The Role of Vernacular Radio in Climate Change Information Dissemination in Semi-Arid Areas in Kenya

Ndavula John O. [1]*, Lungahi G. Esther* [2] [1]*St. Paul's University*
[2]*Hivos Making all Voices Count*

Abstract

Frequent exposure to climate change makes the livelihoods of communities living in arid and semi-arid environments in Kenya vulnerable. These communities need access to climate information and support services, especially in their own language, to build their adaptive capacities. Vernacular radio stations, therefore, are critical in disseminating climate change information which helps communities to make informed decisions about climate change interventions. The study reviews factors that influence uptake of vernacular radio as channels of delivering climate information and support services. The study examines existing approaches of information dissemination in Township and Barwago wards in Wajir East Constituency of Wajir County by pastoralists and small-scale farmers. The study was guided by the technology acceptance model and adopted the case study research design. The study used purposive sampling technique to select 310 pastoralists, farmers and stakeholders working on climate change adaptation and resilience building in Wajir East Constituency. Questionnaires and key informant interviews were the main sources of primary data employed. Data was analysed using descriptive and inferential statistics. Findings indicate that the community relies on the vernacular radio station to access and use information on climate change advisories that has helped them make informed decisions on alternative livelihood options and adapt to extreme climatic stress. The study concludes that vernacular radio remains a powerful, accessible and affordable media for reaching large numbers of people in isolated areas. Even far remote villages in Wajir East Constituency have access to vernacular radio that build on the prevalent oral tradition in the region. The findings are useful to the government and development practitioners working with pastoralists and rural farmers to build resilience communities.

Key Words: Climate Change, Vernacular Radio, Information, Resilience, Communities
Introduction

This paper examines factors influencing uptake of vernacular radio as channels of delivering climate information and support services in Wajir East Constituency as a means of building resilience of vulnerable communities. In general, radio is the most accessible medium of communication in Kenya. According the Kenya Audience Research Foundation (KARF) report (2011), 95 percent of Kenyans regularly listen to the radio. According to the Communications Authority of Kenya (CA), there are over 30 stations broadcasting in languages other than English and Kiswahili. The Media Council of Kenya estimates that vernacular stations command 42 percent of the total radio market share (Media Council Annual Report, 2014). The majority of these stations are privately owned while others are either state-run or community based local language stations. The vernacular radios are especially popular in rural areas, with a majority of listeners being older than 30 years (KARF, 2011). Ozwa (1997) notes that vernacular radio has the potential to reach illiterate rural communities in the language they understand.

Radio has played significant role across Africa and other parts of the world in effective information dissemination. Countries like Rwanda and Burundi that have particularly used radio during violence and war to „shoot" persuasive messages to their audiences (Thompson, 2007). According to Kar (2010), community radio stations have enhanced women empowerment in India. A study carried out by Ariyo et al. (2013) on the role of mass media in the dissemination of agricultural technologies among Farmers in Kaduna North Local Government, Area of Kaduna State revealed that radio was the most accessible and also the major source of agricultural technologies to the farmers.

Although Nazari et al. (2010) indicate that most radio stations lack accurate statistics regarding the nature and composition of their audiences, in Wajir East vernacular radio stations predominantly reach pastoralist communities. According to the Kenya National Bureau of Statistics (KNBS) and Society for International Development 2013, illiteracy levels in Wajir County stand at 76 percent. Majority of the people practice nomadic pastoralism where the large portion of the land is used as grazing zones (Behnke, 1994). There are however few farmers who are practising small scale farming. For communities

living in arid and semi-arid environments, their livelihoods are particularly vulnerable due to frequent exposure to climate change impacts.

A study conducted by Little et al. (2008) in Kenya showed that, in 80 percent of pastoralist households, those that practiced mobility were generally better-off (less likely to lose their livestock assets and become food insecure) than those who had fewer animals and were sedentary. Pastoralists are experiencing rapid changes in their environment due to the changing climate, thus need to access information that can be useful and help them make informed decision in building their resilience. The mobility nature of pastoralists makes it harder to disseminate information to them. Therefore, vernacular radio is essential in reaching the wide audience.

