



THE GENDER, POVERTY, AND ENERGY NEXUS IN ZIMBABWE: THE CASE OF
GWERU URBAN AND SHURUGWI COMMUNAL AND RESETTLEMENT AREAS

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ABSTRACT

The paper examined the link between gender, poverty and energy in Gweru urban and Shurugwi communal areas. This is in light of the country's persistent power shortages vis-a vis environmental degradation exacerbated by the decade-long socio-economic crisis of 2000-2009 resulting from the fast-track land reform programme. Questionnaires, interviews and direct observations were used as research instruments. Tools of analysis included gender needs analysis, Caroline Moser's triple roles analysis framework and gender matrix. Findings revealed that wood fuel is still the major source of energy for men and women at both household and small-scale enterprises in both rural and urban areas of Zimbabwe. Fuel wood is characterized by scarcity and alternative renewable sources of energy like wind, solar paraffin, diesel, and electricity were either not available or unaffordable. Poverty and gender had a bearing on access and control of energy. Wood collection is done by both males and females in both rural and urban areas, but women tend to collect for subsistence use in the household while men in urban areas collect for commercial purposes. Energy scarcity impact on women's time and participation of women in energy planning is still lacking. The paper suggests a gender-energy-needs assessment to avoid gender blind projects and policies that do not take into account different energy needs of males and females.

Keywords: Gender, Poverty, Energy, Gweru, Zimbabwe.

1. INTRODUCTION

Gender inequality and energy poverty is widespread at every level of the energy sector, yet most poverty assessment researches exclude energy (Cecelski, 2004). Energy is a key input in all domestic, commercial and industrial activities which form the economic base for development. There is concern with linkage between gender, energy and poverty in the Gender and Development (GAD) approach. Chandi (2002) affirms that gender imbalances, energy and poverty are global concerns that need to be addressed if sustainable development (SD) is to be attained. The World Summit on Sustainable Development (WSSD) convened in Johannesburg 2002 on the backdrop of inequality in resource distribution, poverty, inadequate service provision and unsustainable production and consumption patterns among others (UNDP, 2004 and Devendra, 2002). SD has to do with eradicating poverty, improve management of the

resource base and changing unsustainable patterns of consumption. UN (2004) notes that the current national energy demand for domestic use far outstrips supply. The 1992 Rio Conference on Environment and Development was a milestone in raising National awareness on the need to integrate energy policies to address countries' energy problems more specifically, the provision of renewable energy for use in remote areas. The WSSD in 2002 was for ensuring environmental sustainability.

Gender, poverty and energy are global concerns in the Millennium Development Goals (MDGs) (UN, 2004). Gender and Energy Technical Advisory Team (GETAT) was set up in order to mainstream gender into energy projects. The Norad Energy Programme or Action plan was launched in 2007 and emphasized the importance of gender sensitivity in energy as one of the five priority areas of Norwegian Development Cooperation (Chiang, 2010). Norway as a country was to be in the forefront of support of sustainable, safe energy solutions that ease women's burdens of work to improve their access to health through the use of clean energy sources. Gender mainstreaming (GM) in energy takes into account that women are key stakeholders in energy service (Chiang, 2010 and Cecelski, 2004). Men and women's energy needs extend beyond cooking to cover reproductive, productive and community roles, the triple roles according to Moser (1993).

Energy and poverty are directly related (Chandi, 2002). Availability of modern services, for example, various energy sources are directly linked to one's economic status. Improved access to energy leads to better living conditions for most women especially rural women. Households (HHs) with low or high income depend on different energy sources (Cecelski, 2004). The rich use conventional sources of energy like electricity, solar and generator among others while those in abject poverty, relying on non-conventional sources like wood, dung and biomass (Chandi, 2002). The latter has a low energy efficiency compared to conventional ones. The disadvantaged poor HHs spends more time working with traditional energy sources.

The majority of the poor are women because women are the 'poorest of the poor' (Nebser, 1993 and Bundlender, 2004). Poor women are also stakeholders in the use of energy in their triple roles, namely productive, reproductive and community work. Chandi (2002) and Dithane (2002) note that wood fuel remains the largest single source of energy for the poor consumed at the HH level in many developing countries. Energy pricing determines allocation and access of energy as an economic resource.

Availability of sources of energy, especially traditional ones, namely wood, cow dung, charcoal and biomass depends on the state of the environment (UNDP, 2004). The majority of the population in both urban and rural areas of Zimbabwe depends on natural resources, yet the state of the environment continues to deteriorate in these areas. This deterioration was exacerbated by the decade-long socio-economic and political crisis which engulfed the country from 2000-2009 as a result of the countries fast track land reform programme.

In Zimbabwe the provision of renewable sources of energy, like solar, wind, biomass, geothermal and small hydropower is either scarce or unaffordable. Energy scarcity in Zimbabwe dates back to the energy crisis in 1971. The first five year development plan after independence tried to substitute oil imports by domestic fuels in 1981. However, there were no specific package instruments for alternative energy sources. There was over-emphasis of electricity, which saw the investment in Hwange power station phase programme. The results were rural electrification programmes which only worked in towns, growth points and business centres (Karenzi in Diphaha et al, 1994). Rural areas have remained relying heavily on wood because they cannot afford other alternatives. The Aerial photographs from the surveyor's general office indicated that there was wood scarcity and that depletion areas in Zimbabwe include virtually all former Tribal Trust lands (communal areas) like Murehwa, Shurugwi, Mberengwa and Mutasa and Gutu-Masvingo among others. Demand for wood and biomass in both rural and urban areas has therefore increased and also the commercialization of firewood. Access to wood depends on claims near homes, transport, cooperative husband, labour, tools,

purchasing power, and proximity to forests hence wood fuel has become hard to access just like other alternative sources of energy.

This paper argues that gender, poverty and energy are directly related. Gender and poverty determine access to, demand and use of energy type. Access to energy also has a bearing on productive, commercial, reproductive and community activities. Energy scarcity often makes invisible issues of gender and poverty in energy related projects and programmes. This paper seeks to identify sources of energy and gender related factors that constrain energy access and affordability. It also determines energy demand and use by gender in productive and reproductive work. The energy impact of men and women's activities as well as the relationship between poverty and gender will also be established.

2. LITERATURE REVIEW

Energy is one of the critical inputs in the economic development of any country as most development activities are associated with massive requirements of energy (Devendra, 2002). It is defined as the ability to do the work or the potential power to drive change without which nothing can live and no work can be done (Waugh, 2002). Energy is crucial in almost all forms of production, manufacturing, processing and preservation in both urban and rural areas. Chandi (2002) notes that domestic, commercial and industrial activities all demand energy power, hence it is part of the economic base for development. For this reason, energy demand, use, distribution, access and affordability have become issues of concern globally.

Energy is a natural resource-based product and its demand have a bearing on the natural environment. Chiang (2010) views energy as both a product and a service. Protection and sustainable management of natural resources is therefore important. Energy issues cannot be discussed outside environmental issues since energy is an environmental product whose depletion is primarily a function of human use and hence humans need to use energy sources both sustainable and rationally for sustainable development.

2.1 ENERGY AND POVERTY

Energy demand and access is also linked to gender and poverty (Chiang, 2010). Poverty is lack of welfare characterized by deprivation of basic needs including food, safe drinking water, sanitation facilities, health, shelter and education, among others (The Copenhagen Declaration of the World Summit for Social Development cited in Spicker, Leguizamon and Gordon, 2007). The type of energy used depend on the class of user (affordability by user), purpose for use, domestic, that is, commercial or industrial as well as whether one is in a rural or urban area (Ditlhane, 2002). Urban areas tend to use cleaner sources of energy, for example, electricity, solar and generators for industrial, domestic and commercial purposes. Governments also tend to introduce energy technologies and renewable ones to meet energy demand in towns (Tandon, 2009). Coal, wood fuel, paraffin, diesel, dung cake and biomass tend to be used by the rural poor people. Chandi (2002) also points out that in Zambia, like many countries, wood fuel, is the major source of energy for the rural poor. Ditlhane (2002) also revealed that in the Botswana fuel wood was the main cooking fuel over 77% HHs and 89% used it for heating in both the urban and rural areas.

In 1999, the Botswana Power Cooperation (BPC) embarked on electrification programme of 72 villages, but this proved unaffordable for the rural poor. Economic status of beneficiaries is important in determining the type of energy to be made available to them. Botswana has low HH connectivity to electricity due to limited affordability by HHs. Cecelski (2004) also found that half the world's population cooked with biomass for all or some of their meals. The urban and rural poor HHs consumes 90% of total energy from biomass fuel which is used in open fires, primitive stoves, forests and agriculture. Renewable and affordable energies like solar, wind, geothermal and small hydropower linked to small scale renewable

energy technologies were developed in the 1970s and 80s. Unfortunately industrialized countries were unwilling to adapt these for rural industries, agriculture or domestic purposes (Cecelski, 2004).

