Indigenous Knowledge Systems (IKSs) used by women to address El Nino-induced droughts: A case of Chivi District in Masvingo Province, Zimbabwe

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Abstract

Climate change is one of the most debated topic globally. Its effects are also visible in Zimbabwe, in the agriculture sector in particular, with rural communities facing different problems like shortages of food, water and loss of livestock due to El Nino. The research attempts to establish Indigenous Knowledge Systems (IKSs) employed by women in Chivi District to reduce the impact of El Nino and reduce food poverty. Furthermore, the study probes the effectiveness of these strategies and the challenges associated with their employment. The study used a qualitative approach and a descriptive design to collect data from 30 female participants who were purposively selected (10 from Chivi North, 10 Chivi Central and 10 from Chivi South). In-depth interviews and focus group discussions were used. The research was guided by the Resistance Theory. Thematic analysis was used to analyse data. The research revealed that women have some coping strategies which include food storage, income generation projects, livestock management, crop diversification and binding of social capital, among other household-based adaptation strategies. It recommends continuous education of rural communities on climate change, as well as strong collaboration among rural communities, government, and NGOs.

Key Words: El Nino, livelihood, poverty, resilience, rural women,

Introduction

The climate change is a reality in human lives (Ontl, Janawiak, Swanston, Daley, Handler, Hagenbuch, Handrick, Morcarthy & Patch, 2020). This reality poses great challenges to human life, hence the need for urgent attention (Nunes, Meireles, Pinto Gomes & Almeida Ribeiro, 2020). Nunes *et al*. (2020) further assert that climate change is caused by the increase in carbon dioxide concentration present in the atmosphere as a result of the burning of fossil fuels, hence the need for climate change adaptation. Adaptation to climate change refers to the mechanisms and initiatives by humans and other systems to mitigate climate change impact (IPCC, 2014). Akinnagbe and Irohibe (2014) also argue that the role of such adaptation is mainly to reduce risks inherent to both humans and animals, and develop the capacity to cope with impediments and dangers, and craft survival techniques which are innovative. It is true that women are more affected by climate change as compared to men (UNFCCC, 2014). This is mainly because they are the ones who interact more with the natural environment for food security (Nyahunda *et al*., 2020; Tirivangasi et al., 2021a). Women play important roles in food security, hence they

are affected by climate change (Nyahunda, 2021). Women do represent the poorest population in most developing countries, Zimbabwe included, and depend on agriculture and natural rains for their livelihoods (Ndaruzaniye, 2013). Alam *et al.* (2015) also note that women are also valuable agents of change despite facing greater problems than men. They are blessed with indigenous knowledge which of importance in dealing with climate change (Nyahunda and Tirivangasi, 2020). They possess several indigenous solutions in their different communities. In support of this, Williams (2018) asserts that women have shown great skills in dealing with the impact of climate change; skills garnered through their constant interaction with the environment in their daily work and responsibilities. In Chivi District, women constitute a larger number of peasant farmers mainly because of poverty, social exclusion, patriarchal dominance in decision-making, limited access to information, shortage of land, and gender roles (Mpandeli and Maponya, 2014; Alam, 2015).

Climate change and women

Climate change is a global physical process disproportionately affecting humans, and women are usually affected more than men. People in Chivi District are located in a semi-arid area which is known as natural Region 6. It receives very low rainfall and has poor soils, hence the region tends to have poor communal farmers with poor income, hence their vulnerability to climate change. In Africa, women constitute more communal farmers despite the other responsibilities they shoulder like cooking, doing laundry, as well as collecting firewood, food and water. As a result, they are expected to manage natural resources like water and land which are sensitive to the effects of climate change (UN-Women, 2016; Tirivangasi, 2018; Nyahunda and Tirivangasi, 2019). Climate change, according to Tirivangasi, (2019), causes traditional food sources to be scarce and inaccessible for the ones who take care of the families (women). Women in Chivi District face low harvests and incomes, hence they are dragged into poverty and food insecurity (Nyahunda and Tirivangasi, 2021). UNDP (2014) projects that 90 million women in Africa will face food shortages by 2050 because of climate change.

