COMMUNICATION RELATED FACTORS IN CLIMATE CHANGE POLICY IMPLEMENTATION AMONG SMALLHOLDER FARMERS IN LAIKIPIA COUNTY, KENYA

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ABSTRACT

The study focused on communication related factors affecting climate change policy implementation among smallholder farmers in Laikipia County, Kenya. It was believed that the national and county governments climate change policies for enhanced food security and community resilience were being affected by several undocumented and unaddressed communication related factors. Using household surveys, focused group discussions, key informant interviews and community engagements on selected smallholder farmers and stakeholders drawn during community-led initiatives, local administration meetings and agricultural extension workshops in Laikipia County, results show that factors associated with what, who, where, when, why and how policies were communicated greatly affected their implementation and consequential climate change adaptation.

INTRODUCTION

Kenya is a good example of a country with clear national and local policies for responding to climate change since several international and regional climate change and environmental regulations and legislation have been ratified and implemented. Further, climate change has been well integrated into national and county development strategies. However, what remains to be seen is how climate change discussions can leave boardrooms in order to impact the local communities since it directly affects livelihood practices (LCDP 2017). Climate change affects agricultural activities all over the world. However, the small-scale farmers who depend on the subsistence farming are the majority who are considered most affected by climatic changes globally (Connolly, 2016). In his research, Doss (2014) states that the region of sub-Saharan Africa has been considered more susceptible to climatic change as compared to the other African region because of the factors that are considered inherent to the region. The factors are not limited to reliance on agricultural activities but are coupled with the over-reliance on agricultural resources among the region's inhabitants. This has therefore made the region more susceptible to climatic change with adverse effects on its fertility and productivity in the long run (Hansen, 2012). On average, 58.9% of the sub-Saharan occupants are living under severe multidimensional poverty coupled with the ailing and non-reliable infrastructural development that has halted the economic and agricultural activities within the region (Iheoma, 2014). This has therefore led to challenges both at the infrastructural and at the policy levels, resulting in inadequate agricultural inputs to support the ever-growing population. This is also due to limited access to these viable and crucial resources which are at the heart of a healthy and functional society (Lamboll, 2017).

The interactions of these severe and multiple challenges affecting the region have made it to become highly susceptible to climatic changes and variability. This has therefore considerably

limited and constrained the region's capability to develop adaptive capabilities to environmental challenges (Lowder, 2016). The concept of climatic change has been defined as the changes in the climatic properties through means and variability modules that demonstrate considerable longevity over a period (Massetti, 2011). There are various local and international policies and approaches which have been incorporated to help curb the adverse effects of climatic changes which when given consideration are considered beneficial to small-scale farmers and Kenya has not been left out (Mudombi, 2014).

According to the National Climate Change Action Plan (NCCAP, 2018-2022), Kenya's agricultural output faces significant threats as a result of climate change and unpredictability. Farmers' ability to depend on when their crops will mature is threatened by slow but steady changes in weather patterns. Droughts are becoming more common, which threatens human and agricultural water supplies. Particularly in dry and semi-arid places like Laikipia County, unpredictable weather patterns cause havoc with agricultural planning. Low profitability from farming and difficulty in rain-fed farming on dry areas are only two examples of the many issues that plague the agricultural sector today (Huho & Kosonei, 2013). Smallholder farmers in Laikipia County, especially in Tigithi Ward, are facing these challenges. Kaumbutho & Kienzle (2007) reported that conventional farming methods in Laikipia were causing losses due to high production costs. However, despite widespread advocacy, Kinyumu (2012) discovered that although farmers recognized the advantages of conservation agriculture, few really practiced it. Similarly, Mboroki (2013) studied climate change impacts and adaptive responses among pastoralists in Laikipia, revealing low adoption rates of adaptation measures. Surprisingly, there is no existing study investigating the factors that affect climate change policy implementation especially among smallholder farmers whose farming support livelihoods and food security. To help farmers be more resilient in the face of climate change problems, this study seeks to overcome this knowledge gap and shed light on how the factors and challenges can be addressed for policy implementation to support climate change adaptation.

The general objective of the study was to explore the communication-related factors affecting climate change policy implementation among smallholder farmers in Laikipia county in Kenya. Specifically, the study sought to achieve the following objectives: -

i. To explore the communication-related factors which affect the implementation of climate change policies among smallholder farmers in Laikipia county
ii. To examine of how commination barriers affect the implementation of climate change policies among smallholder farmers in Laikipia County
iii. To explore how smallholder farmers navigate the climate change policy implementation barriers in order promote climate change adaptation
iv. To explore what needs to be done for climate change policies to be effectively communicated in order to support climate change adaptation

Challenges and barriers affecting communication for climate change policy implementation

According to Ferrari (2010), climate change policy communication occurs within the usual policy frameworks. The author suggests that the aim of engaging smallholder farmer communities in climate change policy and adoption entails several stages: first, making them aware of climate change policy and adoption as a problem, second, communicating some knowledge about policy and adoption, third enlightening them of the likelihoods of policy communication and lastly guaranteeing them the climate change policy communication outcomes. In 2000, during the international conference on climate change communication in Ontario, Canada, several principles of climate change communication were suggested (Andrey and Mortsch, 2000). The Generic Communication Guidelines was suggested and these included carefully defined communication goals; identifying and describing the intended audiences; having well-informed and committed communicators, developing communication partnerships; having two-way communication, and finally learning from other fields, particularly risk communication (Ferrari, 2010).