2.2 GENDER, POVERTY AND ENERGY

Energy, poverty and gender relations are beginning to receive attention globally (Cecelski, 2004 and Chiang, 2010). Gender is defined by Gita Sen in Towards the Earth Summit (2002) a set of characteristics, roles and behaviour patterns that distinguish women from men which are constructed not biologically but socially and culturally. The use of energy in productive, reproductive and community work by both genders has also become an area of focus. Women, the poorest of the poor cannot access expensive sources of energy. Women lack access to land, capital, power, information, literacy as well as skills for new technologies (MDGs, 2004 and ZNGP, 2004). For the above reasons, biomass were found to be the major source of energy for most women in developing countries at both HH and small scale enterprises. It was used for food processing, preservation and retailing (Momsen, 2004 and Dankelman, 2002).

Dankelman (2002) further notes that women bear the highest cost of environmental crises because of their role in providing water, food and energy at family and community levels. However, gender considerations in energy pricing are not made, although this is a major determinant of accessibility. Women in most developing countries also have small rural and urban industries for baking, pottery, fish smoking, oil seed processing, beer brewing, weaving, tailoring, soap making, maize milling, restaurants and guest houses which heavily depend on availability and access to energy sources (Momsen, 2004).

Energy assessment needs by gender receive little attention and the differential impact of the energy crisis on men and women is not addressed (Chiang, 2010). If gender analysis is made, the assumption is that women's energy needs are for practical gender needs (PGNs) (basic needs for survival) only, ignoring the fact that women are also stakeholders in energy use for productive, commercial and community services which are strategic gender needs (SGNs). Energy, provision in Zimbabwe is not sufficient and does not satisfy the energy needs of most rural Zimbabwe (Maya, 1994 and ZNGP, 2004)

Energy provision does not take into account gender, needs and affordability. Rural electrification worked in towns, growth points and business centres (Maya, 1994). Low income urban areas makes alternative commercial fuels unaffordable. In urban areas the poor resort to wood which is also costly because of distance and officials who are against wood poaching. This particularly affects poor women. It is for these reasons that the ZNGP (2004) aims at formulating policies that encourage participation of women and men in this sector for gender sensitivity in energy provision.

Women have income generating activities that rely heavily on energy availability, but are not mainstream in decision making that relates to energy policies (Cecelski, 2004 and ZNGP, 2004). Gender, poverty and energy are development issues as highlighted in the MDGs (UN, 2004). The three are intricately linked. Gender policies need to take poverty and energy access into consideration, they should also focus on the poor in particular the disadvantaged gender. ZNGP (2004) further notes that gender, all along was not mainstreaming at the micro - level in policy formulation, planning and implementation. Women do not participate in the development and distribution of alternative energy sources. Energy development projects do not target women. There is no gender sensitivity in existing national energy policies and budgets. In Botswana it was found that women rarely participated in the National Energy Development Committee (NEDC), Provincial energy Development Committees (PEDC) and District Energy Development Committees (Ditlhane, 2002). In Zimbabwe, Munslow (1998) pointed out that in Campfire projects and Rural Afforestation (RAP) there is a tendency to ignore cultural issues relating to access and ownership of resources. Gender and poverty in domestic energy, are of no

interest to men, but trees and other energy resources are regarded as men's because the land belongs to men.

Cecelski (2004) cites that there is a need for a rethink on gender and energy paradigm in policy reviews by focusing backwards (on what was) and forward (what should be). Energy policies and practices are guided by invisible HH energy demand and use by men and women. This is also influenced by invisible productive, reproductive and community work of men and women (Cecelski, 2004; Bundlender, 2004 and Tandon, 2009). Where there are acknowledgement of women's demand for energy, policy makers view women as collectors, users, victims and perpetrators of environmental deterioration (Dankelman, 2002 and Momsen, 2004). This is usually done to incorporate women in energy and environmental conversation instead of the development of policies relating to demand, access, distribution and affordability of existing and alternative new sources of energy. Women are integrated as users (Cecelski, 2004). Gender analysis of project policy planning has remained largely within women in Development (WID) framework focusing on women as users of energy and abusers of the environment through forest destruction (Momsen, 2004). It is also assumed that women need energy for domestic purposes only.

2.3 IMPACT OF ENERGY SCARCITY ON WOMEN

Studies done on energy and women documented the burdens suffered by women as a result of energy scarcity, for example, Cecelski (2004) noted that in the late 1970s, gender experts argued that women's time and not biomass energy was the real energy crisis. Women, who were viewed as culprits in deforestation, were to participate in forestry projects like reforestation to improve availability of fuel wood. Studies done by Achanya, Bennett and Tinker, cited in Dankelman (2002) on the real energy crisis focused on forestry management and women's time on energy sourcing. Women also participated in the Green belt movement in Kenya in 1977 which was a tree planting project, efficient stoves were introduced to conserve fuel wood. Dithane (2002) revealed that time scarcity for a woman was linked to collection of fuel wood which is mostly done by women in rural areas and by men and women in urban areas. 79% HHs spent 3-3 ½ hours in the fuel wood collection. Lefebvre in Momsen (2004) reveals that UN development programmes found that women and girls in sub-Saharan Africa carries an average of more than 5kg per day. Commercialization of energy sources traps the rural poor, especially women in wood fuels trap given that wood is a free gift in rural areas (Munslow, 1988).

Energy scarcity and type of energy used has a bearing on the quality of life especially for women. Search for energy takes women's leisure time. Momsen (2004) colludes that the provision of energy services to women save their time as custodians of domestic energy use. They also point out that access to clean alternative energy sources improves the living conditions for women in rural and urban areas. Traditional energy sources, for example, charcoal, dung, paraffin and gas are not only low efficient, but they increase indoor air pollution which women inhale. Clean energy sources are not only fast and efficient for production, but they create time for education, income generation activities as well as ensuring good health (Chiang, 2010). World Health Organization (WHO) estimate that 2,5 women and children in developing countries die prematurely from inhalation of toxic fumes from biomass fuels used indoors to cook food (Momsen, 2004). A day spent inhaling smoke from cooking is equivalent to smoking 400 cigarettes and this can cause chronic respiratory problems and throat cancers.

2.4 GENDER, ENERGY AND CONSERVATION OF THE NATURAL ENVIRONMENT

Availability of energy is closely linked to the state of the environment, hence management of natural resources improves availability of energy (Sengendo, 2002; Dankelman, 2002 and Tandon, 2009). World Conservation Union of 1948 had the mission to encourage and

assist societies to conserve the integrity and diversity of nature to ensure that any use of natural resources is equitable and ecologically sustainable. Energy is an ecological issue and a concern for men and women. Dankelman (2002:14) point out that

Probably no other group is more affected by environmental destruction than poor village women. Every dawn brings with it a long march in search of fuel, fodder and water. As ecological conditions worsen, the long march becomes even longer and tiresome.

Karenzi in Diphahle, Hall, Karenzi, Khgathi, Maya, Mpotokwane, Sekhwela and Tietema (1994:176) noted that “wood depletion is likely to continue in Zimbabwe as the government continues with its rural resettlement programme.” While those resettled will certainly benefit from improved fuel wood availability and accessibility in the short term given the availability of forests, in the long term the energy-deficiency cycle will soon catch up with them if no community-initiated tree conservation measures are put in place.

Issues of environmental conservation and the sustainable use of resources have emerged as a concern because of competing livelihood strategies (UNDP, 2004). Both men and women should participate in natural resource conservation. In Zimbabwe various strategies have been developed which include rural electrification, a community area management programme for indigenous resources (CAMPFIRE), introduction of Environmental Management Agencies (EMA), environmental science education in schools and environmental awareness campaigns on alternative renewable energy sources. Renewable energy sources are infinite energy sources which are a “flow nature” recurring over time and can be used over and over again as opposed to non-renewable that can be exhausted (Carr, 1997). Examples are solar, wind, tidal, thermal and hydroelectric power. This is done to reduce over-reliance on natural resources for energy by the majority of the rural population and an increasing population of urban dwellers (UN, 2004; UNDP, 2004 and ZNGP, 2004 and). However, these have not mainstream gender and poverty, hence the need to interrogate the intricate relationship between gender and poverty in energy issues.

3. THEORETICAL FRAMEWORK

This paper is grounded in the feminist political ecology theory which posit that the science of survival is tendered, so are the environmental rights to resources, ownership, user-rights, demand, access and affordability (Cecelski, 2004). Participation in energy access and environmental policy formulation, planning, distribution and control is determined by gender and one is economic status. Benefits and impacts of energy scarcity are also gender differentiated.