Study area

The study was conducted in Chivi District in Masvingo Province, Zimbabwe. The district is located in a drought-prone region (with low average rainfall) of the country and is occupied by subsistence farmers. The majority of the people in the study area are peasant farmers who grow crops and keep some livestock. There are more females than males in the district in the study area in particular. In Ward 16 and Ward 22, most males have crossed the border to South Africa for greener pastures, leaving their homes run by women. In Ward 8, most men are now practising gold panning in the Mashava area and the villages around Mhandamabwe have families headed by females who are vendors at the growth point. Because of low rainfall, goats and donkeys are their main domestic animals. Very few people have cattle because of poor pastures.

Theoretical framework

The study was guided by the Resilience Theory. According to Adger (2006), the theory views the beliefs by human beings (subsystems) as anthropological activities which are part of their livelihoods, and the natural environment directly or indirectly as interacting aspects at social

and economic levels. Resilience to the changes in climate is a way by which societies forget their common ways of living in responding to the climate change-induced changes. In these, human activities are directly or indirectly linked to the ecosystem which they interact with. The theory holds that stressful and disturbing circumstances are common in all systems, and for humans to adapt to the disturbances, they should focus holistically on the advantages and opportunities that may develop out of the predominant challenges (Holling & Gunderson, 2002; Nelson *et al*., 2007). From such knowledge, the theory values strengths over problems, emphasising the transactions between humans and their social and physical environments. It is also defined by Masten, Best Garmezy (1990) as the process or capacity for successful outcome adaptation despite challenging circumstances. As such, rural communities, women in this case, gain multipurpose lenses which they use to examine all challenging issues regarding the effects of climate change in Zimbabwe, and Chivi District in particular. Women in Chivi District are experiencing climate change, and are rationally responding to such disturbances by employing organised adaptation strategies as individuals or collectively.

Statement of the problem

Climate change is a serious phenomenon, especially to the rural communities who depend heavily on rain-fed agriculture, like the Chivi Communal Lands. Climate change poses risks to lives and livelihoods of individuals (Helluth *et al*., 2007). Rural people are vulnerable to climate change and their interaction with the environment affect their social and economic growth. Chazovachii *et al*. (2012) note that farmers in Masvingo Province respond differently to climate change. Ofoegbu *et al.* (2015 also observe that the communities in rural areas usually remain vulnerable to climate change shocks even if they can apply different mechanisms because their mitigation methods do not match the high pressure of climate change. Several studies (Chagutah, 2010; Gukurume, 2012; Chazovachii *et al*., 2012; Dube & Phiri, 2013; Ndebele & Mubaya, 2015; Chimutabgi, 2016; Nyahunda & Tirivangasi, 2019) in Zimbabwe which have tried to understand and explain the effects of climate change either on agriculture, health, and other areas, the challenges, risks, and even ways of coping with it but there has not been much in terms of unearthing the climate change faced by rural Chivi women in Wards 8, 16 and 22 in Masvingo communal lands, Region 4/5 that receives very little rainfall. This study intends to close the gap by establishing the coping strategies used by rural women in Wards 8, 16 and 22 of Chivi Communal Lands.

