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Gender, Wood Energy and Use in Hurungwe District, Mashonaland West Province, Zimbabwe and Its Determinants

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Abstract

The paper argues that there is an intricate relationship existing between gender, wood energy and use. Man, and women are affected differently when it comes to wood energy collection and use. The paper assesses the physical, mental and health status exerted on women, men and children by lack of adequate and energy services. The study used a case study of two villages in Kazangarare area, Hurungwe District which falls under Zimbabwe's Mashonaland West Province. This study revealed complex gender dimensions of wood energy collection and use in rural communities. The researchers observed that the lack of adequate, clean and safe sources/forms of energy affects women more than it affects men. Women, who have a larger population in rural areas, are traditionally expected to make available firewood for domestic use. Women face immense challenges of collecting and using firewood. They suffer from physical, mental and health problems because of over-reliance on firewood.

Keywords: gender, energy, firewood, rural, Zimbabwe, Hurungwe

1. Introduction and Background of the Study

In this paper, we examine the relationship between gender, wood energy collection and use by rural communities. We argue that there is an intricate relationship existing between gender, wood energy and use by men and women. Men and women are affected differently by inadequacy of fire-wood in rural areas. It is this difference that this paper investigates looking at the gender variance in wood energy collection demand of, access to firewood and marginalization of women. The paper will also assess the physical, mental and health burdens brought by lack of adequate and safe energy services on women, men and children. In achieving this, we explore the new and existing alternative sources of energy which are accessed by the local population in a gender differential manner. This, we do in the context of different international agreements, SDGs and poverty reduction programme on addressing women and men's differential access to affordable and cleaner energy sources and technologies. For the purposes of this analysis, we used a case study of a rural community in two villages in Kazangarare area, namely Dzokamushure and Masawu in Hurungwe district which falls under Zimbabwe's Mashonaland West Province. This area, which is predominantly women populated, was chosen because of its remoteness and relative backwardness. Electricity supply is sparse and resultantly, women are exposed to the drudgery and challenges associated with traditional fuels provision and use.

Women face distinct challenges in the collection, use and availability of fuels and energy in household and

economic studies. Studies indicate that the majority of the rural population in sub–Saharan Africa do not have electricity but rely on traditional fuels, such as wood, charcoal, dug and agricultural residues for cooking and heating (Longe, 2021; Wassie et al., 2021).

India, China and Sub-Sahara are singled out as major users of biomass in the world (Li et al., 2022). The grid-based electrical power does not reach many rural and poor urban areas in these countries, nor is there adequate distribution of gas or other cooking and heating fuels. In many contexts, it is women who suffer the most from shortage of energy. Because of their traditional responsibilities for collecting fuel and water (Liu et al., 2024). Njenga et al. (2021) posit that the time at physical effort expended by women and girls in gathering fuel and carrying water seriously limits their ability to engage in educational and income-generating activities. Much of women's time is taken up with difficult and time consuming chores related to producing and processing food without mechanical or electrical equipment and to cooking clean-burning fuels and energy-efficient appliances (Abbas et al., 2021). Many women and girls suffer from health problems related to gathering and using traditional fuels (Zhang et al., 2022). In addition to the time and physical burdens involved in gathering fuel, women suffer serious long-term physical damage from strenuous work without sufficient recuperation time. Women worry about threats of assault, snake bites, and other dangers during firewood collection (Okyere et al., 2024). They are also exposed to a variety of health hazards from cooking, over poorly ventilated indoor fires which results in respiratory infections, eye diseases and at times cancer (Gofa & Egbendewe, 2021). The unique and often difficult situation faced by women in the poorest developing countries has been recognized in different international fora, such as the Beijing Platform for Action in 1995, the Millennium Summit in 2000, and the World Summit on Sustainable Development in 2002. These and other for a have called for the empowerment of women through increased economic opportunities and enhanced access to clean affordable fuels and energy technologies (Robinson, 2019). A special emphasis is also given in the Millennium Development Goals, now the Sustainable Development Goals, and poverty reduction programme of many developing countries. Different countries have also designed and implemented various forms of projects, programmes and policies that explicitly address the gender and energy nexus and expect to result in better outcomes in terms of the sustainability of energy services as well as the human development opportunities available to women and men (Arachchi & Managi, 2021). Some of the measures, include increasing access to electricity, through extension of power grids as well as installation of decentralised small-scale energy systems powered by diesel fuel or by renewable technologies using solar, micro-hydro, wind, or biomass resources; distribution and marketing of energy-efficient end-use technologies to reduce overall fuel and electricity requirements, making widely available liquefied petroleum gas (LPG) and other cleaner fuels to provide affordable alternatives to traditional biomass-based cooking and heating fuels, low-cost lightning options using battery power, small stand-alone home systems, or decentralized village power systems (Bednar & Rrames, 2020).

