

B. RADIO STRATEGY
Radio Instruction to Strengthen Education
RISE – Tanzania Mainland & Zanzibar

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Acronyms

CENAMEC	Center for Upgrading Science and Mathematics Education
COBET	Complimentary Basic Education for Tanzania
DED	District Executive Director
DEO	District Education Officer
EDC	Education Development Center
FAWE	Forum for African Women Educationalists
GoT	Government of Tanzania
ICT	Information and Communication Technology
IRI	Interactive Radio Instruction
IYF	International Youth Foundation
ME	<i>Mambo Elimu</i>
MECLC	<i>Mambo Elimu</i> Community Learning Center
MEMKWA	Mpango kwa Elimu Maalum kwa Watoto waliokosa
MEU	Media Education Unit
MoEVT	Ministry of Education and Vocational Training
MoU	Memorandum of Understanding
ORS	Orkonerei Radio Service
OLSET	Open Learning Systems Education Trust
PMP	Portable Media Player (Mp3 or Ipod)
PRT	Parapanda Radio Tanzania
QUESTT	Quality Education Services Through Technology
RFA	Radio Free Africa
RISE	Radio Instruction to Strengthen Education in Tanzania
RTD	Radio Tanzania Dar es Salaam
TAMPS	Tanzania All Media Products Survey
TBC	Tanzania Broadcast Corporation (formally RTD)
TIE	Tanzania Institute of Education
TuTu	<i>Tucheze Tujifunze</i>
USAID	United States Agency for International Development
VOTZ	Voice of Tanzania Zanzibar

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I. Background

Radio remains the most widespread and effective mass communication tool in Tanzania. Even with the growth of media such as TV and Internet, people in all regions of the country continue to listen to radio on a daily basis. From 2000 to 2006, an increase in the number of licensed radio stations from 14 to 45 indicates that radio is the number one people's choice in media.

The national stations include:

- Radio Free Africa (RFA) - a private FM network
- Radio One - privately owned by IPP media)
- Tanzania Broadcast Corporation (TBC) - formerly Radio Tanzania Dar es Salaam, or RTD)
- Para Panda Radio Tanzania (PRT) – a public FM station set up to counter competition for young listeners from private stations
- Voice of Tanzania-Zanzibar (VOTZ) – a public station.

Of the national stations, TBC covers 85% of the Tanzania's Mainland geographical area and has, by far, the highest frequency of listenership in rural areas. In a recent survey of five regions (Dodoma, Morogoro, Kilimanjaro, Iringa, and Mtwara), TBC ranked first in signal strength and coverage, as well as the station most listened to by all demographic groups¹⁹:

- males and females;
- urban and rural
- all age groups between 18-54

In the same study, RFA is reported to have the highest frequency of listenership in urban areas.

International radio services with coverage limited to Dar es Salaam include: BBC World Service, Voice of America and Deutsche Welle.

The stations that cater mostly to the youth market based in Dar es Salaam are Clouds FM and East Africa Radio.

Like many countries undergoing media deregulation, Tanzania has seen a growth of private regional radio stations, often broadcasting in the urban areas in regions and districts. For example Radio Maria is a well-established faith-based private radio station based in Dar es Salaam with sister stations in Arusha, Manyara, Iringa, Mbeya, Morogoro, Moshi, Mpanda, Mtwara, Mwanza, Pemba, Singida, Songea, and Unguja. A typical example of these new radio broadcasters is Orkonerei Radio Service (ORS) FM or Iaramatak Radio. It is a community radio station based in Simanjiro, serving the five districts in the Mara region (Same, Mwangi, Lushoto, Simanjiro and Korogwe). ORS FM targets a specific population, the pastoralists, and has coverage of up to a 100 km radius in Arusha and the surrounding areas (i.e. Manyara, Moshi, Meru). The station is on air every day for eight hours from 2:00pm until 10:00pm, with approximately 26% of airtime for discussion and educational programs on local issues. One of the most significant changes resulting from ORS FM, as cited by the Maasai community, is the education of Maasai children, especially girls. Throughout Tanzania, community radio stations, like ORS FM, are known to provide non-formal and adult education programming targeting particular communities.