According to the available evidence, spreading the word about measures meant to combat and adapt to climate change is essential. Developing a multilevel governance structure in climate change policy requires better communication and information flows between sub-national and national levels of policy communication (Wertz-Kanounnikoff & Angelsen, 2009). Communications on climate change policy with multi-actors at different levels may be facilitated by the use of many channels, as suggested by Park et al. (2013). These channels include national reports, workshops, and online data bases. On the other hand, (Wibowo et al., 2013) concede that most people do not know enough about the factors leading to climate change and its potential outcomes. This is because the topic is often discussed in academic publications, where it is shrouded in jargon and difficult mathematical models. Many smallholder farmers who are vulnerable to climate change will not be able to access policy communication as a result.

In addition, smallholder farmer communities rely on advocates as a source of knowledge on policy pertaining to climate change. There is a significant need for these advocates to provide information about climate change policies and mitigation strategies in their communities (Resosudarmo et al., 2012). However, Park et al. (2013) show that there is a significant problem with the lack of data on the political and social means of supporting and implementing climate change policy in developing countries, as well as communications between developed and developing nations.

In developing climate change policies, Angelsen (2009) recognizes the ongoing development of national climate change strategies. However, the scholar recognizes policy communication as one of the most significant challenges. In order to effectively communicate climate change policy, Wibowo et al. (2013) suggest the following steps be taken first: determine the characteristics of the intended audience or participants; make sure frontline workers have the necessary information and motivation; create communication partnerships to make sure

information flows in both directions; learn from other sectors, especially about the risks involved in communication; and incorporate lessons learned.

According to Adhikari (2009), the success of climate change policy communication will be subject to the careful design and actual participation by local smallholder farmers in their implementation and adoption of the policies in place and how the climate change will be communicated at the local level. Standing & Gachanja (2014) demonstrate that Kenya has progressed well in developing climate change readiness. However, the authors recognize that there are challenges in participation whereby stakeholder meetings are controlled by the central government and external consultants who formulate the policies and select the participants. According to the researchers, this is an opportunity for analytical debate, and people considered critical of the government or climate change affected are not usually included.

Further, the researchers indicate that climate change policy communication is not well practiced outside a small group of government officials, NGOs, and academics. According to the researchers, there is a lot of confusion about climate change policy communication. Further, at the community and district levels, climate change policy communication is very minimal. Nevertheless, there seems to be little effort and funding by the government and the more prominent NGOs in Kenya to undertake in-depth capacity building on climate change policy communication among smallholder farmers in the county and local authorities (Standing & Gachanja, 2014). In Kenya, for instance, there is no online platform for disseminating information on climate change policy communication and adoption (Standing & Gachanja, 2014).

Effective communication is a key factor in the successful implementation of policies, as stated by Ulo & Skendrovi, (2010). All other policy domains may build upon and benefit from this basis (Zulch, 2014). If the message gets through and serves its intended objective, then the communication was successful. However, a more explicit and thorough list of aspects describing the efficacy of the communication process is required for measurement purposes. To keep stakeholders on track to accomplish policy goals and to enable them to overcome obstacles and settle disputes when they arise, good communication is vital, as Zulch (2016) demonstrates in her study. Zulch (2014) adds that these attributes of effective communication include the importance of feedback, comprehending the message and making sure it reaches the intended audience on time; guaranteeing the accessibility of communication records to those who require them; maintaining open lines of communication between the stakeholders; and making the best use of all team meetings.

Weaver (2007) showed that two key components of successful communication are the timely delivery of feedback and the importance of the information being conveyed. The sincerity, honesty, and credibility factors are also highlighted by the researcher. Similarly, the study proposes picking the correct medium and messenger and reducing transmission noise to guarantee good communication. This author also implies that successful communication entails producing the outcome intended by the communicator. Effective communication, according to Naaranoja, & Savolainen (2016), is when stakeholders are informed with the right and relevant

information in a timely manner at a low cost. Furthermore, they understand that communication ought to be easy to learn and use, replicable, and open to comments.

Bourne (2016) holds that while communicating with stakeholders, it's important to take into account their unique perspectives and methods. The study also acknowledges a variety of aspects of effective policy communication, such as achieving the information's intended purpose, defining the purpose of communication, tailoring the message to a particular audience, reiterating the message as necessary to achieve the desired result, making the information readily available, and using multiple channels of distribution. However, there are several obstacles in the way of clear and concise policy communication. Factors like policy intricacy, organizational culture, and trust within the policy team are just a few that have been highlighted in various works of literature as both obstacles and motivators to effective policy communication. Multiple stakeholders and cross-organizational information sharing contribute to policy complexity, as stated by Stead et al. (2009). According to Remidez & Jones (2012), the inherent structure of policy makes it hard to have effective conversations about it. When people work together, they are able to re-evaluate their prior understanding in a variety of domains.

Understanding the role of participatory communication in climate change policy implementation

The notion of participatory communication is gaining ground in both academic circles and development practice. People are encouraged to shift their roles from being just recipients to contributors to development initiatives. Servaes and Malikhao (2005) argue that the central tenet of participatory communication theory is the need for people at all levels of society to be involved in development efforts. In addition, the effectiveness of development initiatives and programs is measured by the extent to which they include the public in the decision-making process.

Further, the failure of top-down decision-making in previous models of development communications was mitigated by people's ability to have a voice in the process. Even though no one possesses competence in all subjects and all settings, Chambers (1983) argues that there are times when the knowledge of development organizations, elites, and governments is given greater weight than that of local people. In addition, this new perspective of development communication emphasizes the need for community input and open discussion throughout the decision-making process to ensure the project's long-term viability and success (Karl, 2007). After all, people are the project's key stakeholders, thus researchers and project staff need to learn how to listen to and comprehend their perspectives. Knowledge is reversed and information is exchanged in this process (Chambers 1993, 1997).