Climate variability and change are bringing new and increasing risks and uncertainty about the future (UNFCCC, 2007). In Kenya, the impacts of climate change are already being felt in arid and semi- arid areas. This has made it difficult for the vulnerable communities to achieve productive and secure livelihoods. Lack of access to climate information and support services makes the poor more vulnerable to climatic shocks and unable to build resilience due to increasing uncertainty.

Climate information packaging and dissemination is crucial in helping communities make informed decision in adapting to shocks when they occur, however, a lot of information is stored in shelves and offices. Climate information is most useful when it is produced and shared in a manner that the target audience can understand. Tools used to disseminate climate change information need to be accessible, effective, timely and in a language that can be understood.

These communities, where a majority do not have formal education, need to access climate information and support services in order to build their adaptive capacity in a language they can understand. The language and channel through which communication is done are essential factors that make climate information useable. Ability to use climate information may vary significantly due to levels of literacy and social roles of people in a community. Repackaging and simplifying climate information tailored to specific users" is indispensable. Lack of market information represents a significant hindrance to market access especially for

smallholder farmers in Kenya (Mukhebi et al., 2007).

Wolff (2006) observes that, communication between human beings is almost "exclusively verbal". The use of language in communication is, therefore, both significant and inevitable. Barriers to effective communication may result in failure of the communication process (Russell, 2012). Language is one of such barrier to communication and failure to understand the background of the audience in relation to language used may render communication approaches used ineffective. The failure to conclusively deal with language problems of Africa is attributed to Africa"s multilingualism Heine and Nurse (2001). Webb and Kembo-Sure (2000) noted that the problems which are language based are not necessarily language problems but have roots in other spheres of life such as education, the economy, politics and social life.

According to Shitemi (2012), policy remains silent on the various indigenous languages although they are utilized and developed informally at the grassroots. The efforts by the government of Kenya to legislate the identity, roles and functions of official language, national language, parliamentary language(s), other (indigenous)Kenyan languages, sign language and Braille in order to actualize the linguistic rights of all citizens in spite of their dispositions, observes Shitemi, "have remained stillborn.

Language is a critical component in information dissemination. Therefore, dissemination of required climate information through vernacular radio stations would increase access and reach to vulnerable communities. Thus, there is need to assess importance of language used in packaging of information to target audiences.

Gathigi (2009) highlights that rural communities prefer vernacular radio and ranked them as the most important and accessible medium. He further states that the rise of vernacular radio stations has provided access to broadcasting in various local languages which allows for diverse content to a wide section of the population. Vernacular radio stations demonstrate sensitivity to the needs of rural audiences and have a higher acceptance. Vulnerable communities should therefore benefit from this tremendous growth in the sector.

Access to information on climate change and support services for building resilience among pastoralists and farmers is critical. Real-time meteorological content such as weather forecasts are highly perishable and must be disseminated rapidly in the most efficient way to be of any use. Vernacular radios come in handy to address the existing dissemination gap.

However, they are not well utilised thus communities still struggle to get relevant information to enable them make informed decision. Thus, the purpose of this research was, therefore, to ascertain the uptake of vernacular radio service to access climate information and support services by pastoralists and small-scale farmers in Wajir East Constituency in Kenya.

2.0 Theoretical review

We based this study on Technology Acceptance Model (TAM) to examine factors that influence uptake of vernacular radio service in Wajir East Constituency. The essence of any innovation is to provide a platform for which intended target users can use it effectively to enhance their work. Technology Acceptance Model (TAM) was initially proposed by Davis (1989). It is an information systems theory that models how users come to accept and use a technology. The model suggests that when users are presented with a new technology, a number of factors influence their decision about how and when they will use it, notably: Perceived Usefulness (PU) which is the degree to which a person believes that using a particular system would enhance his or her job performance for example through working more quickly, increased productivity, effectiveness and making the job easier.

