

Stakeholders' engagement in the process of adapting to climate change impacts. A case of central Tanzania

Stakeholders
adapting
climate change

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Abstract

Purpose – It is imperative to intensively engage stakeholders in the process of adapting to climate change impacts because stakeholders are important components in adaptation process and policy formulation. However, there is slight empirical evidence that has been established to indicate whether the stakeholders are significantly involved in developing various adaptations plans.

Design/methodology/approach – As a way of bridging that gap, this study adopted both primary and secondary data and assumed various techniques. In-depth, semi-structured interview was the major approach and most interviews were conducted between June and August 2020. Here, 20 stakeholders were involved in this kind of participatory process. To make results more rigorous, the data from interviews were enriched with data from documentary reviews. Generally, the data were analyzed through theme content analysis.

Findings – The results exhibit that there has been little engagement of stakeholders in undertaking various researches especially in marginalized areas. In some instances, several stakeholders have been included; however, the most important ones have been excluded in the process, thus affecting the provision of data. The inconsistencies affect the whole adaptation process and bring numerous controversies with the existing realities which recognize stakeholders as important entity in the adaptation process. Subsequently, this has widely affected even the set ups of decision-making organs and the policy formulation processes at large.

Originality/value – Explicitly, the results of this study are essential to climate scientists and practitioners, as the results reveal the real situation in the field. Similarly, the results inform how various sustainable projects, plans and policies related to climate change adaptations can be developed. Conclusions are therefore drawn to strengthen sustainable adaptation to climate change impacts through increased stakeholder involvement.

Keywords Agriculture, Adaptation strategy, Climate change, Co-production, Food security, Intervention research, Resilience, Sustainable policy integration, Tanzania

Paper type Research paper

1. Introduction

According to [Adger *et al.* \(2009\)](#) and [IPCC \(2014\)](#), adaptation can explicitly be expressed as is a process whereby certain groups or individuals employs various strategies to cope with or/ and adapt to the consequences of climatic impacts. Principally, the whole process of adaptation aims at increasing resilience among the community member groups ([Rao *et al.*, 2011](#); [Mkonda *et al.*, 2018](#); [Vaidya *et al.*, 2021](#)). Furthermore, according to [Wamsler \(2017\)](#), sustainable adaptation happens through thorough involvement in policy-making and decisions process by important stakeholders, i.e. individuals, groups, scientists, governmental agencies, private sectors, international agencies and their networks.

Sustainable adaptation needs proper and sufficient involvement of relevant stakeholders in identifying the best suitable methods of adaptation ([Filho *et al.*, 2018](#); [Nicholson, 2018](#)). Besides, the analysis of the capacity of stakeholders to cope and adapt to climatic stress is important in characterizing the existing and potential future vulnerability ([Paavola, 2008](#); [Vogel and Henstra, 2015](#); [Mkonda, 2021](#)). This is in connection with the role of stakeholders in the process of making, which, in turn, influence the implementation of the laid adaptation strategies.



Profoundly, in most developing countries the impacts of climate change are severe (Conde Eakin, 2003; IPCC, 2007; Mkonda and He, 2022). This is mainly intensified by less involvement of wide scope of stakeholders in adaptation process, and this is more pronounced in vulnerable areas like arid and semi-arid. In most cases, scientists and other climate experts have been considerably engaging their expertise and experiences in addressing climate issues than relying on stakeholders. In turn, this has significantly affected the sustainability of adaptation process. Again, this scenario has been more pronounced in vulnerable agro-ecological zones such as arid and semi-arid. In all standards, stakeholders are essential to the establishment of any climate change adaptation process, as they are the ones who will form the so called “adaptation community,” an important aspect to sustain adaptation process.

Numerous countries especially those highly impacted by climate change have already presumed the studies on addressing the effects, exploring the exposure and adaptation to climate change (IPCC, 2014; Mkonda *et al.*, 2018). More importantly, some of them have further undertaken detailed studies to prevent climate impacts and associated risks (IPCC, 2007).

Against this background, this paper focuses on the engagement of stakeholder in undertaking transdisciplinary research (Condel and Lonsdale, 2004). While the general concept of the paper can be well grasped in the background, it is quite discernible to put forward the definition of stakeholder, stakeholder engagement and why is it important to engage him/her in research undertakings (Wamsler, 2017).