Based on the ideas of Freire (1970), participatory communication is defined as people-centered development. When it comes to the implementation of measures to combat climate change, smallholder farmers in Tigithi ward play a pivotal role. Community involvement is crucial to the effectiveness of policy communication. They are the ones who will have to put climate change policies into action, but they also stand to gain the most from them (Awung, 2015). To

accomplish sustainable forest management, the United Nations Development Program recommends switching from a top-down to a bottom-up, participatory strategy (UNDP, 2011). In addition, the UNFCCC emphasizes in Article 6 the need of participatory communication in including people around forests in decision making as a means of developing agreement and encouraging a sense of ownership over forestry operations.

Closely connected with the idea of participatory communication is the Diffusion of Innovation hypothesis. Here, (Rogers, 2003) explains how novel ideas and methods spread inside a group or organization. According to Rogers and Shoemaker's (1971), there are five distinct phases that a person goes through before deciding whether or not to accept a new idea. After being introduced to the invention and learning the basics of how it works, a person enters the "knowledge" stage. The person is unaware of the invention at this point, but wants to learn more about it and is making efforts to do so. Individuals establish a favorable or unfavorable attitude toward innovation and actively seek out more information about an invention during the second stage, which is persuasion. The third step, decision, is when a person (or other decision-making unit) actually does the work that ultimately results in a verdict on whether or not the innovation should be adopted. The fourth step, implementation, is when a person really uses the invention. The last step, confirmation, involves a person or group seeking approval for a prior choice on an innovation. However, this approval might be revoked if the individual or group is presented with conflicting information.

Furthermore, Rogers (1971) argues that in most social structures, not everyone adopts innovations at the same time. Instead, there is a spectrum from "early adopters" to "late majority" to "laggards" in the adoption process. The study claims that those who take the longest to start adopting the new method are the true adopters. Here, interpersonal strategies are what push people to embrace the new concept. For instance, a binomial expansion leads to a bell-shaped distribution over time if the first person to adopt an innovation discusses it with two other people in a society, and if those people also become adopters and pass the innovation along to other people in the society.

Diffusion of innovations, as defined by Robinson (2009), is an attempt to clarify the factors that contribute to the widespread adoption of new ideas. An innovative concept, action, or product is one that is novel in the eyes of its target market. To better understand how an idea or policy takes traction and spreads over time within a community or social system, the field of communication developed the notion of diffusion innovation theory. The spread of an idea, behaviour, or policy across a community. The hypothesis posits that widespread adoption of innovations is necessary for progress and longevity.

The climate change policy communication is relevant because it is seen as a novel approach to encouraging smallholder farmers in Tigithi Ward to cut down on carbon emissions from forests and put their money toward low-carbon technologies. An individual's journey from naive understanding of climate change policy to a developed position on that policy is covered by this hypothesis, to the stage of policy implementation and confirmation, when people are still looking for reassuring wording on the climate change policy to help them make up their minds

about whether or not to accept the innovation. Because it describes the flow and structure of contact with the complete climate policy information ecology, this theory is applicable in this study.

Research Materials and methods

A cross-sectional survey design with mixed-methods approach comprising of qualitative and quantitative data was utilized. Research data were collected from smallholder farmers, who are typically the heads of households, and key informant interviews, consultative meetings, and semi-structured questionnaires. Equally, secondary data from international, national, and local climate change policies were reviewed through content analysis. Other than this, the study also used qualitative approaches involving in-depth interview with key informants and focus group discussions and community meetings to establish the factors that affect communication in the implementation of the climate change policies for climate change adaptation. Respondents were selected using a stratified random sampling procedure from among smallholder farmers. Kothari (2008) suggests a minimum sample size of 100 for such a study which is largely qualitative. Data were collected by research assistants who were carefully selected from amongst local community and experienced masters' graduates. While qualitative data were processed using thematic analysis, quantitative data were analyzed using descriptive and inferential statistics and presented in tabular format. In order to improve the climate change adaptation by way of promoting policy communication, a selected number of smallholder farmers were trained to use a wide range of communication approaches suitable for their circumstances for enhanced policy implementation. The study endeavored to understand the communication-related factors that affected climate change policy implementation among smallholder farmers in Laikipia County in Kenya.

RESEARCH RESULTS

Communication barriers to climate change policy implementation in Laikipia county

A wide range of communication barriers were reported across the Solio locations. Village 7 alone specified long distances to meeting venues as exacerbating participation barriers for some. Solio 1 further reported misinformation and under-staffing of extension services weakening guidance accuracy and availability respectively. These varied reports illustrate common universal struggles of transmitting climate information, as well as location-specific contextual determinants uniquely shaping localized experiences. The research established that consistent, multi-channel outreach is needed to fill knowledge gaps.

Table 1 Communication barriers experienced with climate change adaptation policies

	Lamuria Village	Tigithi Village	Solio Village
Complexity of Climate Science	1	6	8
Cultural and Language Barriers	7	11	23
Mistrust and Misinformation	8	10	15
Lack of Community Involvement	10	13	13
Economic and Social Priorities	6	9	10
Inadequate Media Representation	5	8	10
Institutional Challenges	2	4	7
Total	**39**	**61**	**86**

Majority of the residents from Lamuria village (10), stated that they experienced lack of community involvement as a communication barrier with climate change adaption policy; 8 out of 39 residents stated that they experienced mistrust and misinformation as a communication barrier with climate change adaption policy; 7 out 39 residents stated that they experienced cultural and language barriers as a communication barrier with climate change adaption policy; 6 out of 39 residents stated that they experienced economic and social priorities as a communication barrier with climate change adaption policy; 5 out 39 residents stated that they experienced inadequate media representation as a communication barrier with climate change adaption policy; 2 out of 39 residents stated that they experienced institutional challenges as a communication barrier with climate change adaption policy and 1 out of 39 residents stated that they experienced **complexity of climate science** as a communication barrier with climate change adaption policy.