Methodology

The study was carried out in Chivi District, and three wards were purposively selected, which are Ward 8, Ward 16 and Ward 22. 30 participants were sampled to serve as key informants in this study. Purposive sampling allows the selection of participants according to the study's needs (Creswell, 2009). Participants were women subsistence farmers who rely mainly on vending, gardening, small-scale irrigation schemes and other livelihood strategies for survival. Their ages ranged from 30 to 60 years and were mainly those who have resided in the same village for a minimum period of 10 years and, thus, who have historical knowledge of development in the area. Village heads helped the researcher to identify the participants. Three

focus group discussions were conducted with 10 participants per group. Individual interviews were also conducted with three purposively selected participants per ward. The researcher ensured trustworthiness by verifying collected data and addressed biases that might affect the process of drawing conclusions (Babbie and Mouton, 2012). This was done through ensuring that the findings were closely related to, and reflected, the meanings as described by the participants. The researcher addressed the four components of trustworthiness identified by Williams and Hill (2012), which are transferability, dependability, credibility and conformability. The researcher ensured that data was collected and recorded correctly, that the results in the study were a true reflection of what the participants said, and data was collected in a natural setting without any influences. She also then made sure that the results were objective and not biased by the motives and perspectives of the researcher. Data was collected through in-depth individual interviews and three focus group discussions of five individuals each, selected to discuss their personal experiences of the subject under study (Babbie and Mouton, 2012).

Results and discussion

The study revealed that women are indeed ravaged by climate change impacts in Chivi District of Masvingo, but they are not passive victims of these effects of climate change. It was revealed that women in Chivi District have a variety of activities that they adopt to mitigate climate change effects, and these are unique to their areas. These adaptation strategies employed by women in Chivi District are presented under the following themes: the use of indigenous knowledge systems, livelihood diversification, household and adaptation, and information about climate change.

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The use of Indigenous Knowledge systems (IKSs)

The study established that IKSs are useful in informing adaptation strategies adopted by most Chivi women. IKSs are defined by Musasa (2022) as a body of knowledge accumulated based on practices, beliefs and coordinating techniques through generations on cultural transmission, on how human beings interact with the environment, creating relationships. One elderly woman said:

> *"Ndinogona kuona kuti todyara here kana kuti kwete kana teteguru vangu vakandipa kuhope. Ikozvino hatichina masango kana mhuka dzaitiudza nguva yekurima ndokusaka tozivikanwa nekuti veMhandamabwe."* (I can tell whether there is need to plant or not, if my ancestors reveal it to me through dreams. We no longer have nature and wild animals' behaviour to tell us the situations, hence we are known as Mhandamabwe people). **(56- year-old Participant).**

The participant emphasised that she is a woman living in the area and is able to predict planting times if only her ancestors reveal it to her through dreams. Women in this study have accepted

climate change in their area and can interpret the meanings related to rainfall. Another woman also said:

> *"Tinoongorora mafambiro emhamhasi munharaunda ino. Kana dzakawanda segore rino toziva kuti hakuna mvura saka hapana chatinokohwa chero tikarima zvedu. Yokumwa chaiyo ichatonetsa*." (We analyse the behaviour of black ants/termites) in our area. If they are in large numbers like this year, the way they move and build their homes indicates that we have no rains so we won't harvest anything even if we plough. Even drinking water can be a problem). **(52-year-old Participant).**

IKSs are easily accessible and can be shared and adopted, as we have seen in this district. It also emerged that people, women in Ward 8 in particular, find IKS useful and important to them in making decisions related to climate change adaptation. In Ward 8 that receives very little rainfall, the participants revealed that they no longer grow crops and have accepted the historical myths of the area. One woman confirmed this by saying:

> *"Tisuka vaye vokunzi zvinhu zviendzwa chembere yekuno yakabika mabwe ikamwa muto vamwe vachikohwa muminda yavo."* (We are those in Chivi whose elderly woman cooked stone and drank soup from the stones during harvesting time.) *"Kubika mabwe nekumwa muto kureva kuti pavairima hapana chaiikohwewa saka vakashingirira semudzimai kuraramisa mhuri yavo."* (Cooking and drinking soup from stones means that the area and situations were dry, hard, and unproductive but the old woman was so strong, innovative and as a mother). (**46-year-old Participant).**

Another participant said:

> *"Nzvimbo ino inonzi Mhandamabwe kureva kuti haina mvura, haina chirimwa chingamera zveuraramisa vanhu, ine nhamo yekutodya matombo*." (This place is called Mhandamabwe meaning an area with no rainfall, no agriculture plant can grow; an area with extreme poverty and people can even chew stones). (**40-year-old Participant).**

The above narrations demonstrate the extent of confidence rural women in Chivi's Ward 8 have in the IKSs and history of their area, which also serves as their drive for adaptation to perceived climate risks. IKS and history foster resilience to climate change in Africa because they are the most accepted and can be embraced easily by local people. The study also established that the people of Chivi District, and Ward 8, in particular, are still attached to their ancestral doctrines. To them, their ancestral spirits have power and influences over their daily activities and the lives they live. As such, the above excerpts reveal that women in Chivi District use innovative ways to assist their families during climate challenges. To them, all women should be like that old woman who looked for different ways to help her family survive and tried cooking stones.

Livelihood diversification

Livelihood diversification is defined by Gukurume (2013) as a process used by rural households to start different activities and social support capabilities for survival as a way of improving their standards of living. The study revealed that livelihood diversification is a common strategy among Chivi women. It also revealed that agricultural activities are no longer popular because of climate change and rainfall variability. To reduce the risk of ravages of failed harvests, all participants indicated that they have diversified their activities to earn their livelihoods. The following excerpt confirms this:

> *"Kurima angove makasi kuno. Varume vedu vakaenda Joni. Uye tikaramba takagarira maoko raramo yedu inchinja, tinofa. Ini ndinogwafa gwafa kuti vana vangu vawane chekudya nemari yechikoro kana murume akanonoka kutumira." (*Farming is now like gambling here. Our husbands went to South Africa, so if we sit and do nothing when things are changing, we will die. I do a lot of things for my children to survive and go to school if my husband delays sending money. **(40-year-old Participant).**

The deterioration in agricultural production and low rainfall in the district have forced most participants to resort to diverse livelihood mechanisms and economic activities throughout the year. The common activities they indicated include selling fruits, selling vegetables they order from irrigation schemes, fishing, firewood trading, selling drinking water to passengers in buses, selling sugarcane and sadza, among other things. They have selling places at townships where buses and truck drivers usually rest for the night, like Mhandamabwe, Mhukahuru, Sese, Maringire and Ngundu. The International Panel for Climate Change (2014) posits that climate change is a threat to human life and their livelihoods. These livelihoods are defined by Musara (2018) as those ways used by people to make a living. He further states that what is imperative regarding climate change and human livelihood is to adopt sustainable ways in which people can cope to reduce the stresses and shocks, and yet providing benefits for other livelihoods without destroying the natural resources.

The study established that people in Chivi District are poor and their poverty, worsened by climate change, has crippled them for years. The community is very marginalised and underdeveloped and most participants admitted that they are living from hand to mouth. As a result, poverty is slowing down the climate change mitigation efforts in the district. Said one participant:

> *"Vazhingi?? vedu muno hatisi muminda ye Bindamombe dam iyi. Tinotongoendawo hedu kunoredza totengesa hove kuwana raramo. Variko madzimai mazhinji ari kungorma miriwo, beans, carrots, green paper, magaka, nezvimwe zvavanotengesera vemisika."* (Most of us in Ward 16 are not part of the Bindamombe irrigation scheme. We go there for fishing in order to sell for survival. Those in the scheme are into vegetables which they sell at the market). (**44-year-old Participant).**

Another participant had this to say:

> *"Pano paNgundu tinorarama nekungotengesa tengesa. Tinomukira kunohodha hove kuTokwe Mukosi totengesa kuti mhuri dzirarame. Vamwevo tinopota tichitengesa*

*michero, mirivo, nzimbe nezvimwe." (*Here, at Ngundu we survive on vending. We order fish for sale early morning from Tokwe- Mukosi for family support) (**40-year-old Participant).**

Yet another participant revealed:

"Seni zvangu ndinoita zvese zvese ndichibetsera baba vari kubhaga bhaga kuti vana vangu vawane kudya nekuenda kuchikoro." (As for me, I do a lot of things that help my husband who is into gold panning, as long I get food for my children and money to send them to school). (**35-year-old Participant).**

Said another participant:

> "We are doing a lot of things to feed our families. There is nothing coming out of these fields in our ward. Its drought every year" **(50-year-old Participant**).

