sustainability

MDPI

Article

Beyond the Right of Access: A Critique of the Legalist Approach to Dissemination of Climate Change Information in Kenya

Joe Ageyo [1,*] and Idah Gatwiri Muchunku [2]

[1] Royal Media Services, P.O. BOX 7468, Nairobi 00300, Kenya
[2] Faculty of Media and Communication, Multimedia University of Kenya, P.O. Box 15653, Nairobi 00503, Kenya; idahmwenda@gmail.com or imuchunku@mku.ac.ke
* Correspondence: jageyo@gmail.com or joe.ageyo@royalmedia.co.ke

Received: 4 December 2019; Accepted: 19 January 2020; Published: 24 March 2020

Abstract: Kenya has strengthened its climate change governance by developing national level instruments. Principle 10 of the Rio Declaration requires countries to ensure that each individual has appropriate access to public environmental information. Kenya has anchored the right to information in its constitution and the 2016 Access to Information Act. However, this legalist approach has left a translation gap since climate change information is availed in a form and language that is largely inaccessible to the public. To address the gap, this study reviewed the effectiveness of dissemination and access to climate change information among Kenyans as a measure of the country's fidelity to the decisions of the United Nations Framework Convention on Climate Change and other Multilateral Environmental Agreements, to which it is party. The study, guided by the diffusion of innovations theoretical framework and the encoding/decoding model, adopted a qualitative research design. Desk research and in-depth interviews were used to collect data. Results revealed that the current dissemination practices of climate change information in Kenya were not effectively reaching grassroots communities due to socio-economic and language barriers. The study recommends repackaging the information into vernacular and non-scientific narratives that resonate with the daily experiences of local Kenyan communities.

Keywords: climate change governance; dissemination of climate change information; right of access to climate change information; environmental communication

1. Introduction

Kenya, like many developing countries, has relatively insignificant carbon emissions and has hardly contributed to the climate change being experienced in the world. Nevertheless, the country is very vulnerable to the aftermaths of climate change, and this continues to threaten its developmental milestones [1]. These adverse impacts are aggravated by the fact that the growth of Kenya's economy principally relies on sectors that are dependent on climate, such as agriculture, tourism, forestry, and fishing [2]. To respond to this threat, Kenya has in the last decade become a regional and global leader in laying out a robust regulatory framework comprising laws, policies, strategies, and institutional bodies at its two levels of governance to manage climate change issues.

The Constitution of Kenya provides the basis upon which this elaborate legal framework rests, considering that Article 10 outlines "sustainable development" as a national value and Article 42 provides for the right to a "clean and healthy environment" that should be conserved to profit not only the current but also future generations of Kenyans [3]. These articles are further clarified in the National Climate Change Framework Policy, which was laid out through Sessional Paper

Number 5 of 2016 [4] and the Climate Change Act [5], which also came into force in 2016, to create new institutional arrangements for governing climate change in the country. The Act established the National Climate Change Council, chaired by the President, and made Kenya one of only a few countries globally to attempt to directly regulate climate change. Kenya also put in place its second National Climate Change Action Plan, 2018–2022 [6], which expands on the first National Climate Change Action Plan (2013–2017) [7] and provides a framework for delivering on the country's Nationally Determined Contribution that details the actions geared toward attaining the goals of the Paris Agreement that it endorsed in December 2016. The two action plans were developed to operationalize the National Climate Change Response Strategy [8], which in 2010 became the first national planning document to acknowledge the reality of climate change in Kenya. In 2015, Kenya presented its Second National Communication to the 21st Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change [1]. This followed its Initial National Communication, which was presented at the eighth COP to the United Nations Framework Convention on Climate Change in 2002 [9]. Kenya ratified the United Nations Framework Convention on Climate Change in 1994.

These milestones in climate change governance have triggered climate change actions and projects by various national and county public and private agencies, organizations, activists as well as global partners in many parts of Kenya. Consequently, a considerable amount of climate change information that can elicit incredible adaptation actions on the ground has been generated in Kenya. What is needed is for this information to be cascaded from its custodians to the ground so that it can translate to desirable behavioral change and climate resilient actions among affected populations.

Principle 10 of the Rio Declaration adopted at the Earth Summit in 1992 requires countries to ensure that each individual has appropriate access to public environmental information [10]. The declaration urges states to make such information widely available in order to increase public awareness and involvement in decision-making. The spirit of this principle is further captured in Sustainable Development Goal 16, which focuses on the building of peaceful and inclusive societies and sets public access to information as a key target [11]. In light of these international agreements, Kenya has anchored the right to information in its constitution and has it elaborated in the Access to Information Act, Number 31 of 2016 [12]. Further, the National Climate Change Response Strategy and several other climate change governance instruments recognize the need to inform, train, and educate the public about climate change and there have been commendable efforts by various sectors toward boosting the dissemination of climate change information in Kenya [1,6–8].

However, the question remains as to whether every Kenyan is being reached with climate change information in a mode and manner that can enable informed decision making at both individual and community levels. In other words, it is one thing to have a robust legal framework in place and quite another to have life-changing, practical actions emanating from the legal provisions. Merely passing information does not guarantee its adoption (acceptance and use), and therefore, whenever communicating scientific information (such as climate change information) to lay persons, messages should be crafted in captivating and demonstrative ways [13].

It was in this regard, therefore, that this study sought to investigate Kenya's approach to sharing climate change information that appeared to be heavily driven by the need to meet legal obligations, and seemingly left a translation gap, with information being availed in a form and language that is largely inaccessible to the public. It is critical to advance the climate change rhetoric in Kenya by assessing whether the country is disseminating easily comprehensible climate change information or whether these climate change messages leave the citizenry in a further quagmire of attempting to access the inaccessible ("you get it, yet you don't get it"). As such, this study had the following two objectives: to assess the effectiveness of dissemination of climate change information by the Kenyan government to its citizenry and to examine the effectiveness of access to climate change information by the Kenyan citizenry.