13 out of 61 residents from Tigithi Village experienced lack of community involvement as a communication barrier with climate change adaption policy; 11 out of 61 experienced cultural and language barriers as a communication barrier with climate change adaption policy; 10 out of 61 experienced mistrust and misinformation as a communication barrier with climate change adaption policy; 9 out of 61 experienced economic and social priorities as a communication barrier with climate change adaption policy; 8 out of 61 experienced inadequate media representation as a communication barrier with climate change adaption policy; 6 out of 61 experienced **complexity of climate science** as a communication barrier with climate change adaption policy and 4 out of 61 experienced institutional challenges as a communication barrier with climate change adaption policy.

23 out of 86 residents from Solio Village experienced cultural and language barriers as a communication barrier with climate change adaption policy; 15 out of experienced mistrust and misinformation as a communication barrier with climate change adaption policy; 13 out of 86 residents experienced lack of community involvement as a communication barrier with climate change adaption policy; 10 out of 86 experienced economic and social priorities and inadequate media representation as a communication barrier with climate change adaption policy; 8 out of 86 experienced **complexity of climate science** as a communication barrier with climate change adaption policy and 7 out of 86 experienced institutional challenges as a communication barrier with climate change adaption policy.

Recurring themes included language difficulties hampering understanding, insufficient resource provision straining implementation, and lack of reliable guidance undermining appropriate responses. Location-specific factors also emerged; Solio 2 highlighted governance dysfunction further exacerbating pre-existing weaknesses in coordination and leadership prioritization, while Solio 4 pointed to systemic illiteracy challenges compounding dissemination problems.

One key informant mentioned that policies were well communicated and theoretically correct. However, in application they failed to consider the environmental and economic challenges that existed among them,

> "If you are told to dig a furrow and you do so, whatever you plant does not thrive so you see it like a loss." "We are told not to cut trees and if you do so you should plant two of them. We cut trees at least so that we can sell the timbers and have something, these trees require a lot of water because they grow very fast. Like the bluegums. some of us come from the lower part so when people from the highlands tap water we don't have water here because the river is dry".

Equally, Chief Lamuria Location response highlighted language barrier as a factor. "*Sometimes they come with information but not in our local language so you may fail to understand".* Another respondent raised concern with the draught where he said meetings were disrupted due to community prioritizing pasture and water for their animals.

Chief Teresa singled out large and vast geographical area as a challenge in disseminating climate change information to the communities, the distance inhibited the effectiveness of chief baraza engagements. He also reported that climate impacts interrupted their forums undermining consistency which was vital for behavioral transition. Assistant Chief Richard added *"Lack of technical experts stationed locally limits our ability to address farmer queries, undermining clear communication of policies."*

In Furaha Sub-Location, Assistant Chief Wambui explained that a major barrier experienced was the vast distances between scattered homesteads within the expansive ward, which inhibited effective participation of farmers in pivotal awareness forums and trainings organized at central locations. When asked about communication barriers, Chief Joseph Mwangi highlighted literacy level, limited livelihood, poverty levels, cultural backgrounds of the people, and certain farming styles posed as challenges. He also added that,

> "As I mentioned earlier, some of the key communication barriers include climate change skeptics in communities who see it as something supernatural and believe little can be done about it. There is also generally low awareness among farmers on the issues of climate change and how it affects them."

Sources of communication-related barriers and how they manifested

Attribution of barriers diverged somewhat between regions. Village 7 implicated socioeconomic underdevelopment through lack of education and financing limiting adaptive capacities. Tigithi emphasized insufficient extension resourcing. Both highlighted governance breakdowns. Whereas Solio 1 traced dysfunction to deficient cross-collaboration and inconsistent community leadership engagement priorities. These diverse causal attributions indicate a plurality of determinants from local socioeconomic conditions to systemic governmental performance shortfalls shaping region-specific communication challenges.

