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'Stakeholder Participation in Climate Change Adaptation in Chadereka Ward 1 of Muzarabani Rural District in Zimbabwe'

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ABSTRACT: Stakeholder participation in climate change adaptation is critical the world over. This enhances sustainability of rural livelihoods given the adverse climatic conditions currently experienced. A focus on a local area serves as benchmark for great inferences of the scenario at national, regional and global scales. Thus, the choice of Chadereka Ward 1 of Muzarabani Rural District in Zimbabwe for this paper was not equivocal. For sustainable socio-economic transformation in developing countries there is need to constantly interact with matter leading to place specific climate change adaptation strategies. Currently, technological innovations to mitigate the climatic disaster still need more action and publication. Thus, the purpose of this paper was to establish the role of stakeholders in climate variability and change adaptation, a major constraint to the goal of sustainable socio-economic transformation. The Ward, being marginal in Zimbabwe is one of the hardest hit by climate variability and change which cripple the rural livelihoods in the area. Who are the stakeholders in climate change adaptation in Chadereka? What contribution do they make in reducing the problem and fostering sustainable socio-economic transformation? A mixed methodology approach (qualitative and quantitative) was used to gather data for providing answers to the questions. Statistical Package for Social Scientists (SPSS) version 21, descriptive statistics and content quote technique were used to analyse the data. The research established that the main stakeholders include the community members, the Non-Governmental Organisations (NGOs), academics from universities, the traditional leaders, and the governmental officials. These in their various capacities contribute differently in promoting the adaptation strategies in the area ranging from education on best practices to the provision of implements for use. Structural and non -structural adaptation measures key to socio-economic transformation are considered in the area.

Key words: Stakeholder, sustainability, rural livelihoods, adaptation, climate variability and change.

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I. INTRODUCTION

Stakeholder participation in climate variability and change adaptation has become a critical issue worldwide (Aldunce et al., 2016; Lawson, 2016; Manyani et al., 2017; Tompkins and Eakin, 2012).Given that our 'Mother Earth' collapses if no action is taken to abate the increasing concentrations of greenhouse gases in the atmosphere, solutions are needed now or never. Thus, as noted by the identified authors, active stakeholder participation generally builds resilience and sustainability of livelihoods adaptation strategies pursued during the times of adverse climatic conditions. Stakeholders' interventions in their different capacities in decision making and the execution of proposed measures are worth sharing and exchanging experiences so as to adopt the locally suitable. This is done in order to reduce the vulnerability of rural communities, marginalized and exposed to the extremes of climate change (Bohensky et al., 2016; Mavhura et al., 2017; Wise et al., 2015).

The issues of stakeholder participation in the agenda of climate change dates back even before the Earth Summit in Rio de Janeiro in 1992 which culminated in the adoption of the United Framework Convention on Climate Change (UNFCCC) (Government of Zimbabwe, 2015). The Intergovernmental Panel on Climate Change (IPCC) (2007; 2014) inform that the UNFCCC was put in place to engage the whole world on the issue of keeping greenhouse gases low, within sustainable levels since it had become clear that with the level at which it was being produced through anthropogenic activities, sooner the earth would be uninhabitable. Catastrophic events resulting from climate change such as floods and drought have become inevitable. Currently, climatic change effects are being experienced across the globe (Manyani et al., 2017) to the local level like Chadereka Ward 1 of Muzarabani Rural District in Zimbabwe.

Lawson (2016) for example, discusses the worthiness of stakeholders in the National Climate Change Policy making processes in Ghana. Thaker et al. (2016) observed that beliefs, norms, and networks which are shared socially regarding climate variability and change are fundamental in raising and promoting the adaptive capacity of individuals and communities. This research paper is therefore set to establish the stakeholders and their roles in promoting sustainable rural livelihood adaptation to climate variability and change in Chadereka Ward 1. It also examines household perceptions on the effectiveness of the stakeholders' intervention mechanisms in adaptation to climate variability and change. The following questions guided the research:

- Who are the stakeholders in climate change adaptation in Chadereka Ward 1 of Muzarabani Rural District in Zimbabwe?
- What are the stakeholders' contributions to sustainable rural livelihood adaptation to climate variability and change in Chadereka Ward 1;
- How effective are their interventions strategies?

Few et al. (2007: 56) assert that "stakeholders must have a genuine opportunity to construct, discuss and promote alternative options". This supports their observation of Article 6 of the UNFCCC of 1992 which called for all Parties to enhance public participation in responding to climate change and its effects. Sango and Godwell (2015) conclude that climate change is a multi-stakeholder and multi-dimensional agenda whose address lies in multi-sectoral approaches. Thus, the determination of stakeholders' roles and their effectiveness in climate variability and change adaptation is of great concern in the present research.

Is climate really changing? Enough evidence worldwide currently exists to suggest that climate is varying and changing. In the case of Zimbabwe, Chifamba and Mashavira (2011) suggest that the Save River discharge in Zimbabwe has decreased by 43% from 1982 to 2009 owing to climate change. Further evidence includes the changing rainfall pattern which is decreasing and the increasing air temperature and sunshine intensity causing variations in stream flows (Dube et al., 2016; Madobi, 2014; Pinto et al., 2016). Other evidence worldwide which can be listed incorporates global sea level and temperature rise, warming oceans, shrinking ice sheets, declining Arctic sea ice, glacial retreat like on the summit of Mount Kilimanjaro in Africa, extreme events (especially droughts and floods), ocean acidification, and decreasing snow cover (Goyette, 2016; IPCC, 2007, Lang and Ryder, 2016). The beginning of the rain season has become unpredictable and overall the climate in Zimbabwe is regionally differentiated, generally becoming warmer with more erratic rainfall patterns (Chifamba and Mashavira, 2011; Jiri et al., 2015).