2. Methodology

This qualitative study embraced desk research and in-depth interviews to collect data. A list of the documents reviewed during desk research is found in the references section of this article. For the in-depth interviews, purposive sampling was used to identify nine key informants, including a member of Kenya's National Climate Change Council, two top management staff who have worked in the Ministry of Environment and Forestry, two Governors from counties that have made commendable progress in climate change matters, an active science journalist, one prominent executive director of a climate change non-governmental organization and two ordinary citizens. A semi-structured interview guide was used to conduct face to face or telephone interviews depending on availability of interviewees. The interviews were audio-recorded, with permission of the interviewees, then later on transcribed and emerging data was analyzed using thematic narratives before triangulation with the findings of the desk research. Oriare, Okello-Orlale, and Ugangu used this methodology when they studied "The Media We Want: The Kenya Media Vulnerabilities" [14].

The study was guided by the Diffusion of Innovations Theory and the Encoding/Decoding Model of communication. According to its proponent, Everret Rodgers, diffusion of innovations advances how any new ideas or things are introduced, accepted, and used by people and why some are adopted faster than others, as well as why some people adopt them faster than others. [15]. Innovations are the basis of social change. The theory explains both diffusion and adoption of innovations as two different but interdependent processes. Whereas diffusion occurs among groups of people in a society, adoption relates to a single person; and whereas diffusion is about movement of an innovation from its originator through communication channels to its recipients, adoption is psychological and starts from the initial encounter to final acceptance of the innovation. According to the theory, it does not matter whether or not something is in fact "new," but it can be regarded as an innovation if it appears to be new to the adopter.

In this study, any climate change information that is new to any Kenyan citizen will be regarded as an innovation. Diffusion and adoption of innovation comprises various stages of adoption, types of adopters, elements of diffusion, types of innovation-decisions, rate of adoption, and factors that influence adoption [15,16]. The theory outlines the five attributes which influence the adoption of an innovation in a society as complexity, relative advantage, trialability, observability, and compatibility [16]. Further, depending on how innovative persons in a community are, they are categorized into five groups—innovators, early adopters, early majority, late majority, and laggards. The diffusion of innovations model presents communication channels, time, attitude, social systems variables and perceived characteristics of innovation as independent variables that determine whether a new innovation will be adopted or rejected.

In this study, the diffusion of innovations theory helped to understand how climate change information in Kenya is disseminated (diffused) by government and non-government agencies to the grassroots communities and in turn how this climate change information is accessed (adopted) by citizens to enable them to cope with the negative effects of climate change. To this end, the study sought to achieve its objectives by investigating the effectiveness of communication channels, methods, and modes that are used to distribute and access climate change information in Kenya.

The encoding/decoding model of communication, advanced by Stuart Hall in 1973, recognizes the complexity of the process of encoding and decoding messages by claiming that audiences interpret messages differently depending on their cultural, economic and personal frames of reference [17]. According to this model, as depicted in Figure 1 that follows, any communication goes through four stages from the time a message is encoded (production) and transmitted (circulation) to when it is decoded (consumption) and reacted upon (reproduction). How each of these four stages is managed or happens influences the impact the message will finally have on the intended audience [17].

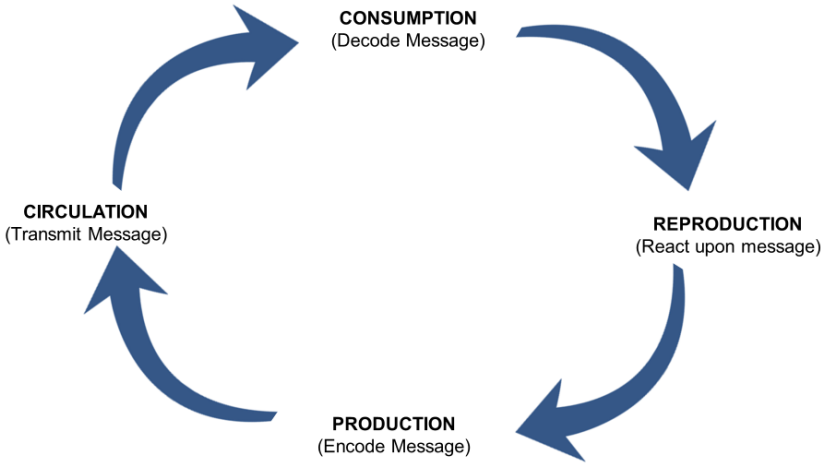

Figure 1. Four Stages of Encoding/Decoding Communication.

This model is applicable in assessing dissemination and access of climate change information because during production of a climate change message technical needs are considered but during circulation, socio-economic and language needs are considered. However, during use, the message is related to real life situations, meaning that end users interpret messages differently depending on their social, economic and political backgrounds. As such, reproduction means that the finally decoded message may differ from user to user and from the originally intended meaning. Usually, the meaning that each end user creates is what influences his/her adaptive behavior to climate change. This means that a climate message, however carefully framed during dissemination, may be interpreted differently during access and have unintended impacts. Hence, the need to monitor the final outcome of every message sent out.

3. Results

3.1. Effectiveness of Dissemination of Climate Change Information in Kenya

The Kenya government has, for about two decades, appreciated that the seriousness of climate change requires active involvement of everyone in the society because, in its Initial National Communication, it highlighted that a lot of effort needed to be put in to successfully sensitize most Kenyans about climate change [8]. Over the last two decades, studies about preparedness to deal with climate change consequences have continued to reveal low levels of awareness and deficiency of necessary information for coping among most Kenyans [18].

Therefore, when the country developed its first National Climate Change Response Strategy in 2010, it dedicated the fifth chapter of the blueprint to "Climate Change Communication, Education and Awareness," underscoring the need for increased targeted sensitization using diverse communication media to reach most citizens [8]. The first National Climate Change Action Plan (2013–2017) observed that, in spite of the generation of substantial climate change knowledge by Kenyan institutions and individuals, dissemination of this knowledge was minimal [7]. Other official government communication has continued to show inadequate diffusion and adoption of climate change information among Kenyans. Therefore, there is still a need to increase sensitization among all Kenyan people using the most accessible, current, and effective media.