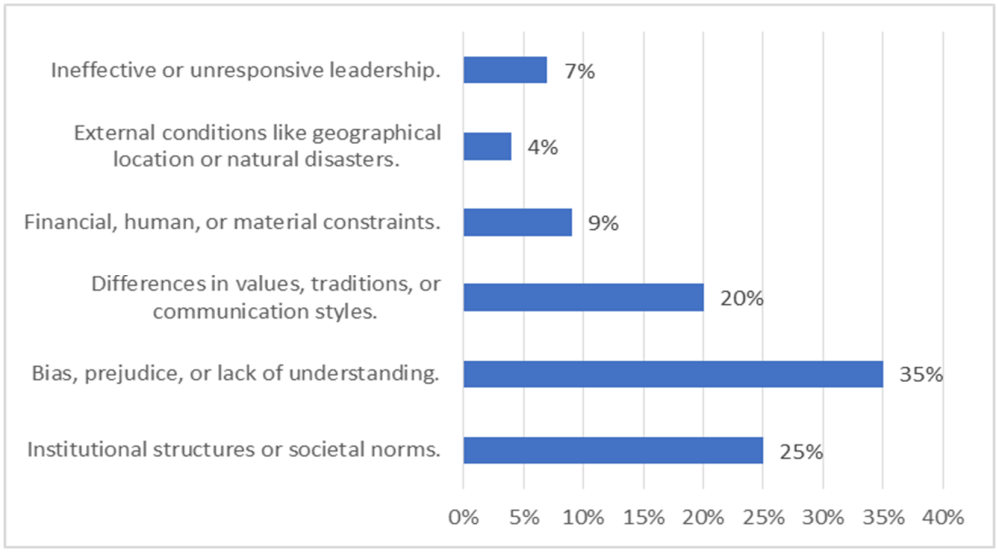

Figure 1 Sources of these barriers or challenges and how did they manifest

This Figure shows that 35% of the respondents indicated that biasness, prejudice, or lack of understanding was a source of the communication challenges and how they manifested, 25% indicated that institutional structures or societal norms were sources of the communication challenges and how they manifested, 20% indicated that differences in values, traditions, or communication styles were sources of the communication challenges and how they manifested, 9% indicated that financial, human, or material constraints were sources of the communication challenges and how they manifested, 7% indicated that ineffective or unresponsive leadership were sources of the communication challenges and how they manifested and 4% indicated that external conditions like geographical location or natural disasters were sources of the communication challenges and how they manifested.

Stakeholders consistently implicated the government as a key source of reported barriers through deficiencies in cross-sector collaboration and grassroots resourcing. Solio 2 implicated additional political influences distorting messaging. Location 5 critiqued non-experts promulgating misinformation. These diverse attributions again reveal agreement on the core responsibility of policy bodies to integrate guidance with conditions, while also exposing how determinants vary spatially. For example, political meddling appeared location-specific versus more widespread resource deficiencies understanding of such differences is important for targeted remediation.

On the sources of these barriers and how they manifested, some of the respondents informed that they received climate change communication from the agricultural officer on climate change policies, the assistant chief and village elders, church elders and opinion leaders. One of the responded was quoted saying "*we get them through the leaders from the government and village elders and people that come here to educate us like the TIST. They come to teach us how we should plant trees and take care of our environment"* Chief Lamuria Location, reported that *"the sources were the people communicating the information, sometimes they come from other areas and do not speak our local languages well"* they also highlighted drought as a challenge for it disrupted usual ways of life and meeting schedules. On the other hand, Chief

Teresa explained *"Holding barazas across the expansive ward remains difficult due to distances involved in covering all locations. This hinders outreach through our main channel."* she also added that unreliable partnership with mandated agencies disjointed shared responsibilities leaving a vacuum difficult for her to address single-handedly. Assistant Chief Richard noted *"Inconsistent support from upper levels of government further burdens limited local resources and disrupts coordinated planning between stakeholders."*

Responses from KII 2 Tigithi Location indicated that The communication barriers experienced stemmed majorly from limited human resource capacities in form of localized subject matter experts, as well as inconsistent provision of promised material support by the government in form of starter agro-inputs and equipment. These hampered full demonstration of recommended climate-smart agricultural practices tailored to the contexts and land sizes of the community. With financial constraints compounded by vast terrains, the existing manpower shortage was further exacerbated affecting targeted engagement, this was according to Peter Kimani who was a respondent in Tigithi Location. Assistant Chief Juma pointed out barriers also came from politics interference where meetings get hijacked, ignorance caused by politics, lack of experts, and lack of motivation and facilitation of relevant departments. He also noted "*these beliefs are rooted in cultural and religious traditions in some areas. Consistent engagement by relevant stakeholders on the topic has also been lacking. At times, local politicians also aim to hijack climate change discussions for their own political gains"*.

How communication barriers affect implementation of climate change policies

Communication failures manifested tangible impacts according to respondents. In Village 7 and Tigithi, delays or inaccuracies led directly to incorrect project implementations like maladaptive crop choices. Solio 1 respondents more broadly asserted that misunderstandings undermined adaptation efforts altogether. Ensuring timely guidance delivery to those intending to act emerged as a consensus priority across regions. These effects speak to the real on-ground consequences when information deficiencies disrupt coordinated climate action planning.

Respondents unambiguously asserted that communication failures undermined timely, appropriate climate action. Low yields, crop losses and environmental degradation across locations testify to miss opportunities for building adaptive capacity. Location 5 further linked these impacts to downstream social vulnerabilities from diminished food security. These effects confirm that without resolving communication barriers, the goal of bolstering resilience to rising risks remains elusive. Cohesive strategies considering diverse local manifestations are needed to circumvent lost development opportunities.

A key informant said that the agricultural officer only conducted sessions with farmers' groups occasionally; once or twice a month. The agricultural officer shared information on new policies and practices during the meetings which they relied on for their climate change adaptation. One respondent gave an example of one of the policy; *"if you are to cut a tree, you must have the letter from the chief or from the government".* Another respondent highlighted lack of reliable source of water as a challenge in his effort to participate in practices like digging furrows, planting trees and using conservation farming methods. Chief Teresa informed *"When*

messages cannot reach all at once, some farmers may not receive information in good time to adapt. This can undermine uptake of recommended practice". She also added *"When anticipated agricultural inputs fail to materialize, it strains credibility of communication and derails intended outcomes"* while the Assistant Chief Richard stated *"Absence of local resources constrains wide sharing of messages as targeted dissemination through supplemental channels is restricted by scarce inputs."* Responses from KII 2 Tigithi Location suggested that uptake of some adaptation policies and strategies remained low as complex technical concepts were communicated without personalized clarification sessions addressing farmers' emergent questions. This deterred their voluntary willingness to test and commit to new behaviors long-term, with inconsistent access to reliable information and support also tending to undermine credibility of the adaptation guidance for some smallholders here.

