

The Gender-differentiated Impacts of Climate Change on Rural Livelihoods Labour Requirements in Southern Zimbabwe

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ABSTRACT This paper examines the gender-differentiated impacts of climate change on rural livelihoods labour requirements. It explores how climate change is impacting the work of men and women differently in exercising their livelihoods gender allocated portfolios in a rural set-up. The paper interrogates men and women's experiences of climate change impacts in Tohwe village, Zimbabwe. Data was collected using a mixed methods approach involving a household survey, focus group discussions with community members and in-depth interviews with community leaders and key stakeholders. Using an adapted version of the Harvard Analytical Framework, the study investigates how livelihoods related household labour requirements are shifting as a result of climate change. The study finds that while climate change affects both men and women, it disproportionately affects the amount of work women have to do. The study recommends ways to foreground gender mainstreaming in order to address emerging gender related challenges emanating from climate change.

INTRODUCTION

There is clear evidence pointing to the ongoing process of climate change worldwide (Ngingi 2016; Dube and Phiri 2013). The UNFCCC (2007: 47) has noted that the "warming of the climate system is now unequivocal." Prolonged and frequent droughts, floods, heat waves, changes in seasons and precipitation patterns, ecosystem changes and water stress are some dimensions of climate change which affect rural livelihoods (Mubaya et al. 2012; Shaw et al. 2011; UNDP 2007; Stern 2007). Davies et al. (2013: 28) have explained that the effects of climate change are increasingly having an impact on local populations and deepening the risks faced by many poor and vulnerable communities, especially those involved in agricultural and ecosystem-dependent livelihoods in developing countries.

Some studies have suggested that women and men do not experience climate change equally (Global Gender and Climate Alliance 2016). Poor rural women in developing countries are generally considered to be the most vulnerable to climate change (Global Gender and Climate Alliance 2016; Pfupajena 2012; Brown 2011; Dankelman et al. 2008). Nhamo observed three

main pathways that make women more vulnerable to climate change than men. These are "biological and physiological differences, pre-existing social norms and role behavior, and exacerbated and new forms of gender discrimination" (Nhamo 2014: 159). To date, most existing studies on impacts of climate change have tended to view affected communities as homogenous units whose members are uniformly impacted by climate change (see for example IPCC 2014; Dube and Phiri 2013; Morton 2007; Challinor et al. 2007). The view that climate change uniformly affects both sexes is an oversimplification of the phenomenon. This paper will show that gender inequality results in different vulnerability levels to climate change related shocks. This study assesses the gendered impact of climate change on rural livelihoods labour requirements with specific reference to a rural community in Tohwe, Southern Zimbabwe.

The study was guided by the following questions: How has climate change affected livelihoods' labour requirements for households in Matobo? How do men and women experience the effects of climate change with regards to labour required for livelihoods portfolios assigned to them by gender? What gender issues

need to be taken into consideration concerning climate change programming?

Women and Climate Change

Nelson et al. cited in Kakota (2011: 299) argued that “vulnerability is dynamic, locally specific and manifested along social, gender and poverty lines.” In the context of Zimbabwe, several studies that examine the impact of climate change on different communities have been carried out (Dube and Phiri 2013). However, these studies all imply that communities are homogenous and they are therefore uniformly affected by climate change. Dube and Phiri (2013) analyzed the perceived effects of climate change on smallholder farmers. However, they did not capture the gender dimension of climate change. This paper brings into question this assumption of a homogenous community that is uniformly affected by climate change.

Climate change brings with it health consequences that increase the burden of women as care givers (Pharikh et al. 2012). According to Demetriades and Esplen (2006) due to drying up of water sources, women and children end up using water supplies from dirty ponds, and thus increasing women and children’s exposure to water-borne diseases. Research by the World Health Organisation (WHO) (2016) shows that about eighty percent of all global illnesses are due to unsafe water supplies, leading to diseases such as cholera, diarrhea, malaria and dengue, all of which are highly climate-sensitive and are expected to worsen as the climate changes. According to Zhou et al. (2004), it has been noted that climate variability played an important role in initiating malaria epidemics in the East African highlands. Other health problems, such as cardiovascular and respiratory diseases, are also likely to increase as a result of climate change. This increase in diseases multiplies women’s workloads in taking care of sick children and sick elderly. Sultana (2013) highlighted that women generally tend to the ill and injured, and as such in the event of disasters like floods, women also take care of the injured or sick, thus substantially worsening their care burden and lessening the time they can spend in pursuing income generating activities or acquiring skills.