3.1.1. Assessment of Levels of Awareness on Climate Change in Kenya

Scholars and institutions have assessed the level of awareness on climate change in Kenya over the years and noted that a lot more needs to be done because in spite of various efforts, the adaptive capacity of grassroots communities has continued to remain low [1,19–22]. This was echoed by one key informant who said,

"Climate change is definitely an extremely serious problem … and to some extent even countries or the continent at best are in denial. At worst, it may be lack of sensitivity to realize that this is one of the biggest problems of our times … Because of lack of focus on this, we are in a situation where we are reaping the hazards of … abuse of our climate … rains are not coming when they should … it is so hot … [we have] unexpected floods … for almost five years now, we have had very unpredictable seasons … Currently the rains have taken a long time, we don't have grass for the animals, we are having conflicts with our neighbors … leading even to deaths when we are fighting over water and pasture … So this is really a big issue!".

The acute lack of awareness is, for the most part, not the result of unwillingness of climate change policy makers and practitioners to avail climate change information. Over the years, the government has attempted to put in place systems to communicate climate change information, as confirmed by one key informant for this study who worked for the national government in Kenya when she said that,

"At the Ministry of Environment and Forestry, climate change information, is regarded as a very important product for development … there has been a lot of effort to ensure that climate change information is accessed by the public … both general and technical information is shared".

Second, the awareness is not low because of a shortage of the information, because Kenya, as articulated in this study, has numerous climate change governance documents that have huge amounts of information aimed at building the adaptive capacity of individuals and communities. At the same time, as outlined in the second National Climate Change Action Plan (2018–2022), several public and private institutions carry out research that continually generates climate change information [6]. However, lack of effective knowledge sharing with grassroots communities prevents sustained implementation of recommendations thereof and impedes continuous adaptive capacity building within the country. One key informant, who has previously worked for the national government, said,

"At the Ministry level, they don't have the structures to go up to the ground level to share the information, and the kind of information I find at the Ministry level is to do with policy, outcomes of climate change negotiations and typically I see that after any COP meeting, which is done annually, there is normally a session convened by the Ministry and all the delegates who travelled are required to come and report back … but this is mainly at policy level and high level … I mean these are things that happen at Nairobi [the Capital City of Kenya], you will not find that same information at the village … and in my view it is at the village where action takes place when it comes to application of policy".

According to the diffusion of innovations theory, disseminating an innovation to potential adopters requires that four major elements are carefully considered—rate of adoption, time, social system, and channels [16]. This study assessed the effectiveness of dissemination of climate change information in Kenya in view of these elements so as to identify possible shortcomings.

3.1.2. Assessment of Rate of Adoption, Time and Social System

Although the Kenya Climate Change Policy Framework and the Kenya Climate Change Act, both of 2016, require the mainstreaming of climate change into the planning process at the national and county levels of governance, according to the second National Climate Change Action Plan (2018–2022), only five out of 47 county governments (Garissa, Isiolo, Kitui, Makueni, and Wajir) have made meaningful strides by formulating some regulations and pieces of legislation or establishing county climate change funds [4–6]. However, two other counties—Kajiado and Vihiga—were mentioned by key informants as actively developing similar documents that they are yet to finalize. One Governor, when interviewed, said,

"As a county, we … developed regulations about … how to deal with climate change … We even put aside one percent of our development budget to deal with climate change issues. We … decided that in every department climate change was to be a cross cutting issue so that as they develop any project, they have to take into account climate change … We went … to the extent of piloting climate change committees at ward level so that the citizens themselves, apart from getting education on climate change, … started operationalizing the regulations and doing activities that would ameliorate

the effects of climate change so that like if they have a problem about water, deforestation, they will now begin together to do activities that would restore the environment with the reverse climate change effects . . . When we saw how this was effective, we . . . continued to get more wards, we have 30 wards, to have their own independent committees which can look into climate change issues . . . . We also have a Sand Authority . . . and this is established through legislation . . . We had a major problem of sand being harvested haphazardly, and as a result, the water source was being compromised . . . Through this legislation, we were . . . able to explain to the community that when this sand is preserved, it is going to be a source of water . . . [which] you will use . . . for irrigation . . . As a consequence, the same people who used to harvest the sand indiscriminately are now into agriculture that is very, very productive".

When the Governor was asked how he learnt about the national climate change policies and laws and subsequently mainstreamed them through development of his county's climate change legislations and effective community education programmes, he explained that,

"I had worked in the Ministry of Environment at a national level as a Minister and was a president of the Climate Change Convention so I had some knowledge of . . . real problems that are facing the world in terms of this particular area, and again even internationally, when one is alive to the debate, one will appreciate that this is something that can annul any development progress that you think you have . . . and particularly when you come from these arid and semi-arid areas . . . it is even more potent . . . so that is why for us it became an important area to address".

His experience, garnered from working in the Ministry of Environment and Forestry, exposed him to the technical aspects of dealing with climate change. The other counties making progress in mainstreaming climate change exhibited similar exposure of their governors in terms of academic expertise or work experience. For instance, when another Governor was interviewed about the state of climate change awareness in his county, he said,

"For me, who is an expert in this area, I keep on talking to the people about this . . . We have (local) FM radio so any time I get a chance to get to the radio, I don't miss to tell them about climate change, and also, I spend a lot of time talking on how we have to change our agricultural practices . . . We can no longer practice agriculture the way we have done traditionally".

As such, two of the seven governors who had visible adoption of innovation confirmed that they had varying degrees of technical expertise in climate change related fields. The seven governors are in the innovators and early adopters categories of diffusion of innovations, and they confirm that, as Rodgers said, innovators are required to have complex technical knowledge. Rodgers also postulates that early adopters are usually leaders in their societies, which quality these governors undoubtedly have [16].

However, although some mainstreaming of climate change issues is happening between the two layers of government in Kenya, out of 47 counties, only a handful of senior policy makers (five governors; 11%) have been sensitized enough to adopt climate change regulation and another two (4%) are giving it commendable priority. This is definitely a low rate of adoption since it means that 85% of the counties are yet to embrace the climate change innovations in the country. This adoption rate of 15 percent (11% + 4% = 15%) compares favorably with Rodgers' categorization of adopters (innovators {2.5%} plus early adopters {13.5%} equals 16%) [16].This means that, if the policy makers are not triggered enough to precipitate action, a lot less action is expected to happen among the citizenry.