From Furaha Sub-Location, Assistant Chief Wambui noted that these communication barriers affected effective implementation since the uptake of adaptive policies and strategies remained low and without personalized clarification sessions to address farmers' questions. Chief Joseph Mwangi felt these barriers undermined implementation as without addressing local capacity and conditions, policies could not be successfully actualized on marginal agricultural lands. In the Chief's opinion, he elaborated that *"These barriers have greatly affected successful implementation of climate policies as without buy-in and true understanding of the issues among farmers, they are less motivated to adopt more climate-resilient practices that have been communicated. For policies to have impact, we need the farming communities as true partners in the process through open dialogue."*

Ways of resolving climate change policy implementation barriers

Suggested solutions varied somewhat in local emphasis while retaining universal goals. Village 7 prioritized infrastructure upgrades aligned with its context, whereas Solio 1 emphasized demonstration activities. However, all endorsed bolstering cultural conduits and extension presence, highlighting complementary multi-pronged strategies are required to reconcile policy with diverse regional needs. Suggesting solutions that prioritize infrastructure upgrades in Village 7 and demonstration activities in Solio 1 aligns with research on nuanced, place-based approaches.

One farmer mentioned that they got information about climate change policies through farmers' groups, chief's barazas, the radio programs on climate smart agriculture, and sometimes WhatsApp messages from the county government which they relied on for adapting best practices on climate change. This gave them motivation which resulted to hem planting many trees within a period of ten years and changed their land from its initial state of bareness. One responded said, *"They should ensure the information is passed in simple local languages using terms and explanations we all understand".* Another added that they should have alternative communication approaches like home visits, village barazas to disseminate climate policies. Chief Teresa stated *"Stationing subject experts locally would tremendously help our efforts through interactive clarification of issues on the ground with farmers. This would boost adaptation."* Assistant Chief Richard suggested *"Dependable supply of seasonal key inputs by the county would motivate participation knowing support is accessible when required.".* He

also added that supplementing mass events with targeted interpersonal channels aided inclusion minimizing those left out due to limitations.

Responses from KII 2 Tigithi Location suggested that *"To systematically address these barriers, a viable approach would be cascading digestible awareness content through grassroots-based representation anchored at the village level. This would supplement mass awareness campaigns optimizing information flow. Furthermore, staking localized technical support centers offering on-call assistance coupled with structured hamlet-level practical demonstration days personalized to our contexts could boost learning." Another respondent* suggested *"systematically addressing barriers through grassroots representation anchored at village levels to supplement mass awareness campaigns and optimize information flow coverage."* The chief proposed *"boosting localized expertise through cascading messages, technical centers, motivation for government departments, and enhanced public-private partnerships to encourage behavioral transitions."* When providing suggestions, the Chief stated, *"We must undertake continuous capacity building and training of all stakeholders to address existing knowledge gaps. The departments must also better mainstream climate considerations into all our work. Most importantly, engagement with farmers needs to be made interactive and two-way using channels that are accessible like community radio."*

Ensuring climate change policies are effectively communicated for adaptation

Views on personal roles demonstrated universal acknowledgment of on-farm leading by example and community mobilization functions for grassroots stakeholders. Tigithi alone highlighted the importance of conveying guidance in locally understood languages. One respondent stated: *"I try my best to participate in practices like digging furrows, planting trees and using conservation farming methods. But it is difficult without a reliable source of water." "Personally, I don't know of any farmer who doesn't rely on the policies. As farmers we try our best to follow the guidelines given to us."* Another respondent argued that he could not think of anyone who did not follow the policies. He said adaptation was difficult for all of them due to lack of rain." Some said as farmers, it was their role to attend meetings and share the information with others who never made it to the group meetings. They agreed they must all work together to understand and apply the guidelines. One respondent said, *"My role is to be open-minded and active listener. Also, to ask questions for clarification and assist in sharing info with fellow farmers."*

Chief Teresa said *"We leverage existing structures through barazas and community elders to effectively pass on climate information. However, following up is prioritized to complete the dissemination loop to households."* Assistant Chief Richard mentioned that directly engaging the grassroots ensured transmission of messages to intended beneficiaries where decisions were made despite hindrances. Additionally, Chief Teresa acknowledged that while collaboration was ongoing, multiplying alliances could reinforce efforts through synergy of diverse strengths. Responses from KII 2 Tigithi Location acknowledged that *"As small-scale farmers, our primary role in effective communication encompasses honest participatory feedback mechanisms that can enhance policy relevance to our on-farm conditions. We can also volunteer our time as local messengers disseminating adapted learning to fellow smallholders*

within our social networks. Importantly, committing to implement acquired knowledge is key to catalyzing collective climatic resilience." In Furaha Sub-Location, Assistant Chief Wambui acknowledged the role of local leaders as the facilitators of two-way information exchange through honest participatory feedback mechanisms. Chief Joseph Mwangi saw his role as ensuring policies reached the targeted communities through involvement of local administrators and leveraging existing community groups for demonstrations and feedback. Chief Joseph Mwangi also noted, *"As the head of the relevant department, I am responsible for cascading climate policies effectively to staff and other county partners who have direct interface with farmers. My role also encompasses coordination and facilitating full implementation of communicated practices."*

What needs to change for effective climate change policies communication

Perspectives on retaining or adapting existing structures revealed divergence and overlap. Village 7 uniquely prioritized expanded staffing capacities. However, consensus emerged around sustaining culturally-grounded platforms like local media and bottom-up organization, signaling their continued merit. Solio 1 prioritized reforming engagement methods. Such differing priorities potentially reflect divergent developmental levels, again showing a plurality of valid viewpoints. At the same time, common accord on pragmatic solutions affirms their viability across diverse settings. Prioritizing expanded staff capacities in Village 7 aligns with research emphasizing sufficient extension resourcing (Oyekale et al., 2015; Muszyńska, 2017). Consensus on retaining culturally grounded platforms like local media and bottom-up networks aligns with findings that locally appropriate conduits strengthen outcomes (Bessette, 2006; Servaes & Malikhao, 2005). The observed divergence in priorities possibly reflects contextual diversity even at small scales, as studies have shown (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012). Common accord on pragmatic solutions also aligns with literature advocating plural, nuanced viewpoints in participatory solutions (Bourne, 2016; Moser, 2017).