Objectives of the Study

The primary objective of the study was to assess the impact of climate change on rural live-

lihoods labour requirements in order to understand how men and women experience climate change with regards to their daily livelihood chores. The study sought to identify the gender roles allocation patterns in livelihoods labour and to systematically assess how the different roles and associated sexes are affected by the changing patterns of climate.

METHODOLOGY

The study adopted a qualitative approach utilising both semi-structured household interviews and focus group discussions. The study focused on households in Tohwe village, in Matobo, South Western Zimbabwe. The study area was chosen because it is one of the driest areas in Zimbabwe and it has been significantly affected by climate change. A study by Dube and Phiri (2013) shows that Matobo region in which this village is found, lies Agro-Ecological Regions IV and V in Zimbabwe which receive the least amount of rainfall. Coupled with declining precipitation as a result of climate change, the impacts of climate change have been more severe in this region (Dube and Moyo 2015).

A total of 100 households were interviewed as a sample for the village. The village has a total of 212 households. Every second household was sampled using a systematic random sampling technique. This sampling approach was meant to capture a population that was representative of the village. Research assistants were used to conduct the semi-structured household interviews. The focus was on household livelihoods related labour roles allocation according to gender and related experiences regarding climate change. Household heads were targeted in this semi-structured household interview. The study also utilized four focus group discussions (two male groups and two female groups). The focus group discussion participants were drawn from community representatives in the village seconded by the community as being knowledgeable about the subject under investigation. The focus group discussions were carried out separately for the different groups with regards to gender in order to ensure that the data was not affected by existing gender dynamics in the community.

It must be noted thus, that the results of the study may not be fully applicable to other areas in Zimbabwe largely because the livelihoods

activities are location specific and therefore the labour requirements are likely to follow suit. Furthermore, local gender conventions in different communities would mean that local level studies of this nature are necessary for a fuller understanding of this issue. This study should be thus understood as being indicative rather than generalizable.

The study utilized an adapted version of the activities profile of the Harvard Analytical Framework (HAF), as a heuristic tool to understand gender dynamics in rural livelihoods labour requirements affected by climate change. This framework is suitable in this study as it casts light on gender based activities in the community with regards to who does what kind of work and for how long. This affords an analysis of livelihoods based labour requirements in the community by first isolating activities associated with particular livelihoods and then assigning a particular gender and time on it. The term 'livelihood' according to DFID (1999) refers to capabilities, assets and activities for a means of living. Therefore, the HAF, in its objective of mapping out the work and resources of men and women in a community and highlighting the main differences, does in essence map out the community's livelihoods labour requirements and the people responsible for them.

RESULTS

Main Livelihood Portfolios at the Study Site

The livelihood activities in Tohwe as noted in FGDs range from on-farm activities, livestock rearing to illegal activities such as hunting and

gold panning. These activities were listed in the activities profile derived from FGD contributions shown in Table 1 and from semi-structured household questionnaires. Table 1 shows which activities in general are done by which gender. General farm activities, market gardening and live-stock rearing were done by both men and women. They are considered as 'overlapping' activities. However, activities such as hunting, selling fire wood and offering casual labour were mostly done by men. Daily chores such as water and wood collection were mainly in the domain of women.

Although Table 1 does not reveal how much of the 'overlapping' activities women do when compared to men, it should be noted that the activities done by women are repetitive activities that recur daily, while men are generally involved in those activities that occur seasonally or when need arises. This indicates that women suffer from relative time poverty when compared to men because they (women) are involved in all-year-round livelihood activities while men only sometimes get involved. Women are also mostly involved in such activities as cooking, washing and fetching water which are also directly affected by climate change as they depend on precipitation. This entails that the effects of climate change on their work is more pronounced.