According to Rainey (2006), a stakeholder can be defined as “any individual or group that is directly or indirectly affected by the products, programs, processes, and/or systems, but does not directly benefit as an economic participant such as a customer or supplier.” In addition, Brown *et al.* (1998) defined stakeholder as a person, organization or group with interests in an issue or particular natural resource. Overall, stakeholders are both the people with power to control the use of the resources as well as those with no influence but whose livelihoods are affected by changing use of resources. Table 1 gives the type of resourceful stakeholders from local to global levels.

Empirically, it should be noted that *primary stakeholders* have high importance to the process. They frequently perceive themselves as having low influence. Besides, *secondary stakeholders* can be both important and influential, as they may be directly involved in the process and are integral to success. They can in some circumstances be highly influential (for example, government implementing agencies). Lastly, external stakeholders can also be

Continuum level	Resource stakeholders
Macro level	Global and international wider society
	National
	Regional
	Local off-site
Micro level	Local on-site

Source(s): Adopted from Grimble *et al.* (1994)

Table 1.
Typology of resource stakeholders on a macro- to micro-continuum

influential but tend to have low importance for particular coastal zone management activities. External stakeholders can be influential to outcomes.

Furthermore, stakeholder engagement is a process that an individual, group or organizations can follow in order to listen to, collaborate with or inform their existing stakeholders (Brown *et al.*, 2001). This process involves identifying, mapping and prioritizing stakeholders in order to determine the best tactics for effective communication while making the best use of available resources.

Consequently, stakeholder engagement helps organizations to proactively consider the needs and desires of anyone who has a stake in their organization, which can foster connections, trust, confidence and buy-in for your organization's key initiatives (Brown *et al.*, 1998; Adger *et al.*, 1999). When done successfully, stakeholder engagement can mitigate potential risks and conflicts with stakeholder groups, including uncertainty, dissatisfaction, misalignment, disengagement and resistance to change. However, there can be complication in stakeholder identification because stakeholders tend to fall into more than one category.

All these involve stakeholder's analysis which is a system for collecting information about groups or individuals who are affected by decisions, categorizing that information and explaining the possible conflicts that may exist between important groups and areas where trade-offs may be possible. It can be undertaken simply to identify stakeholders or to explore opportunities for getting groups or individuals to work together (Brown *et al.*, 2001).

Many studies extensively exhibit that it is important to engage stakeholders in research undertaking, more especially on climate. This is quite imperative as stakeholders and research community can improve the existing adaptive strategies by concurrently applying both scientific information from experts and indigenous knowledge on various environmental change (Akompab *et al.*, 2012; Filho *et al.*, 2018).

Stakeholder engagement approaches may vary depending on the level of interactions where the stakeholders can provide information. It entails the assessing vulnerability for climate adaptation, stakeholders involvement in the process of climate adaptation, evaluating the existing climate threats, evaluating prospective climate threats, evaluating the present and varying socio-economic situations, evaluating and improving the capacity of adapting to, framing adaptation policy and enduring the existing adaptation process (Tsufac *et al.*, 2021).

Although the science of engaging stakeholders and its importance in undertaking research especially on climate is known, its establishment based on issues related to policy and practice is insufficient. Therefore, this paper aims at establishing such policy gap in order to enable climate practitioners and other important stakeholders to execute various agricultural activities in central Tanzania which is mostly characterized by excessive droughts and, consequently, being exposed to severe stress caused by climate impacts. This study is important as it involves and streamlines important stakeholders in the adaptation process to climate change. It can be useful to most countries needing to adopt sustainable adaptation to climate change impacts (IPCC, 2014).

In this paper, the guiding research questions include the following: What are important stakeholders in undertaking researches and how can be selected? How the process of participatory adaptation is handled? How consultation and engagement are handled during the whole process of adaptation? And how decision-making influences adaptation process?

2. Materials and methods

2.1 Profile of the study area

Tanzania lies within 1–12°S and 29–40°E, between the great East African lakes of Lake Victoria in the north, Lake Tanganyika in the west and Lake Nyasa to the south. To its east lies the Indian Ocean. The country includes Africa's highest and lowest elevations: Mount Kilimanjaro (5,950 m above sea level) and the floor of Lake Tanganyika (358 m below sea

level), respectively. As supported by [Basalirwa et al. \(2002\)](#), most part of Tanzania, except the eastern coastline, lies above 200 m above mean sea level.