The paper also argues from post modernists thinking that views women’s relationship with the environment as emerging from the social context (Chandler and Wayne, 2000; Cecelski, 2004 and Momsen, 2004). In post modernism women’s gender, energy demands and access vary according to their social stratification, that is, whether they are young, old, rural, urban, working and non-working. Both feminist political ecology and post modernism focus on a gendered perspective of access to natural resources. They also focus on gender relations as they relate to roles, resource use, decision making and control of products and services. Participation is not viewed as the same as benefits. Women are recognized and are seen as excluded from macro-context of gender, energy and environment.

The paper is a shift from eco-feminist theory and its women in Development (WID) approach to a Gender and Development (GAD) and Gender Environment and Development (GED). Eco-feminism viewed women’s roles as biological rather than socially determined, hence the terms ‘mother earth’ and ‘Earth Care’ (Shiva, 1988; Chandler and Wayne, 2002 and Merchant, 1995). WID as a strategy for reducing poverty took a welfare approach where women were perceived as passive recipients of development and adopters of new energy technologies. Women’s resistance to new technology, energy sources was explained in terms of ignorance and cultural rather than exclusion through top-down approaches to development

(Cecelski, 2004 and Karenzi in Diphaha et al, 1994). Participation of women in natural conservation was based on the view that women were users and victims of natural resource scarcity. Issues of access, control and decision making in policy formulation were ignored.

WID projects were women's specific and ignored gender relations between man and women (March, Smith and Mukhopadyay, 1999). GED, according to Aguilar in Dankelman (2002) is a mechanism that institutionalizes the process of seeking equal opportunity and equity between man and women in their relations with natural resources. GED facilitates recognition of men and women have different needs, interests, rights and power over natural resources. GED argues that men and women experience different impacts of natural resource scarcity of products like energy. They also experience different impacts resulting from natural resource conservation and intervention development measures (Aguilar in Dankelman, 2002; Momsen, 2004). GAD and GED encourage active participation of men and women in natural resource and energy issues to address inequalities relating to access, decision making and control over resources (Chandi, 2002). Gender development constraints need to be removed through the formulation of gender sensitive development policy (ZNGP, 2004). For this reason GAD and GED incorporates gender analysis tools in gender research relating to natural and energy resources. In this research, the Harvard analysis tool provides quantitative and qualitative data relating to activities for males and females, type and amount of energy used, access, affordability and control over energy resource.

Gender analysis provides sex disaggregated data for policy making and monitoring for gender mainstreaming in development. Gender needs assessment tool is also important for making visible energy needs for different activities of males and females to guard against gender blind policies and projects. Failure to acknowledge different needs of men and women often leads to failure of projects (Chiang, 2010 and Mukhopadyay, 2001).

4. MATERIALS AND METHOD

4.1 THE PROFILE OF THE STUDY AREA

Gweru and Shurugwi Districts are adjacent districts in the Midlands Province of Zimbabwe (Figure 1), which is natural farming region 3 with an annual rainfall regime of below 600mm and an annual average temperature of 15-25 degrees Celsius. Both districts are at the centre of the province with the greater part of Shurugwi district lying in the mineral rich Great Dyke region while Gweru district is on the western side of this important geological formation.

While Shurugwi District is rich in chrome, gold and platinum, local indigenous communities have hardly meaningfully benefited from these. These minerals are exploited by large companies like Anglo American and others who ferry these minerals to urban centres like Gweru for processing. Platinum, which currently higher prices on the world market, is actually exported all the way to South Africa for processing. It is only the government's indigenisation policy which in early 2012 forced companies like UNKI Platinum mine in Shurugwi to offer what local communities are called 'Community Share Trust' (CST) which are meant to benefit the local communities through different developmental projects. These, however, have not yet borne fruit.

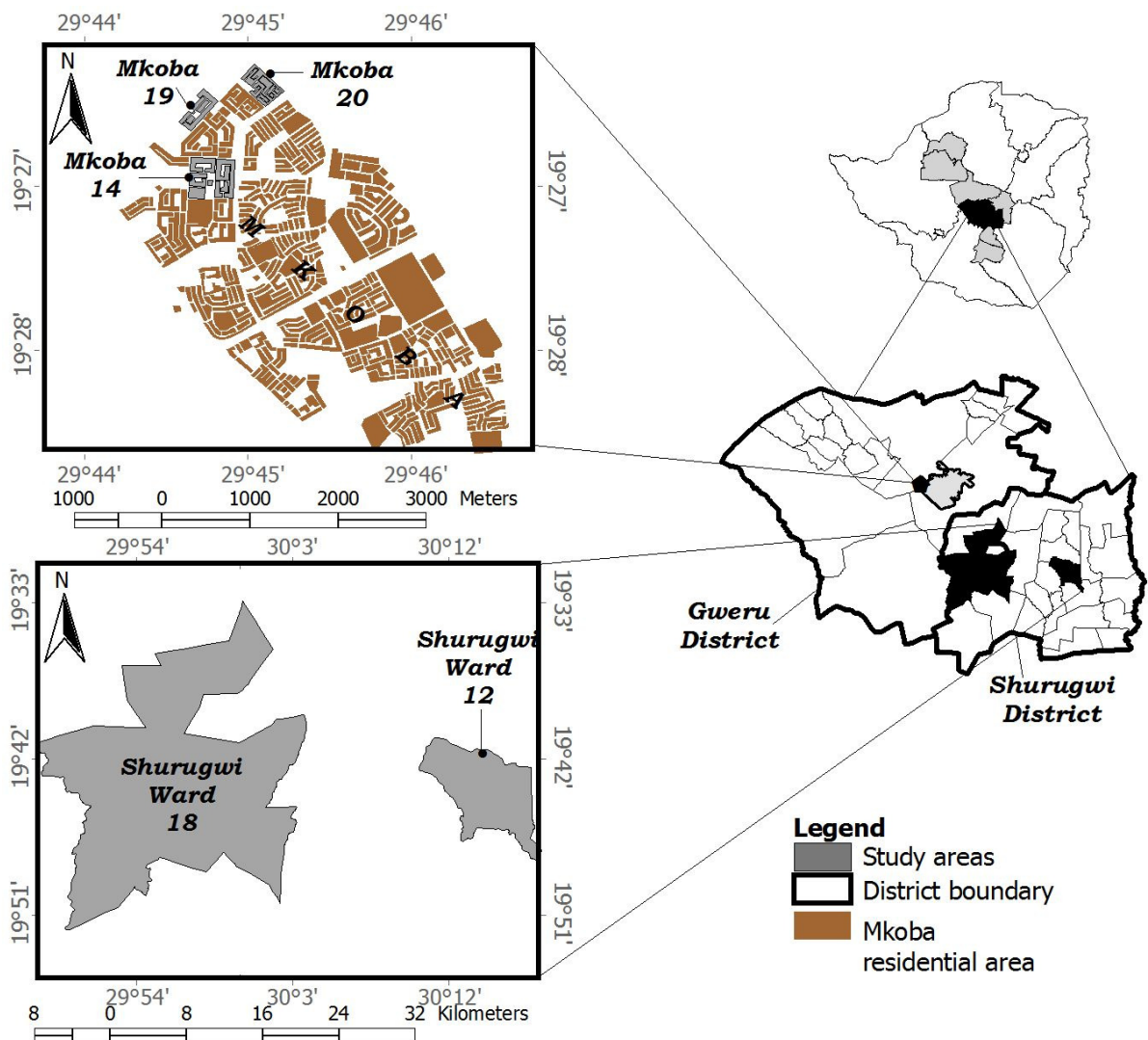
The major economic activity for both wards 12 and 18 of Shurugwi Districts still remains essentially dry land cropping and livestock rearing at the subsistence scale on the district's mainly sandy soils. Ward 12 is an exhausted communal area which has been under these farming systems for over 100 years now and hence is now very unproductive in the absence of fertilizer or manure. There are very few trees left of what were miombo forests because of massive deforestation carried out over the years to open up new areas for both settlement and agriculture. Hyperrhenia is the dominant grass type. The main rural service centre, Tongogara Growth Point, is however connected to the national electricity grid, although surrounding communities do not benefit from this because of the prohibitive costs of both initial

connection and monthly charges. The few locals employed in mines are lowly paid miners whose income and influence are insignificant for community development.

Ward 18, however, being a former white owned commercial farm and now a newly resettled area acquired by the government in 2000 under the fast-track resettlement programme, has an advantage over communal Ward 12 in that it still has forests. Although both Environmental Management laws and traditional customs prohibit wanton cutting down of trees, it is still permissible to cut trees in the resettlement areas for purposes of opening up one's farmland or for establishing a home. Illegal gold panning is also an important economic activity in Ward 18 and almost every family is involved in it, especially during the dry season.