It was noted however that some livelihood activities mentioned in focus group discussions did not show up in questionnaire responses. Such activities included gold panning and hunting which respondents did not want to be individually associated with at household level. This is understandable because these activities are

Table 1: Gender roles allocation in livelihoods related work

<i>Activity</i>	<i>Women</i>	<i>Men</i>	<i>Frequency</i>
Cropping: maize, nuts, wheat)	√	√	seasonal
Market Gardening (Beans, tomatoes, choumolia)	√	√	daily
Livestock rearing (Cattle, goats, Poultry)	√	√	daily
Gathering (wild fruits: umbumbulu, umqokolo etc)	√	√	seasonal
Informal trade (vegetables)	√		daily
Hunting (illegal)		√	seasonal
Gold panning		√	erratic
Selling Firewood		√	daily
Offering labour (e.g. fencing)		√	seasonal
Selling thatching and broom grass	√		seasonal
Water collection	√		daily
Firewood collection (household use)	√		daily
Daily chores (washing, cooking, care of children)	√		daily

Source: Field Data

illegal according to the laws of Zimbabwe. Therefore, in household interviews, respondents did not want to be identified with such activities as this could have potential legal implications although the researchers had explained that the responses would remain anonymous.

Cropping

The primary livelihood activity in this rural area is cropping. All households indicated that they derive their food from cropping during the wet season in summer. The staple crop that is planted in this part of the country is maize which is used for corn meal locally known as *isitshwala* in the Ndebele language. Other common crops include ground nuts, sorghum and millet. In a good season, farmers are able to feed their families from their farm produce and to sell what they consider to be surplus food after assessing food requirements at the household level. Respondents in both the FGDs and the household interviews explained that climate change had negatively affected cropping as a livelihood option. Increased heat and reduced precipitation were leading to reduced crop yields.

These challenges were leading to generally increased labour requirements at the household level. Respondents pointed out that the main issue was with regards to replanting if the initial crop wilted as a result of prolonged dry spells. Replanting was a common strategy to try and restore failed crops. This exercise meant duplicating labour efforts and increasing the time spent working in the fields. At this point it should be noted that women were mainly responsible for such farm work. One woman respondent pointed out that:

Asisakwazi ukuthi sihlanyele nini ngoba izulu lakhona selisiza ngezikhathi ezehlukeneyo. Singaphangisa kuyatsha ngoba liphuzile ukuna, singaphuza asizuzilutho sesitshonela ukuphinda-phinda ukuhlanyela ukuthi phela sitshayisane lalo sizuze okungcono...

We do not know when to plant anymore because the rains come at inconsistent times. If we plant early, the crop sometimes wilts because the rains then delay coming. If we plant late, sometimes you do not get a harvest because the rains end early. So what we do is plant early and continue planting over and over if the crops fail. We always hope that we will

eventually coincide with the right rains (Women's FGD, Participant C).

Respondents also noted that conservation farming (popularly known as *ugatshompo*) in the region was mainly practiced by women. This farming method was being promoted by government and non-governmental organisations (NGOs) as a panacea for climate change induced droughts. While this farming method was meant to promote resilient agriculture to climate change, women farmers noted that it was multiplying the amount of labour required in the fields because the method was labour intensive. Respondents noted that unlike the old way of farming with oxen, conservation farming requires extra work like mulching, careful measurements, cutting and reusing residual crops. Women were at the centre of all such work.

The loss of draught power due to drought had also worsened household labour requirements in agriculture. As noted earlier on, Tohwe is located in Zimbabwe's Natural Farming Region 5 which is one of the driest areas, receiving an average of 350 milliliters of rain per year. Due to frequent droughts respondents noted that they had lost a lot of livestock. They noted that people now had to do the work formerly done using cattle. Instead of using an ox-drawn ploughs, villagers now had to use hand ploughs. This increased and changed the nature of the work that was required in farming.