The country is characterized by a bimodal rainfall regime in the northern parts, which includes areas around the Lake Victoria basin, Northern Coast and Mount Kilimanjaro. The first rainfall season occurs during March, April and May and the second during October, November and December. The central, southern and western areas are characterized by a unimodal rainfall regime from November to April. According to [Nicholson \(2018\)](#); the rainfall over Tanzania is controlled by many factors, including large-scale teleconnections such as the El Nino Southern Oscillation, the quasi-permanent systems such as the Intertropical Convergence Zone, tropical cyclones and more local-scale circulations such as sea breezes.

Although the country exhibit bimodality rainfall characteristics over the northern sector, the rainfall analysis used for these data did not consider these variations ([Mkonda and He, 2017a](#); [Walker et al., 2019](#)). The recorded disaster events may not necessarily follow the rainfall regime; second, there is a lag in reporting the impacts associated with hazards, for e.g. for the case of slow onset disaster such as drought ([Msemu et al., 2021](#)). Third, observed impacts may have been caused by a far field severe weather events example rains over the high grounds may results to flooding in low-laying areas. However, it is important for future studies to explore the relationship between disaster events and the rainfall patterns to assist improvement in generation and provision early warning information ([Ahmed et al., 2011](#); [Rowhani et al., 2011](#)).

Central Tanzania is in the plateau region of Tanzania with grasslands. Mainly, the area is occupied by Dodoma and Singida regions. These regions in most cases share climatic characteristics, soil and vegetation. In Dodoma region, the study focused on Kongwa and Mpwapwa district, while in Singida region it focused on Manyoni and Mkalama districts. The central Tanzania is a semi-arid zone which exhibits prolonged droughts due to severe shortage of rainfall. This condition poses adverse impacts to agricultural production and other livelihoods systems. As a result, the situation has significantly exacerbated the level of poverty in the area. Therefore, it is worthwhile to undertake climate research in these areas to raise awareness among the community, policy advocacy and climate practitioners at large.

2.2 Study design

This paper has mostly employed descriptive qualitative approach, as we wanted to gain new insight into the novel topic ([Eisenhardt, 1989](#)) of private and governmental stakeholders. A descriptive approach follows [Freeman's \(1999\)](#) suggestion that stakeholder research benefits from "divergent narratives on stakeholders." Technically, this study employed a case study research design. This is a qualitative research technique which has been extensively applied to explore a phenomenon within a specific context by using data from numerous sources as stipulated in the following sections of this study ([Conde1 and Lonsdale, 2004](#)). For this study, the primary data were collected through semi-structured interviews with stakeholders while secondary data were collected from documentary reviews. The reviewed documents involved key policy documents ([Baxter and Jack, 2008](#)). The study employed various sampling techniques such as purposive, systematic and simple random sampling in data collection.

It used systematic sampling to select the study zone (i.e. Central Tanzania which is mostly semi-arid zone). In addition, purposive sampling was employed to select the study districts, i.e. Kongwa and Mpwapwa districts in Dodoma and Manyoni and Mkalama Districts in Singida. Purposive sampling was used to select these districts because they are all in the semi-arid zone and are characterized by prolonged droughts.

The same approach was used to select the Government officials from the ministries. This was very important as it inquired to get policy aspects at national level. Here, the officials from environmental, agricultural and financial related ministries were consulted.

However, a simple random sampling was employed to select the Mtanana and Chitego wards in Kongwa District, and Berege and Gulwe wards in Mpwapwa District. Similarly, the simple random sampling was further used to select Ilunda and Ibaga wards in Mkalama District and Chikuyu and Kintinku wards in Manyoni District (Grothmann *et al.*, 2017). These sampling were employed because all areas (to be selected) had similar climatic characteristics.

Scenario analysis is another important approach that was employed in establishing important stakeholders and the major theme of the study (Hemmati, 2002; Gardner *et al.*, 2009). In scenario analysis, stakeholders create and explore current and future scenarios in order to learn about the external environment and to understand the decision-making behavior of the organizations involved. This approach enables the exchange and synthesis of ideas and encourages creative thinking (Gardner *et al.*, 2009; Akompab *et al.*, 2012).