Section 5 of the Climate Change Act establishes the National Climate Change Council, which is chaired by the President of Kenya. Some of the functions of the Council include "to ensure the mainstreaming of the climate change function by the national and county governments; approve and oversee implementation of the National Climate Change Action Plan; advise the national and county governments on legislative, policy and other measures necessary for climate change response; provide policy direction on research and training on climate change including on the collation and dissemination of information relating to climate change to the national and county governments, the public and other stakeholders; and administer the Climate Change Fund established under the

Act" [4]. However, the National Climate Change Council is yet to be operationalized in spite of the members having been nominated in accordance with the requirements of the Climate Change Act. This negligence at the national level, may partly explain why 85% of County governments are yet to make any visible progress in implementing articulations of the Act. One Key informant, who was a climate change practitioner leading a national wide climate change non-governmental organization, when asked about of access of the information contained in the Climate Change Act said,

"Unfortunately, we are only like 20 percent in terms of implementation of the Climate Change Act, and one of the achievements is coming up with the Climate Change Directorate which is now responsible about climate change in the Ministry of Environment and Forestry. But again, it came up with National Climate Change Council, which is chaired by the President. Unfortunately, this has never taken off, there is so much politics about it and it has never sat. So, this is a bottleneck to the permeation of this document to the public because even the second National Climate Change Action Plan is awaiting signing off by the Council which has never sat. The Climate Change Fund is to be administered by the Climate Change Council, which has never sat".

When innovative climate governance instruments are not utilized or their legal provisions not implemented, diffusion of climate change information cannot spread fast enough to reach the critical mass and trigger positive responses. The Second National Climate Change Action Plan, for instance, is a five year plan (2018–2022), and whereas 2020 should be its third year of operationalizing the National Climate Change Response Strategy, it has not yet been activated because the anchor institution, the National Climate Change Council, has yet to begin its sittings. Consequently, the diffusion of relevant climate change information through the five stages of adoption [16] is happening only slowly due to such bottlenecks at the national level.

3.1.3. Assessment of Dissemination Channels

The diffusion of innovations theory identifies mass and interpersonal media as key in communication of an innovation from the source to the receiver. In Africa, some of the most commonly used media in communicating climate change information to susceptible communities are radio, television, phones, newspapers, public meetings, *barazas*, opinion leadership, and social media [7,23]. According to Rodgers, interpersonal media are better at enhancing diffusion because they are more effective at creating or breaking strongly held personal attitudes. Interpersonal communication is more effective if it involves persons who not only have several points of commonality but also have some points of differentiation [16].

Additionally, Rodgers advances that choice of media is influenced by the five stages of diffusion of innovations and in this regard, mass media channels are more effective if used at the knowledge stage, whereas interpersonal channels are more useful at the persuasion stage of diffusion [16]. In Kenya, multiple channels are used to disseminate climate change information to the public. The suitability of the channels may vary depending on audience characteristics and type of climate change information being shared among other factors. It is therefore important to assess the suitability of some of the channels currently being used in the country.

Kenya's Climate Change Act establishes the Climate Change Directorate in the Ministry of Environment and Forestry to guide the nation on matters climate change and to centrally manage climate change information [4,24]. To perform the second role, the Directorate established the National Climate Change Resource Centre as the national depository for climate information. It currently has a special public library in Nairobi that is equipped with hard and soft information materials, including an online portal [25,26]. These resources are supposed to be accessed and used by Kenyans so as to enhance climate change awareness levels. However, the Resource Centre generally has only a few visitors owing to the fact that many Kenyans living in rural villages have little to no access to technological infrastructure such as computers, tablets or smart phones with data bundles to access the online portal. Furthermore, all the information on the portal is not only packaged in English, which is

only spoken by the educated, but often involves technical terminologies as well. In fact, when asked to describe the state of availability of climate change information in Kenya, one key informant said that,

"Sadly, I consider the availability of climate information to the public to be very weak. It is a weak state because where that information sits is not accessible to everybody. For example, Kenya has got the Climate Change Information Hub on the Internet, which is described as a one stop shop for all matters climate change, but how many people particularly those that should access that information have access to the Internet? There is also a library facility at the Kenya Meteorological Service and the National Climate Change Resource Centre . . . and the facility has been stocked with books on climate change, but I visited it last month and I found very few readers. Why? Many people do not know that it is there . . . Yes, there has been effort to make sure that climate change information is availed but the physical location is in Nairobi. We have 47 counties; what happens to those other counties?"

Another key informant when evaluating success of the Kenya Climate Change Knowledge Portal added,

"When it comes to people getting access to what is in the portal, then I think the communities might not be able to get access to the Internet and eventually to the portal and that is why different packaging of information is needed for people who are illiterate and that is what we are doing with the Kenya Meteorological Service using RANET [community radio] using local languages . . . ".

Therefore, the Resource Centre and Portal can be deemed as designed for the elite and urban Kenyans, who are hardly directly affected by climate change and who generally have a higher adaptive capacity. Kenya therefore needs to evaluate the effectiveness of the channels it uses for dissemination of climate change information against actual impact. It should embrace use of diverse channels because as one key informant further said,

"But when a book has been published . . . for example, the National Climate Change Response Strategy . . . we try to ensure that we send them out to counties so that various the counties could have that information and I have seen that it has triggered action by some of these counties like Makueni, Isiolo, having their own downscaled, tailor-made, localized, climate change laws, policies, and so on".