1.1 Theoretical Framework

This paper is informed by an Eco-feminist Theoretical Theory which contents that women have a close relationship with nature. Ecofeminism is a collection of feminist and environmentalists' ideologies which seek to explain the relationship between women's oppression and environmental degradation (Lovenduski, 2005). The main goal is to save the environment from degradation whilst simultaneously altering the unequal relationship existing between men and women. Women are believed to be victims of a patriarchal system which also threatens the sustainability of nature. Ecofeminism therefore aims to recover, to regenerate an 'ancient wisdom' as a means to liberate women and nature from patriarchal destruction (Lovenduski, 2005).

A feminist ideology states that gender inequality predates industrialism. Women's predicament was first noted in early feminist writings by people like Mary Wollstonecraft. Wollstonecraft (1972) saw women as heavily excluded and oppressed in society. She therefore staunchly campaigned for their visibility and liberation from the hegemonic tendencies of patriarchy. Women are conceivably subordinated to men and their access to resources is not equal with that of men (Wollstonecraft, 1972). Women are seen as victims of skewed power relations emanating from patriarchal ideologies peddled by men. And it is these patriarchal ideologies that define women' access to resources, their place in society and their roles both in society and in the family or household.

1.2 Literature Review

Fuel wood is the dominant source of energy in rural areas of Zimbabwe, with about 70% of households depending on it as their cooking fuel (Longe, 2021). Excessive fuel wood consumption jeopardizes the natural environment. It hastens the speed of desert encroachment, escalate soil erosion and causes loss of soil fertility (Gafa & Egbendewe, 2021). The majority of communities in rural areas of developing countries such as Zambia, Malawi, and Mozambique, just to mention a few, have adopted fuelwood to meet domestic energy needs due to high levels of poverty, inadequate infrastructure, low supplies of fossil fuels to some areas, and a lack of political will to address energy challenges (Nsenyire et al., 2024).

Fuel wood is consumed in diverse ways and at different levels, the majority of the rural dwellers depends

directly or indirectly on fuel wood. However, meeting rural household fuel wood energy needs in most countries has become herculean task due to the enormous quantity of wood required (Wassie et al., 2021). Daily consumption of firewood by rural communities in Zimbabwe in particular is estimated 18 million kilograms per day (Makumborenga et al., 2022). In the drive to satisfy fuel wood requirements, most lands in Africa have been stripped bare of vegetation cover. This has resulted in soil exposure and erosion thereby placing a heavy burden on the environment and the resource base (Njenga et al., 2021). The demand for fuel wood has resulted in massive destruction of many wood resources leading to deforestation and increasing desertification in parts of Zimbabwe and other parts of sub-Saharan Africa (Wassie et al., 2021; Zvobgo & Tsoka, 2021).