Dilling and Berggren, (2015), Haque et al. (2016), Mafongoya et al. (2016) and Prokopy et al. (2015) identify non-governmental organisations (NGOs), Civil Society Organizations (CSOs), scientists or researchers like climatologists, media, professionals, the general public (consumers and suppliers), agricultural advisors or extension educators as some of the stakeholders concerned with climate variability and change issues. A stakeholder, as defined by Freeman (2010), is a group of people or an individual with an influence in the accomplishment of the objectives of an organization or society. Stakeholders were also labeled as planners, managers, supporters, or makers of climate-sensitive decisions (Dilling and Berggren, 2015). All the literature presented here on the stakeholder subject concurs in that the individual or the group has vested interest in the organization's goals. In this note, numerous stakeholders are involved in climate variability and change adaptation issues to ensure the feasibility, sustainability, legitimacy, and acceptability of the generated solutions (Gramberger, et al., 2015). As Muchanga (2012: 81) observed:

...planning for climate change would require a diversity of views from multiple stakeholders such as educationists, traditional leaders, the government, affected people, government statutory bodies, clergies, Non-Governmental Organizations (NGOs), among others.

Collins and Ison (2009) and Gramberger et al. (2015) also affirm that polycentric stakeholder engagement is considered a critical component in coming up with research results which are acceptable and conclusive to political and societal decision-making. Thus, the results could have a practical application. In Chadereka Ward 1, the roles of such stakeholders was evaluated as a way of fostering and enhancing effective participation thus, promoting sustainable rural livelihoods as people adapt to climate variability and change. Climate variability and change is part of the global Agenda 21, among other issues which call for global partnership for sustainable development as revealed by the UNCED (1992). The UNCED (1992) further identifies individual countries, international organizations together with various organs and organizations of the United Nations system, and NGOs as critical stakeholders which is also affirmed by Muchanga (2012).

II. SOME GEOGRAPHICAL CHARACTERISTICS OF CHADEREKA WARD 1

Zimbabwe, a country in which Muzarabani Rural District (study area) lies (Figure 1.1 and Figure 1.2), is one of the most vulnerable sub-tropical African countries to the impacts of climate variability and change. Its vulnerability stems from its geophysical, socio-economic and political conditions which reduce adaptive and

copying capacity considerably. As a tropical country, it is prone to seasonal climatic variations with hot-wet and dry-cold conditions. Unganai (1996) and Mugandani et al. (2012) gave its precise location as a country which lies in the southern hemisphere between latitudes 15.5^0 and 22.5^0 south and longitudes 25^0 and 33^0 to the East of the Greenwich Meridian. It covers an area of 390 580 km^2 (Mugandani et al., 2012).

The specific area studied, Chadereka Ward 1 (Figure 1.1) is in the northern lowveld of the country experiencing extreme climatic conditions. Moyo et al. (2012) state that Chadereka Ward I occupies the agro-ecological zone IV characterized by little rainfall averaging 550 mm per year and excessively high temperatures (up to 40^0C during the hot season of September to November). Thus, the area is prone to prolonged seasonal droughts and severe dry spells in between summer months (Campbell, 1994; Murwira et al., 2012).

Floods and drought are meteorological phenomena that are experienced occasionally in Zimbabwe (Manyani et al., 2017; Mavhura et al., 2017; Murwira et al., 2012). This entails the variation in climate in the area as postulated by Matarira et al. (2013). Unganai (1996) and Matarira et al. (2013) concur that the inter-annual rainfall variations are known to be explained by the El Nino Southern Oscillation (ENSO) phenomenon among other factors. This supports some common crop varieties grown in the study area like maize, sorghum, pearl millet (*mhunga)*, finger millet (*rapoko*) and cotton in addition to the keeping of a variety of small to large livestock.

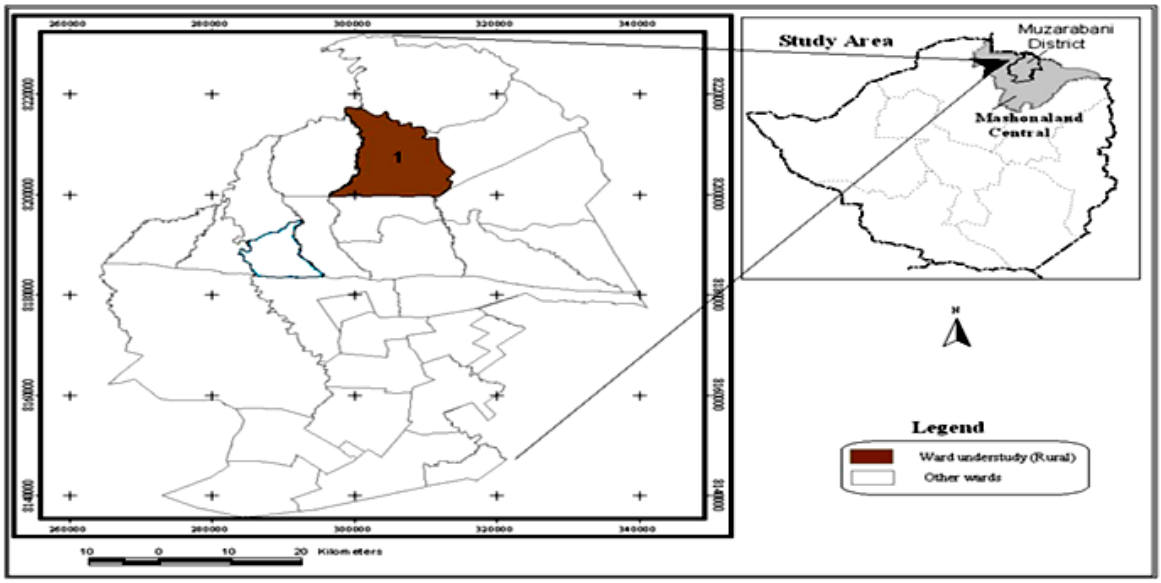

Figure 1.1: Map of Zimbabwe showing Chadereka Ward 1 in Muzarabani Rural District of Mashonaland Central Province (Source: Author)