2.3 Recruitment of stakeholders

Before undertaking the interviews, there were some deliberate contacts with stakeholders that were initially made. This stage entailed introductions of the researcher to stakeholders and this assured the prevalence of confidentiality. In this process, the researcher used a non-probability purposive method to sample stakeholders from different groups such as government and private actors (Babbie, 2001; Maxwell, 2005). The selection process was done on the basis that those selected would provide rich information for the study (Maxwell, 2005). In this stage, the local government authorities were also contacted to give permissions and enable the connection with some respective stakeholders.

Subsequently, the researcher contacted the selected stakeholders via phones and email to brief on the major theme of the study. Then, the researcher made some followed-up to remind them. Attached to this email, the study information sheets were provided to give the details of the study. The stakeholders were subsequently informed that there will be sufficient confidentiality during the whole process.

So far, the involvement in the interview was fairly voluntary. In this process, the selected stakeholders were requested to their interest to participate in the interview as well as suggesting appropriate time and date for the interview.

More so, stakeholders were equally invited to suggest the method of interview which they mostly preferred. This could be either person meeting or through phone. Among the 35 stakeholders whom were approached in this process, 18 showed interest to participate. Likewise, the researcher reached four more stakeholders through snow-ball sampling but only two of them agreed to participate to make a total number of twenty.

2.4 Data collection

For this study, the data were collected from June to August 2020 using semi-structured interviews. The study succeeded to interview 16 stakeholders through face-to-face and four stakeholders through phone, thus making a total of 20 stakeholders who were interviewed. Among the 16 stakeholders who were interviewed through face-to-face, 14 stakeholders were interviewed in their workplaces while the other 2 were interviewed at their home side area. Despite the outbreak of COVID-19 pandemic, it was possible to carry face-to-face interviews by taking all precautions and measures as stipulated in WHO standards. During interviews, the researcher hired one person as a note taker. Stakeholders were asked several questions to provide data and information. For instance, stakeholders were asked “*Who introduced the participatory adaptation process in your area? Please, can you express how decision-making took place during the process?*” In addition, the researcher posed some follow-up and probing questions based the stakeholders’ responses.

In this process, the stakeholders were not shown the interview questions in advance. This aimed at acquiring extensive responses through free conversation that based on climate

change adaptation issues and related climate policies. In order to get more detailed data, the interview guiding questions were relatively flexible although the interviews were consistently detailed. In terms of interview duration, most interviews took an average of 30 min. At last, the researcher produced an interview summary showing demographic characteristics of the interviewees as seen in [Table 2](#).

All interviews were precisely recorded by considering privacy. The records were then cross-referenced for precision. The observed data were supplemented by those obtained from literature reviews from scientific publications in the theme, government documents and reports.

2.5 Data analysis

Data were specifically analyzed through theme content analysis ([Ritchie and Spencer, 2002](#)). Explicitly, [Srivastava and Thomson \(2009\)](#) recommended this approach, as it suits for data analysis and relevant to provide policy implication. After the engagement with the data, themes were identified through *a priori* themes. Then, texts were imported in Nvivo version 9 to enable coding.

Subsequently, coding process was conducted by reading the records and diagnosing appropriate units of the data that matched to a specific theme. Nevertheless, when some new concepts appeared from the chunk of data, the emerging themes were generated to accommodate the new ideas. The pertinent transcripts were then coded into their fitting themes. The themes were subsequently revised for resemblances and variances in views provided by the stakeholders. Later on, the entire coding process was carefully reviewed. As stipulated in the design, there were also some critical documentary reviews related to the study.

3. Results

Generally, the findings of this study were obtained from numerous stakeholders as seen in [Table 2](#). They exhibit that there were more male respondents were (12) than female ones (8). In terms of sectoral representation, the study also indicates that private sector was highly represented (8) compared to non-governmental organization (NGO)/community service

Characteristics	Number
<i>Gender</i>	
Male	12
Female	8
<i>Sectoral Representation</i>	
Public	8
Private	4
NGO/Community Services Providers	6
Researchers/Scientist	2
<i>Management Level</i>	
Elder	12
Intermediate	8
<i>Region/National</i>	
Dodoma	10
Singida	7
Ministries	3

Table 2. Characteristics of the stakeholders interviewed

providers (6), private sector (4) and researchers/scientists (2). Besides, there were more elders (12) than intermediates (8). Regional wise, Dodoma had most respondents (10) compared to Singida (7) and ministries (3). This table indicates that there were detailed representation of the respondents from different aspects, and thus, the results are authentic.