Market gardening was one of the main stay livelihood activities in Tohwe. Respondents noted that due to increasing temperatures and reduced precipitation, they had to water their vegetables all year round and increase the quantity of water as the ground dried up quicker than before. Moreover, they had to walk longer distances to fetch water as nearby sources were drying up early. These complexities increased the time spent and amount of labour put into garden farming by villagers especially women who according to data were the most active in gardening. As one focus group respondent noted:

Thina sisakhula ezingadini zangakithi kwakusiba manzi sibili kuze phose kuyekuna izulu lomnyaka ozayo ngabo-September. Kodwa khathesi vele kuthi kutshaya oJune kungaselaluto amanzi sesisikha khatshana. Khonokhu sokusenza ukuthi noma ufuna ukuhlanyela umbhida ucabange kabili. Ukuthelela sokungumsebenzi omkhulu njengoba amanzi esekhiwa khatshana.

When we were growing up, our garden used to have water throughout the year almost up to the next rainy season starting around September. However, nowadays when you get to June, it will be dry. So if you want to plant vegetables you have to think again about it because we have to fetch water from very far places (Women's Focus Group Discussion 1, Participant F).

Informal Trade

Informal trade was also identified as an important livelihood portfolio in this community. Most of the informal trade was hinged on farm produce such as vegetables. Findings from both the household interviews and the focus group discussions showed that although men also participated in gardening, women were primarily the ones involved in market gardening including both the cropping and the marketing of the produce. Men mostly helped to ensure that the gardens were fenced. Where wells needed to be dug, men also took charge of that activity. Besides this, most garden work was done by the women.

Fetching Water

Water forms an essential part of most livelihoods in Tohwe. The Tohwe community represents the typical African traditional set-up in Zimbabwe where women are primarily responsible for fetching water. An overwhelming majority of respondents confirmed that fetching water was primarily the work of women and girls. This is a typical arrangement of traditional gender roles in the rural set up where women are solely responsible for making sure there is water for use in the household. This is also because women are responsible for the day to day care of the household. Most activities around household care require the use of water. For instance activities such as cooking, washing and cleaning are dependent on water, hence women are forced to make sure there is water for these activities that they carry out themselves. However, it is notable that men were also involved in fetching water in some instances. On occasions where men were involved in fetching water, they often used donkey or oxen drawn carts. This made their work easier as they were able to ferry more water in less time using 200 litre drums. On the other hand, women generally used 20 litre buckets

which they often carried on their heads. This meant that they spent more time than men in fetching the same amount of water.

Women in the FGDs explained that they were walking distances of 10-15 kilometers to get water while in several decades ago water used to be more readily available in sources close-by. The study however noted that well-to-do households were utilising carts for fetching water, and were therefore less affected by the long distances. This suggests that the poorest people will bear the brunt of climate change because they lack the necessary resources to address the negative effects.

Collecting Firewood

Firewood constitutes a critical energy source for most rural communities in Zimbabwe including Tohwe village. This is because there are limited alternative energy sources. Firewood is therefore used as the primary energy source for a variety of needs including cooking, keeping people warm in winter and heating bath water. Firewood collection in this community was also primarily seen as women's work. This assignment of this role was evidently linked to the fact that the use of firewood is already associated with work that women mostly do such as cooking and warming bath water. It was evident from FGDs with women that women are most involved in firewood collection as they are responsible for care activities such as cooking and warming up the house. Although men were also involved with fetching firewood in some instances, when they did this they used donkey drawn carts for the purpose. Furthermore, men often fetched firewood as an income generation exercise where they would charge a fee for a cart load. Men were generally involved with fetching firewood where logs were needed. On the other hand, women tended to fetch smaller sticks and twigs.

Although participants in the female FGDs agreed that wood collection work had increased owing to climate change, participants in the male FGDs did not notice any difference. Most women noted that this increase resulted from them having to walk long distances to reach places with firewood. This also often entailed going up on the mountains. Frequent droughts and growing populations were exerting pressure on local forests leading to a suppressed replenishment rate. Villagers therefore had to go deeper in the

woods to find firewood. Another issue raised by women concerned safety as they explained that women were at risk of falling off the mountains, or being raped while looking for firewood. It was noted that one woman had been found dead in the mountains where she had been collecting firewood and the cause of the death remained unknown.