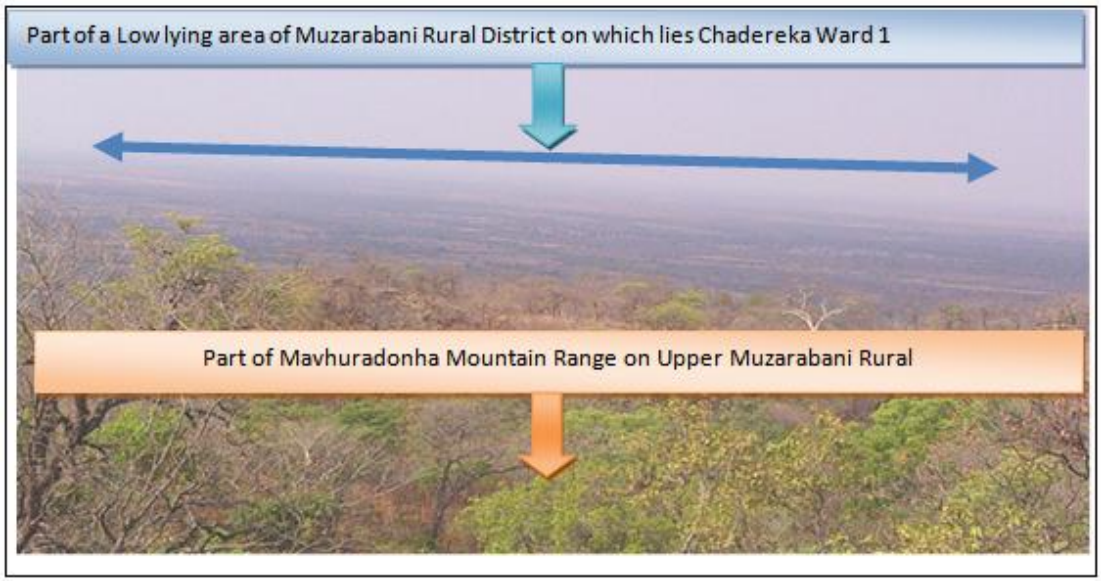

Figure 1.2 Part of the low lying area and Mavhuradonha Mountain Range of Muzarabani Rural District (Photograph taken from part of Mavhuradonha Mountain Range) (Source: Author)

III. CLIMATE CHANGE GOVERNANCE IN ZIMBABWE

The proposed governance framework for climate change in Zimbabwe according to Government of Zimbabwe (2015) is organized as show in Figure 1.3. The framework portrays a top-down approach given that the resource distribution is centralized. On top is the Cabinet Committee on Climate Change which together with the Minister of Environment, Water and Climate are responsible for all communications to do with climate change at national, regional and international scales like the engagement with the UNFCCC and the production of Nationally Determined Contributions (NDCs) which are communicated to the Conference of Parties (COP) (Government of Zimbabwe, 2015). The National Climate Change Platform is considered multi-stakeholder involving representatives from all the governance levels including other economic sectors. This is where climate change strategies are formulated, discussed and recommended like the Zimbabwe National Climate Change Response Strategy launched in 2015.

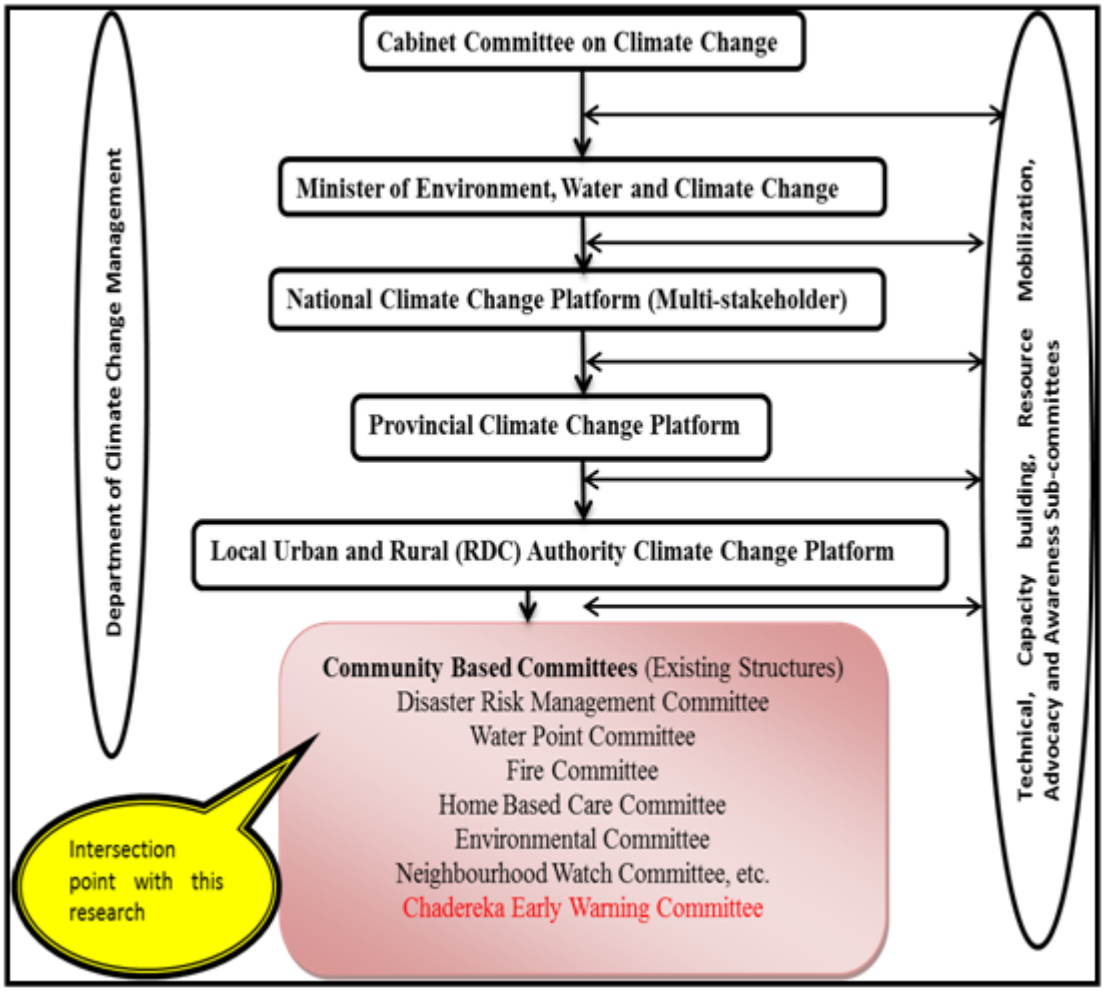

Figure 1.3 Proposed governance framework for climate change in Zimbabwe (Adapted from Government of Zimbabwe, 2015:65)