Views on retaining versus reforming existing communication structures showed both consensus and divergence. Expanded facilities, cost reduction initiatives and diversifying multi-modal dissemination approaches gained cross-regional backing, recognizing the need for pragmatic improvements. Meanwhile, retaining traditional councils and religious networks as trusted intermediaries also emerged as a consensus position, underscoring the value of contextually-appropriate channels. Differences appeared in some locations prioritizing expanded staffing and others systematic reforms. These perspectives collectively confirm the necessity of innovating while retaining proven culturally-grounded platforms, through participatory processes sensitive to regional nuances. A balanced fusion of reforms and perpetuating demonstrated strengths holds the greatest promise for overcoming barriers. Calls for expanding facilities, reducing costs and diversifying dissemination mirrors research advocating improved accessibility through innovative yet practical reforms (Hansen, 2012; McKinney & Harmon, 2007). Retaining trusted councils and religious networks also aligns with emphasized strengths of contextually grounded channels (Bessette, 2006; Servaes & Malikhao, 2005).

Chief Teresa mentioned "*While local leadership bodies should remain central to coordination, material backing of initiatives through infrastructure is equally vital given constraints*. Assistant Chief Richard noted that strengthened platforms could have lasting impact compared to awareness alone through combined strategic interventions tackling both 'software' and 'hardware' dimensions. Additionally, Assistant Chief Richard concluded that sustainable adaptations pivoted on long-term dependability of localized specialized human and material resources. Responses from KII 2 Tigithi Location as seen through Peter Kimani advised that moving forward, continuous localization of messaging content was crucial and required ongoing process. Joseph Mwangi noted, "*While traditional channels involving opinion leaders remain crucial, we should explore new approaches leveraging technology that today's farmers engage with. But most importantly, communication must be an ongoing, interactive process that centers the adaptation needs of smallholder farmers. "Above all, reliable provision of promised material support coupled with specialized human resources needs sustenance. Moreover, fostering a culture of participatory governance where farmer agency complements duty-bearers' steerage promotes community adaptation in a sustainable manner."*

Discussions

Communication Barriers to policy implementation

Studied have depicted several factors affecting implementation of inventions and ideas since time immemorial. With regard to policy implementation, literature by Bessette (2006) and Servaes & Malikhao (2005) shows how language and distance barriers can undermine participation in extension programs. Overcoming them requires context-specific, culturally appropriate engagement strategies. Additionally, Hansen (2012) and McKinney & Harmon (2007) examined how lack of reliable information from extension agents hampered farmer decision-making. These reports emphasize common obstacles faced regionally in equitably conveying adaptation strategies, but also intra-regional diversity in how overarching barriers materialize given local characteristics. The responses can be linked to literature by Muszyńska (2017) and Oyekale et al. (2015) who found that without capacity building and support resources to address financial constraints, farmers were less able to implement new practices, even if receptive to messaging. Bourne (2016) and Clutterbuck (2001) explored how illiteracy inhibits certain dissemination approaches and requires diversifying communication to reach non-literate groups. Dow & Taylor (2010) and Moser (2017) discussed how governance challenges like lack of coordination can reduce program effectiveness if not reconciled through flexible, participatory frameworks attuned to institutional dynamics.

Sources of barriers to policy implementation

Studies have found barriers emerge from a plurality of contextual drivers at governmental, institutional and community levels (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012). Coulibaly & Fofana (2017). Studied have also explored how socioeconomic diversity within small regions of West Africa led to uneven impacts of policies and programs. This demonstrates how localized contextual factors can shape experienced challenges. Resosudarmo et al. (2012) examined uneven participation in community forestry programs in Indonesia due to intra-village variability in socioeconomic characteristics like wealth and social relationships. This also illustrates spatially diverse barriers. Consistent weaknesses cited are resource gaps

and inadequate cross-sector/stakeholder coordination (Adger, 2003; Wertz-Kanounnikoff & Angelsen, 2009). Adger (2003) discussed how lacking coordination of stakeholders and actors undermines climate adaptation via collective learning and actions. Effective partnerships are important. Wertz-Kanounnikoff & Angelsen (2009) evaluated REDD+ projects, finding both global initiatives and local-level incentivization like resources and capacity building are needed for community participation. Inadequacies in either can impede outcomes.

How barriers affect the implementation climate change policies

The literature affirms barriers significantly undermine resilience goals if not resolved through holistic strategies considering diverse local manifestations (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012). Coulibaly & Fofana (2017) found that even within small West African regions, socioeconomic diversity led to uneven policy impacts. This emphasizes the need for holistic strategies tailored to local conditions. Additionally, Resosudarmo et al. (2012) also found intra-village heterogeneity in Indonesia shaped unequal participation in forestry programs. Both studies underline the importance of considering diverse local manifestations. Improving implementation demands reconciling initiatives with plural community factors and stakeholder voices to circumvent lost benefits through nuanced, participatory solutions (Bourne, 2016; Moser, 2017). Bourne (2016) promoted nuanced, participatory models for agricultural innovations in Malawi that incorporated plural stakeholder needs. This facilitated consensus-based problem solving. On the other hand, Moser (2017) discussed how top-down climate initiatives must be reconciled with bottom-up input and empowerment through collaborative, adaptive frameworks. This aligns with responses emphasizing cohesive strategies are needed to resolve communication challenges.