Mkoba villages 14, 19 and 20 are on the edges of the Gweru urban municipality in Gweru district. They are high density areas which, like most urban residential areas, have a critical and chronic shortage of energy, especially electricity. The 3 suburbs have an approximate population of 3 200. Less than half of the adult population of Gweru is employed in the few industries still operating in the City of Gweru. Most people, however, make a living out of the informal sector, which includes backyard industries, cross border trading, urban community gardening, foreign currency dealing and vending of low income items such as paraffin, firewood, cell phone recharge cards among others. Residents in all villages also practice dry land, urban crop farming on the city's clay soils during the rainy season to complement their meager income. Adjacent farms still have miombo forests.

Fig. 1: Map of the study area



4.2 RESEARCH DESIGN AND SAMPLING PROCEDURES

The study was carried out in the Gweru urban district and Shurugwi communal and resettlement areas of Zimbabwe between March and June 2012. Qualitative and quantitative designs were both used in this study. The study was, however, largely qualitative with multiple case studies of Mkoba villages 14, 19 and 20 in Gweru urban, Ward 12 in Shurugwi communal lands and Ward 18 in Shurugwi resettlement area. For Gweru urban, three (3) suburbs were purposively selected. Mkoba 19 was selected because it is furthest from the city centre and close to the farms which relatively have accessible fuel wood. Mkoba 14 was selected because it has an ageing population of mostly retired workers with no sound income and hence limited energy options. Mkoba 20 was chosen because it is the new suburb with some houses not yet connected to the national electricity grid. It also has some of the youngest and most dynamic residents of the city who are mostly either not formally employed or unemployed. 20 households in Mkoba 14, 26 in Mkoba 19 and 24 in Mkoba 20 were randomly selected using Geographic information Systems (GIS) software.

Shurugwi rural (Ward12) was selected because, like most of Zimbabwe's communal areas, it has suffered massive deforestation over the years due to high population growth and its associated factors. Ariel photographs from the Surveyor's general's office as early as 1994 indicated Shurugwi as one of the areas of critical wood depletion in Zimbabwe (Maya in Diphaha et al, 1995). Shurugwi Ward 18 resettlement was selected because it is a new resettled area with relatively virgin forests. GIS was used again to select 20 households in Wards 12 and 18.

4.3 DATA COLLECTION AND ANALYSIS METHODS

A questionnaire was administered to 20 respondents (12 males and 8 females), Mkoba 14, 26 respondents (8 males and 18 females) and in Mkoba 20, 24 respondents (6 males and 18 females). There were more females than males because females were the ones who were found within the confines of the homes. The researchers also felt that the ratio was an advantage in representing the female voice. Females are largely invisible and their voices are unheard in energy issues (Chandi, 2002).

In Shurugwi Wards 12 and 18, 20 respondents for each (7 males and 13 females), (9 males and 11 females) respectively answered questionnaires. The items in the questionnaire sought disaggregated data related to availability of different energy sources, reliability, affordability, uses (productive or reproductive), use by gender, general energy constraints, average income and average expenditure on energy. The total sample of questionnaires was 110 of which 68 were females and 42 were males.

In-depth interviews were conducted with interviewees who either owned small businesses, markets or the self-employed in business centres, all the villages in Gweru urban, ward 12 and Ward 18. The interview sample in Gweru urban was 36 respondents (5 males and 7 females) in Mkoba 14, (6 males and 8 females) in Mkoba 19 and (4 males and 6 females) in Mkoba 20. In Shurugwi Ward 12, there were 22 respondents (5 males and 5 females) while Ward 18 had (5 males and 7 females) respondents. The total interview sample was 58 respondents (25 males and 33 females). The interview items sought data relating to energy sources, alternative energy sources, women's energy constraints, the relationship between gender and poverty, energy saving and renewal activities as well as awareness campaigns and education relating to energy issues.

4.4 OBSERVATIONS

In all households where questionnaires were administered and all business centres where interviews were conducted, direct observations were made. In urban areas, rural areas and business centres, observations made related to the type of energy sources, fire places, availability of energy sources within the premises and around the area (forests, piles of wood, electricity connections, solar and generator gadgets). Energy deliveries were also important, that is, the gender delivering, quantity of delivering energy and the transport used to deliver.

In Ward 12 communal lands, and Ward 18 resettlement area, observations related to availability and abundance of both modern and traditional sources of energy. Distance of woodlands, availability and size of woodlots within household premises, deliveries by gender, transport, and availability of dung cake, crop-related biomass and user by gender was also important.

5. DATA PRESENTATION AND ANALYSIS

5.1 SOCIO-DEMOGRAPHIC CHARACTERISTICS OF RESEARCH PARTICIPANTS

The respondents from Gweru urban (Mkoba 14, Mkoba 19 and Mkoba 20) showed a dominance of the 21-40 age groups which range between 60% and 78% for both males and females. Total respondents for Gweru urban were 26 males against 34 females, which reflect that females are still confined to the home and spend most of their time doing home-based chores. As expected, the research revealed that there are very few elderly men and women of the age group 41 and above even in the relatively new suburbs of Mkoba 19 and Mkoba 29. Mkoba 14, which is one of the Gweru's oldest suburbs revealed a 25% male respondent ratio against 37.5% females.

Shurugwi Communal ward 12 shows that most respondents (both male and female) were above 40 years, of which 42.8% males and 46.1% females respectively were above 60 years. This reflects that communal areas are still dominated by the elderly. This could be a result of the economic hardships the country went through in the decade 2000-2009 which led to the closure of most industries and the resultant massive retrenchment of workers some of whom could only find economic refuge in their rural homes. The fast-track resettlement programmes also have a larger number of younger people from communal areas to new farms.

Shurugwi Ward 18 resettlement area shows a dominance of respondents, 72.7% females and 44.5% males in the 21-40 age group. This reflects that a sizeable percentage of youth were among the beneficiaries of the fast track land reform programme. The figures also show that the area, like the rest of the country, has a level of unemployment.

Education levels of the respondents differ from urban areas, a resettlement area and communal area. Over 50% of male and female urban respondents either have ordinary level or advanced level of education which shows the high literacy level. Resettlement area respondents also have a relatively high literacy level with 44.5% of males and 54.5% females having reached Ordinary level. The communal area respondents, however, have a low level of education with 51.1% and 61.5% females only having gone as far as primary education. This is because by virtue of their age, they could not have benefited from the government's education for all programmes of the 1980s.

For all areas, the majority of the respondents were worried, although communal areas showed a higher percentage of widows at 53.9%. Only the urban area had respondents in formal employment. However, males dominated against women by almost 50%. In both communal and resettlement areas, farming and gardening dominated. There was a total absence of formal employment among the respondents.

5.2 MAIN ENERGY SOURCES AVAILABLE

Source of energy available in the study areas includes electricity, solar, wood, paraffin, generator, gas, gel and biomass (Table 1). Wood is the most abundant source of energy for both genders and for both rural and urban areas. Electricity and paraffin are second and third respectively. Generator and solar are also significant sources of energy in all areas. There is a complete absence of relatively new energy sources like gel in both communal and resettlement areas. Biomass, which includes crop related residues (maize stalks, maize cobs etc.) Cow-dung, grass and leaves are, however significant forms of fuel in these areas. The reason why wood is the most available source of energy is because forests are still relatively available in all areas and is still relatively cheaper than other forms of fuel except biomass which apart from being unreliable, is not efficient and is also seasonal. Most people who normally depend on electricity in urban areas have restored to use of wood because of excessive load-shedding the country has experienced since 2000. Both solar and generators are a direct response to electricity's limited availability.

Table 1: Energy Sources by Place and Gender (Frequency)

Place	Electricity		Solar		Wood		Paraffin
	M	F	M	F	M	F	M
Mkoba 14	12	7	2	1	11	8	10
Mkoba 19	8	18	6	9	13	18	6
Mkoba 20	6	17	3	3	6	17	1
Ward 12	6	4	7	10	6	13	6
Ward 18	4	6	9	11	9	11	5
Total	36	52	27	34	45	67	28

5.3 RELIABILITY OF ENERGY SOURCES

Although the three study areas, urban, communal and resettlement have common sources of energy available to them, energy source reliability differs from one place to another (Table 2). While wood and paraffin had the highest frequency of mention as very reliable in urban areas for both genders for the communal and resettlement areas, solar and wood was classified as very reliable. Both urban and communal areas classified wood and paraffin as reliable while in the resettlement area, wood and solar are the ones rated as a reliable. The reason why wood is favourably rated is because it is multi-purpose. Apart from its availability and relative cost, it is also used for food preparation, food preservation, lighting and heating. Solar is also rated as reliable because it can also be used for a range of functions like lighting, heating, cellphone charging and entertainment. For all areas and by both genders, electricity and generator are rated as not reliable. This is because electricity load-shedding in all areas in Zimbabwe including the study area is very unpredictable and can last for more than 18 hours per day. The efficiency of generators, on the other hand, depends on petrol or diesel availability, which apart from being expensive is also sometimes not readily available.