Below this platform comes the Provincial Climate Change Platform followed by the Local Urban and Rural Authority Climate Change Platform. These authorize passage to researchers and some organizations who would want to support the households in the Ward among other duties. Despite the affirmation by Dodman and Mitlin (2015) that climate variability and change information is disseminated regularly through the print and broadcast media, these rarely get to the rest of the households in Chadereka Ward 1 due to infrastructural and remoteness challenges. Just below each of these platforms are the technical, capacity building, resource mobilization, advocacy and awareness sub-committees which for the general populace are non-existent as they are resource constrained in the execution of their mandates. One participant during the focus group discussion regarded them as 'paper sub-committees' whose roles are still to be fulfilled. This implies the need for capacity building at their levels to ensure that they initiate projects which are viable, income generating and invest in their adaptation strategies to climate variability and change.

At the bottom of the framework there are the various Community Based Committees constituted by some civil society groups and the locals. This is the target for the current study. Engagement of the locals in climate change debates generates valuable data in terms of the impacts and possible solutions to the issue of climate variability and change as alluded to by Belachew and Zuberi (2015). This disputes the idea of top down approaches in climate change issues. Discussants argue that the experts and higher authorities should come to the Ward and get the correct picture about the whole issue and then work together towards the solution. In steady, CSOs or NGOs which often visit the ward, educate households on climate change and disaster issues and some provide help in various ways. An example was given of the Red Cross Society in Zimbabwe which in June of 2016 carried out a four days' workshop on Community Based Health and Disaster Management (CBHDM) with some households in Chadereka Ward 1. The workshop focused on Community Driven Early Warning Systems. The Chadereka Early Warning Committee actively participated in the workshop. This instills the sense of ownership among the households as they actively participate in their local capacities. It then emerged from the workshop according to one household participant during the focus group discussion that:

There are no proper measuring equipment such as rain gauges and thermometers for the Chadereka Early Warning Committee to constantly monitor and record weather in their area. In fact there is not even a single weather station in the Ward. Communication amongst committee members and even out of the Ward to high authorities is poor. We then proposed solutions like asking for help from well- wishers for the weather instruments and for communication we resolved to use cell phones/ whatsApp, inter- committee meetings and even sending messengers for internal communication. School children also help pass on messages among other forms.

Abid et al. (2016) suggest the provision of infrastructure as part of the role of local government in climate change adaptation. Thaker et al. (2016) also note the promotion of public awareness campaign as a crucial task for the CSOs and the NGOs in fostering a high level of community collective efficacy in adaptive capacity to climate variability and change. Niang et al. (2014) observe that local and traditional knowledge is being used by communities in fostering resilience and adaptive capacity to climatic variability and change response in Africa. Taiy et al. (2015) add that some governments and other stakeholders normally distribute climate smart technologies and they create a supportive environment through policy and institutional framework. In some particular instances university specialists and researchers train some extension educators in climate variability and change adaptation matters who in turn also educate the smallholder farmers (Prokopy et al., 2015). Abel et al. (2016) suggest that the success of adaptation strategies to climate variability and change is based on the collective action processes in which leadership, lobbying, research, innovation, negotiation, conflict resolution, facilitation, and managerial abilities are brought together. The authors further note the value of engaging stakeholders with diverse experiences and abilities. Such situations were assessed in the case of Chadereka Ward 1.

Muchanga (2012) reviewed four categories of stakeholder or public participation from Few et al. (2006) which are passive, consultative, self-mobilization and interactive. The first two approaches have weaknesses as they are not inclusive. On the last two, even Muchanga (2012) acknowledged that they are the most appropriate as they allow active public engagement in the planning of climate variability and change adaptation.

In developing countries there is still need to explore strategies for adaptation to climate change as the livelihoods are still mainly based on agriculture which is rain-fed (Chifamba and Mashavira, 2011; Gentle et al., 2012; Manyani et al., 2017; Mavhura et al., 2017; Molnar, 2010; Ngondjeb, 2013). Currently, technological innovations to adapt to and mitigate climatic disaster still need more action and publication for their uptake by farmers (Nyasimi et al., 2016). Thus, the role of stakeholders in climate change adaptation and mitigation generally is essential. The marginal areas are the ones hardest hit by climate change as the livelihoods in such areas are crippled by adverse climatic conditions (Gukurume, 2013). Institutional roles in responding to climate variability and change have increased in the recent past (Cadman, 2013). Table 1.1 shows some of the stakeholders and their roles in climate variability and change adaptation in Zimbabwe as reviewed from the Government of Zimbabwe (2015).

Table 1.1: Selected stakeholder roles in climate variability and change adaptation in Zimbabwe (adapted from Government of Zimbabwe, 2015:70-147)

Stakeholder	Contribution to climate variability and change adaptation
Zimbabwe Meteorological Service Department (ZMSD)	• Providing climate monitoring and prediction, disseminates probabilistic seasonal climate forecasts to provinces, districts and wards and maintains records of meteorological data from the weather stations. The activities include weather forecasting, and measurement of wind speed and direction, temperature and humidity in the atmosphere as well as promoting climatic data collection, management and climate modeling. It maintains a network of meteorological observatories; meteorological stations and rainfall stations throughout the country.
Department of Civil Protection	• Coordinating all disaster management activities including all weather related catastrophes. • Facilitating capacity building programs at national and provincial levels especially in "emergency preparedness and response".
NGOs and CSOs like the UNDP, United Nations Educational, Scientific and Cultural Organisation(UNESCO), Practical Action, Zimbabwe Regional Environment Organisations (ZERO), Zimbabwe Environmental Law Association (ZELA), Business Council for Sustainable Development in Zimbabwe (BCSDZ), World Vision and RED CROSS	• Assisting in funding programs like the Five-year coping with Drought and Climate Change project. • Developing and piloting a range of long-term agricultural adaptation measures. • UNESCO Harare in conjunction with the British Council in Zimbabwe is working on a project to apply educational tools, specific sectorial measures and public awareness activities, and developing national policy frameworks on climate change adaptation in order to improve the education, outreach and policy dimensions of addressing climate change. • Mainstreaming sustainable natural resources management in agricultural education. • Institute of Environmental Studies, at the University of Zimbabwe, is facilitating multi-institutional, interdisciplinary and policy-directed research on environmental issues and coordinating and monitoring research studies on climate issues. • Practical Action hosts a climate change electronic forum aiming at exploring, discussing and pooling information on climate change issues affecting Zimbabwe and the southern African region. • Promoting a culture of environmental stewardship in all business processes. • Providing food, shelter and other infrastructural aid.
Rural District Councils	• Have limited capacity to reduce exposure and to cope with consequences of extreme weather conditions such as flooding, storms, droughts, heat waves and cold spells and their impacts on local communities. • Enforce by-laws on siting, designing, quality and building standards. • However, implementation is limited because of shortages of engineers and skilled staff as well as inadequate financial resources for monitoring and supervision. In addition, the by-laws are outdated and are informed by old climatic data.