NGO officials and other researchers indicated that as a start, to address the effects of climate change in Chivi District, there is need to address the level of poverty in the community. This is supported by Brooks and Loevinson (2011), who point out that for people to be able to adapt to climate change, the best way is to address their poverty. The Zimbabwean government should have in place policies that will help increase poor people's resilience to climate change, including in Chivi District's Wards 8, 16 and 22. There is need for the Zimbabwean government to achieve broad-based economic growth that can reach the poor in rural areas, like by improving productivity in crops and strengthening trade to cope with the negative agricultural effects of climate change. The study revealed that in Ward 8, female farmers are provided with 5 goats each a year and are expected to return the goats the following year, hoping that, all things being equal, the farmer will have four goats extra so that she can be able to return the five given to her. This programme was started by CARE, an NGO, but now the government is in charge. This is what respondents had to say:

"Ndakapiwa dzangu shanu kwegore rose. Ina dzakabereka mbudzana mbiri mbiri. Pavakatora dzavo shanu gore rino muna Kubvumbi ndakasara ndatofuma pano. Vazukuru vangu ndivo vafudzi ndinovimba ndivo vane ruvoka rwepfuma." (I was given five goats last year. Four of them have two lamps each. This year in April they collected the five which they gave me last year, and I was left a rich old woman. My grandchildren are the goat-herders here and I believe they are the lucky ones). (**60-year-old Participant).**

"You see that Bindamombe Dam is our safety net. Yes, some of us are benefiting from it but not all of us are in the scheme. The government promised to give us irrigation systems from this dam but more than 20 years now there is nothing that has materialised. I don't think we would be suffering like this if we had irrigation facilities

in place. At one point, there were government officials who came and put some pegs earmarked for irrigation installation outside Gwitima Primary School premises as an appropriate place for irrigation, but it just ended there" **(45-year-old Participant).**

The study revealed that women in Chivi District's Wards 8, 16 and 22 have a lot of techno-science adaptation methods which they employ to reduce climate change challenges and the methods include using boreholes, dams for small-scale irrigation schemes, supplementary feedings, projects, and receiving food aid. The government is encouraging and teaching people in selected districts to grow drought-tolerant crops, but not in Ward 8. Most people, and women in particular, are no longer interested in agriculture because of the water shortage problem in the district. Potable water used to be a problem in the district but the councillors have drilled boreholes in most of the villages in the three wards. As such, the potable water challenge is a thing of the past. Some families with relatives in South Africa have invested in solar systems and drilled solar- driven boreholes, especially in Ward 16 and 22. In Ward 8, people with houses along the Zimbabwe National Water Authority (ZINWA) line supplying water to the Mhandamabwe Growth Point have also formed co-operatives that enable them to work in groups and have had water connected their homes, hence they no longer have challenges of potable water. The researcher noted that the new government policy objective on water availability through different schemes, including irrigation schemes for small-holder sector, has assisted the women in Chivi District to cope with climate change. There is a lot of climate change education and community awareness going on.

The participants commended the government for assisting those who are into vending throughout the district. The government has incorporated the ideas of the local people through the provision of moving wholesalers once a month (every month end), which they call *uya uhodhe* (come and order). Local people are expected to order their goods for sale from these moving wholesalers every month end. This moving wholesale operates at different places (Ngundu, Maringire, Sese, Chivi office, Mandamabwe and Vuranda growth points). The participants pointed out that such an initiative was good for them as it reduced transport costs for them to go and order goods either from Masvingo town or Zvishavane town. The mobile wholesale initiative also enables those with little capital to start their businesses. Those who are not interested in buying and selling would also buy commodities for the month at cheaper prices, then resale them. The wholesalers have no specific quantity limit, as customers can buy one commodity or more. The participants were grateful that the government is now helping people in the area.