In addition, this section addresses issues related to the selection of important stakeholders, introducing the process of participatory adaptation, governance and political willingness to the process, consultation and engagement during the whole process, adaptation decision-making during the process and transparency and accountability as seen hereunder.

3.1 Important stakeholders

The present study spotted the following groups as important stakeholders in the adaptation process. These groups are vital in addressing the impacts of climate change in various levels, i.e. international, national and local.

Although international organs like the United Nations Framework Convention on Climate Change (UNFCCC) and Food and Agricultural Organization (FAO) as well as technical panel like International Panel on Climate Change (IPCC) are important stakeholders in the adaptation process, the national/central government and local governments are more tangible in formulations of policy related to climate change. [Table 3](#) below gives details.

The stakeholders and policies on climate change adaptation are influenced by [the Tanzania National Environmental Policy of 1997](#). This policy addresses the issues of climate in a rigorous approach because climate is very important aspect in biodiversity management. It has influence on water, soil and air. The policy also supports international strategies on combating greenhouse gases. The protection of the atmosphere must therefore be a global effort. International efforts at the protection of the atmosphere have so far consisted of the Vienna Convention on the Protection of the Ozone Layer and its Montreal Protocol and the UNCCC which largely addresses the emissions of greenhouse gases in the atmosphere.

3.2 Introducing the process of participatory adaptation

In this aspect, stakeholders posed numerous views. Mainly, they asserted that the process of addressing the climate change impacts seem to have some roots from some government organs. Empirically, stakeholders viewed that the processes of initiating participatory adaptation process should have a root from the community or local people themselves although they acknowledged the needs of expertise and science.

In order to overcome this challenge, most stakeholders indicated that there are things to consider in advance. They insisted that there should be consistent coordination among the responsible or important stakeholders. These include international institutions, government organs, NGO and local communities, i.e. the affected group as seen in [Table 2](#). Apart from that, the local stakeholders highlighted on the needs of other climate practitioners especially the funding agency from international organization to be in place timely. These stakeholders had such views because the said coordination would reduce future climate change impacts among the vulnerable local communities.

The purpose of coordinating climate change adaptation process among the stakeholders is to intensify community resilience, consciousness and reaction to extreme climate change impacts. In turn, this would help in assisting the responsible funding agencies to work together and effectively deliver the required assignments.

3.3 Governance and political willingness to the process

Generally, most stakeholders asserted that the success of the participatory process is mainly based on the level of leadership and political willingness. Most interviewees noted that

Table 3.
Important
stakeholders and
their roles

Stakeholders	Interests and roles
Global environmental facility (International)	<ul style="list-style-type: none"> i. Provide developmental ability for adapting to climate change where this agenda is taken as a national priority; ii. Fund agreed adaptation projects under the UNFCCC, such as Second National and iii. National Adaptation Programmes of Action (NAPA)
National government and ministries (e.g. agriculture, health, environment and education) and meteorological agency	<ul style="list-style-type: none"> i. Abide to global arrangements and take part in global discussions on regional programmes; ii. Implement sectoral policies, programmes and plans; iii. Increase local human progress; iv. Development of effective climate change adaptation mechanisms and v. Lessen the climate-related threats
Local government authorities (i.e. village, wards, districts etc.)	<ul style="list-style-type: none"> i. Resolve local challenges associated to climate change impacts; ii. Improve the capacity of local communities; iii. Invest in local plans and programs; iv. Support local institutions and v. Inhibit climate damage and disasters at local level
Research institutes, centers and universities	<ul style="list-style-type: none"> i. Contribute to solving climate problems affecting vulnerable human systems and ecosystems at both national and regional level; ii. Build stable capacity at national and regional level for addressing climate change challenges and iii. Develop suitable approaches at both national and regional to address climate change challenges with a developing country perspective
Local environmental development NGOs	<ul style="list-style-type: none"> i. Enable the organization of local people and recognize action to fulfill local needs; ii. Fund local development programmes and projects iii. Develop technical, financial, human and institutional capacities and iv. Support local institutions that act as climate change practitioners
Local communities or people affected by climate change impacts	<ul style="list-style-type: none"> i. Enhance health, education and housing; ii. Enhance land and productivity of aquatic animals; iii. Lessen the vulnerability to climatic threats at local level and iv. Enhance adaptive capacity for coping with climatic threats

although there are some weaknesses in government institutions, there are robust leadership and political support from the Government when planning for adaptation strategies.