IV. METHODOLOGY

A case study approach was adopted, where Chadereka Ward 1 of Muzarabani Rural District was purposively sampled for this research. Key instruments in the collection of qualitative data were interview guides, observation guides (photo visioning), and focus group discussion guides which conforms to Swanborn (2010), Kumari et al. (2014) and Sarantakos (2013)'s assertions of what constitutes qualitative research. Household questionnaire-interviews with both structured and a few non-structured questions were employed in gathering quantitative data. Table 1.1 summarizes the research methods, source and type of data collected.

Table 1.2: Research methods, source and type of data collected (Source: Author)

RESEARCH METHOD	SOURCE/ TARGET GROUP	TYPE OF DATA COLLECTED
Qualitative design: Primary sources		
Key Informant Interview (10)	Village Heads, Ward Councilor, Chief, District Administration official, Head Officials from the CPU or EMA, NGO, ZMSD Official, School head, Clinic head and Agritex Officers in the ward.	Current livelihoods strategies and stakeholder roles in promoting sustainable rural livelihoods.
Focus Group Discussion (3)	Two groups of maximum twelve (12) purposively sampled mixed household representatives in Chadereka Ward1 in Muzarabani Rural District.	Current livelihoods strategies and stakeholder roles in promoting sustainable rural livelihoods.
Observation	Biophysical and human assets like water sources, livelihoods and infrastructure.	Visioning livelihoods strategies and household assets, the biophysical and human environments.
Quantitative Design: Household Questionnaire-interview (310)	Three hundred and ten (310) randomly sampled households from villages in Chadereka Ward 1. .	Current livelihoods strategies and stakeholder roles in promoting sustainable livelihoods.

A mixture of these methods facilitated triangulation of the gathered data ensuring its validity and reliability. A household questionnaire interview survey was used in gathering quantitative data in Chadereka Ward 1. This was appropriate in that data from the sample of three hundred and ten (310) households was obtained in relatively less time and the instrument simplified data analysis through the use of SPSS version 21. The key informant interviews conducted allowed some follow up questions as the interviewer sought some clarifications, as advocated for by Creswell (2014) and Sarantakos (2013). The focus group discussion guide allowed the researcher to get more insights into the livelihoods strategies in the rural ward and an assessment of the effectiveness of stakeholder roles in climate variability and change adaptation issues. This also clarified the results obtained from the household survey and key informant interviews conducted. For the key informant interview and focus group discussion data, the content quote and descriptive statistical methods of data analysis were pursued. Photo visioning of salient biophysical and socio-economic aspects were important in the verification and authentication of some claims by the household respondents.

Besides the purposive sampling done for the Ward studied in Muzarabani Rural District of Zimbabwe and the key informants interviewed, The Survey System Sample Size Calculator software was used in determining the number of household respondents for the household questionnaire survey conducted. Chadereka Ward 1 was selected considering its accessibility, physiographic characteristics which include proneness to drought and floods, and socio-economic and political challenges experienced in the area. It also represents a typical poverty-stricken rural community. Table 1.3 illustrates further the sampling of the households in the research area.

Table 1.3: Household survey sample size of Chadereka Ward 1in Muzarabani Rural District (Source: Research data adapted from ZIMSTAT, 2012)

Ward	Total Households	Number of Households Sampled	Confidence Level (%)	Confidence Interval
Chadereka Ward 1	1 594	310	95	5

According to the ZIMSTAT (2012), Chadereka Ward I has a total number of 1 594 households. Computing The Survey System Sample Size Calculator software using the data on households at 95% confidence level using a confidence interval of 5, the sample size was calculated to be 310 households. This is statistically significant and representative. The household respondents were then randomly selected. Therefore, a multilevel mixed sampling method was followed (Adams et al., 2014; Teddlie and Yu, 2007; Malleson et al., 2008).

V. RESULTS AND DISCUSSION

According to household participants in the focus group discussions, government and its various organs like those in the Ministry of Environment, Water and Climate, Health and Child Welfare, educationists including academics, agritex officers, officers from the CPU or EMA and the Zimbabwe Meteorological Services Department, the NGOs or CSOs, local authorities such as the District Administrator, the Chief, Ward Counselor, Kraal heads and the local community members have been identified as important stakeholders in climate variability and change matters in the Ward. These portfolios have also been considered in the publications by Dilling and Berggren, (2015), Haque et al. (2016), Mafongoya et al. (2016), Prokopy et al. (2015) and Sango and Godwell (2015) among others. The stakeholder roles on climate change issues which vary from global down to the local level, are normally hinged on the access to resources. The effectiveness of the stakeholder roles for this research has been assessed using a three pointer likert scale of 'less effective', 'effective' and 'not effective'.