Table 2: Energy type Reliability by Place and Gender

Place	Energy Type	Reliability (frequency of mention)					
		Very Reliable			Reliable		
		M	F	Total	M	F	Total
Urban (Mk 14, Mk 19, Mk 20)	Electricity	0	1	1	2	3	5
	Wood	9	9	18	8	28	36
	Solar	2	2	4	2	5	7
	Generator	2	1	3	6	12	18
	Paraffin	1	6	7	11	26	37
	Candles	0	1	1	2	0	0
	Gas	1	0	1	2	3	5
	Gel	1	1	2	0	0	0
	Biomass	0	0	0	0	0	0
Communal (Shurugwi ward 12)	Electricity	0	0	0	0	0	0
	Wood	1	1	2	5	17	0
	Solar	0	3	3	7	5	12
	Generator	0	0	0	2	2	4
	Paraffin	0	1	1	5	8	13
	Candles	0	0	0	0	1	1
	Gas	0	0	0	0	0	0
	Gel	0	0	0	0	0	0
	Biomass	0	0	0	0	0	0

5.4 ENERGY SOURCING AND DEMAND

Sourcing of all types of energy mentioned was largely male-dominated in all areas (Table 3). The reason for this in urban areas (Mkoba 14, Mkoba 19 and Mkoba 20) is because all types of energy need to be bought and its mainly males who provide that money since they are generally the ones in gainful employment and are family heads who are thus expected to provide for the family by the patrilineal societal structure. In communal areas, because of deforestation and depletion over years of human settlement, forests are now few, further apart and far from settlements hence wood is now mainly sourced by males and is also commercialised. Wood is the main source of energy in communal areas. In ward 18 which is a model 1 settlement area, people are only allowed to cut trees provided they do this to clear their land for agricultural purposes. This clearing is mainly done by males and the wood thereof is the main energy source in homes. This makes energy sourcing a predominately male activity. Generators and solar panels also require money, which comes mainly from males through activities like gold panning.

Table 3: Energy Sourcing By Gender And Place

PLACE	MALES		FEMALES		BOTH	
	No	%	No	%	No	%
Mkoba 14	12	60	5	25	3	15
Mkoba 19	15	57.7	8	30.8	3	11.5
Mkoba 20	12	50	7	29.2	5	20.8
Ward 12	11	55	7	35	2	10
Ward 18	13	65	7	35	0	0

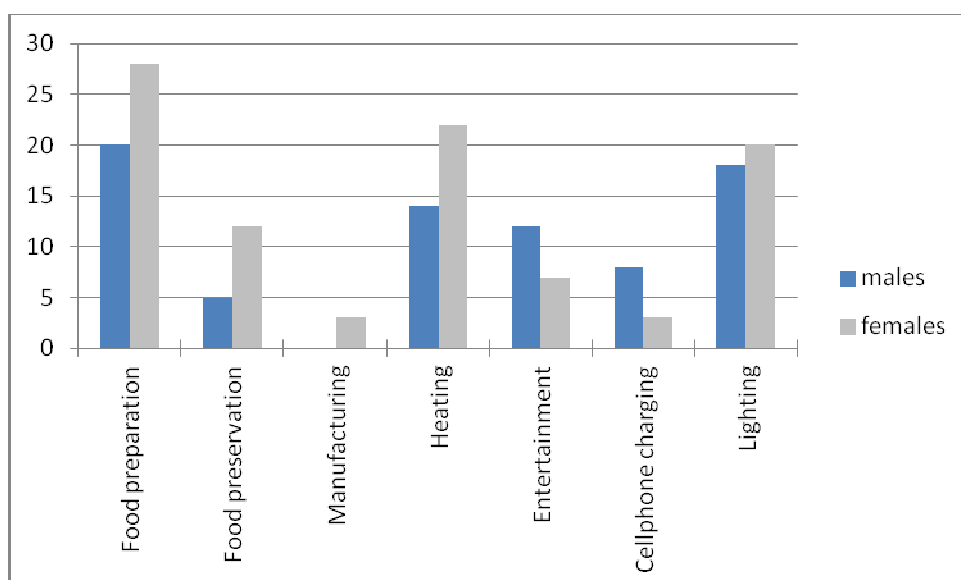


Figure 2: Energy demand and use in rural areas by gender

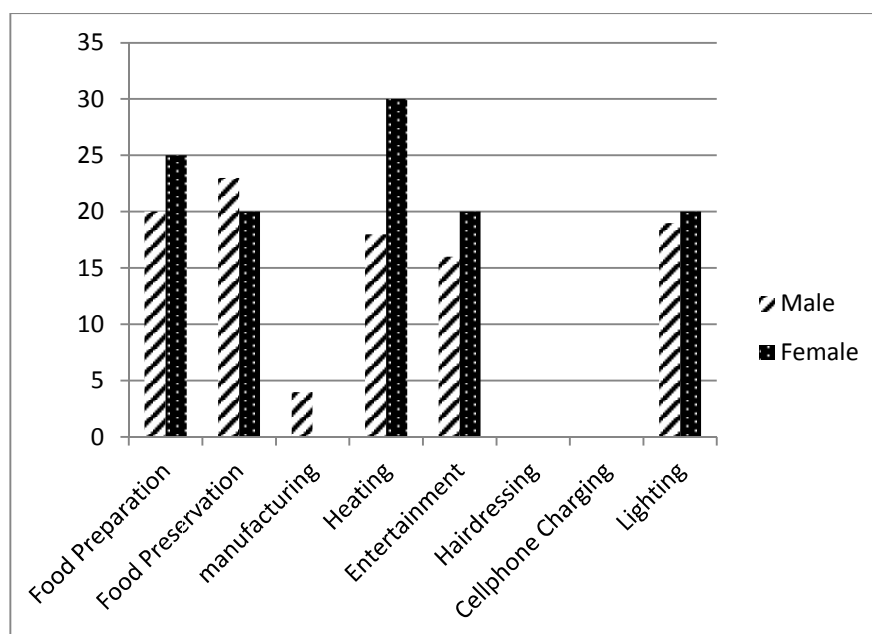


Figure 3: Energy demand and use in urban areas by gender

In all areas energy is mainly used for food preparation, heating and lighting (Figures 2 and 3). Uses like food preparation and entertainment are more in urban areas than in rural areas. This is because food preservation is mainly refrigeration which is electricity based. Though unreliable, electricity remains the major source of both preservation and entertainment. Entertainment is an important pastime activity in urban areas than in rural areas where people spend the day working in the fields and have few alternative sources of energy for entertainment. The absence of electricity in rural homes lead rural people to rely on solar energy and car batteries to power communication gadgets like cell phones, radios and televisions. In both urban and rural areas, energy use show that women dominate in energy use through food preparation, food preservations, heating and lighting. In urban areas energy use for entertainment is also important. This is because they are not formally employed and they work around the home. In rural areas, however, energy demand and use for entertainment is more significant for men than women while in urban areas Women use of energy for entertainment is dominant. This is because in rural areas access to energy for entertainment depends on access to solar and battery gadgets which are mainly accessed by males. The energy sources of entertainment in urban areas are electricity, which is relatively available compared to

solar and battery gadgets. The other contributory factor is that in urban area non-formally employed women have ample time for entertainment as they spend most of their time within the confines of the home. In both urban and rural areas, few men and women use energy for manufacturing.

Table 4: Energy Affordability and Reliability in Urban Areas

Energy Type	Affordable		Not Affordable		Reliable		Not Reliable	
	Male	Female	Male	Female	Male	Female	Male	Female
Electricity	5	11	14	19	2	0	18	29
Generator	0	1	2	1	0	2	2	1
Solar	0	1	0	0	1	1	0	0
Gas	0	0	0	1	0	1	0	0
Wood	12	23	4	11	14	33	3	3
Paraffin	0	12	1	4	3	15	0	1
Gel	0	1	0	1	0	0	0	1
Biomass	2	0	0	0	0	0	4	0
Candles	0	1	4	2	2	1	1	2

5.4 ENERGY AFFORDABILITY AND RELIABILITY

In the urban areas, electricity was rated by both males and females as unaffordable and unreliable while wood was rated as affordable and reliable by both, males and females (Table 4). Unreliability of electricity is a result of excessive load-shedding and affordability is affected by high electricity bills despite electricity cut offs. Wood was relatively cheaper compared to electricity. Males and females can source wood from nearest forests and farms at low or no cost. Females also rated paraffin as affordable and reliable.