2. Materials and Methods

2.1 Study Area

The study was conducted in Hurungwe District, Mashonaland West Province, Zimbabwe. The district is found in agro-ecological Natural Region 3 (Makumborenga et al., 2022). Natural Region 3 is characterised by high altitude, moderate temperature range with 500-700 mm of rainfall per annum. The district's climate and vegetation support various agricultural activities, including crop farming and livestock production. Tobacco, maize, cotton, and wheat are major crops grown in the area and intensive livestock are dominant (Chivuraise et al., 2016). The savannah type of vegetation is common in the area, consisting of short, scattered trees and tall grass. Miombo woodlands, with tree species such as *Brachystegia* and *Julbernardia*, dominate the area. These trees are umbrella-shaped in order to protect their roots from the scorching sun. Savannah grasslands with scattered trees are also common in areas with moderate rainfall.

The specific study areas were Dzokamushure and Masawu villages located in administrative Ward 22.

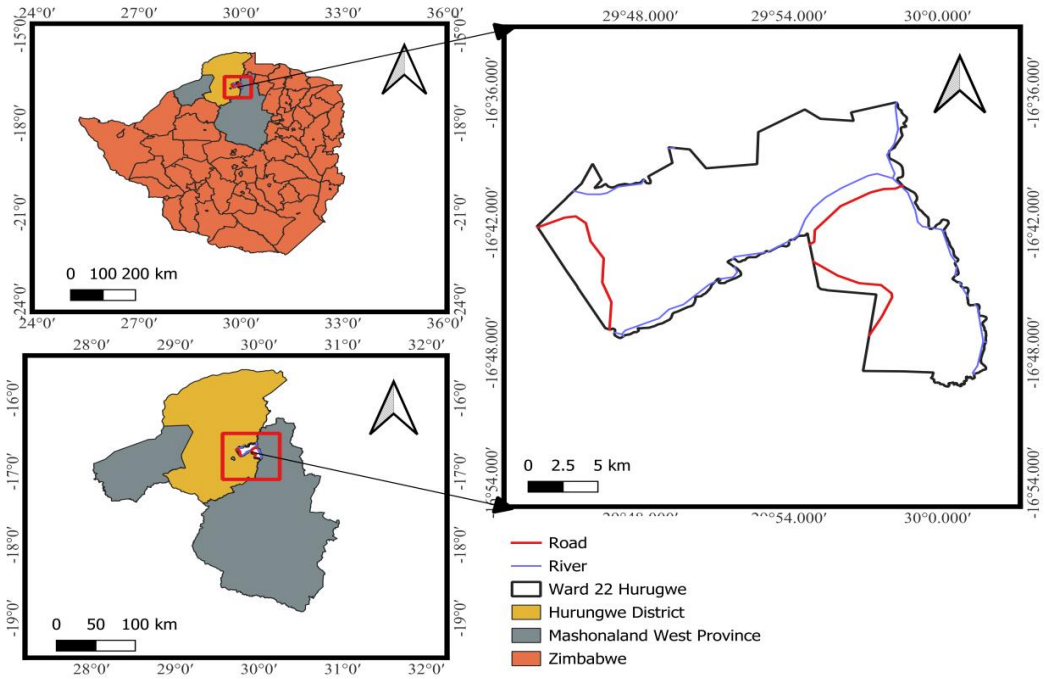

Figure 1. Study Area

The study areas fall under Natural Farming Region 3, which are associated with relatively high temperature and unreliable rainfall ranging from 500-700 mm per annum. Unreliable rainfall received across the study area contribute to decreased agricultural production which result in lifetime food insecurity (Makumborenga., 2022). Prolonged dry winter seasons and low rainfall contribute to the drying of the majority of water sources. Lack of water particularly during the dry season increased human diseases outbreaks and livestock deaths. Human beings are forced to rely on unprotected water sources which result in Cholera and Typhoid out breaks (Chivuraise et al., 2016).