Although information about broadcasters is vital, information on radio listenership is a more important element in any analysis of how radio can or whether it should be used as a preferred

¹⁹ Research Solutions 2009

medium of communication when it comes to education. The following points from a 2007 study²⁰ are important to note:

- On average, Tanzanians spend 16.7 hours per week listening to radio
- The highest radio listenership occurs between 7:00am – 7:30am and the lowest from 9:30am – 10:00am on average weekday mornings.
- RFA is the most listened to station in Dar es Salaam, followed by TBC in other regions.
- On weekdays, RFA receives continually high listenership between noon and 9:00pm.
- TBC is the second most listened station, with peak audiences between 1:00pm – 1:30pm; 4:00pm – 4:30pm; and 8:00pm – 9:00pm. During this time TBC coverage base in Agriculture, technical and development issues.

The 2007 TAMPS also collected data on the type of programming using several categories, such as “to be entertained” or “to keep informed on political issues” In their study. The following tables summarize the findings about the category “to become educated.”

Radio Station	Percentage
Times FM	95%
Kiss FM	91%
Clouds FM	87%
Iboni FM	85%
Radio Maria	84%
Radio One	81%
RTA	80%
RFA	77%
Radio Abood	76%

Table 1 “I like to Listen to Radio to Become Educated” TAMP 2007

People who “listen to radio to become educated” don’t always have access to the radio stations listed above in Table 1. Another way to examine this group is to survey by region and broadcasters. Table 2 displays where (by region) listeners are located who consider education their number 1 radio listening activity.

Regions	Radio Station Selected by Highest Percentage of Respondents
Urban	RFA
Rural	Kiss FM and Radio Abood
Dar es Salaam	Times FM
Central (Morogoro, Dodoma, Singida, Tabora)	Clouds FM, Radio Mwangaza and Voice of Tanzania
Northern (Arusha, Kilimanjaro, Manyara)	Tripple A Radio and Radio Zanzibar
Southern (Mbeya, Lindi, Iringa, Rukwa, Mtwara, Ruvuma)	Radio One, Deutsche Welle, EA Radio
Lake (Mwanza, Shinyanga, Kigoma, Kagera, Mara)	Radio Faraja
Coast (Tanga, Pwani)	Data not available
Zanzibar	Radio One

Table 2. “I Like to Listen to Radio to Become Educated”, by Region TAMP 2007

It is important to distinguish between people who “listen to the radio to become educated” and school broadcasts. People who listen to the radio to become educated may be farmers, midwives,

²⁰ Tanzania All Media Products Survey (TAMPS) 2007

young adults, etc; in other words, this is a heterogeneous group. School broadcasts, in contrast, target a specific and captive audience and, for the most part, are relevant for this unique population.

The Tanzania Mainland Ministry of Education and Vocational Training's (MoEVT) Information and Communication Technology (ICT) Policy for Basic Education (2007) recognizes the opportunity for ICT²¹ to enhance education and improve the quality of education delivery in all areas. It notes the lack of infrastructure and resources in most districts, which results in most primary and secondary schools not being able to be served by media that requires consistent and reliable access to electrical power (TV or computers). However, almost all schools have radios and with new technologies, solar and crank radios are now readily available.

The MoEVT's Media Education Unit (MEU) produces radio programs for primary education, broadcasted on TBC Monday through Friday, from 8:30am – 11:00am. According to an agreement between the Government of Tanzania and the Government of Japan, TBC has to include 20% educational content in its programming, resulting in free broadcasting for primary and secondary education radio programs. The MEU currently has 528 programs for primary education, and 52 programs for teacher education. Its target is 900 programs for primary education, with the following subjects and levels not yet produced: mathematics (standards 1-7); English (standards 1-4); Kiswahili (standards 1-4); science (standards 1-4); geography (standards 1, 2, 6, 7); history (standards 1, 2, 6, 7); and civics (standards 1, 2, 6, 7). Due to lack of planning and capacity no teacher training, guidelines, or materials are provided to accompany the radio programs.