Table 5: Energy Affordability and Reliability in Rural Areas

Energy Type	Affordable		Not Affordable		Reliable		Not Reliable	
	Male	Female	Male	Female	Male	Female	Male	Female
Electricity	0	0	1	0	0	0	1	0
Generator	1	2	1	1	2	3	0	0
Solar	10	5	0	0	10	7	0	0
Gas	0	0	0	1	0	0	0	0
Wood	10	6	5	0	16	10	10	0
Paraffin	2	0	4	11	6	13	0	0
Gel	0	0	0	0	0	0	0	0
Biomass	1	1	0	0	0	0	1	1

In rural communal and resettlement areas wood and solar were rated by males and females as affordable and reliable whereas paraffin was rated as unaffordable but reliable (Table 5). The low rating (or mention) of other sources of energy like gel, gas, generator and biogas was mainly because they were not major energy sources in both rural and urban areas; very few people could afford them.

5.5 ENERGY-BASED ACTIVITIES IN URBAN AND RURAL AREAS

In all the 3 areas energy based activities like food preparation, food preservation, lighting, heating and entertainment were for domestic purposes (reproductive roles) rather than commercial purposes (productive role) for both males and females (Table 6). There were very few males and females who used energy for commercial purposes in all areas.

Table 6: Energy-based activities by place and gender

Place	Activity	Purpose by Gender			
		Domestic		Commercial	
		M	F	M	F
Urban (Mk 14, Mk 19, Mk 20)	Food preparation	21	43	1	0
	Food preservation	18	25	1	4
	Manufacturing/processing	1	1	2	1
	Lighting	18	34	2	1
	Heating	18	39	1	0
	Entertainment	18	30	0	0
	Hairdressing	0	1	0	1
	Printing/photocopying	0	1	0	1
Communal (Shurugwi ward 12)	Food preparation	7	13	0	0
	Food preservation	3	6	0	0
	Manufacturing/processing	0	1	0	0
	Lighting	6	12	0	0
	Heating	5	11	0	0
	Entertainment	3	4	0	0
	Cell phone Charging	0	1	0	0
Resettlement (Shurugwi ward 18)	Food preparation	9	11	0	0
	Food preservation	2	8	1	0
	Manufacturing/processing	0	0	0	0
	Lighting	6	3	0	0

5.6 ENERGY-RELATED CONSTRAINTS

All urban areas mentioned excessive load shedding as a major constraint in the use of electricity by males and females. Mkoba 19 and Mkoba 20 respondents also cited prohibitive costs as an additional constraint (Table 7). Males and females in communal and resettlement areas did not mention constraints relating to electricity because it is not a major source of energy they rely on. Distance from nearest farms or forests and arrests by EMA officials, police

and traditional leadership in rural areas were cited by both males and females as major constraints affecting access to wood fuel sources in both rural and urban areas.

The cost of solar gadgets and the state of the weather were cited as significant factors constraining access to solar energy, a dominant energy source (after wood) for males and females in communal and resettlement areas. Low frequencies for constraints relating to biomass, gel and gas were a result of the fact that in both rural and urban areas, these energy sources are either rarely used or are non-existent (refer to table 7). Availability and cost of fuel for paraffin and generator were cited as a major constraint affecting access and use of these energy sources in rural and urban areas by both males and females.

Table 7: Constraints of Energy type by place and Gender

Energy Type	Constraints	Urban						
		Mkoba 14			Mkoba 19			Mkoba 20
		M	F	T	M	F	T	M
Electricity	Excessive load-shedding	10	6	16	7	16	23	3
	Prohibitive costs	2	2	4	3	7	10	2
Wood	EMA/ Police/ Traditional leaders who arrest them	7	4	11	5	11	16	1
	Expensive	0	2	2	0	0	0	0
	Distance from nearest farms/ forests	7	1	8	6	11	17	0
Solar	Cost of solar gadgets	3	1	4	3	1	4	2
	State of weather	1	2	3	1	2	3	0
Biomass	Its seasonal	2	0	2	1	1	2	0
	Can be affected by poor harvest	1	0	1	1	0	1	1
Paraffin	Cost of fuel	3	3	6	2	9	11	3
	Availability	4	0	4	1	4	5	1
	Smoke and smell	2	0	2	1	0	1	1
Generator	Cost of gadget and fuel	6	2	8	3	5	8	2
	Security	1	2	3	0	0	0	0
	Availability	0	1	1	0	0	0	0
Gel	Smoke	1	0	1	1	2	3	0
Gas	Tank, heavy for refilling	1	0	1	0	0	0	0

5.7 EXPENDITURE ON ENERGY

Table 8 reveals that both male and female respondents of urban case studies of Mkoba 14, Mkoba 19 and Mkoba 20 spend at least one eighth (1/8) of their monthly income on electricity alone. This is despite the fact that this source of energy is not available most of the time and residents have to spend money on alternative sources of energy like wood, generators, solar and paraffin. This results in the most affected residents, that is, Mkoba 20 female residents using almost 25.96% of their monthly income on energy alone. Other family needs and necessities like food, rentals, clothes, school fees, transport, water and sanitation charges, health and others have to come from the remaining 74.04% of US\$275 which is US\$203.61. Zimbabwe's national poverty datum line currently stands at US\$504 per household per month. This means that all urban residents of the sampled areas are living far below the country's poverty datum line. On average, women spend less energy than men, although they generally get more monthly income from that energy use. In Table 8, judging by the monthly income of women, it would appear that urban women are no longer overly dependent on men, but are the breadwinners in their own right, although they fall far below the poverty datum line.

Rural respondents in both Wards 12 and 18 mainly spend on wood, generator and paraffin. Men spend far more than women in Ward 18 because families in this area are quite young and women are still very much dependent on their husbands in almost everything that requires money. Besides, the main source of income in this area is gold panning which is generally a male domain. There is no gold panning in Ward 12 so males fend for their families through economic activities like brickwork, market gardening and small businesses. Patriarchal tradition in this area dictates that the male is strictly the head of the family and hence has to fend for itself. Widows, however, explained how they raise income through selling of agricultural produce to buy family needs like firewood, paraffin and candles.

It is, however, important to note how the figures for the average income per month in both Wards 12 and 18 deviate from the country's poverty datum line of US\$504 per household per month. Women remain the least earners and therefore the most vulnerable.

5.8 URBAN ENERGY CRISIS

Interviews with urban respondents revealed that most of them are involved in low income informal sector activities like selling freezits, maputi, zapnacks; selling paraffin, firewood, chicken cuts, fish and ice cream. Others own or rent tuck shops, bottle stores, butcheries or mini supermarkets at service centres or have these as backyard activities in their homes. These backyard activities include hairdressing, crocheting, photocopying, printing and poultry. All the respondents revealed that they engaged in these activities because formal employment opportunities are currently scarce in Zimbabwe. They, however, explained that their major drawback is energy availability and affordability for most of their activities are energy based.

Electricity, which is the major source of energy for both formal and informal business people in all three residential areas of Mkoba 14, Mkoba 19 and Mkoba 20, is very erratic, unpredictable and unreliable mainly because there is no timetable or schedule for its availability. Interviewees revealed that this has been the situation since 2000 when the country was hit by economic sanctions by Western countries in response to the government fast track land reform programme whose impact worsened in 2008. Alternative sources of energy mentioned by both gender in interviews in urban areas include firewood, generators, gas, paraffin, solar and to a lesser extent crop related biomass. Firewood was the most preferred alternative by women who explained that apart from providing the home basic need of food preparation, it is also important for heating, lighting and even food preservation. The generator, which was more popular with the male interviewees was described as electricity's 'natural substitute' since it can power all gadgets that electricity can power depending on its size and

power output. Generator cost and servicing were, however viewed as very expensive and out of reach for most interviewees given their meager earnings, mainly from the informal sector.

One widow in Mkoba 14 who depends on selling freezits bemoaned loss of business due to the erratic power cuts by the national power utility company, the Zimbabwe Electricity Supply Authority (ZESA). Some complained that regardless of load shedding, electricity bills are unpredictable because the power company uses the estimates to bill clients. The erratic power cuts also destroy electric appliances in homes resulting in losses of food items both for domestic and commercial purposes.

Constraints encountered by women who fetch firewood from farms and forests include men who confiscate firewood from them pretending to be police officers. They also complained that they travelled long distances of about 5km to fetch firewood, which they carry on their heads back home. Cutting trees for firewood is illegal in Zimbabwe but people can fetch dry tree branches and trees to use as firewood. Since Gweru's Mkoba 14, Mkoba 19 and Mkoba 20 are adjacent to private farms, people frequently sneak into these farms under vegetation cover to steal firewood. While male interviewees complained that it is difficult and expensive to transport firewood, the women explained how they are sometimes scared by gunshots or are beaten up by farm owners when discovered. Some male and female wood users complained that using wood as an alternative to electricity is an extra expense which was not necessary had electricity supply been reliable.

One lady from Mkoba 19 who specialises in hairdressing argued that whenever there is no electricity, her clients do not come since they do not prefer to be hair dressed under the noise of a generator. She also complained that the generator is expensive to run fuel wise. Poultry farmers in all villages also complained that power cuts, especially at night lead to stunted growth of their chickens since they cannot feed in the dark and the generator, which is the ideal substitute, is out of their financial reach. Although they have tried to use solar lamps, their solar panels have been stolen by thieves and solar power's viability depends on the state of the weather.