Table 1.4 illustrates the summarized responses during the focus group discussions on stakeholders, and the effectiveness of their roles in promoting sustainable rural livelihood adaptation to climate variability and change. This was also confirmed during key informant interviews. According to the household participants the government through its various ministries and organs provides services to the inhabitants of Chadereka ranging from agricultural support in terms of inputs and extension services to disaster relief like floods and drought relief whenever they occur. Most of the issues regarding climate variability and change in the Ward still remain centralized and underfunded as noted by Dodman and Mitlin (2015). The households also noted that some services are understaffed with for instance one agritex officer for the whole Ward, one Chadereka clinic with only one qualified nurse and some primary and secondary schools with most of the teaching staff unqualified. The area is prone to malaria due to the prevailing climatic conditions. Given these institutional, financial and human capacity among other observed short comings in service provision by the government and its related sectors, the household participants assessed the roles as effective to a limited extent and consider their Ward ignored. However it can also be noted that the government shows concern regarding climate change at

international and national levels by signing and ratifying the UNFCCC in 1992 and acceding to the Kyoto Protocol in 2009 (Government of Zimbabwe, 2015).

Table 1.4: Household focus group discussants' assessment on stakeholder roles in promoting sustainable rural livelihood adaptation to climate variability and change in Chadereka Ward 1

Stakeholder	**Role(s) in promoting sustainable rural livelihood adaptation to climate variability and change.**	**Effectiveness**
Government (District Administrator)	Provision of inputs (though not timeously), provision of clinic services (like provision of nursing staff), education services (like deployment of qualified teaching staff), relocation and disaster relief though not enough.	*Effective to a limited extent*
NGOs (UNICEF, ISL, Help from Germany, World Vision, Zimbabwe Red Cross Society)	Help from Germany- provision of farm inputs, World Vision-provision of sanitation and water(boreholes) UNICEF-provision of education material RED CROSS-provision of education, water and sanitation ISL-once built houses for flood victims	*Effective*
Chief	Lobby for development of the area, takes ward issues and challenges to the government.	*Effective*
Kraal head	Enforces laws/regulations, pass resolutions to minor altercations in the village, report to the councilor on issues arising in the village, and participates in the distribution of the land or relocation.	*Effective to a limited extent*
Zimbabwe Meteorological Service Department	Provide weather reports/forecast through the radio otherwise they are not physically seen in the area as there is no meteorological sub-stations.	*Effective to a limited extent*
Agritex Officer(s)	Encourage good farming practices like conservation farming and the production of drought tolerant commodities.	*Effective to a limited extent*
Ward Councilor(s)	Foresees ward governance- law maintenance in the ward, oversees the distribution of relief goods in the ward, attend meetings/workshops/conferences with NGOs to do with communities.	*Effective to a limited extent*
Civil Protection Unit / EMA	Provide education on natural disasters.	*Effective to a limited extent*
Local households	Implement the rural livelihoods adaptation strategies to climate variability and change.	*Effective*

It is also plausible that the government allowed some NGOs or CSOs to perform their humanitarian roles in different areas of the country. Further, in its current Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZimAsset) 2013-2018 policy, the government recognizes climate variability and change impacts like drought and floods which negatively affect the largely rain-fed agricultural based economy. Thus, it therefore partnered with some organisations for financial and technical support like UNDP, COMESA, UNICEF and Global Water Partnership and launched the Zimbabwe's National Climate Change Response Strategy in November 2015 in line with recommendations by the UNFCCC (Bodansky and Rajamani, 2015). This, according to the Government of Zimbabwe (2015: ii) aims

to create a climate change resilient nation while its mission statement is to ensure sustainable development and a climate proofed economy through engaging all stakeholders recognizing the vulnerable nature of Zimbabwe's natural resources and society.

While the vision and the mission statements are so fascinating supporting multi-stakeholder involvement, the focus group discussion participants pointed out the lack of transparency, accountability, commitment and the corrupt tendencies by some official in the management and distribution of resources (institutional, financial and human) aimed at promoting adaptation and mitigation strategies in the Ward. One participant pointed out,

We are only told what to do by the authorities without them taking into consideration our capacities and what we want done in our community. Look at the roads, bridges and other infrastructure. Our Ward is inaccessible during the rainy season making communication and resource exchange difficulty. The command agricultural input distribution is done selectively, with the majority in marginal areas not benefiting at all. Thus, the government's commitment on us is limited.

The role played by the Chief was commended and rated effective by the focus group discussants. The Chief brings feedback to the households. However, the government delays in attending to challenges experienced in the Ward due to the resource issue other than the political will as reported by IPCC (2014). However, the kraal heads and the councilor who enforce and foresee the maintenance of the environmental laws including best practices in the execution of their livelihoods were considered less effective as they are also found violating some of the laws by practising stream bank cultivation leading to siltation of rivers. The local households rated themselves effective as they confirmed that they implement whatever is needed to be done within their capacities. These are the receiving end and beneficiaries of strategies recommended. However, they were quick to point out that at times the government does not publicize much the role they played in climate change adaptation yet they matter the most when it comes to the implementation of strategies. Policy makers should 'walk the talk' for their roles to be effective in promoting adaptation to climate variability and change.

Household respondents' level of participation in policy formulation process regarding sustainable rural livelihood adaptation to climate variability and change in Chadereka Ward 1 was probed through a household questionnaire survey. Forty-eight percent of the household respondents confirmed that they greatly participate followed by 21% whose participation is less. Eighteen percent of the household respondents remained neutral while 13% acknowledged non participation. Figure 1.4 shows the distribution of the responses.