Participants appreciated the effort by the government in introducing Diga *udye*/*Pfumbudza initiative*, also known as conservative agriculture, involving the supply of lime fertilizers, chemicals and seed as well as advisory services through extension workers. This programme was not fully implemented in Ward 8, 16 and 22 because there was no manpower for land preparation as per extension workers' expectations, because most men in these wards were involved in gold panning in Mashava (Ward 8) or had gone to South Africa for greener pastures (Ward 16 and 22). This is what came out of the focus group discussions. On the diversification

to small grain which can be the best crops for their areas, most participants said the small grains involved a lot of labour so they were not interested. A participant said:

"We do not depend on agriculture in this community and because we are not getting much from maize, for example, does not mean we are stopping farming. Some of us are now growing sorghum and millet which have a cultural significance to us for most of our family rituals. Our agricultural extension workers do explain every time why we should change to these small grain crops but we have no manpower." (55-year-old Participant).

"We are trying a lot of things because things have changed, we cannot rely on one thing. Agriculture is not doing well these days. So if you have many options, you will not run a big loss and you we will survive." **(47-yearold Participant).**

Animals like goats, sheep, donkeys and indigenous poultry (road runners) are on the increase in this study area because they withstand droughts and give the women fast cash. They can easily adapt to dry conditions, hence are ideal for Chivi District which is a drought-prone area.

Most participants in the three wards reported that they are confined to petty trading as the most common economic activity where most women are selling fruits and vegetables from their backyard gardens in Ward 8 and the co-operative gardens by the Bindamombe Dam in Ward 16, and those in Ward 22 use the Tokwe Mukosi Dam. This study established that these female participants have the freedom of diversifying their economic portfolios and are no longer bogged down by patriarchal systems that used to restrict women from exploring other opportunities necessary for climate change adaptation.

In line with the theory that guides this study, things like diversity in economic sources, self-organising, and access to credit and decision making by participants are the main activities undertaken by rural women participants in the three wards under study. These are post-adaptation mechanisms from the main agricultural activities supported by the government. According to Kwamwi et al. (2018), livelihoods diversification enhances resilience to climate changes.

Household and adaptation

The study revealed some household adaptation strategies during focus group discussions with participants, and these were observed throughout the three wards (8, 16 and 22). The strategies sought to respond to challenges posed by climate change in food security, health, agriculture, water resources and livestock production. Some participants revealed that they tended to de-stock their livestock through selling them for school fees, hospital bills, or slaughtering them for consumption as a way of saving the remaining livestock. Those who sold sadza at townships stated that they bought road runners and goats, which they said were their customers' favourites, from local people. De-stocking guaranteed them no loss in wealth as they would get some cash from them, instead of watching them die. The following narration confirms this:

Zvinorwadza kuona zvipfuwo zvichingofa musingadyi nyama nokuti inonzi nyaton'ora. Saka zviri kutengesa kana kuuraya modya nyama zvenyu. (It is very painful to watch our livestock dying and thrown away because they deemed infected. So, we rather slaughter them and complement our nutrition). (**48-year-old Participant)**.

The participants emphasised that they would rather salvage something from their livestock through selling or slaughtering, while others said that they did barter trading, exchanging their livestock for commodities they wanted. For school fees, they would negotiate with the school heads and the teachers who would slaughter the animals for food. Poultry or livestock is usually traded for meals from these wards. Participants emphasised that they now resorted to one meal a day. That is, they were skipping meals. Most of them skipped breakfast and lunch so that they could only have supper with their children after school. Similar findings were reported by Batima (2006), who observed that during climate-change-induced droughts, most women resort to providing one meal per day or have to skip some meals for the sake of their children.