Table 8: Average Monthly Expenditure on Energy per household (US\$)

Place		Electricity	Wood	Generator	Candles	Paraffin	Total average expenditure on energy	Average income per month per household
Mkoba 14	Males	45.83	23.60	20.00	2.00	9.00	100.43	373.33
	Females	44.29	12.86	10.00	1.00	4.00	72.15	287.50
Mkoba 19	Males	50.00	17.43	30.00	2.00		99.43	267.50
	Females	40.63	17.81	24.00		7.25	89.69	315.00
Mkoba 20	Males	43.30	20.00	35.00			98.30	270.00
	Females	33.55	12.27	15.00		10.57	71.39	275.00
Ward 12	Males		21.20	16.00		4.80	42.00	197.14
	Females		14.00	20.00		3.90	37.90	95.00
Ward 18	Males	30.00	20.00	23.00		2.00	75.00	141.00
	Females		10.00	16.00		3.30	29.30	87.27

5.9 CHALLENGES FOR WOMEN

Women complained that they sometimes face challenges of being arrested by the police, farm security officials and environmental management agency officers while fetching firewood. Some of their colleagues have been raped while others have been bitten by snakes. In some cases, women are expected to pay or work on the farms before being allowed to fetch firewood. One young woman from Mkoba 20 lamented that her husband is a vagabond who sometimes leaves the family and let her face financial problems on her own and as a pregnant

woman, and with two young babies; she cannot go out to fetch firewood hence she has to wait for electricity to come almost at midnight to start cooking.

5.10 RELATIONSHIP BETWEEN GENDER AND POVERTY

Interviewees from both gender and from all urban areas were in agreement that 'poverty knows no gender' because both men and women are vulnerable. Women, however, felt that they were more vulnerable in terms of energy use because they are the 'domestic practitioners' in the home who are expected to have answers to all the problems to do with food and family welfare. Women cater for the needs of the family yet they have limited access to sources of income. In the absence of electricity, they have difficulties in boiling water and ironing clothes in the winter season. They also cannot prepare certain types of food, for example, baking, boiling beans and offals using alternative sources of energy like wood or paraffin because it becomes expensive.

While men can carry loads of firewood relatively easily using trucks, scotch-carts, wheelbarrows and bicycles, women cannot carry a lot of firewood on their heads at a given time and hence their frequency in firewood collection is higher. This means that even if both genders get into the business of firewood selling, though both may be in the poverty range, males are likely to get more income with less labour than women. The research also revealed that unlike women, men are bold enough to do illegal activities like selling dagga, illegal homemade brew (kachasu) and practice illegal gold panning and money from these can be used to pay for energy use or buy energy gadgets.

5.11 SUGGESTIONS ON ADDRESSING ENERGY AVAILABILITY

Responses from interviewees on what should be done to address energy availability revealed that urbanites do not find solutions in alternative sources of energy but in re-establishing electricity efficiency. Many argued that the power utility company, ZESA, must review their electricity billing system so that electricity can be charged at affordable prices. They urged ZESA to prepare, publish and implement a fixed and strict electricity load-shedding timetable instead of doing it haphazardly. The power utility company was advised to dialogue with communities to get people's views on how best to address the issue of bill payment for defaulting clients. Whilst some interviewees called for the introduction of a pre-paid electricity billing system as is the case in Botswana and South Africa, others opined that ZESA must allow residents to pay their bills in instalments instead of disconnecting them. They observed that most people accumulated very high electricity bills during the worthless Zimbabwe dollar period, which, because of poverty, they could not clear. Since the economy has not yet recovered and employment levels remain very high with most people struggling in low income sector activities, they should be given time to recover slowly.

One business person from Mkoba 20 was however of the view that residents must clear their electricity bills to enable the power utility company to clear its external debts so that it continues to source and supply adequate electricity for the nation. Zimbabwe imports electricity from South Africa, Democratic Republic of Congo (DRC) and Mozambique to compliment its domestic power generation at the Kariba Hydroelectric Power Plant and Hwange Thermal power station. South Africa and DRC have since disconnected Zimbabwe due to non-payment while Mozambique has also threatened the same. Most interviewees suggested that both Kariba and Hwange power stations should be upgraded and that the smaller thermal power stations of Harare, Bulawayo and Munyati should be fully operational to improve electricity output and availability. One woman, however, argued that Gweru municipality authority should consider Afforestation and reforestation activities in the urban periphery to ease the plight of the urban women wood fetchers.

5.12 ENERGY CONSERVATION ACTIVITIES

The research revealed that urban residents are bitter with the power utility company and are not making any reasonable efforts to save the limited electricity available. One woman interviewee from Mkoba 19 boldly questioned, 'How can we think of conserving electricity, which we rarely have access to?' Another male resident from Mkoba 20 retorted that it is in fact ZESA which was conserving electricity on residents' behalf through its prolonged load shedding schedules; otherwise people are determined to make maximum use of electricity whenever it's available. Some respondents, however, said that they have resorted to using energy saving bulbs, hoping to conserve energy and reduce costs. This, they argued, does not yield the desired results because ZESA uses the estimates to bill clients, hence the charges remain high. On firewood, the urban interviewees acknowledged that EMA rules and regulations to reduce tree cutting and firewood collection only work during the day when their offices and the police are active. Scotch-carts full of wood, however, deliver firewood into the city daily under cover of the night.

5.13 AWARENESS PROGRAMMES

Most interviewees in all residential areas acknowledged that ZESA conducts some energy saving, conservation or resource awareness programmes in the localities through different means. The power company flights some advertisements on both radio and television encouraging people to use energy saving bulbs, to avoid using heaters and geysers and to switch off electrical appliances not in use. The respondents, however, felt that ZESA's effort on radio and television are doomed to fail because very few residents tune in to local media with most of them now preferring foreign channels. One woman from Mkoba 14 said her family last watched local television in 2001. Some respondents observed that even if people preferred local media, ZESA's efforts would still be in vain because of incessant power cuts. In Mkoba 20, one man argued that ZESA cannot educate residents on energy saving due to the hostility between them and the residents over both power unavailability and their exorbitant power charges. Some women in Mkoba 14, however, complained that sometimes ZESA conducts energy saving meetings at Mkoba 4 Primary School but these focus on landlords who are mainly very few and mostly males. This leaves out the tenants (lodgers) who constitute the majority and are mainly women. Their endeavour, therefore becomes ineffective.

In rural areas, electricity is the main source of energy at business centres. The electricity load shedding impact was thus mainly felt by both genders at rural service centres and growth points which are connected to the national electricity grid. Enterprises affected included tuck-shops, grocery shops, butchers, cocktail bars and eating houses.

In both Wards 12 and 18, interviewees confirmed that the main alternative sources of energy for grocery shops and bottle stores is the generator but this was only available at very few of these. Respondents of Tongogara Growth Point explained that although grocery shops could use candles and solar lamps for lighting, bottle stores had no option but to close because clients prefer a cold beer direct from the refrigerator. Both male and female interviewees at all service centres complained that load shedding, apart from damaging electrical appliances, also leads to loss of clients and rotting of perishables like chicken cuts in grocery shops.

Women in communal Ward 12 complained that they do not wish to have their homes connected to the national electricity grid because they cannot afford to pay the high bills. They, however, complained in interviews that forests in the communal areas are now scarce and far from their homes (about 12 kilometers away) and some now have health problems like chronic headaches, neck aches and backaches which they suspect are a result of carrying heavy firewood loads. This is apart from exposure to wild animals like warthogs, snakes, rapists and arrests by the Zimbabwe Republic Police (ZRP) and the EMA officials and traditional leaders. Most women interviewees complained that they are poor and cannot afford multiple energy

sources like paraffin, solar and generators despite the scarcity of firewood. One woman revealed that wood vendors price their wood exorbitantly such that only people with a reasonable income can afford it. She said the rest of the community resort to the unsustainable way of burning poles used for fencing their homes and poles from cattle kraals for firewood out of desperation. This only confirms the cycle of energy-poverty in the communal areas since both the fence and kraal poles will need to be replaced sooner or later.

Both male and female interviewees in Ward 12 suggested that the government connect rural homes to the national electricity grid and then subsidise the monthly charges to cushion the poor. They also called upon the Ministry of Energy and Natural Resources to initiate a deliberate afforestation and reforestation programme for communal areas like Shurugwi's Ward 12 to improve their energy access and availability.