In addition, the stakeholders were further probed to give reasons that influence strong leadership and political willingness in supporting the adaptation process. As a response, most stakeholders replied that in the whole process of climate adaptation; leadership and political attention are very important in influencing policy-making processes, management personnel, service providers and the functioning of local government. Besides, it was noted that the recent climate change impacts needs relevant and consistent adaptation processes. Otherwise, this can lead to increased social consequences and diminished livelihoods among the vulnerable communities.

Essentially, political willingness is validated from the top level of government through responsible ministries to the local government (URT, 2009). The representatives from the local governments are particularly important as they directly involve with the local communities (i.e. the affected stakeholders). For example, some respondents mentioned that the extent of political willingness was validated during the adaptation process. Overall, the stakeholders had extensive views as they commented that leadership and political willingness is empirically detected at both ministerial and local government levels. For instance, elected representatives of the people (i.e. local government councilors) acknowledged the harshness of the climate change impacts and they totally dedicate their efforts to work with other stakeholders reduce actual and potential climate change impacts in their respective constituencies.

3.4 Consultation and engagement during the whole process

In this study, participatory process was designated as “multi-tier,” by virtue of the diverse levels in which stakeholders are engaged. Most stakeholders asserted that there are numerous coordination structures which facilitate the consultation. As shown in [Tables 1 and 2](#), for effective involvement of these stakeholders there is a need to have a good structure that acts a transient form one stakeholder to other. In this aspect, the central government, i.e. cabinet of ministries, is the highest structure in the formulation of policies and procedures related to adaptation processes in Tanzania.

The other important stakeholder is the Parliament of Tanzania where legislations are passed for approval. The local government councilors, especially at ward level, are equally important in passing regulations and by-laws for local government. In addition, the Prime Minister’s office has subdivision responsible for disasters management in Tanzania. However, the financial resources allocated to this subdivision seem to be insufficient to cater the required responsibilities.

3.5 “Adaptation decision-making” during the process

In this section, the researcher asked several questions to the stakeholders. For instance, the stakeholders were inquired to explain how decisions-making is always made and to what extent the opinions and thoughts of stakeholders are taken into account before reaching decisions. Here, there were some differences in responses among the stakeholders. Those representing the Government had almost the same views that there are always open and frank discussions among the stakeholders before making the decision. They further asserted that every stakeholder involved in the process or meeting is always free to air their ideas and opinions before making decisions.

Likewise, most stakeholders representing local communities and those from private sectors had different views. They mostly insisted that despite the presence of openness it is not significant. There were some rising differences in technical knowledge with regards to climate change among the stakeholders. This generally indicates that diverse stakeholders

are always involved. However, to make it more rigorous, there is a need to increase awareness among the local communities and treat them with respect in a pleasant and responsive manner.

The results from interviews exhibit that almost all stakeholders stated that decision-making is generally reached through consensus as shown in the following questions and responses hereunder;

Question: Please; can you tell how decisions are always reached when planning for adaptation process?

Answer 1: "I think is done largely by consensus."

Answer 2: "Decision-making, I consider that; one would have to say it is generally consultative in nature."

Even though most of the stakeholders specified that decision-making is always reached through consensus, there were some extreme responses that significantly differed from many others. For example, one participant asked the extent of openness as sometimes it appears that decisions have been taken prior by the top authorities without discussion. Thus, the local people had to take it as directives. This interviewee believed that stakeholders are always called to meetings to discuss matters which have already been decided.

Question: What do you think about the extent of consent by which decisions are made?

Answer: "Although we are called in the meeting, I feel that some sort of decisions had been made before. Does that make sense to you? And that you were regarded as taking part in a decision process."

Besides, some interviewees asserted that to certain extent the expert and top authorities had power to decide for them due to a number of reasons. They asserted that *"They are the experts, but we are not."* Some asserted that *"there are certain things that some people need to do on behalf of others."* All these arguments were posed by different stakeholders to reflect their views.

On the other hand, the Director of Planning from the Ministry of Agriculture when asked these questions replied that:

The government has proper plan to involve all stakeholders in the planning including the private sectors. This involvement is mainly done through Public Private Partnership (PPP) which insists the collaboration between public and private sector in boosting socio-economic development.

This situation signifies that it is difficult to involve all stakeholders in undertaking research or in developing policy because of several factors. Among others include lack of willingness among the stakeholders and financial constraints to fund research.