Perceived Ease-Of-Use (PEOU) is the degree to which a person believes that using a particular system would be free from effort for example easy to learn, clear and understandable and easy to remember. The attitude toward adoption will decide about the adopter's positive or negative behaviour in the future concerning new technology. People who perceive technology as useful and easy to use will accept it more readily than those who do not, with usefulness more important than ease of use.
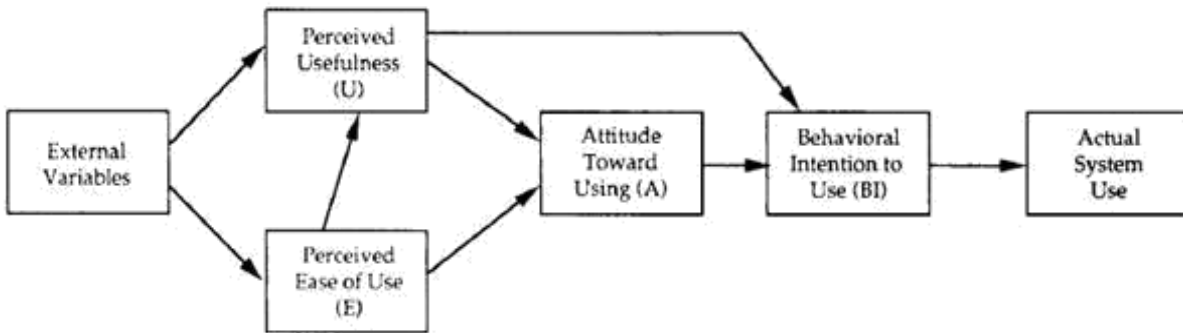
Figure 1: Technology Acceptance Model (Source: Bagozzi & Warshaw, 1989).

In the above diagram, both (U) and (E) are specific perceptions and are anchored to specific beliefs users hold about the system. According to TAM, they have a significant impact on a user's attitude toward using the system (A), defined as feelings of favourableness or unfavourableness toward the system. Behavioural intentions to use the system (BI) are modelled as a function of A and U. BI then determines actual use. Research has consistently shown that BI is the strongest predictor of actual use (Davis et al 1989). Understanding the factors that influence user acceptance of information technology is key to any technology developers or organisation championing the innovation. For example, using vernacular radio service to access climate information support services and finding the information useful is important in adoption.

Lack of user acceptance is a significant impediment to the success of new information systems. In fact, users are often unwilling to use information systems which, if used, would result in impressive performance gains (Henderson, 1988). TAM attempts not only for prediction but also for explanation to help researchers and practitioners identify why a particular system may be unacceptable and pursue appropriate steps thus this model was very useful in determining factors that led to the acceptance or rejection of the vernacular radio.

3.0 Research methodology

This study adopts case study design. This is an in-depth investigation of an individual, group, institution or phenomenon. It is the best research design when a researcher intends to determine factors and relations among factors that have resulted in the behaviour under study (Mugenda & Mugenda, 2003).

We conducted this study in Township and Barwago wards in Wajir East Constituency in

Wajir County, in Kenya. An area predominately occupied by a Somali community with the Ajuran and Matan sub-clans well-represented. The constituency occupies an area of 99.80 km^2 with a population approximated at 59419 persons who mainly depend on pastoralism and small-scale farming for their livelihoods. The study‟s target population was the 310 households in Township and Barwago wards. This population received radio programmes from private vernacular radio stations broadcasting in Somali language.

We developed structured interview schedules and questionnaires to enable ask each respondent the same questions in the same way and ensure a way of collecting high quality data. One of the key informant interview schedules was for collection of data from the person in charge of programmes in the vernacular radio stations while the other one was for collection data from the sampled small-scale farmers, pastoralists, stakeholders working on building resilience and Kenya Meteorological department. We administered a pilot test of the interview schedules and questionnaires to measure the pertinence of the tool; validate it; measure the approach and the understanding of the questions and verify the conformity of the answers with the expected results. A reliability coefficient of 0.77 was realised after analysis which was above the 0.7 recommended by Frankel and Wallen (2000). We selected individual participants who were most likely to contribute appropriate data, both in terms of relevance and depth. For example, we identified farmers and pastoralists who are using the vernacular radio services to determine factors that influence acceptance; pastoralists and farmers who would wish to use the vernacular radio but don‟t own or have access. This was useful in determining other factors that hinder usage.