II. Delivery Options

When producing education radio or Interactive Radio Instruction (IRI) programming, it is important to take into account how the programs will be delivered to the audiences, the teachers and students. With new technologies, it is now possible to download programming on Portable Media Players (PMP) and allow classes to set their own listening schedule; they then have the opportunity to stop or replay programs as needed for in-depth comprehension. The medium (radio or PMP), the broadcaster (if needed), the schedule and the frequency are all factors to consider when trying to reach tens of thousands students using the most cost effective and reliable delivery mechanism.

Education programming can be delivered through a radio, audio cassette, CD and Portable Media Player. In the case of the RISE Project implemented by Education Development Center (EDC), radio is currently used in Zanzibar (Radio Zanzibar – Voice of Tanzania) and iPods are used in the Mainland districts (Kilindi, Kiteto and Ngorongoro). EDC is known worldwide for its innovative radio programming approach called IRI. Interactive Radio Instruction is based on Active Learning pedagogy and uses a three point model of interaction involving the radio, the teacher and the students. In the past, EDC has broadcasted its IRI programs in over 15 districts through Radio Tumaini and TBS-RTD.

Radio

In addition to EDC, there are a handful of development projects/organizations that utilize radio broadcasts in Tanzania, such as STRADCOM's Fataki Campaign, Mediae's Pilika Pilika Radio Project, and HakiElimu's radio spots on education and governance issues.

The Fataki Campaign, funded by PEPFAR, is intended to reduce cross-generational sexual relations. STRADCOM incorporates broadcast fees in its Fataki Campaign program costs to provide 60-second spots running 9 times a day for 120 days on national radio stations and local radio stations where

²¹ The MoEVT uses a broad definition of ICT to include technologies such as: radio, Television (both fixed line and mobile), computer and network hardware and software; as well as the equipment and services associated with these technologies, such as electronic mail, text messaging and radio broadcasts.

national service is unavailable (i.e. Bomba in Mbeya; Ebony and Country in Iringa; Mwambao in Tanga and Zanzibar; Pride in Mtwara and Lindi; Victoria in Mara; Faraja in Sinyana and Voice of Tanzania in Tabora).

Pilika Pilika is a weekly 30-minute radio soap opera that is transmitted during prime-time on TBC and repeated on local FM stations such as Radio Sauti Ya Injili. It has been on air since 2004 to raise awareness about issues such as health, hygiene and sanitation, and reaches around 3 million listeners. Pilika Pilika is sponsored by WaterAid, Femina Hip, and the NGO Policy Forum, and has also received funding from DFID, the Natural Resource Institute and Farm Africa.

HakiElimu uses radio to inform and generate debate among the public to achieve their goal of quality basic education for all.

These projects and organizations use a combination of national and local broadcasters, public and private stations and pay for airtime with external funding.

The mainland districts where phase 2 of the RISE project is being implemented are Kiteto, Kilindi and Ngorongoro. In addition, during phase 1, RISE established Learning Centers in Mtwara and Lindi. The following local radio services are available in these districts:

District	Radio Station
Kiteto	Pride FM
Kilindi	Pride FM, Sauti ya Tanzania Zanzibar, Radio Sauti ya Injili
Ngorongoro	Radio 5 FM, Radio Tanzanite
Mtwara Urban	Tanzania Broadcasting – TBC and Radio Pride
Mtwara Rural	Tanzania Broadcasting – TBC and Radio Pride
Lindi Urban	Tanzania Broadcasting – TBC and Radio Pride
Lindi Rural	Tanzania Broadcasting – TBC and Radio Pride

Table 3. Radio Stations that Reach RISE Districts

While community or local radio stations may offer significant cost savings compared to national stations, some may require technical assistance, support and capacity building. For example, USAID/Zambia’s Quality Education Services Through Technology (QUESTT) partnered with nine community radio stations to provide equipment and training for producers and station managers, expand the stations’ coverage, help rebroadcast IRI lessons, and enable them to present “Education for All” programs including dramas, public service announcements and interviews of local interest. In the Mainland, the RISE Project has met with a number of community radio stations but its limited budget does not include the often prohibitive broadcasting fees these station charge.