3.6 Transparency and accountability

3.6.1 Openness and fairness. In this aspect, most stakeholders asserted that they are satisfied by the openness and transparency from the top authorities. They expressed that this was fundamental part of good governance. They continued that most discussions and reflections were always open and friendly to stakeholders.

An elder living in Gulwe Ward in Mpwapwa District asserted that *"We are always openly told to how different projects and plans are done including the responsibilities of the communities. This is always done as part of community engagement."*

In addition, they posed that in most occasions especially in meeting, they have chance to raise several questions and pose ideas about what should be done to improve adaptation process in their areas.

Alongside, stakeholders especially from Dodoma Region had dissimilar views on the extent of openness before reaching decision on several aspects, indicating that the process are not that much open. They asserted that, this is caused by the institutional arrangements that surround the decision process.

3.6.2 Encouraging feedback from stakeholders. Most stakeholders stated that there are always appropriate feedbacks during the decision process. For example, agenda of various meetings and the way forwards are always made open to stakeholders. Here, the stakeholders are capable to give relevant inputs including comments which are then integrated into the final drafts of the deliverables. Almost all the stakeholders were satisfied with regard to the extent in which their comments are considered in the deliverables.

3.6.3 Mechanisms that facilitated transparency during the process. In this aspect, the interviewees were expected to assert about the mechanisms that are employed to enable transparency of the entire process. This would be guaranteed through an approach known as the “assurance mechanism.” This encourages the provision of constant feedbacks among the involved stakeholders. By so doing, the inputs, i.e. basically the suggestions from the stakeholders, have significant contribution in the decision-making process. Overall, this mechanism ensures significant trust among the stakeholders and it strengthens the accountability and transparency of the entire process.

One interviewee asserted, “On top of that, there is a formal process set down by our country’s arrangements called assurance. This assurance process requires that everything that you think that you have done, you then submit to all stakeholders for mass consumptions.”

4. Discussion

This paper aims at establishing policy and practices that can enable important stakeholders in addressing climate impacts. For instance, there is a need to considerably involve climate practitioners and other important stakeholders to execute various agricultural activities especially in areas with excessive drought in order to reduce the vulnerability.

In doing so, the paper has widely discussed the importance of good governance and institutional arrangements in the process of planning for relevant adaptation process to climate change impacts especially in central Tanzania, the semi-arid agro-ecological zones (Mkonda and He, 2017b). The study indicates that there are very rare studies of this nature that have been established in the country. Stakeholders, more especially, the local communities are very important in designing adaptation mechanism that would improve their resilience (Wamsler, 2017). The studies by Ahmed *et al.* (2011) and Rowhani *et al.* (2011) explicitly indicate that effective adaptation to climate impacts in Tanzania needs substantive involvement of stakeholders. These results are in line with that by IPCC (2014) that grouped Tanzania among the worst impacted and most vulnerable countries by climate change impacts. Therefore, the country needs relevant adaptations process to limit the associated impacts.

In all standards, Tanzania needs a good mechanism that would ensure effective adaptation to climate change impacts. This mechanism should involve stakeholders, especially smallholder farmers at local level, who are the most vulnerable. Basically, this vulnerability is more pronounced in semi-arid zones, i.e. particular central Tanzania (Mkonda and He, 2018).

The stakeholders’ views and documentary reviews indicate that the process of developing the adaptation policy recommend the engagement of all important stakeholders in order to make it be constructive, successful and sustainable (URT, 2013). Interviews results indicate that there are numerous factors that can influence the achievement of sustainable adaptation to impacts of climate change amongst the stakeholders. Among others, the level of leadership and political commitment should be considerably high. These findings from stakeholders consistently correlate with that from documentary reviews. Leadership and political willingness on the development and implementation of public policy are essential elements (Ludwig, 2009).

It was further noted that policy and legal frameworks should be well designed to enable the implementation of any plan including climate change adaptation. Although climate adaptation plan of action (NAPA) describes how adaptation should be done in several sectors in Tanzania, there is existence of weak coordination among sectors and stakeholders (URT, 2007). Hence, this gap necessitates the requirement of effective involvement of stakeholders in a preparation of any community plan.