We adjusted the instruments accordingly and pre-tested again to increase reliability. We administered questionnaires to 310 respondents. Small scale farmers and pastoralists were not proficient in English; we conducted the interviews with the help of a trained local interpreter. We also gathered data through conducting in-depth interviews and focus group discussions with four stakeholders, one staff from Kenya meteorology department and two government agriculture officers and livestock extension workers in Wajir East Constituency. This was useful in understanding context and real issues that affect pastoralism and small-scale farmers in accessing information. We used reports on radio programmes schedules and statistics of the radio coverage as secondary data. We analysed data by descriptive statistics and the hypothesis tested using chi-square; and inference at 5 percent level of significance.

4.0 Research and discussions

Demographic information of respondents

We issued a total of 310 questionnaires which were all returned giving a response rate of 100 percent that was deemed sufficient for data analysis. We took the responses to be true representation of the respondents" views due to the independence of the questionnaire method of data collection. We sought to find out the demographic information of the respondents respective of their gender, age, academic qualifications, occupation and access to radio. The purpose of this information was to establish the general characteristics of the respondents in the constituency and their understanding of the use of vernacular radio in disseminating climate information.

Distribution of respondents by gender

Using questionnaires, we asked the respondents to indicate their gender. The majority, 55 percent of the pastoralists and farmers were male while the females represented 45 percent. This could be attributed to the fact that in the African culture, the man is seen as the head of household and therefore seen as the spokesperson for the family. Whenever information is sought about households, it is usually the man"s opinion that is sought except when he has delegated or is not within the home. This finding implied that the responses sought from the respondents accommodated views from both genders giving the research more validity for generalization.

Distribution of respondents by age

Using questionnaires, we asked respondents to indicate their age to determine the distribution of community members who practice pastoralism and farming. 78 percent of the respondents who practice pastoralism and farming were above 45 years of age while 22 percent were below 35 years of age. This finding implied that majority of people who practice pastoralism and farming are elderly. This finding suggested that youths prefer to engage in other income generating activities other than pastoralism and farming or have left to the cities in search of greener pastures. This could impact on their usage of technology, especially given the fact that technology changes fast and is very popular amongst the younger generations especially

the youth (those aged between 18 and 35 years of age). The fact that most of the pastoralists and farmers in the area are advanced in age makes vernacular radio the best medium for dissemination of information.

Distribution of respondents by occupation

To determine the livelihood of the community members, we asked respondents to indicate their occupation. Findings showed that 82 percent of the respondents were pastoralists while 18 per cent were farmers, thus majority of them are nomadic and require a medium that can be used to reach them even while on transit with the animals. The fact that radio is portable and has better network signal compared to other ICTs like mobile phone make it the best option since pastoralists can move with the radio and access information wherever they are.

Community literacy

Using questionnaires, we asked the respondents to indicate their level of education to determine the levels of literacy among the community members. Findings indicated that those without formal schooling were 71 percent of the pastoralists and farmers who used vernacular radio stations which could be a hindrance to their uptake of emerging technologies that require some form of basic education. However, it was observed that 29 percent of those who used vernacular radio had little education which varied between O-level and university degree. Education might be a hindrance to the use of other emerging technologies like ICTs thus vernacular radio stations would be appropriate in this case.

The level of education of the extension officers, staff from vernacular radio stations, staff from stakeholders on climate change and Kenya meteorology was university degree suggesting that they can repackage information in English, simplified into local languages and use vernacular radio stations to disseminate to the pastoralists and farmers in the area.