2.2 Methodology, Methods and Data Analysis

The study was achieved through the utilization of both quantitative and qualitative approaches, as well as

adopting a temporary approach to understanding changes taking place on the environment because of the use of wood fuel. Primary and secondary sources of data were used. Key informant interviews and semi-structured interviews were utilised with some randomly selected women from the selected villages who depend most with their immediate environment. These were complemented with four focus group discussions, two in each selected villages. This enabled the researchers to get much relevant data as quickly as possible. Secondary information was used and this included some government public reports, documents, policies, newspapers, magazines, articles and journals. The main reason for use of such documents was to comprehend the nature and extend of the problem from the policy dimension. The researchers selected two villages in the district based on accessibility and suitability for the research. These were Dzokamushure and Masawu villages. Masawu is close to mountains while Dzokamushure is relatively on an adulating ground relatively a distance from mountains. The researchers intended to tap into different villages' situation in as far as energy use and accessibility was concerned.

3. Results

3.1 Demographic Characteristics of Informants

The case study sample comprised 39% and 61% male and female headed households respectively. Demographic statistics indicated that the majority of these respondents were females accounting for 60% of the respondents. This is because women are mostly custodians of their households as they are tasked with home managed. On marital status, 70% of the respondents are married, 12% single, 10% divorced and 8% separated.

On education and professional qualifications 53% attended Primary Education, 3% never attended any form of informal education, and 35% did Secondary Education but did not complete it up to ordinary level (Form 4). Only 6% managed to attend tertiary education. In terms of sources of livelihoods, reliance on wood fuel is dominant at 77% other sources of energy used were 7%.

The age group of the sampled population showed that most of the individuals sampled fell within the age group of 40-49 years, 29% were in the age group of 29-39 years, and 7% were in the age group of 50 years and above. Therefore, the population sampled were mostly the productive, independent and vibrant which showed that the 40-50 years and the 28- 39 age distribution use more wood fuel than the others. Subsistence agricultural practice is dominant and other non-agricultural sources of livelihood which includes small scale mining, cross boarder trading, petty trading, seasonal/permanent employment, remittances, and fishing.