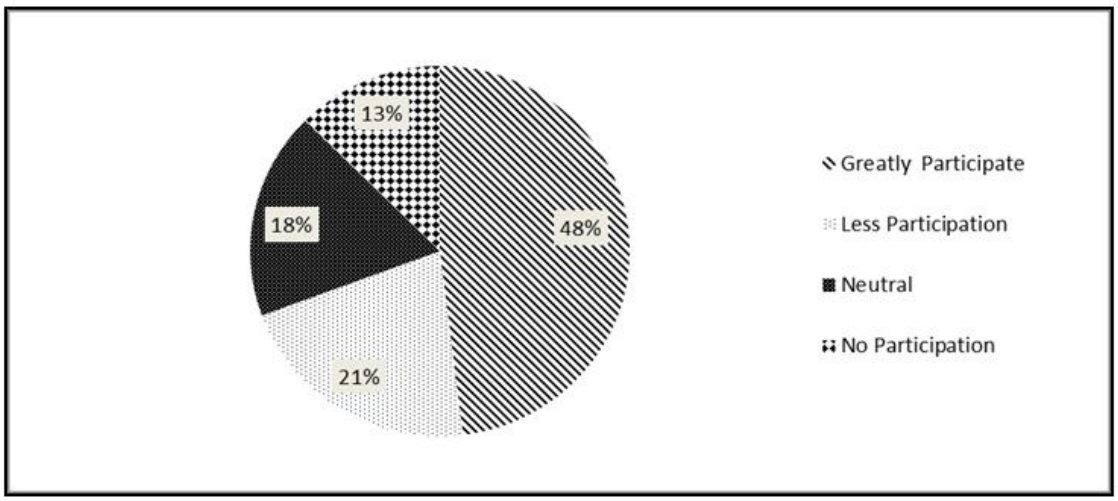

Figure 1.4 Household percentage responses on their level of participation in policy formulation process on promoting sustainable rural livelihood adaptation to climate variability and change (N=310)

The households who confirmed participation in policy formulation process (69%) also include the key informants and those individual households who are pursuant with current events in the Ward. When requested to indicate in which way they take part, Figure 1.4 illustrates that 56% agreed to be involved in the implementation stage while 13% provide ideas during planning, an indication that they attend to the National Climate Change Platform where this is done. The remainder, 31% are not involved in any way. This portrays a weak participation of the locals on decisions which matter the most particularly in their Ward.

Despite the assertion by Dodman and Mitlin (2015) and the Government of Zimbabwe (2015) that the country as yet does not have a standalone policy or legislation on climate change, the existing sectoral laws like the environmental laws advocating for reductions in pollution and environmental degradation are pursued. The EMA in Zimbabwe for instance is in the helm of ensuring that citizens abide by these policies. Success stories for EMA have been recorded by Manatsa and Gadzirai (2010) and Mwaniki (2013) among others but these have concentrated on the southern lowveld of Zimbabwe where there Chiredzi, Chivi, Bikita and Masvingo are found leaving little coverage of the northern lowveld in which lies Chadereka Ward 1, Muzarabani Rural District. Thus, this research adds more literature on rural livelihoods and climate change issues in the northern part of Zimbabwe.

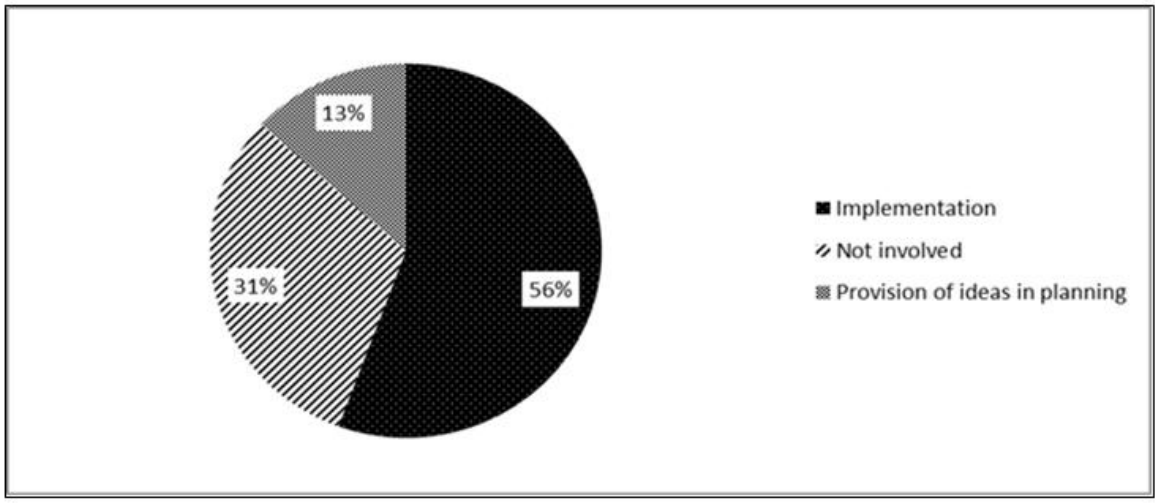

Figure 1.5 Household percentage responses on their involvement in the policy or regulation systems (laws) on the promotion of sustainable rural livelihoods adaptation to climate variability and change in Chadereka Ward 1

Given these observations, the use of automated weather stations would augment the indigenous knowledge systems discussed in Manyani et al. (2017) and help the community reduce the negative impacts of climate variability and change as revealed in. Once the households develop full knowledge of the climate change phenomenon and each of the stakeholders performs the roles diligently and honestly it becomes easier to increase resilience and reduce community vulnerability to climate variability and change fostering sustainability of the adaptation endeavors. The implication calls for partnership of the rural community especially in Chadereka Ward 1 with some CSOs, NGOs and the relevant sectors of the government.

In the quest to know whether household respondents were provided with any awareness training regarding the issues understudy, Figure 1.5 illustrates the percentage responses. There was almost a striking balance between the recipients of training (56%) and non- recipients (44%).Of those who acknowledged to have been trained, 38% indicated that they were trained on sustainable natural resource use and management while 18% received community disaster survival education especially floods and drought which are prevalent in the Ward. Even though some of the household respondents argue against their exclusion from deliberations on climate variability and change issues at higher levels, initial training to understand the phenomenon is critical. Knowledge is best developed within the context of the local area visiting the relevant fields as revealed by Butt et al. (2015). Households therefore are in support of change of venue for the workshops and seminars or deliberations, that is, they are requested to be held in the rural areas where the impacts of climate variability and change are worst. However, residents commended the training conducted by NGOs such as the Zimbabwe Red Cross Society on early warning systems. On this issue already limited awareness regarding climate variability and change had been acknowledge and noted.