Portable Media Players

Research shows that the iPod or MP3 player is a relatively low cost device for delivering education content, particularly for groups who cannot meet during broadcast times or where radio broadcast service is unavailable. RISE uses Portable Media Players (PMP), a solar/crank Lifeline radio as a speaker, and a solar recharging system for the batteries. PMPs were introduced in Ngorongoro district in order to:

- (1) address the issue of poor radio reception in the remote communities where RISE establishes Learning Centers,
- (2) enable migratory communities to play the programs at their own convenience, and
- (3) repeat programs for the special needs of second language learners and students with learning difficulties. PMPs were later introduced in Kilindi and Kiteto districts when the national radio broadcast through TBS-RTD was no longer available.

Other Technologies

There is a rapid increase in the use of mobile phones throughout Tanzania, and most

of the country now benefits from reliable network coverage. The USAID-funded Bridge IT Project uses mobile phones and digital technology to deliver educational videos to classrooms, where students and teachers view the videos. The components include a cell phone for downloading content; a television for viewing the videos in the classroom; and a service provider (Vodacom) and network (GSM/3G) for transmitting the content. However, such initiatives need a reliable power source, mainly for the television.

New technology such as the national fiber-optic project to improve and expand Internet service provision is under development and scheduled to be completed in 2011. However, it is too soon to tell what the impact of this new technology will be on delivery options and to which degree primary schools and secondary schools will be serviced by the electrical grid in order to be able to provide reliable and sustained connectivity for education purposes.

III. Costs

There does not appear to be a public benefit requirement or national policy in licensing agreements for radio stations to provide educational broadcasting, although a discount of about 50% off the rate card is typically offered. Unlike many of its African neighbors, Tanzania does not benefit from a radio broadcast facility within its Ministry of Education. The MoEVT must rely on commercial broadcasters to air the education programs it produces. In Tanzania, Radio stations are paid to air programming; therefore the radio syndication model where programming is sold to radio stations is not a viable option. Pilika Pilika's experience shows that commercial sponsorship is difficult to secure in Tanzania.

RISE Mainland

RISE delivers the *Mambo Elimu* accelerated learning program consisting of four series (Standard 1, Standard 2, Standard 3, and Standard 4) of 100 programs each. The 400 programs require two years for completion. The *Mambo Elimu* radio programs were developed in 2003-2004, and reviewed and updated in 2006. Assuming a rate of Tsh. 250,000 for 30-minutes of air time, the annual recurrent costs for radio broadcasts would be Tsh. 125,000,000, with at least a two-year commitment so that one cohort of students could complete the entire program.

Program	Minutes	Programs/ Week	Total Minutes/ Week	Weeks Required	Total Program Minutes
Standard 1 (Kiswahili, Math, Life Skills, English)	30	5	150	20	3,000
Standard 2 (Kiswahili, Math, Life Skills, English)	30	5	150	20	3,000
Standard 3 (Kiswahili, Math, Life Skills, English, Social Studies, Science)	45	5	225	20	4,500
Standard 4 (Kiswahili, Math, Life Skills, English, Social Studies, Science)	45	5	225	20	4,500
Total			750	80	15,000

Table 4. RISE Mambo Elimu programming Mainland

RISE Zanzibar

RISE develops and produces the *Tuchez Tujufunze (TuTu)* series for pre-primary, Standard 1 and Standard 2 which follow the MoEVT formal school curriculum of one level per year. Each level contains 99 radio programs. The *TuTu* series are currently broadcast cost-free as per an agreements made with VOTZ and the Zanzibar MoEVT. However, if we were to estimate the costs assuming a rate of Tsh. 250,000 per 30-minute broadcast, the *TuTu* series would cost Tsh. 123,750,000 annually to broadcast.