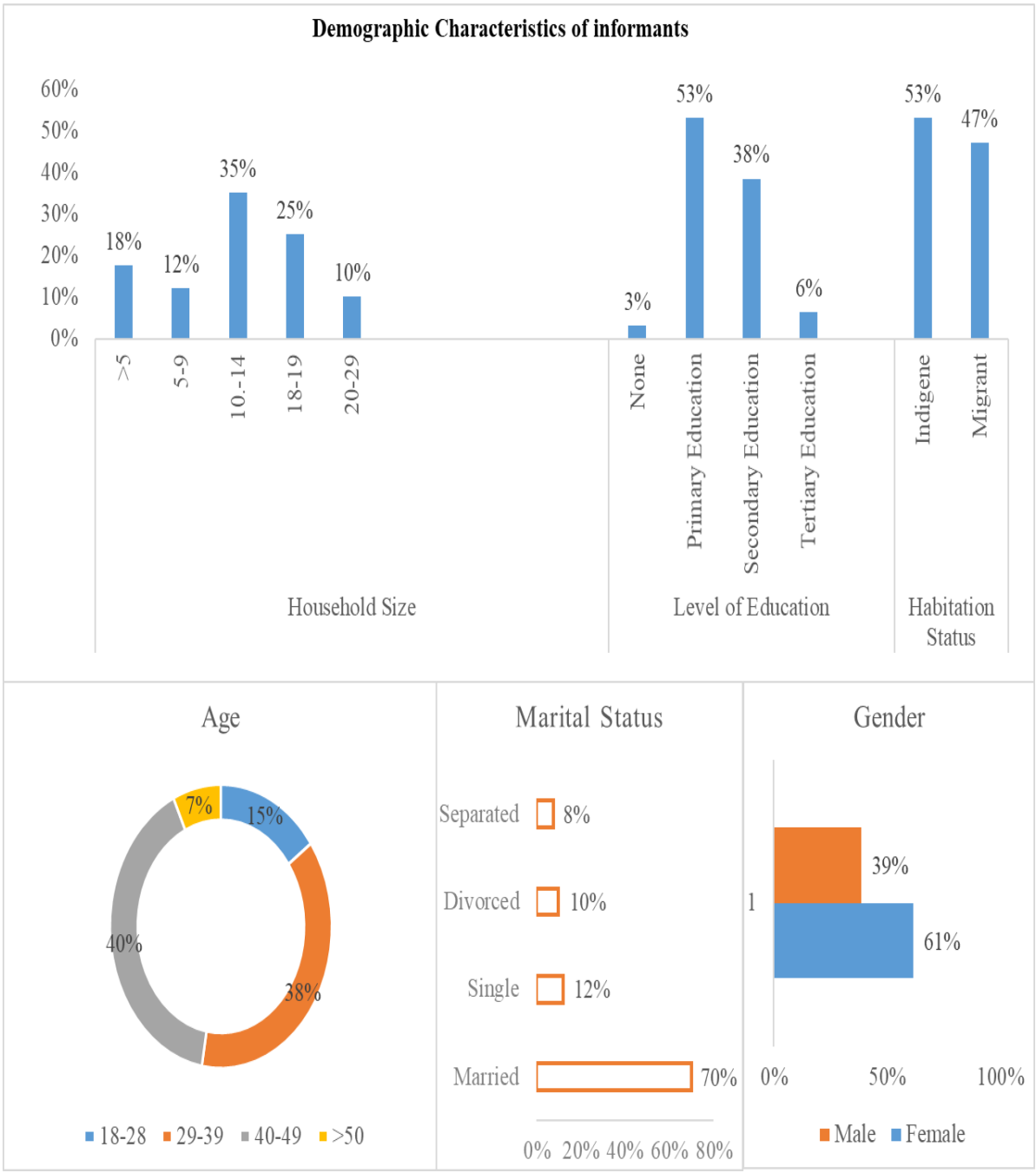

Figure 2. Demographic Characteristics of informants

3.2 Access to Sources of Energy

Figure 3 shows enumerates of the available sources of energy in Dzokamushure and Masawu villages. The researchers found out that sources of energy available for the people in Dzokamushure and Masau villages range from grid electricity provided by the Zimbabwe Electricity Supply Authority (ZESA), generator power sources that are individually run at different households, solar energy as well as bio-mass energy sources. From the household that were surveyed in this study, it emerged clearly that of the 400 households that were targeted in this study had grid electricity provided for by ZESA.