Ward 18, a former white-owned commercial farm only occupied in 2000 is still relatively self-sufficient in terms of wood fuel needs according to a respondent in a village 4 resident. She explained that although both men and women are prone to snakes and other wild animals during wood collection because of the relatively dense forests close to them, the wood itself is not a big problem. It is alternative sources like solar and candles which are costly for women, yet they desperately need them in the home, especially if they have young babies or if a child or any family member is sick or if a snake sneaks into their huts at night. Men, however, preferred generators as alternative sources of energy, and most of them pan for gold to buy these gadgets which they value mainly for entertainment in the home.

Male and female interviewees in both Ward 12 and 18 acknowledged that EMA officials sometimes conduct environmental awareness programmes in their communities aimed mainly at veldt fire reduction whilst Heifer also educates people to conserve trees and pastures since they specialize in livestock distribution and raising programmes.

5.14 OBSERVATIONS

Observations revealed that in urban areas there were a number of new houses without electricity, especially in Mkoba 20, and some had electricity disconnected by ZESA for failure to pay electricity bills. In Mkoba 14, all disconnected households were female-headed. Almost every household had a fireplace, logs, twigs or piles of wood on their backyards. More females than males were seen preparing food using open fires. Men felt that it was unethical for a man to cook outside using fire. They would rather use paraffin and gas stoves indoors.

Sources of energy available in the areas and within households included mostly, electricity, fuel wood, candles and fewer of generators, solar inverters, gel, gas and paraffin. Both men and women were seen delivering paraffin, diesel and wood. However, females and children delivered by head while males delivered by trucks, scotch-carts, bicycles and wheel barrows. Women did not have such kind of transport. Men, more than women, were seen cutting wood in homes or at back yard wood markets. In all villages, the carts were mostly from Ngamo, a newly resettled area which still has relatively abundant forests. Deliveries were done mostly in the evenings to avert the police and EMA officials.

In communal areas, sources of energy observed included paraffin lights, wood piles, solar panels, cow dung, crop-related biomass and car batteries for powering radios and televisions. At business centres, there were also candles, electricity and diesel grinding mills. Well-to-do families had large heaps of wood delivered by scotch-carts while poorer families had smaller bundles delivered by head. As in urban centres, women and girl children delivered wood by head while men used scotch carts. Woodlands in Shurugwi ward 12 are more than 12 km away because the area has experienced massive forest depletion over the years. As a result, piles of crop-related biomass were evident in most homes. Some members of the community, especially in Mvura village have gum woodlots ranging from 20m²-200m².

Sources of energy observed in the Shurugwi resettlement ward 18 were mainly wood, paraffin, solar and car batteries. Noise of radios powered by car batteries and solar could be

heard in the village. Solar panels and gadgets charging cell phones were seen outside houses. There were also piles and logs of wood in their backyards. Bundles (masvinga) delivered by women could be seen in some households, while large heaps apparently delivered by a man driven scotch-carts were also evident. Women were seen using wood fuel for most of their energy activities. Men operated solar gadgets and generators. The area has been cleared around villages. However, most villagers still have abundant trees in their fields. Gum tree woodlots are very few and the planted trees are still too small to be used as wood fuel.

6. CONCLUSION

In urban areas, electricity remains the major source of energy despite its being unreliable and unaffordable for most residents. In the absence of electricity, however, wood and paraffin are the major alternatives in the urban case studies. In the communal area, wood is the major source of energy for communities, although electricity is the natural and most viable choice if it's available. In the absence of wood, which is not readily available in communal ward 12, paraffin is preferred by the few families who can afford it. In the resettlement area of Shurugwi ward 18, wood and solar are the most preferred the most used and the most reliable mainly because virgin forests are still relatively abundant in this former white commercial farming area. The income obtained from gold panning in the area also enables some resettled farmers to buy solar gadgets like solar panels, lamps and batteries.

Sourcing of wood fuel in all areas is done by both genders. While men use wheelbarrows, bicycles, donkey-drawn scotch carts and even trucks, which enable them to carry large quantities at the same time, women use their heads, which only enable them to carry comparatively smaller quantities but whose weight leave them exhausted and sometimes ailing. Male wood fetchers thus save time and energy, yet they make more and quicker income per every wood load delivered to the market while women on the other hand lose time and expend more energy since they have to frequent the forest more. Women who fetch firewood for selling therefore comparatively get less income per trip than men.

Although all energy sources covered in this study, electricity, generator, paraffin, gas, wood, gel and solar are all commercialised, both male and female respondents in the study areas view wood as the most available, reliable and affordable energy source. This confirms what Munslow (1988) referred to as the 'fuel wood trap', which he identified as being the mainstay of the energy crisis in rural communities. This study, however, reveals that this 'fuel wood trap' is also manifest in Zimbabwe's urban areas because of the country's dire electricity shortage and excessive load-shedding.

In both rural and urban households, energy is mostly used for reproductive rather than productive work. Given that women do more reproductive roles relating to food preparation, food preservation, lighting and heating, they demanded more energy. This also means that at household level, women experience energy scarcity, unreliability and unaffordability more than men. At business centres, however, where most business enterprises like butcheries, bottle stores, grocery shops and cocktail bars are owned by men, males use more and various forms of energy than women. These business people, however, lamented the unaffordability of sustained use of generators, grinding mills, refrigerators gas stoves and paraffin. Energy constraints at household level affect mostly women whose food get bad and cannot prepare certain dishes. Commercially, both male and female enterprises lose clients because of selling stale food, delays in meat cutting, and photocopying, typing and even damage to electrical gadgets. Women business people have additional constraints in operating and fixing solar gadgets and generators in case of technical faults.

In sourcing wood fuel, women are in danger of rape and other forms of sexual harassment because farm managers, EMA officers, police officers and traditional leaders are mostly males. Some of these demand sexual favours in exchange for wood collection and offence exoneration.

Although there are some energy conservation and awareness programmes being run by ZESA, EMA, traditional leaders and Heifer International, these seem mistimed and unfocused because communities do not have cheap and readily available alternatives. This makes them hostile to anyone who tries to get in their way as they strive for survival. In essence, however, poverty affects both genders in relation to access to energy sources and both male and female respondents aptly captured it when they observed that 'poverty knows no gender'.

7. RECOMMENDATIONS

The study recommends that energy be mainstreamed in poverty issues. This is because poverty is widespread at every level of the energy sector, yet most poverty assessment research excludes energy (Cecelski, 2004). Eradication of poverty is goal number one in the MDGs (UN, 2004). One of the strategies of alleviating poverty is through income generating projects. As evident in this study, most income generating projects for men and women are energy based hence poverty alleviation strategies should take into account issues of energy access. Government departments that promote gender empowerment through income generation projects that are energy-based should work with the Ministry of Energy Resources and government departments that deal with energy.

Use of new renewable energy technology is topical in both developed and developing countries (Muguti, Everts, Schulte and Smallegange, 1999; Tandon, 2009 and Chiang, 2010). However, energy provision does not take into account energy availability and affordability. In this study, electricity, solar lamps, solar and other energy gadgets were beyond the economic reach of many males and females in both urban and rural areas. Energy pricing is an important instrument for promoting the efficient allocation of economic resources (Chandi, 2002). Paraffin that was relatively affordable was reported to be unavailable in both rural and urban areas. There should also be information dissemination on energy use efficiency of renewable sources of energy by relevant authorities. Respondents in this study reported that solar power was only useful in lighting, charging cell phones and entertainment, but could not power refrigerators and stoves to prepare and preserve their perishables in their households or business enterprises.

The Ministry of Energy Resources, NGOs and department that deal with energy issues should first make gender needs assessment because males and females have different energy needs. Both women and men need energy in both productive and reproductive work. The study revealed that more males than females own enterprises at business centres because they could comparatively afford additional rentals and even expensive alternative energy sources like generators, diesel, car batteries and electricity unlike women. For this reason, Chiang (2010) and Dithane (2002) feel that gender should be mainstreamed in energy issues.

Energy education and campaigns on energy saving, renewal and conservation is very crucial to iron misunderstandings between EMA, ZRP, ZESA, traditional leaders and the Forestry Commission. Respondents revealed that generally there were no energy saving or conservation activities and campaigns except messages from radio and televisions. These, however, relate to saving only wood and electricity. Information on various alternative sources, conservation, and energy saving in and outside the household be disseminated (Muguti, et al, 1999).

The poor in general and women in particular, are marginalised in energy policies. Both male and female respondents indicated that they did not even know who to approach or what procedure to follow in issues relating to energy. Chandi (2002) posits that National Gender Policies (NGPs) and Energy Gender Policies (EGPs) should be harmonised to create poverty and gender sensitivity in energy issues. All energy stakeholders need to be gender sensitised. These include international development agencies, Ministry of Energy, government departments, NGOs, energy suppliers like ZESA, technical schools and universities and resource conservation agencies like EMA, ZRP and traditional leaders. Above all, gender

analysis, which is a collection of sex-disaggregated data on energy issues, should be carried out to unearth disadvantages of the poor and women on energy policies and provision.

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