Information about climate change

The respondents decried that they did not receive information about resilience and adaptive capacity to climate change from officials from NGOs and their local Agricultural Extension Workers who were trying their level best to educate the community in both English and local languages on climate change resilience and adaptive capacity. In all the focus group discussions, the researcher noted that there was a high level of appreciation for the role being played by NGOs and Agricultural Extension Workers operating in Chivi District, though the NGOs' special focus was now limited. In one of the focus group sessions, the following was said:

> We appreciate the role that NGOs are playing in meeting our needs in times of drought resulting from climate change like this. The organisations are supporting us in the best way they can, but we haven't learned much about the causes of this drought, and it is their role to educate us even on how best to remain strong. **(46-year-old Participant).**

On the other hand, government extension workers maintained that they were educating the community about climate change and resilience, but most of the workshops that they tried to convene in these wards faced poor attendance mainly because people in the wards were no longer interested in workshops, as they wanted income-generating activities and donations. Most of them would rather do their day- to- day activities than attend workshops. It was further suggested that the community had developed a high level of dependency syndrome, where each time a community meeting was organised by officials from NGOs or extension workers, people would be expecting to receive material things, not just information. This seemed to be the problem throughout the country. People should be given the fishing rods not the fish, they should be given information to catch fish for themselves. As has been mentioned before, the community is unconsciously making ends meet in terms of employing a number of mechanisms to diminish the effects of climate change. They are just unaware

that they are being resilient. The other contradiction with Chivi community has to do with the misconception about drought, which the communities view as climate change itself and not as an effect of climate change. It can be argued that the women in Chivi District's knowledge base on climate change, resilience and adaptive capacity is not very low. However, there is need for it to be scaled up as the current status might affect efforts towards mitigating the effects of climate change.

This finding is corroborated by Ndaki (2014) and Nyahunda and Tirivangasi (2019) who contend that knowledge levels regarding climate change adaptation in some regions in Zimbabwe remains low. The role of information and skills in explaining adaptive capacity should also be stressed. For a population to take initiatives to adapt to climate change, it has to be aware of the risks posed and perceive that something is not right and that there is need for change to be able to adapt (Nyahunda & Tirivangasi, 2019). For this to happen, people must have access to information, which is what is happening in Chivi District. Access to information can help people assess the magnitude of the climate change challenge, possible options and those feasible within the relevant context (Tol, 2009). It is the researcher's view that the level of access to information about climate change and best coping mechanisms needs to be increased in Chivi District to make climate change challenges mitigation easy.

Conclusion

This study has revealed that women in Chivi District's Wards 8, 16 and 22 implement several strategies for climate change mitigation. The literature and the findings show that there is need to depart from reliance on rain-fed food production through heavy utilisation of irrigation. The study established that rural women are enmeshed in a vicious circle of reinforcing traps of climate change, but have made some fruitful efforts to escape its impacts. The government is trying its best to educate rural communities about climate change through its rural development policies which are assisting in terms of development and execution of viable climate change-responsive strategies for people in Chivi Communal Lands. Additionally, the study revealed that early warning and response strategies are not being implemented. The community members should be assisted through information dissemination or predictions about rainfall and IKS. The paper also argues that an increase in access to information is consistently noted as a catalyst to building the much-needed adaptive capacity in Chivi District and, therefore, information is an important resource in the fight against the adverse impacts of climate change. There is a need to give villagers and farmers regular information on current issues related to climate change and agriculture. This can be achieved through extension workers, village heads and councillors. These are people who are close to women in society and they can encourage them to form groups in their villages for capacity building.

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Competing interests

The author declares that she has no financial or personal relationships that may have inappropriately influenced her in writing this article.

Authors' contributions

The researcher was responsible for the conceptualisation, initial draft and for data collection, analysis and writing revisions.

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