Access to radio

One of the factors influencing the uptake of vernacular radio station was access to radio because it is a basic requirement for the access to the service. Distribution is as shown in

Figure 2.
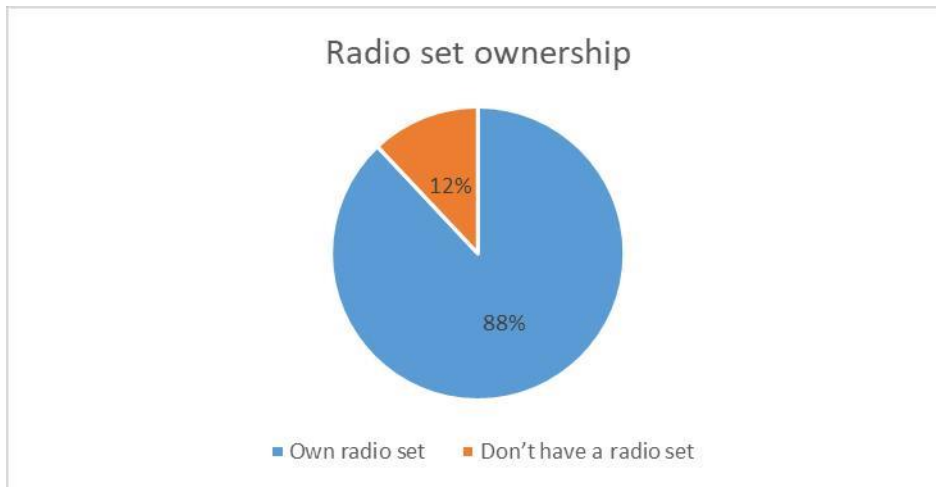
Figure 2: Radio set ownership

Using questionnaires, we asked the respondents to indicate how they access and use vernacular radios to determine ownership of radio sets. Findings show that majority (88 percent) of respondents own radio sets while few (22 percent) of them do not own radio sets but access the radio services through neighbours, friends or at social centres. Those who do not own radio sets indicated that the cost of purchase and maintenance is high. We interviewed Fatuma Osman a pastoralist in Wajir County on 2nd February 2017 who stated, "Although I rely on radio to access information, I don"t own a radio set because I can"t afford to purchase and maintain it. The effects of climate change have destroyed our livelihood thus the little income I get, is for food."

This points to the need to subsidize radio sets to increase affordability since it"s the most reliable tool for information access.

Information systems

To determine the sources of climate information and support services within the community, we asked respondents about their sources of information and support services. The purpose of this information was to establish the main sources of climate information and support services. Their distribution was as shown in Figure 3. Findings show that majority (41 percent) of respondent rely on vernacular radio station to access weather and climate information. This might be due to the literacy level of the community and oral nature of the

Somali culture, thus prefer to receive information in their own language. Interviews with radio programmers and other key stakeholders revealed that there are six vernacular radio stations in Wajir and three radio stations that broadcast in English and Kiswahili. We interviewed Diyad Hujale, a Programme Manager with Mercy Corps Kenya on 30th January 2017 who stated, „„From our experience as an organisation working in Wajir, community members heavily rely on vernacular radio stations for information because of their literacy level and their nomadic way of life. We use vernacular radio stations to disseminate information on climate change to reach majority of the residents in the county.‟‟ Although community members also get information from opinion leaders, traditional forecasters, and seers among others, the nomadic life and the vastness of the area, makes the vernacular radio services the most useful tool.
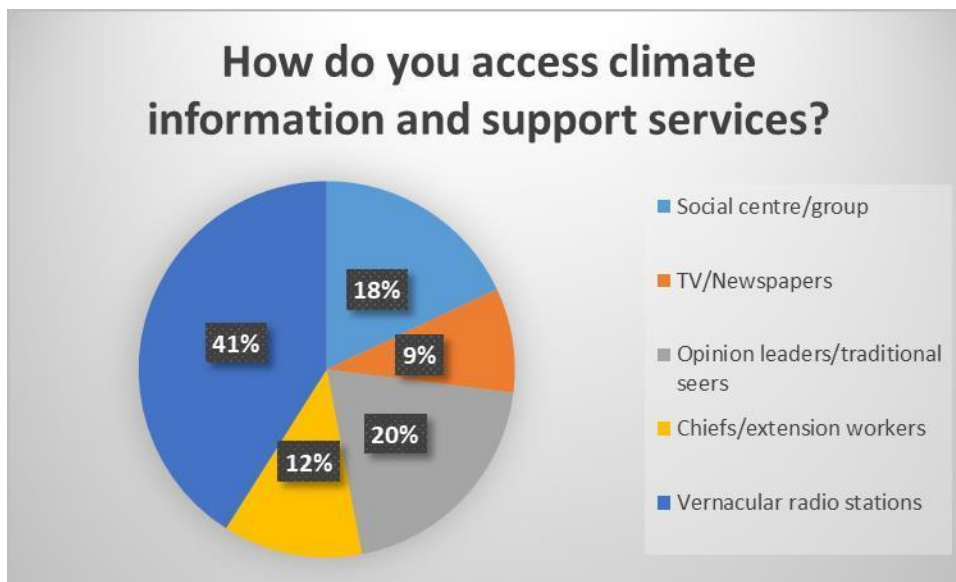