How smallholder farmers navigate through the climate policy barrier

Coulibaly & Fofana (2017) and Resosudarmo et al. (2012) found that even at small local scales, socioeconomic diversity creates uneven impacts requiring tailored solutions. Supporting context-specific needs is important. Bessette (2006) also discussed how addressing barriers like distance requires diverse engagement strategies minimized to accessibility constraints. Infrastructure could help in some areas. Bourne (2016) promoted participatory models incorporating plural stakeholder views to facilitate consensus building. Demonstrations cultivate pragmatic learning.

Additionally, suggested solutions universally emphasized increasing local information accessibility and grassroots involvement in decision-making. Priorities like agricultural demonstrations promoting pragmatic learning, bottom-up community networks cultivating joint ownership, and ubiquitous multi-lingual approaches overcoming participation barriers garnered cross-regional support. Also notable were location-specific proposals like Solio 2's bringing services closer to improve physical access. This confluence reveals emphasis on interactive, culturally-relevant processes to rectify disconnects impeding coordinated response. Increasing local information accessibility and grassroots involvement in decision making is supported by literature on participatory approaches. Bourne (2016) and Wertz-Kanounnikoff & Angelsen (2009) found bottom-up input and empowerment improve ownership and impact.

Networks and demonstrations cultivate joint problem-solving. Multilingual approaches aim to overcome barriers cited in studies like Bessette (2006) and Servaes & Malikhao (2005) by maximizing comprehension across contexts. Place-specific proposals also align with research indicating consideration of diversity even at fine scales (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012). Emphasis on interactive, culturally-relevant processes to rectify disconnects observed in the literature mirrors recommended solutions (Moser, 2017; Adger, 2003). This emphasis reaffirms the indispensable yet often undervalued positions of those interfacing directly with recipients in contextualizing information for meaningful uptake. Emphasizing on-farm leadership, community mobilization and language contextualization aligns with research on effective participatory models. Bessette (2006) and Servaes & Malikhao (2005) found nuanced engagement overcomes barriers like understanding. Leading in locally understood languages demonstrates this. Bourne (2016) promoted grassroots involvement to build collaborative problem-solving oriented towards recipient circumstances. On-farm leadership sets participation examples. Moser (2017) discussed how bottom-up input and empowerment strengthen implementation by reconciling initiatives with communities. Mobilization fulfills this role. The importance placed on directly interfacing with recipients to contextualize information for meaningful uptake mirrors discussions of grassroots change agents as invaluable bridge-builders in participatory frameworks.

Personal roles identified centered on leading by example through practicing recommended adaptation methods within personal domains like farms, then amplifying impacts via community education and mobilization efforts. Locations highlighted complementary duties like facilitating resource exchange networks and youth engagement. These reports point to the invaluable yet often undervalued position occupied by grassroots change agents in bridging top-down policy with localized realities. Widespread acknowledgment of such duties affirms their critical importance in integrating guidance with recipient circumstances and priorities. Identified roles of demonstrating practices, community education and mobilization align with literature on participatory, bottom-up driven solutions. Bourne (2016) and Wertz-Kanounnikoff & Angelsen (2009) emphasized empowering local leadership and collaborative problem-solving. The reported roles support these objectives. Focusing duties on bridging policy with localized needs and priorities mirrors discussions of grassroots stakeholders as critical interpreters reconciling top-down initiatives with community circumstances (Moser, 2017; Bessette, 2006). Acknowledging such interfacing positions as invaluable but undervalued aligns with calls for strengthened grassroots enfranchisement in participatory models (Adger, 2003; Bourne, 2016).

What needs to change for effective policy implementation

The observed divergence in priorities possibly reflects contextual diversity even at small scales, as studies have shown (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012). Common accord on pragmatic solutions also aligns with literature advocating plural, nuanced viewpoints in participatory solutions (Bourne, 2016; Moser, 2017).

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Conclusion

Effective communication is an essential tool in implementation of any policy. Clear understanding of the the policy by implementer as well as the beneficiary is key to achieving the goal intended by the constructors of the policy. These case study bring to the surface communication challenge that marred the policy communication model that was adopted by the implementers of climate change policy in Tigithi Laikipia County. According to the study findings, a number of common themes emerged across locations, yet the results also highlighted intra- and inter-regional differences in communicated challenges. Communication barriers mentioned included physical barriers like distance as well as socio-economic barriers such as low literacy and financial constraints. Inconsistent and inaccurate guidance due to under-resourced extension services was also frequently cited. However, the manifestations and relative impacts of these barriers appeared to diverge spatially. This affirms research showing that barriers emerge from a diversity of contextual drivers at local implementation scales (Coulibaly & Fofana, 2017; Resosudarmo et al., 2012).

Numerous suggestions were given to bridge these communication gaps which included focus on bolstering culturally-grounded local networks and extension presence through pragmatic approaches sensitive to context diversity. Consensus priorities centered on improving information accessibility and grassroots involvement in decision-making. Such emphases align with literature advocating nuanced, participatory models that reconcile global aims with localized diversity. Similarly, identified responsibilities centered on demonstrating practices, mobilizing communities and strengthening bidirectional information flows which enhances understanding of information, these roles support research emphasizing empowered local leadership and collaborative problem-solving. Equally there is need for balanced fusion of

innovations and proven strengths through participatory processes respecting plural viewpoints of all actors involved in climate change endeavors.

Climate change policy communication is essential a framework that is a pivotal arsenal in war against climate change impact. These acts as a guideline on how information is packaged and transmitted; collaboration and partnership with all actors should be employed for enhancement of information acquisition. Locals when consulted and involved will own the practices and they will not feel foreign or lacking the cultural context of their society therefore increasing the uptake of the policy.

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