Male respondents had a different view, with most of them arguing that they had not experienced any changes in the labour required when collecting firewood. They explained that according to their observation, the dry weather brought about by climate change dried up the trees quicker hence making dry wood more abundant. It was noted amongst participants in FGDs that women collected firewood for household use on a frequent basis, going on foot and carrying the load on their heads, whilst men usually collected wood once in a while for sale, using animal driven carts. The responses from these two groups therefore presented contradictions. We postulate that these differences in perception are due to the differences in the way that the two groups carry out the task of fetching firewood. Men used technology in the form of carts while women mostly did a manual job, carrying firewood on their heads.

Livestock Rearing

In this southern part of Zimbabwe, cattle rearing are a critical part of the livelihood portfolios, if not one of the most important. It was noted that men were the ones mostly involved in livestock rearing. Participants in all the FGDs agreed that men were most active with regards to large livestock, cattle in particular. However, it was pointed out in the FGDs that in households where men were not present due to emigration women were forced to take the extra burden of rearing livestock, which is traditionally a 'males' job. This added on to women's other existing tasks such as farming as aforementioned.

Most respondents noted that labour requirements relating to the rearing of cattle had increased. This was mainly attributed to the effect that climate change had had on grazing land and water. Men pointed out that they now had to travel further with their cattle in search of pastures and water since nearby pastures and water sources were no longer able to sustain them as a result of frequent droughts. They also high-

lighted that climate change exposed their livestock to diseases because hunger made them weak. This entailed that livestock called for extra attention than usual. One male respondent reported that '*kuyabe sokumele uzilandelele kokuphela ngoba ezinye ziyabe sezisiwa sezidinga ukumiswa...*' (We need to constantly follow up on the cattle because some of them collapse (due to hunger, and lack of water) ... So they would need to be helped to be raised to stand again). This shows that livestock became an extra burden of work as villagers had to constantly follow up on them instead of their usual way of letting them go and then checking them periodically.

Local farmers noted that they had to construct pole frames to hold cattle from collapsing while they feed in one spot for up to 24hours. Besides making frames, they also claimed that they had to prepare supplementary feeding for these animals, calves required porridge cooked from mealie-meal, eggs and milk. During the season when grass was readily available, respondents also noted that they now had to collect grass and keep it as feed for the animals in case the following agricultural year was a drought year. This was work mainly done by women. This work was evidently an increased burden to farmers in terms of labour. Furthermore, respondents highlighted that the increase in droughts also put pressure on their resources as they had to buy not only food for their families but also feed for animals.

DISCUSSION

The findings in this paper expose new and emerging evidence of the interaction between climate change and gender, while at the same time confirming findings from previous studies. With regards to cropping and livestock, the study confirms previous findings elsewhere by Nelson and Stathers (2009) that unpredictable rainfall due to climate change has led to more frequent crop failures and increased yield variability. Farmers are thus being forced to cultivate larger areas of land to obtain sufficient food which directly increases the labour required. This study established that in southern Zimbabwe, farmers in the area were increasingly adopting conservation agriculture in order to address climate change induced yield reductions. However, it was found out that the labour element required was multiplied because the area had little

grass thus requiring work to find mulch as demanded by conservation farming principles. The study also found out that in response to climate change, farmers in Zimbabwe resorted to planting less preferred small grains crops such as millet and sorghum. These farmers highlighted that these crops, unlike maize, attracted birds thus increasing the labour required in protecting these crops.

In a case study in Guyana, Bynoe (2009) found out that droughts and floods associated with the El Nino Southern Oscillation phenomenon in the late 1990s caused both women and men to spend more time planting and diversifying their crops. It is evident that where precipitation is reduced, adaptation mechanisms variously lead to an increase in labour requirements particularly for women. However, the study also established that communities are innovating new ways to deal with livestock affected by climate change. While cropping adaptations mostly affected women, livestock adaptation mechanisms mostly affected men who were assigned the role of ensuring the wellbeing of cattle in the community.