Program	Minutes	Programs/ Week	Total Minutes/ Week	Weeks Required	Total Program Minutes
Pre-Primary (Kiswahili, Mathematics, and Life Skills)	30	3	90	33	2,970
Standard 1 (Kiswahili, Math, Life Skills, English)	30	6	180	33	5,940
Standard 2 (Kiswahili, Math, Life Skills, English)	30	6	180	33	5,940
Total			450	99	14,850

Table 5. RISE Tucheze Tujifunze Zanzibar

An important issue for RISE is the cost effectiveness of delivery via radio broadcast versus other technologies. With the economies of scale that interactive radio instruction (IRI) offers, the cost per learner decreases proportionally with any increase in the number of beneficiaries. While the PMPs initially require more technical support compared to radio, it does not require continued monetary support like radio. Both PMPs and radios are reported to need replacement every five years²².

It is important to note that the total annual recurrent cost of radio in the Mainland uses the number of current beneficiaries using PMPs, which is not a realistic estimation of the number of pupils that would be reached by radio broadcast. Radio broadcasting reaches the pupils in the MECLCs as well as those who are listening at homes and even in the formal primary schools who are not part of the RISE project.

When programs are available through radio frequencies, they reach a much wider audience than the one targeted by a project. The “shadow” audience includes all the people who listen to the program simply because they have access through their own means. A shadow audience can be as large, if not larger than the targeted audience. This greatly increases the number of potential beneficiaries. If the targeted beneficiaries for the *Mambo Elimu* series in the Mainland are out-of-school youth between the ages of 9-14, nationwide radio broadcasts could reach an estimated 82,989 (47,091 boys; 35,898; year 2009 MoEVT Annual Statistics) out-of-school youth in Tanzania Mainland, which would equal a low per pupil cost down of \$1.34.

A difference is seen in the maintenance and repair costs for PMPs, especially as costs for hardware maintenance and repair are born by the user. The communications infrastructure at the local level is much more favorable to radios than PMPs. Schools are more able to afford radios and are more likely to be supported by a service industry that can repair and replace radios when they break. Maintenance and repair systems are more costly and complicated the more complex the technology. For example, One Laptop Per Child (OLPC) has a multi-tiered maintenance and repair system. At the school level, financial resources must be allocated for basic maintenance (i.e. replacement screens and batteries) and teachers must be trained to trouble shoot (i.e. antenna replacement, debugging and re-imaging of software). At the district and central levels, more technical expertise is required (i.e. change of motherboard and connectivity issues) and funds must be budgeted for labor, training, transport and parts to support the laptop and associated requirements (i.e. server and networking, internet access, and power infrastructure).

IV. Sustainability Models

The IRI Toolkit for Policy Makers and Planners (The World Bank 2005) states that sustainability depends on the educational benefits documented, the affordability of recurrent costs, successful institutionalization, and strong leadership in adapting the program and in troubleshooting. This report

²² Freeplay Foundation advertizes a shelf life of five years. It should be noted that Lifeline radios distributed in Tanzania in 2003 (six years) are still functioning well with only a small percentage needing battery replacements.

focuses on the affordability of recurrent costs. For IRI projects using radio broadcasts, the most prohibitive recurrent cost is airtime.

Various payment schemes have been used to fund radio broadcasting for IRI projects.

- National/District Annual Education Budget: State governments paid for all or a majority of radio transmission costs in Venezuela's Center for Upgrading Science and Mathematics Education (CENAMEC), even during project funding by the World Bank.
- Free/reduced rates from radio stations for airtime: South Africa's Open Learning Systems Education Trust (OLSET) received free airtime through the government-owned South Africa Broadcasting Corporation and provincial radio stations. Bolivia's Radio Math radio transmissions continued in several regions through church-owned stations providing free airtime.
- Taxes: Lesotho's Let's Learn English covered recurrent costs with a government-imposed tax levy.
- Public-Private Partnerships/Fee for Service: The design of Honduras' Mental Arithmetic included the development of an association of businessmen and industrialists (AVANCE), whose revenues from newspapers contributed to recurrent costs. AVANCE also sold posters, a teacher's guide and radio to teachers. A similar model based on collaborating with the media was used in El Salvador.

The most popular models are funding through annual education budgets or free/reduced rates from radio stations. In some of EDC's larger IRI projects, the broadcasts were paid for by the national or local government.