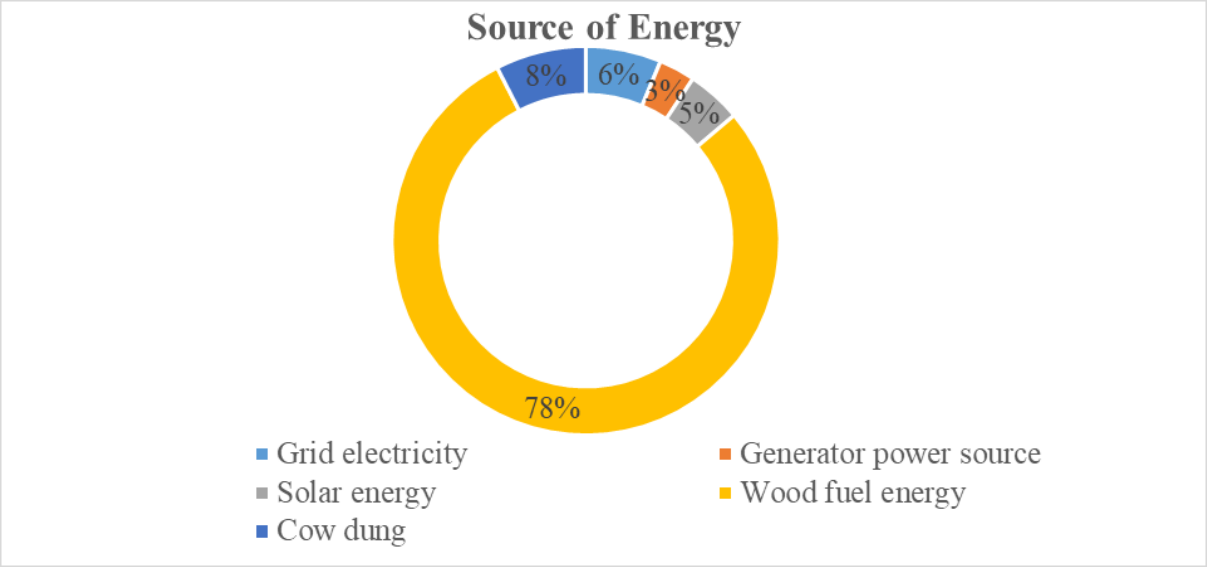

Figure 3. Access to available sources of energy

Another 3% of the households had generators which they used for small electronic gadgets such radios, television, as well as lighting in the home. Of all the households with generators, there was not a household that used generators for cooking. A total of 5% of the households owned a range of solar panels that differed in size but the major use of such panels was to power small gadgets like radios and televisions. Charging of cell phones was also another use of solar panels. All the respondents indicated that they use firewood for cooking, lighting and tobacco curing as well as burning bricks. With regards in the availability of energy sources, it was established that firewood is openly accessible to all community members at no different cost. However, some respondents indicated that the continuous growing of the population in the area and an increase in the growing of tobacco had accelerated deforestation and making it harder to find firewood. Firewood was increasingly becoming scarce in the area, and some locals were taking that as a business opportunity.

Interviewed women and participants in discussion generally agreed that with the levels of unemployment in the locality, many of the youth were indiscriminately cutting down trees for firewood to sell to those people who cannot cope with the increased stress of fetching firewood. Even though by law it is forbidden, people still need to survive and this firewood scarcity is an opportunity situation for many to earn a living.

Access to firewood emerged to be dependent on capacity to get firewood from the forest. Fetching firewood is a strenuous activity which many indicated to be a challenge for the villagers. Respondents indicated that access was increasingly becoming a challenge and there were more impediments characterising the fetching of firewood. Women in particular, they proved to be struggling to cope with the increasing obstacles associated with firewood fetching. It also emerged from the study that there were local rules that made it difficult to cut the trees without permission from the village head. From focus group discussions and key informant interviews, it was pointed out that some people were bribing village heads in order to get permission to cut trees. This resulted to some people cutting trees even without permission from the village head. One of the respondents said the following:

> *'These days even our local leaders are being bribed by certain people who would want to cut tree. It is no longer transparent as it used to be. Favouritism has led to some people defying local rules because they feel the rules are being applied selectively.'*

The majority of the respondents' perceptions were that access to solar power and generators was determined by one's economic status. The ability of one to buy these was the only key to access such sources of energy.

3.3 Gendered Nature of Energy Mobilization and Use

Table 1 below shows the uses of the energy sources.

Table 1. Uses of energy sources

Name of source of Energy	**Uses**	**Frequency**	**Percentage**

Grid electricity	Cooking, heating and lightning	23	7%
Generator power source	Powering small gadgets, like radios, televisions and charging cell phones	10	3%
Solar energy	Powering small gadgets like radios, televisions and charging cell phones.	12	4%
Wood fuel energy	Cooking, heating, lightning, curing tobacco and burning bricks	241	77%
Cow dung	Cooking and heating	30	9%
Total		400	

Women and children are the key actors responsible for gathering firewood which emerged to be the key source of energy. Key informants pointed out that 90% of the energy requirements in each household is for cooking and subsequently for heating the house. Cooking was seen as a routine activity that occurs on a daily basis. This meant that the fetching of firewood which is the main source of energy is a routine business. From the responses gathered from focus group discussions, it was established that there is division of labour in each household and this informs the daily duties done by each member of the household. One respondent had this to sum up the allocation of duties in a household:

> *'The responsibility to make sure that the family has had food in the home lies in the hands of the father. The mother of each household makes sure that the food available by the father is well prepared in order to feed everyone. This means there is need to have firewood to prepare the food. The mother of the household can also delegate some duties to gather firewood to children.'*