Indeed, the need for channel assessment even in terms of its infrastructural support for access is vital as Kenya Climate Change Working Group found out when they investigated how people living in arid and semi-arid areas of Kenya accessed climate change information [21]. To further illustrate this, when a pastoralist was interviewed and asked his source of adaptive climate change information, he said,

"As for me, I just struggle to get information myself, although the other day I heard on the television that climate change is here with us and that one ought to drill a borehole and do things like irrigation . . . they talk on TV . . . they say we should change our pastoralist habits . . . we drill boreholes . . . that information is good . . . I would like to know more about farming . . . good information indeed . . . if they would employ some members of the local community to educate the rest, because not everyone has a TV, or maybe there is no electricity . . . so . . . many are not aware . . . local public forums can also be good avenues to pass information".

It is apparent that channel effectiveness should be evaluated in view of variables such as characteristics of the target audience, socio-cultural and economic contexts as well as message type because these are the factors that influence social behavior change [23]. This is especially so in Kenya, where, according to the Kenya National Bureau of Statistics survey, 36.1% of Kenyans in 2015/16 lived below the poverty line [27]. Such persons cannot afford data charges to access the Internet. Also, although there is mobile phone adoption rate of 91% (46.9 million people) and internet connectivity penetration rate of 84% (43.3 million people) in Kenya, Google only identifies 13 million active internet users in the country [28]. Undoubtedly, the majority of these are in urban areas. Further, according to a World Bank report (2018), 25% percent of Kenyans do not have access to electricity [29]. Therefore, passing innovative climate change information through the Internet and TV to rural people who cannot afford internet connectivity or have no access to electricity is ineffective. Information given via such

media can only be useful to climate change practitioners and policy makers but not to grassroots communities, where the real action is expected.

The Communications Authority annual report rates radio as the channel with the highest penetration in Kenya and the media that is affordable to most rural folks; therefore, more climate change information should be disseminated through this means. However, out of the over one hundred FM radio stations, there are no dedicated stations or programs dealing with climate change issues except for the five community radios owned by the Kenya Meteorological Department, known as RANET: Nganyi in Vihiga, Suswa in Narok, Budalangi in Busia, Kangema in Muranga, and Kwale in Kwale County [24]. Also, access to radio among rural folks is influenced by income levels because, as a study that involved pastoralists in northern Kenya revealed, as much as radio is the popular access media for receiving weather updates, only a few pastoralists own one [23,30].

Further, communicating the technical jargon of climate change would be more effective through the use of interpersonal media, especially face-to-face opinion leadership. This is because this method ensures personalized and close communication, and adaptive climate change information is best communicated in comprehensible and reachable ways to end users [21,22,31–33]. Renowned Kenyans, especially celebrities in media, music, arts, and sports, can make excellent opinion leaders and should therefore be enlisted in the dissemination of climate change messages to their numerous followers, who ascribe a lot of loyalty to them [19]. They can, for instance, easily reach out to and persuade the youth who comprise majority of their fans through their social media sites, word of mouth, or composing songs/plays about pertinent matters of climate change.

More importantly, comprehensive partnerships are required to increase understandability and adoption of messages by end users [6]. Key informants confirmed usefulness of using partnerships, multiplicity of channels and the richness of interpersonal communication methods in attaining persuasion. One said,

"We pass the information through the radio, through our administration, county administration … through the Climate Change Committees … because of the people wondering why certain things are happening which never used to happen, and then being explained that this is because of climate change … [and through] repetition by our workers from the department and our administrators, with the help of the National Drought Management Authority … and … the meteorological department so that through partnership there is information from the national level which comes to us … and in turn, we make it our business to get it to the grassroots".

Another said, "We are using extension officers," and when asked to explain why he opted to use agricultural extension officers to disseminate climate change information, he said,

"Because extension officers are with the farmers on a daily basis … In my case every ward has about two or three extension officers. They reside in the wards. They talk to the farmers on a daily basis. They have what we call contact farmers … who they use to illustrate best practices of farming … . When the chiefs have *barazas* [local public forums] they go there and tell people about agronomical practices that people need to do. During *matangas* [funerals], they go because there is always a guarantee that people are in *matangas* … and talk to them … Once in a while, they produce fliers, but normally, we produce fliers when there is outbreak of diseases".

Indeed, to achieve both depth and breath, it is recommended that one uses diverse channels to disseminate climate change information e.g., giving audiences at face-to-face events the short videos to share with their social networks or combining face-to-face engagements in smaller groups with digital outreach via larger television or radio broadcasts [34].

Therefore, effective dissemination is deeper than just passing information to end users because what is important is not just passing of information but rather sharing it in ways that the recipients can understand, resonate with and make use of. This makes the question of accessibility of disseminated information very critical and hence the second objective of this study.

3.2. Effectiveness of Access to Disseminated Climate Change Information

The IPCC points out that knowledge generated through research does not often result in the anticipated behavior change in the target group because of social, cultural, psychological, physiological, and financial barriers [35]. According to the diffusion of innovation theory, complexity, compatibility, and heterophily influence the adoption and use of an innovation [16]. The simplicity and appropriateness with which information is packaged and disseminated to people and how this information fits with the value system of the recipients determines its acceptance and use [36]. These barriers point out to the need to evaluate effectiveness of access to disseminated climate change information because circulation does not necessarily mean accessibility. According to the encoding/decoding model, during "use," recipients interpret information "as per their socio-economic and political backgrounds," which means that one message can be understood very differently by each member of the audience and as such has a very different final impact [17].

3.2.1. Assessment of Complexity and Compatibility Barriers to Access

Communicating about climate change has its own unique challenges spanning from cutting through scientific jargon in order to represent climate impacts simply and faithfully to opening up conversations about climate solutions that are inclusive and accessible [34]. One key informant resonated with this fact when he said that,

"Climate change information should be the right information and given by the right and qualified people who have done a beautiful and a good job in putting that information together and … relate it in the way it affects people socially, economically, and even politically".

This is why Kenya's Public Awareness and Communication Strategy was developed to provide a systematic way of producing, managing and sharing clear yet simple and up-to-date climate change information to reach most Kenyans and thereby enhance awareness and boost adaptive capacity [1]. Climate change information can be technical in nature and therefore needs to be disseminated in simplified forms that a majority of its recipients would understand. Climate change jargon needs to be broken into simple, everyday language and repackaged into simpler modes such as illustrated printouts that even scientists can synthesize easily [34]. One key informant observed that,

"When talking about climate change, there is a lot of jargon that is thrown to the general public and when you use jargon, you lose them … so we need to unpack this language of climate change into a simpler language … that can permeate into the general public more easily".