As for the sustainability of the use of Portable Media Players for delivery of educational content, the BridgeIT approach provides one model for an education technology project. BridgeIT was designed by the International Youth Foundation (IYF) with many partners, including the MoEVT's Media Education Unit (MEU), FAWE, Vodacom, Nokia and Pearson. At each quarterly stakeholders' meeting, the project discusses issues of sustainability and actively seeks commitments from partners for continued support after the initial funding ends. For example, IYF has worked with the MoEVT to include BridgeIT in their education budget for two consecutive years now, demonstrating an eventual path of project transition from IYF to the MoEVT. In the coming months, IYF will relocate within the MoEVT office, with the intent of transferring the video production tasks to the MoEVT. Vodacom has indicated it will continue to house the server and provide bandwidth (valued at approximately \$100K) for uploading and downloading education videos. These two critical partners ensure that even after the project ends, educational content can be updated and produced by ministry officials when the need arises, and videos can be automatically uploaded from the Vodacom server when teachers turn on their cell phones. However, the issue of hardware maintenance and repair continues to be a challenge. BridgeIT guarantees the televisions for up to one year, and is working with schools to budget funds for continual maintenance and repair.

V. Recommendations

The recommendations below focus on the role of radio and other technologies in the delivery of educational content after the RISE project funding expires. A critical consideration regarding sustainability is how to continue to support the goal of the RISE activities, that is, to enable underserved children to achieve higher learning gains.

Recommendation 1 – Since radio is a successful approach to providing quality educational content, RISE should seek ways to continue program delivery via radio broadcasts.

In the Mainland, RISE has attempted to secure airtime from community and national radio stations, but broadcast fees are prohibitive. Therefore, RISE should work with the MoEVT to ensure the

delivery of the *Mambo Elimu* series within the package of primary education radio programs that are broadcast without charge by TBC. The reasons are:

- (a) as a MoEVT program, *Mambo Elimu* has a strong chance of being broadcast for free under the TBC agreement; and
- (b) *Mambo Elimu* may only have a remaining shelf life of about two years before significant changes are required, so even a short-term arrangement is desirable.

It is also useful to point out that EDC has already reduced *Mambo Elimu*'s capital costs by continuing broadcasts with USAID funding after funding by the US Department of Labor ended in 2006.

Points to bring up with the MoEVT in facilitating communication between MoEVT departments include:

- *Mambo Elimu* is a MoEVT program.
- The MEU indicated the possibility of using *Mambo Elimu* for the Mpango kwa Elimu Maalum kwa Watoto waliokosa (MEMKWA) students (out-of-school youth in primary schools) since it currently does not have any radio programs to target these students.
- In 2007, the RISE Radio Producer and Training Specialist edited the *Mambo Elimu* programs per TBC and MoEVT/TIE specifications to reflect consistency with MoEVT programs. RISE project staff can provide data from its frequent monitoring visits to show that *Mambo Elimu* continues to provide relevant and high quality education.
- In addition, any new audio programming developed to support teachers and students in Mainland Tanzania would require high broadcast fees or partnerships sanctioned by the MoEVT, the latter being a preferred option. Another viable alternative is PMP technologies with reliable technical support available (see #2 below).

In Zanzibar, RISE has invested heavily in design and production costs for a relatively new IRI program that was developed in sequence with the MoEVT's new primary education curriculum. To maximize the initial capital investment over a longer period and larger audience, RISE should continue to work with the MoEVT and VOTZ to secure at minimum, a three-to-five year commitment for continued free broadcasting.

Recommendation 2 – Since PMPs provide the most isolated communities with access to quality education, RISE should secure the financial and technical support required to support continued PMP use.

Minimally, this investment could be sustained by providing ongoing support for PMP maintenance and repair to the MECLCs supported by RISE, especially since the upfront costs have been made to provide the PMP system, mentor training and related materials. Additional funds could keep the PMPs functional for several years before they would need to be replaced. RISE should continue to work with districts to budget funds for maintenance and repair costs; and seek private sector partners who would be willing to provide technical support (i.e., labor and parts for iPod repair; training and support to district-level technical advisor).

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