international donor support which is missing so often. The result is CR does not reach to marginalized community but is confined to rich NGOs or private colleges and universities who more often use it as a commercial radio station to operate as business venture and derive monetary gains.

Financial sustainability is of great concern specially in developing countries, where community radio plays a crucial and often life-saving role, and where the crunch comes when donors withdraw support. In earlier times, the discussion about earning from community radio would have brought responses ranging from dismay to ridicule. With passage of time, CR operators have been forced to ponder about the sustainability of the service. Apart from the capital investment required for setting up the system, recurring expenses are required to sustain the system over a period. The recurring expenses are in the form of salary to regular staff, payment to artists, conveyance/electricity/diesel/telephone expenses, royalty for the programs, maintenance and repair of the equipment etc. This becomes more important after the donor agencies withdraw funding support. CR must make profit to sustain it and save finances to plough it back into service provision or to be used for the benefit of the community, for example, by training community members [47]. Many countries don't allow raising funds through advertisements. In this case the CRs have to resort to annual fund raising. In India, limited advertisement has been allowed which includes allocation of advertisement by government to CRs [48]. Radio offers affordability, target audience selectivity, wide reach, and timely message delivery as compared with other media used by advertisers to reach target markets. A research by UNESCO conveys that in India, the CR stations have developed and are pursuing to develop strong community engagement practices that are leading them towards social sustainability [49].

9. Technology Forecast

A radio station basically needs some studio equipment such as microphone, mixer, PC, recorder etc. to record and produce program. Further, it needs a transmitter, tower, antenna and cable for transmitting the signal. The coverage area depends upon the power of the transmitter and the height of the tower. FM (Frequency Modulation) mode of broadcasting is used in almost all the countries [50]. FM broadcasting was invented in 1933 by American engineer Edwin Armstrong, to provide high-fidelity sound over broadcast radio [51] [52]. FM broadcasting is capable of better sound quality than AM (Amplitude Modulation} broadcasting. One network of radio stations, the Feminist International Radio Endeavour (FIRE), used short-wave radio programme by and about women [53]. Digital radio is being propagated world over as an alternative to analogue AM and FM broadcasting This is called DAB (Digital Audio Broadcasting) or DRM {Digital Radio Module) which is supposed to provide high quality of program [54]. Norway has become the first country to switch off FM transmission and transit to Digital [55]. Australia has started shifting CR from FM to digital. There are currently 36 community digital radio stations broadcasting 40+ services in five capital cities in Australia: Adelaide, Brisbane, Melbourne, Perth and Sydney [56]. Keeping in view the high cost of digital receivers and transmitters, this will be great setback for the CR move-

ment. Governments should continue to encourage the FM technology for at least ten years till the digital equipment becomes affordable.

Conclusion

Community radio is the most potent tool for increasing democratic political participation in development projects. CR empowers marginalized groups, giving them skills in communication, helping them develop support networks, and programming for their linguistic, health, social, and cultural needs. It uses format that runs the gamut from dramatic soap-operas to public service announcements in local dialect on topics such as community health (AIDS, HIV, Malaria, etc.), anti-violence programs, gender issues, women empowerment, children's rights, news of development projects in the area, rights and privileges etc. Community radio stations also support distance education projects, by broadcasting programs on literacy, skill development, farming. entrepreneurship etc. This has the capacity to achieve the Millennium Development Goals {MDGs) set by United Nation (UN) aimed at the reduction of poverty, hunger, disease, illiteracy, environmental degradation, and discrimination against women [57]. This has been well established by the case studies of India and Ethiopia undertaken by the author and other researched cases.

Acknowledgment

The author wishes to thank the team of World Development Foundation. This work was supported by World Development Foundation, India and Media Lab Asia (MLA), Ministry of Communication and Information Technology (MCIT), Government of India (GOI) and Ministry of Communication and Information Technology (MCIT), Government of Ethiopia.

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