Figure 3: Information systems

Content on vernacular radio stations

Using questionnaires, we asked respondents to list the type of information accessed through the vernacular radio stations to determine the type of content accessed. As shown in Figure 4, majority (43 percent) of vernacular radio usage is on religious content. We interviewed Yusuf Abdi, a resident of Wajir County on 1st February 2017, who stated, "A majority of us are Muslim. We receive our religious teachings on radio and that‟s why we find radio very useful." Although the community uses vernacular radio stations to access climate information

and support services, there probably could be barriers that exist on accessing the products portfolio. Some of the barriers include timelines of weather information content or inadequate content that is not credible enough to attract them into the service. We interviewed Ahmed Salat Ali, a radio presenter at Wajir Community Radio, who revealed that some of the climate change actors have introduced radio programs on building resilience, however, the programmes not sustainable due to financial resources. Ahmed further stated, "Although we air programmes on climate change, most often we lack access to simplified content and organisations lack resources to sustain a programme for more than three months." There is need to further examine what makes content on religion popular to inform strategies for improving access to climate information and support services.
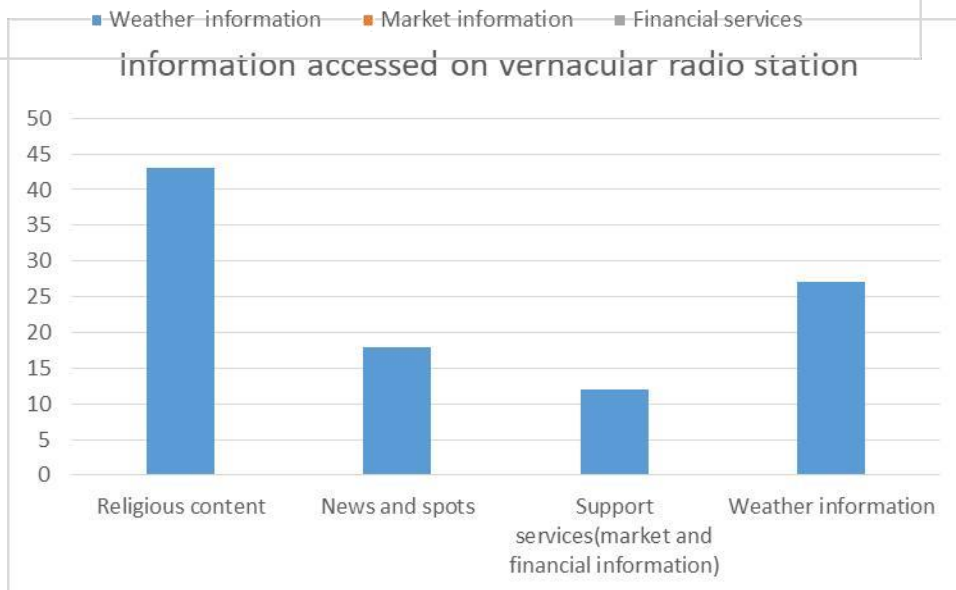

Figure 4: Information access on vernacular radio stations

Usefulness and quality of information on vernacular radio stations

Using questionnaires, we asked respondents what content on climate information and support services is useful on vernacular radio stations. Findings indicated that 40 percent of pastoralists and farmers found the weather information useful, 36 percent found information on markets useful while 24 percent found information on financial services useful as shown in Figure 5.