Women make sure that there is enough firewood in the home and children can help their mothers to make sure that firewood stocks are there. The researchers also noted that men in the home can also play a role in ensuring that there is enough firewood in the home by either bringing home huge logs or buying supplementary firewood. Men also have the responsibility of buying candles, generators and solar panels that are used to power home gadgets and lighting the space. Study results highlighted that there is clear distribution of duties between mothers, fathers and children of each household. The researchers noted also that the economic fortunes of households differ and so is there sourcing of energy. Some households had some domestic workers would double as livestock minders and firewood providers. Under such situation, the burden of sourcing firewood was reduced for women. Despite this alternative, it was clear that women are the managers in providing firewood in their homes. One respondent indicated the following:

> *'Women can never be relieved of the duties of fetching firewood. Men can bring home bigger logs but still need for tsotso (thin firewood) to facilitate the lighting of the bigger logs.'*

The division of labour in rural African home is so entrenched such that despite the seemingly unfair practices, it has survived for a long time. This was evident in the villages investigated. Socialisation of children from early days of life was meant to cement such norms and values such that when children grow old, will be aware of the societal expectations. Women will know that they cook for the family and cooking means that they need to look for firewood.

Table 2 shows cross tabulation for energy source used versus gender.

Table 2. Gender versus energy source used.

		Energy Source Used					
		Grid Electricity	**Solar Energy**	**Cow Dung**	**Generator Power Source**	**Wood Fuel**	**Total**
Gender	**Male**	12	30	22	20	55	139
	Female	30	45	65	22	99	261
	Total	42	75	87	42	154	400

Chi square test for association revealed statistically significant association between gender and energy source used. The p value obtained was 0.0042 which was significant at 5% level of significance.

3.4 Health Challenges Associated with Rural Energy Sources

Study results highlight an active role that women play in the fetching of firewood. They are the managers in the sourcing of energy in the households investigated. However, interviewed women and participants in discussion generally agreed that most women were ignorant of the potential health hazards that may be caused by the energy sources available to them. This was also supported by key informants who pointed out that women did not attribute their previous respiratory illnesses to the energy sources they used. One respondent indicated that she did not think that the use of firewood had any impact on her health as she was aware of the specific types of trees that are safe to use in the household. However, the smoke that is emitted from the burning of firewood has long term effects to their health. The involvement of women in fetching firewood from the forests exposed them to snake bites and various other physical injuries. Most women would normally carry firewood on their heads further exposing themselves to some back strains.

The researchers noted that at least 40% of respondents had suffered from a respiratory related illness for the past year. This could be attributed to their sources of energy which is mainly unprocessed firewood. The other source of problem that women face is stress caused by the increased scarcity of firewood due to deforestation. This means that women now need more time to get the same amount of firewood because of scarcity caused by deforestation. They are now travelling long distances in search of firewood a situation that will drain their energy and expected to do other duties such as cultivating the fields or small gardens.

3.5 Possibilities of Alternative Sources of Energy

Survey results highlighted that firewood is a major source of energy for the respondents who participated in the study. Despite the many challenges that were faced narrated by respondents in relation to firewood use that range from its availability, access and dangers associated with its use, many respondents indicated that firewood was their preferred source of energy. This was discovered by the researchers who also attributed the lack of other alternatives in Hurungwe district to the cost of such alternatives. Firewood is regarded as free good (public good) in rural areas of Zimbabwe as it is seen as a communal resource that any member of the community has access to though within agreed regulatory frameworks. This makes access to firewood relatively easy and affordable. The other alternative sources of energy that respondents numerated awareness of, include bio-gas energy. Respondents indicated that there was a Non-Governmental Organization (NGO) that once trained them on how to tap into bio-gas from household use from cow dung. This initiative was welcome by villagers but could not take off at full scale for reasons that could not be established. The use of cow-dung as a source of cleaner energy was hailed by many villages especially women who bemoaned the challenges they are facing in securing firewood.