Another key informant noted that,

"The problem with most of us technocrats, we use very heavy language, but climate change adaptation simply means showing someone to do something that they have been doing differently because the seasons have changed … So it is the language … When you say the seasons are changing, the droughts are becoming more intense and frequent … they are aware … so how do we need to adjust because adaptation is about adjustment with the changing climate?".

This explains why the Government of Kenya identifies the "lack of clear, simple and relevant climate change information" as a key hindrance to effective management of climate change [1]. Practitioners in developing countries are encouraged to use simple words, as opposed to complex ones, when communicating climate change information for adaptation if they are to be effective [37]. The National Climate Change Response Strategy and the first National Climate Change Action Plan advocate for development and dissemination of climate change information in vernacular so as to benefit remote local publics and as a result increase their adaptive capacities [7,8]. This agrees with Elia, who advised that climate change information disseminated to farmers should to be packaged into simple and understandable messages and disseminated through user-friendly channels to rural folks who are mostly illiterate or semi-literate [36].

3.2.2. Assessment of Language Barriers to Access

According to Kenya Climate Change Working Group, adoption of climate change information is obstructed by language challenges, inappropriate forms of communication and poor repackaging of messages [21]. When investigating "proper dissemination of information on climate change: a comparative study of the roles of official and indigenous language in Nigeria, Mbah and Ayegba," concluded that dissemination of information on climate change in Nigeria, especially to those who are illiterate, should be done in indigenous languages rather than official language so that they will be properly aware of their vulnerability to this environmental scourge and know how to manage it [38].

The Government of Kenya observed that one of the challenges limiting access of climate change information included high illiteracy levels within communities [1]. Despite major increases in enrolment in educational institutions at all levels following launch of free universal primary education programme in 2002, a survey by Synovate Ipsos in 2017 showed that more than 44% of Kenyans have primary school level education and below [39]. Nevertheless, when interviewed, key informants noted that in Kenya the language in which climate change information is shared is mostly English:

"In English, and Kiswahili as well . . . but I find it more in English than any other language . . . of course, our rural radios are free to also air the information".

When interviewed, one key informant, a Science Journalist, elaborated this further by arguing that access of climate change information should be viewed from three angles:

"Number one is the access to that information itself. That is where that information is, where the information is stored and who are the target audience for that information and how easy is it for them to access that information from where it is stored . . . That is one fundamental point . . . I would say this is not well done in the context of Kenya. Number two, the other level of accessibility is that information itself: how accessible is the information itself to the people who want to use that information especially if they are not people who do research, who have studied this thing . . . You may have the information but you cannot access it because of the technicality that is contained in that information, in terms of language, in terms of arrangement of points, and also in terms of the easy understandable way it is put. So that's another way that accessibility can be interfered with negatively. The third point is the language used. Most of this information is stored in the dominant economic languages . . . . I mean languages like English . . . French or Chinese . . . So, at the end of the day, you may have it, it may be accessible, but then it is not really digestible to the people who are using that language because it is not in their own language and the fact of the matter is a foreign language cannot really resonate a hundred percent in the culture setting it has been exported to or imported to . . . ".

Access of climate change information is therefore not effective and cannot be expected to be if language barriers are not eliminated. In this regard, repackaging of climate change information into local languages and into simple, relevant and easily understood messages is what will lead to its effective adoption and use. To achieve this, audience analysis should be done, knowledge products tailored to different audience types, and multiple formats used to reach them. For instance, translating climate change information literally into different local languages and/or repackaging using less technical language and different lengths according to the target group's needs [34]. Also, if the budget allows, diverse formats should be produced to cater for people's varying personal preferences e.g. use text, images, short video clips, animations, and multimedia formats. This means making content easy to access, easy to use and easy to share. In other words, ensuring that content can be readily understood, applied, and distributed to the intended audiences increases access.

3.2.3. Assessment of Socio-Economic Barriers to Access

In any community, reception of climate change information is affected by social factors, such as gender and positions, because these affect how communicators frame their messages as well as how community members participate in sensitization forums [23]. Best practice during any climate communications campaign is to first and foremost know the characteristics of the target audience so as to first segment it and tailor messages to the specific concerns and needs of different target groups.

This makes the message content more useful and relevant and it also helps to understand the target audience's knowledge and values so as to use framing and language that will resonate with them and increase their awareness levels [34].

As such, for effective communication, it is vital to always start with identifying and appreciating local insights of climate change as well as any already existing adaptive efforts [24]. By involving the local folks and concentrating on what they need, climate information can be co-generated so that it can be more acceptable and applicable. Different people receive and understand messages differently [23].

Therefore, to break through these and other socio-economic hindrances to climate change communication, thorough research should always be done first. Second, information should be repackaged to target specific media and users for effective adoption by individuals [40]. Another way is to use opinion leaders to communicate specially framed messages that are relevant and address specific needs of a targeted audience [40]. One informant corroborated this because, when asked what methods of communication she felt resonated most with the public in passing climate change information, she said,

"The methods that resonate most with the public depend with the segment of the public you are talking about … When you go to the rural areas interpersonal communication … opinion leaders and sharing thematic information … . [and] information should be packaged so that it is relevant for use at that point in time because they don't keep records … But for the higher policy levels, engaging them during COP is useful … writing through a magazine and putting it in pigeon holes for members of parliament … partnership between the Ministry and the academia for example, teaching university students … so that they include policy changes into their research … ".

Thaler describes a simple way of framing climate change information to ensure effective access as one that picks local climate issues that are known and that matter to targeted audiences so that they engage into the discussion with ease, understanding and acceptance [41]. Indeed, it is more effective to communicate science if one uses language that refers to things that matter to end users [42].

4. Discussion

The findings of this study agree that although a lot of planning for adaptation in Kenya has been done at the national level, it is important to acknowledge and support relevant targeted action plans to eliminate local barriers to adaptation, since most adaptation takes place at the grassroots [43]. As such, the need to put all necessary effort to ensure effective dissemination of climate change information to grassroots communities in Kenya cannot be underscored.