Figure 5: Content used on vernacular radio

We interviewed Amina Abdi, a resident of Wajir County on 10th January 2017, who stated, „„"I am always interested in weather information because it will enable me plan for extreme weather. We have lost our livelihood in the past due to lack of information on changes in climate." These findings suggest that community members listen to radio in order to obtain climate change information that will in turn build their resilience to climate change.

Significance of information on vernacular radio

Using questionnaires, we asked respondents to rate the value of content received on climate information and support services. 27 percent said that the information accessed was very useful, 50 percent rated the information averagely while 23 percent felt the information was not useful (see Figure 6). Guyo Hario, a resident of Wajir County whom we interviewed on 2nd February 2017 stated: "The information we get on weather is not accurate, sometimes they predict rainfall which doesn"t happen. We need information that is useful to us and in a timely manner. For example, we need to be alerted when severe drought can occur to help us make informed decisions about our livestock."

These findings indicate that most content produced does not meet the community information needs or is not disseminated early enough to enable community make informed decisions. The findings also suggest that there are areas that required improvements to which investigations were necessary in order to satisfy information needs of the community. Findings from key informants also revealed that most of the vernacular radio station lack resources to invest heavily on content and some face frequent blackouts due to lack of backups thus sometimes are off air when the information is needed most. Although Kenya

Meteorology department-climate information services use Radio and Internet (RANET) services to reach wider community in other counties, investments in Wajir is still low.
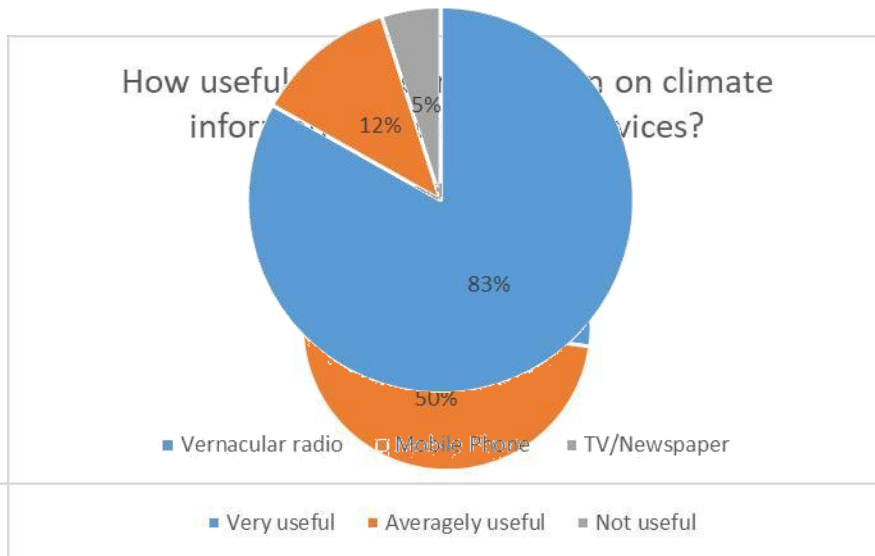

Figure 6: Usefulness of information on vernacular radio

Communication channel preference

Using questionnaires, we asked the respondents to select the preferred communication channels in accessing climate information and support services. As indicated in Figure 7, majority (83 percent) of respondents prefer vernacular radio stations to other channel of information. We interviewed Mohammed Ali a resident of Wajir County on 15th of January 2017 who stated,

"Mobile phones require a form of basic training in order for one to use it. I find vernacular radio stations easy to follow because they use my mother tongue." The findings suggest that majority of residents use vernacular radio largely because they use the local language, their affordability and accessibility.

Figure 7: Preferred communication channel

Information needs

Using questionnaires, we asked the respondents their information needs to determine the type of climate change information and support services the community members need. It was established that the pastoralists and agropastoralists in the Barwaqo and Township wards wished to access; weather alerts, market prices and buyers, weather forecast, access to financial services like loans, insurance and the extension information for both livestock and farming.