Rural electrification was another possibility as was noted by key informants who pointed out that the government has launched a rural electrification programme in the year 2002 that targeted to equitably distribute electricity in rural areas. However, the programme has started at slow pace in all districts of the country including Hurungwe. Respondents indicated that efforts to register for rural electrification were done but normally took a political dimension. Such projects or programmes were mainly talked about towards election and hence they become politicised with little progress. This meant that rural electrification was a pipe dream for women in Dzokamushure and Masawu villages. For those who would shoulder the costs of installations, it was normally difficult to mobilise enough people who would put resources together to meet the costs of installation.

4. Discussions of Findings

Energy has been dubbed one of the most essential ‘things’ needed to sustain people’s livelihoods. It is generally believed that energy is central in human existence. Energy provides lighting, cooked food, boiled water, and warmth. Energy sources are quite broad (including biogas, biomass, fuel, petroleum products, solar, electricity, etc.) most rural poor families rely on biomass energy (that is firewood, charcoal, agricultural waste, and dung). Many studies done in many African countries including Zimbabwe, Kenya, Mozambique, Tanzania and South Africa have shown that the vast majority rural households rely on extensively upon firewood as their basic energy source (Wassie et al., 2021). These observations are consistent with the energy situation obtaining in Hurungwe District as evidenced by study results.

There is now an increasing shortage in supply of firewood, and this has added burden to women whose responsibility is to collect it. More so, of the approximately 1.3 million people living in poverty, it is estimated that 70% are women, many of who live in female headed households in rural areas (Makumborenga, 2022). Apart from increasing shortage of firewood and the burden with which this puts on women, the use of biomass fuel has adverse effects on women’s health. It is therefore means that there is need to move towards healthier and sustainable sources of energy which help women move out of poverty and its effects. Electricity is one of the safe and efficient energy that can be used by women, but unfortunately is not within the reach of most rural households (Makumborenga, 2022).

Rural areas continue to face marginalization in the access of electric power. Villages in Kazangarare area is

typical example of rural electricity shortage. Most households are without electricity despite government's push for rural electrification. Most notably rural areas continue to lack modern sources of energy which are safe and clean.

5. Conclusion

This study has revealed interesting and complex gender dimension on firewood collection and use in rural communities. The researchers observed that the lack of adequate and clean and safe sources of energy affects women more than it affects men. Women, who constitute a bigger percentage of the rural population, are traditionally expected to make available firewood for domestic use. Since biomass energy, mostly involving firewood, is the most common source of energy for rural households, women find themselves grappling with challenges associated with accessing and using firewood. Women tend to suffer from physical, mental and health strains due to their over-reliance on firewood.

Other available options of energy, which are clean and safe, such as electrical generators, solar, biogas, and electricity are not easy to access due to the costs involved in installing them. Electricity is not common in rural households and electrification a household is very costly hence a pipe dream for most rural households.

Having presented the findings of the study and forged a conclusion thereof, the researchers wish to note that there is need for the government to have a more clear and humane policy on access and use of energy in rural areas. The government is implored to grant the issue of energy in rural areas the weight it deserves. Access to adequate, clean and safe energy for rural households must be considered a right and the government should take up the mandate of facilitating this. It is also incumbent of the government to speed up and further subsidise its rural electrification to make sure that all including poor households in rural communities access the electricity grid.

There is need for the government to protect to protect the environment in rural areas. The growing populations are now making it difficult for people to be able to access firewood thereby causing serious deforestation. This deforestation has turned some areas to become semi-deserts which are unproductive. The government should seriously enforce laws on tree and firewood harvesting so as to protect the environment. Other alternative sources of energy should be provided by the government at affordable prices so as to reduce dependence on the environment. Last but not least, rural communities must make efforts to reduce the burden put on women and children by lack of adequate, clean, and safe sources of energy through sharing duties.

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