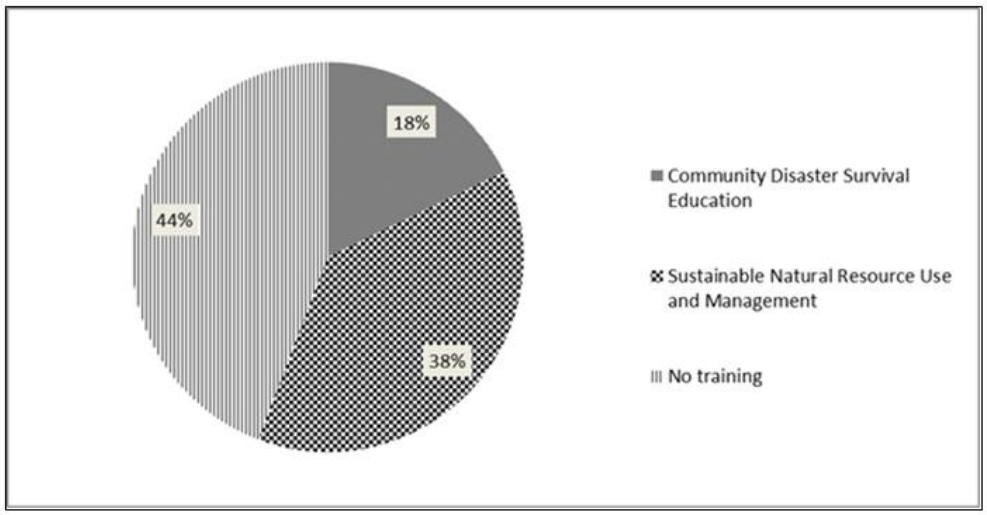

Figure 1.6 Household percentage responses on training received to enhance livelihood adaptation strategies in the face of climate variability and change in Chadereka Ward 1 (n=310)

The providers of the training shown in Figure 1.6 were identified as the NGOs with the highest percentage (32.9%), followed by the government organs with 27.4% and finally the local leadership with 4.2%. Local leadership mainly report outcomes of the deliberations from workshops, seminars and conferences attended at district, provincial and national levels to the community. In all the three sets of trainers, the percentage of household respondents who did not acknowledge any trainers widely surpassed those who were trained. The current dimension of assistance to the vulnerable communities is to encapacitate them through life skills training for them to be self relient given that when the external support is removed, there should be self-sustenance and continuity (Mavhura et al., 2017). Mechanisms to ensure that every household attends to such trainings need to be enforced.

As part of government's effort to have the message of climate variability and change reach to communities, Musarurwa (2012b) discussed the university institutional roles. Musarurwa (2012b) made it clear for universities to find relevance to communities which they serve by encorporating or infusing problematic physio-societal issues like climate variability and change into their curricula. Exchange of scientific and indigenous knowledge systems to foster sound adaptation strategies to the phenomenon are encouraged as reviewed by Manyani et al. (2017). In this placement, Bindura University of Science Education which lies in Mashonaland Central in which Chadererka Ward 1 of Muzarabani Rural District is located, through the memorandum of understanding with the ZMSD, has established a weather station equiped with instruments for recording weather elements. Since 2013 climatic data is being generated for use in climatological studies. Further, programmes which take into account climate variability and change issues are being run and improved like the Master of Science in Climate Change and Sustainable Development (MScCCSD). Thus, ligible candidates who would later disseminate climate change information and adaptation options are being encapacitated through education and training.

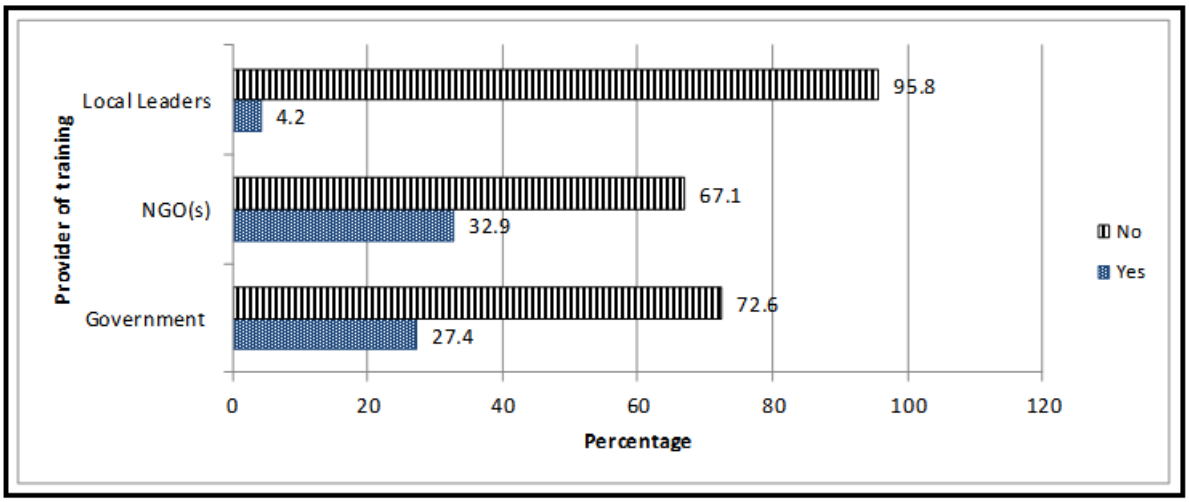

Figure 1.7 Household percentage responses on the provider of training to enhance livelihood or survival strategies in the face of climate variability and change (n=310)

VI. CONCLUSIONS AND RECOMMENDATIONS

The study sought to identify stakeholders who participate in climate variability and change issues. Their roles in the process were established. From the paper presentation it has been clarified that stakeholder roles on the issue of climate variability and change are diverse and should not be underrated. In the case of Chadereka Ward 1, generally the roles are effective to a limited extent as there is no time frame for their execution and they are resource constrained. The visit to the Ward by other stakeholders is usually less frequent. However, NGOs were commended to be of great help in the Ward as they offer support ranging from training to other material donations for use. Human empowerment is the advocacy to reduce the donor syndrome and foster creativeness. Strengthening of collaborations between government, NGOs, private sector and the local community should be reinforced for sustainable adaptation to climate variability and change to be realized. Conditions for global climate change funds should be relaxed in order for them to be accessed by most developing countries like Zimbabwe which have not yet significantly received any meaningful amount for adaptation. There is need to generate up to date data on climate change issues in order to wedge meaningful debates at international fora. The most vulnerable communities need priority whenever assistance is being given. Climate change researches need to be funded for the generation of best results.

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