However, we needed to look into the relevance, accuracy timeliness, productiveness, frequency, effectiveness and efficiency of the information relayed to them. We interviewed Halima Kahiya, a Wajir Community Radio Station Managing Director, who revealed that it has been difficult to get simplified climate information, making it strenuous to repackage it into the local language for transmission. She further stated, „„Our main challenge as vernacular radio stations is getting simplified and relevant weather information and support services in a timely manner in order to disseminate it to our audiences." This challenge could be attributed to the lack of resources and know how by both the development actors who use radio in disseminating climate change content and radio stations which need to institute proper climate change content gathering mechanisms.

5.0 Conclusion

Following discussions based on the findings four key conclusions were drawn and recommendations provided as below:

Access to vernacular radio stations

Access to knowledge is crucial if pastoralists and farmers are to build resilience in a sustainable way. Radio service is the most reliable and fastest means of disseminating information. Nyerere

(1967) stated that, "While other countries in the world aim to reach the moon, we must aim for the time being at any rate to reach the villages by providing them with necessary information. It has been observed that having access to the right information can address major problems that hinder rural community development and it can also improve livelihoods. When the rural farmers lack access to knowledge and information that would help them achieve maximum agricultural yield, they are driven to the urban centres in search of formal employment, as the only option for survival (Munyua, 2000).

The cost of communication gadgets in Kenya remains high. This hampers information dissemination to many Kenyans. Investors on ICT should look at reduction of costs in accessing radio sets especially solar sets that would be more sustainable. Lack of access to adequate and right information at the right time undermines the efforts of improving the living conditions of rural communities.

Radio is a necessity tool to farmers in rural areas. Such gadgets should be subsidised by the government or development partners so that farmers are able to afford and use them to access information to enable them improve their income levels and living conditions.

Climate information services

With uncertainty in climate change, pastoralists and agropastoralists do not require just any kind of information, the information has to be relevant, reliable, timely, and in the language preferred by the farmers. Knowledge brokers who facilitate the transfer and exchange of information to support pastoralists and small-scale farmers in decision making processes in many cases provide information that does not match their needs and is in a format that is not friendly to them. This leads to barriers in usage of such information that could be useful elsewhere. Kenya meteorology department should invest in interactive radio programming to simplify climate jargon and provide weather advisories that would be helpful to the pastoralists and farmers including, how to understand probabilities and uncertainties of forecasts. Additionally, government should consider providing tailored content on relevant

information on farming and pastoralism. Additionally, investments should be made on content provision and programming and repackaging into vernacular languages.

There is need to do periodic needs assessment by information providers in order for them to provide timely and relevant information to improved production. The department of agriculture and livestock should put a mechanism of ensuring that extension services provided by any entity should be in the right format and language that can support informed decision making. Long-term resilient development will depend on climate information services that are accessible and relevant to those who need it.

Partnerships among climate information providers

In terms of delivery of relevant, timely, well-adapted and adequate information, there is certainly a big gap in most rural areas. The responsibility lies on both the national and county governments to moderate entities that provide climate information so that farmers and pastoralists access usable information in friendly formats. They should provide checks and balances to regulate the information that could end up confusing farmers and pastoralists and encourage partnerships.

6.0 Recommendations

Vernacular radio is essential to pastoralists and farmers in rural areas. Such gadgets should be subsidised by the government or development practitioners so that farmers are able to afford and use them to access climate information and support services to increase their productivity and income levels. Providers of agriculture and livestock extension information should conduct periodic needs assessment in order for them to provide timely and relevant information in the right format and language. There should be a regulatory unit in charge of extension agriculture and livestock that should monitor and moderate entities that provide climate information that is usable. There is need for the government to come up with a comprehensive language policy document that governs the preservation and modernisation of vernacular languages. This is to ensure that no citizen is denied political participation and opportunities for socio-economic development. The state should also institute moderating and promotion of incentives for vernacular radio stations airing climate change adaptation and resilience building oriented content. Government should consider investing in these radio

stations to achieve the developmental benchmarks enumerated in the vision 2030. Based on the findings, further research should be conducted to investigate the role of other sources of climate information to find out the market share and the influence they have.

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19

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