Historically, this situation of weak coordination among institutions can be traced back even before independence. Since her independence, Tanzanian policy and legislation relating to livelihoods sectors such as livestock keeping, agriculture, water, fisheries and natural resources management, for example, are based on misunderstandings about the sustainability and relevance of these sectors in industrial economy (Vogel and Henstra, 2015). As such, policy and legislation in areas as wide as agriculture, natural resource management, tourism, conservation and urban development have had contradictory solutions to problems associated to these sectors.

A focus on modernization and commercialization of both crop farming and livestock keeping has dominated policy, ignoring local or customary knowledge (Koontz, 2006). These policies have served to undermine the livelihoods of pastoralist, smallholder farmers and other weak economic groups in the country.

On behalf, the large-scale investors have been taking advantage of government incentives to engage in large-scale commercially oriented crop production and modernized livestock production (Greene, 2015). This has in one way or another affected the livelihoods of the local communities as what is produced has no direct impacts to their livelihoods systems, since the investors are always producing for export.

Alongside, the multi-stakeholder processes in climate change adaptation focuses on the core set of values that support communication and engagement of different stakeholders, encouraging interaction between state and private actors with the purpose of sharing information and making collective decision (Conde and Lonsdale, 2004). In this study, it was further revealed that, for effective establishment of climate adaptation, various issues need to be addressed holistically. This aspect was clearly reported by stakeholders and also reported in various documents that were thoroughly reviewed.

In terms of decision-making, it is important to involve stakeholders from the scratch. Fortunately, there were some positive responses on this aspect from the stakeholders. However, it was also revealed that some decisions are made in advance by authorities or scientists before involvement. Explicitly, this aspect had economic implications as most stakeholders especially those from local communities expect some economic support from either the Government or other climate practitioners to implement some climate projects as part of adaptation. Regrettably, this was not easily possible to get funds from either the Government of funding agencies.

Likewise, most stakeholders raised their concerns on the domination of government in most decision aspects. This was also connected to political willingness. Most strategies related to climate adaptation are politicized by the politicians. This, in one way or another, affects the accuracy of stakeholders' decision on various aspects. Some stakeholders were afraid of mention the Government as a barrier for their involvement in decision-making processes. It has been conserved that when a government institution manages a participatory process, representatives from private sectors are sometimes skeptical on the magnitude to which decision-making process can be fair (Koontz, 2006). However, most stakeholders revealed that consensus is a main approach of making decisions. This is also consistent with the findings from a study of a multi-stakeholder process to formulate an environmental policy.

The results of the present study give significant advice to the establishment of a framework for a broad-based consultative process with well-coordinated institutional

engagements to guide the development of various plans related to adaptation to climate change impacts. This institutional framework facilitates effective management and leadership in the planning process. It can guarantee the participation of broader stakeholders and promote effective coordination and liaison between and among actors from both government and private sectors.

Here, the process of adapting to climate change impacts involves all discussion and decision of what strategy should be taken to adapt to climate change impacts. Some of the indicators include awareness, knowledge and skills among the farmers on attempting agricultural practices such as conservation agriculture, early planting of crops and innovation of other agricultural techniques that would reduce vulnerability to climate impacts. This can be assessed through interaction with the stakeholders to assess their knowledge on the same. The outputs such as agricultural yields can also be used to assess this aspect.

Finally, the future empirical research should adequately explore the exhaustiveness of economic policies associated to climate change in order to include all vital stakeholders in that institutional framework. This will be more important by working on the challenges associated with the implementation of the policy. In addition, participant observation should be considered as a most important method of data collection regardless of the challenges that can prohibit the component, e.g. COVID-19 pandemic (Talukder *et al.*, 2021).

5. Conclusions

The present study has both local and global implications toward policy and practice assessment related to climate adaptation. The study is applicable in diverse agro-ecological zones and countries that needs to streamline their adaptation strategies and practices with policy. It has specifically explored the essence of stakeholders' engagement in adaptation processes to climate change impacts. It has been revealed that there is a need for cordial involvement of all important stakeholders in developing the policy that responds to climate change impacts. In semi-arid zone, the involvement of stakeholders is considerate and does not involve all stakeholders. In this study, it has been revealed that the involvement of several stakeholders (multi-stakeholders) is important and brings about sustainable improvement and application of public policies. This comes as a result of allowing widespread consultation of various stakeholders. This would bring in board constructive ideas and insights when planning to respond to climate change impacts and other associated societal threat. In short, good leadership and political commitment are crucial aspects in the development of any public policy process. Above all, good institution framework leads to promote consensus during decisions-making process.

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