Second, since most people understand the world through narratives and pictures rather than scientific statistics and technical diagrams, it is vital to translate and interpret scientific jargon into simpler messages [42–45].

As evidenced by the results of this study, the poor access to climate change information in Kenya is not as a result of lack of legislation on access to information nor is it about the government's unwillingness to avail such information; rather, it is a direct consequence of the inappropriate form in which climate change information is availed and the inevitable inability of the citizenry to resonate with it. Bridging the gap will therefore require dedicated resources and personnel at all levels of government in order to ensure that the end user gets simple, relevant, timely, and therefore usable climate change information. This means the jargon of climate change should be stepped down when communicating with ordinary persons, and instead, narratives that resonate with the communities' day to day experiences should be used so that the message is simple, relevant, and easy to access. This is especially because, as much as the complexity of climate change and its inter-disciplinary approach make it difficult to diffuse and adopt climate change information, the impacts of climate change continue to ravage many developing countries. It is thus critical for all actors to enhance effective dissemination and access to climate change information.

This study recommends that Kenya should shift the climate change rhetoric from merely ticking legal boxes or adopting a techno-scientific approach. Instead, focus should be on the social dimensions

of this phenomenon such as the impacts on health and food production. Many rural communities may not understand the complex computer models used in climate stations or the winding negotiations at the international level, but they can relate with a higher incidence of malaria in highland areas where mosquitoes could previously not survive. They will also easily relate with the unpredictable rainfall patterns that affect everything from planting seasons to the types of crops they can grow and how far they have to travel to get pasture for their livestock. Communication that encourages communities to adopt new crop varieties to mitigate the impacts of erratic rainfall patterns, without needing to mention the term "climate change," is likely to have greater resonance than complex academic explanations, however well-articulated.

Climate change policy makers, scientists and practitioners should therefore endeavor to repackage available adaptive climate change information into socially relevant and context-specific messages, translated into various local languages (Kenya is a multilingual state with more than 42 vernacular languages) and then avail them in multiple formats. For instance, the numerous vernacular radio stations that reach Kenyans across the country can be used to disseminate climate change information repackaged into human interest stories that resonate with their target audiences, while video clips can be produced and circulated through various digital vernacular television channels in the country and social media platforms. At the same time, short stories can be written and shared through agricultural extension officers who can narrate the stories in local languages.

These efforts however, can only bear fruit through effective knowledge intermediaries who can reach out and train those who do not have the information, contextualize the information for those who have general or non-tailored messages, and filter out that which is unnecessary in cases where there is too much information. Such knowledge intermediaries can be climate change experts who are knowledgeable in communication, journalists who have been trained on climate change issues or local leaders who are well versed with the community perceptions of climate change.

In the same regard, this study also recommends framing climate change information using religious themes. The majority of Kenyans respect and are loyal to their religious leaders and are therefore more likely to be persuaded by religious figures than by government functionaries. Additionally, the study recommends zealous integration of climate change information into the school curriculum so that children grow up with a deep understanding of environmental matters and especially the threat of climate change. Such an approach will sensitize the children of this problem from an early age and will also ensure they integrate this knowledge into all facets of their lives and appreciate possible interventions.

Author Contributions: The two authors contributed equally in research and compilation of this article. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Acknowledgments: We are greatly indebted to the interviewees who, in spite of their tight schedules, accorded time to provide data that yielded rich information for this work.

Conflicts of Interest: The authors declare no conflict of interest.

References

1. National Environment Management Authority. *Kenya Second National Communication to the United Nations Framework Convention on Climate Change*; Government of Kenya: Nairobi, Kenya, 2015.
2. The National Treasury and Planning. *Climate Change Indicator Development Guidebook*; Government of Kenya: Nairobi, Kenya, 2018.
3. Republic of Kenya. *Constitution of Kenya, 2010*; Government of Kenya: Nairobi, Kenya, 2010.
4. Ministry of Environment and Natural Resources. *Sessional Paper Number 3 of 2016 on National Climate Change Framework Policy*; Republic of Kenya: Nairobi, Kenya, 2016.
5. Government of Kenya. *The Climate Change Act, No.11 of 2016, Kenya*; Government Printer: Nairobi, Kenya, 2016.