This study notes that the effect of climate change in Southern Zimbabwe has been marked by increasing shortages of water and lack of access to clean water. The study confirms projections previously made by various researchers that climate change may exacerbate existing shortages of water (Pharikh 2007; Demetriades and Esplen 2008; Blackden and Wodon 2006). These studies further projected that due to the traditionally assigned responsibilities, women are largely responsible for the collection of water for household uses such as cooking, drinking, bathing and washing. Goldsworthy in Macgregor (2010) projected that there is evidence that women's everyday work will be made more difficult due to climatic changes as they may have to travel further for clean water. This is markedly different from findings in other parts of the world. For example, Chettri et al. (2011) particularly argue that in parts of Asia, there have been challenges of too much water (from flooding). Nabalamba (2011) noted that even heavy rains and frequent floods will increase women's workload as they devote time to cleaning and maintaining their homes after flooding.

It was also evident from this study that in the context of Southern Zimbabwe, declining precipitation and increasing temperatures were

leading to a slower recovery rate of woodlands and forests and thus resulting in shortages of firewood. This shortage of firewood meant that women who do most of the firewood collection would be affected negatively in several ways. These findings converge with findings from other parts of the world. A related study in Nepal and another in India by Parikh (2012) revealed that due to scarcity of wood, women now have to walk much further to get the necessary fuel wood, a task that takes about six hours every three days. Besides increasing their labour, this reduces the time women could spend on income generating activities or on gaining knowledge or training. It is therefore evident that the impacts of climate change of women's livelihood labour requirements may be far reaching that has hitherto been estimated.

CONCLUSION

The study found out that climate change has affected communities in Tohwe in terms of labour requirements for livelihoods and daily chores. Men and women were both affected by climate change, albeit differently with regards to livelihoods labour requirements. The difference of impact is attributed to the distribution of gender roles in the community. Most of the work that women do tends to be sensitive to climatic changes. In particular, labour required for on-farm work increased significantly. Findings revealed that women were the most involved in farm work, hence their work increased significantly more than men's work. This was due to the need to replant, and engage more laborious conservative farming techniques. Pest birds were a major problem for farmers attempting to grow small grain crops in response to climate change. Growing small grains as an adaptation mechanism to climate change thus brought about additional labour requirements from pest birds. With regards to livestock rearing, the labour required for livestock rearing increased as it included new adaptation strategies such as watering, cooking for weak animals and calves, and feeding livestock in general. Livestock also required extra attention, and nursing from diseases and weaknesses resulting from walking long distances to reach pastures. It was found out that men were the most involved in livestock rearing, it follows that their work was also increased in this respect. Fetching water was found

to be a daily routine mainly done by women which saw a significant increase in terms of the labour required. The study revealed that women were walking longer distances to fetch water as a result of declining precipitation and increasing temperatures. With regards to firewood collection, it was noted that women felt that they were putting more labour in finding firewood while men felt that there was no difference. This finding showed that men and women experience climate change impacts differently firstly because they play different roles in livelihoods activities and secondly because even those roles are executed differently when both sexes are involved. Men tend to utilize technology such as donkey drawn carts while women use their heads. The researchers' noted that gender inequality and the associate gender roles allocation aggravate rural women's experience of climate change impacts.

RECOMMENDATIONS

From the foregoing findings and discussion, the researchers' recommend that climate change programming should focus on mainstreaming interventions. In communities such as Tohwe, it is evident that climate change effects will be felt by women more than men. Gender imbalances with regards to gender roles allocation disproportionately aggravate the effects of climate change on women. Improving gender imbalances and equity in gender roles allocation will ease the burden of climate change on women. Development interventions need to strengthen gender equality in poor rural economies in the face of climate change adaptation. Where greater gender inequalities exist, women are likely to suffer more severely from the effects of climate change.

Noticing that climate change is not a homogeneous experience for all sexes everywhere, the researchers' recommend that the needs of men and women be given a balanced platform in development programming related to climate change. They also recommend that development programs and policy interventions must ensure that in involving women they do not increase women's already heavy burden of labour and time poverty by adding other labour intensive activities. Instead, they recommend the promotion of labour saving development and policy interventions such as rural electrification and piped water provision.

Lastly, they recommend a policy shift with regards to rural livelihoods portfolios. There is a need for rural communities such as Tohwe to diversify available livelihood paths and to incorporate non-climate dependent portfolios such as rural manufacturing and services. It is important to develop infrastructure, credit, technology and services in rural areas in order to promote rural non-farm activities which are not climate sensitive.

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