6. Government of Kenya. *Second National Climate Change Action Plan (2018–2022)*; Government Printer: Nairobi, Kenya, 2018.
7. Government of Kenya. *National Climate Change Action Plan (2013–2017)*; Government Printer: Nairobi, Kenya, 2013.
8. Government of Kenya. *National Climate Change Response Strategy*; Government Printer: Nairobi, Kenya, 2010.
9. Ministry of Environment and Natural Resources. *First National Communication of Kenya to the Conference of the Parties to the United Nations Framework Convention on Climate Change*; Republic of Kenya: Nairobi, Kenya, 2002.
10. United Nations. Principle 10 of the Rio Declaration adopted at the Earth Summit in 1992. Available online: https://www.unenvironment.org/news-and-stories/story/unep-implementing-principle-10-rio-declaration (accessed on 20 January 2020).
11. United Nations. Sustainable Development Goal 16. Available online: https://sustainabledevelopment.un.org/sdg16 (accessed on 20 January 2020).
12. Government of Kenya. *The Access to Information Act, No.31 of 2016*; Government Printer: Nairobi, Kenya, 2016.
13. Ross, C.B.; Eyler, A.A.; Harris, J.K.; Moore, J.B.; Tabak, R.G. Getting the Word Out: New Approaches for Disseminating Public Health Science. *J. Public Health Mgt. Pract.* **2018**, *24*, 102–111.
14. Oriare, P.; Okello-Orlale, R.; Ugangu, W. *The Media We Want: The Kenya Media Vulnerabilities*; Friedrich Ebert Stiftung (FES): Nairobi, Kenya, 2010.
15. Rogers, E.M. *Diffusion of Innovations*; Free Press: Glencoe, UK, 1962.
16. Rogers, E.M. *Diffusion of Innovations*, 5th ed.; Simon & Schuster: London, UK, 2003.
17. Stuart, H. Encoding and Decoding Model. Available online: https://www.kcesmjcollege.in/ICT/English/Encoding%20Decoding%20final%20notes.pdf (accessed on 20 January 2020).
18. BBC World Service Trust. *Kenya Talks Climate: The Public Understanding of Climate Change*; British Council: London, UK, 2010.
19. Heinrich Böll Foundation. *Climate Change Vulnerability and Adaptation Preparedness in Kenya*; Camco Advisory Services: Nairobi, Kenya, 2010.
20. Ogola, J.S. Climate change: Kenya's responses. *Voices Afr.* **2011**, *6*, 11–15.
21. Kenya Climate Change Working Group. *Report on Access and Use of Climate Change Information in the ASALs*; OXFAM & Kenya Climate Change Working Group: Nairobi, Kenya, 2013.
22. Muchunku, I.G. Opinion Leadership Strategies for Communicating Adaptive Climate Change Information to Residents of Kitui Central Constituency in Kenya. Ph.D. Thesis, Jomo Kenyatta University of Agriculture and Technology, Juja, Kenya, 31 July 2015.
23. Lumosi, C.; McGahey, D. Communicating Climate Change for Adaptation: Challenges, Successes and Future Priorities. Information Brief by Adaptation at Scale in Semi-Arid Regions (ASSAR). Available online: https://idl-bnc-idrc.dspacedirect.org/bitstream/handle/10625/57702/IDL-57702.pdf (accessed on 20 January 2020).
24. Ministry of Environment and Forestry Website. Available online: http://www.environment.go.ke/ (accessed on 14 October 2019).
25. National Climate Change Resource Centre Website. Kenya. Available online: http://www.kcckp.go.ke/nccrc-national-climate-change-resource-centre/ (accessed on 14 October 2019).
26. Kenya Climate Change Knowledge Portal Website. Available online: www.kcckp.go.ke (accessed on 14 October 2019).
27. Reuters. Kenya's poverty rate drops sharply in 10 years—Stats office, March 22, 2018. Available online: https://af.reuters.com/article/kenyaNews/idAFL8N1R440U (accessed on 9 October 2019).
28. Jumia. Kenya mobile report 2019. Available online: https://www.jumia.co.ke/mobile-report/ (accessed on 20 January 2020).
29. World Bank. *Kenya Charts Path to Achieving Universal Access to Electricity*; The World Bank: Nairobi, Kenya, 2018.
30. Luseno, W.K.; McPeak, J.G.; Barrett, C.B.; Little, P.D.; Gebru, G. Assessing the Value of Climate Forecast Information for Pastoralists: Evidence from Southern Ethiopia and Northern Kenya. *World Dev.* **2003**, *31*, 1477–1494. [CrossRef]
31. Nderitu, J.M. Impacts of early warning systems in Garissa, Kenya. *Joto Afr. Adapt. Clim. Chang. Afr.* **2013**, *12*, 6.

32. Shaka, A. Dissemination of climate information using radio in Kenya. *Joto Afr. Adapt. Clim. Chang. Afr.* **2013**, *12*, 8.
33. Nderitu, J.M.; Ayamga, T. Making seasonal forecasts usable in Ghana and Kenya. *Joto Afr. Adapt. Clim. Chang. Afr.* **2013**, *12*, 4.
34. Dupar, M.; McNamara, L.; Pacha, M. *Communicating Climate Change: A practitioner's guide*; Climate and Development Knowledge Network: Cape Town, South Africa, 2019.
35. IPCC. *Climate Change 2007: Climate Impacts, Adaptation and Vulnerability, Contribution of Working Group II to the Intergovernmental Panel on Climate Change Fourth Assessment Report*; Intergovernmental Panel on Climate Change: Geneva, Switzerland, 2007.
36. Elia, E.F. Information Dissemination for Adaptation to Climate Change and Variability in the Agriculture Sector: The Case of Maluga and Chibelela Villages, Central Tanzania. Ph.D. Thesis, University of KwaZulu-Natal, Pietermaritzburg, South Africa, 2013.
37. Kropp, J.; Scholze, M. *Climate Change Information for Effective Adaptation: A Practitioner's Manual*; Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ): Eschborn, Germany, 2009.
38. Mbah, E.E.; Ayegba, M. Proper dissemination of information on climate change: A comparative study of the roles of official and indigenous language in Nigeria. *Int. J. Phys. Hum. Geogr.* **2013**, *1*, 21–30.
39. Omulo, C. Daily Nation Newspaper: Survey shows 2.4m Kenyans illiterate. Available online: https://www.nation.co.ke/news/Survey-shows-2m-Kenyans-illiterate/1056-3804610-brgih1/index.html (accessed on 20 January 2020).
40. Nisbet, M.C. Communicating Climate Change: Why Frames Matter for Public Engagement. *Environ. Sci. Policy Sustain. Dev.* **2009**, *51*, 12–23. [CrossRef]
41. Thaler, A.D. When I talk about Climate Change, I don't talk about science. Southern Fried Science. Available online: http://www.southernfriedscience.com/when-i-talk-about-climate-change-i-dont-talk-about-science/ (accessed on 14 October 2019).
42. Corner, A.; Shaw, C.; Clarke, J. *Principles for Effective Communication and Public Engagement on Climate Change: A Handbook for IPCC Authors*; Climate Outreach: Oxford, UK, 2018.
43. Jones, L. *Background Notes: Overcoming Social Barriers to Adaptation*; Overseas Development Institute: London, UK, 2010.
44. Corner, A.; Lewandowsky, S.; Phillips, M.; Roberts, O. *The Uncertainty Handbook*; University of Bristol: Bristol, UK, 2015.
45. Nisbet, M.C.; Kotcher, J.E. A two-step flow of influence? Opinion-leader campaigns on climate change. *Sci. Comm. J.* **2009**, *30*, 328–353. [CrossRef]

© 2020 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (http://creativecommons.org/licenses/by/4.0/).