

An Assessment Of Gender And Energy In Kenya: The Underlying Issues

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Abstract: Despite concerted efforts by the government and non-state actors to improve access to modern energy resources and services in Kenya, women's energy needs have remained largely unrecognized in most national policies, planning processes and development efforts. This has led to negative implications on their health, education and livelihoods. This study employed desk review research design in analyzing secondary data. The study found that Kenya has made some progress in gender and energy with specific policies and strategies. However, low implementation has slowed down the progress. The study concludes that Kenya is yet to achieve gender and energy goals.

Keywords: Gender, Energy, Poverty, MDGs, Kenya

1.0 Introduction

Approximately 30 million Kenyans (85% of the whole population) neither have electricity nor access to alternative sources of energy. About the same number rely on traditional fuels, such as fuelwood, charcoal, dung and agricultural residues for cooking and heating (Muchiri 2008). Many do not have access to energy in the quantity and form they need to satisfy their basic household and productivity needs, and so remain in poverty (Branco 2002). Like most countries in sub-Saharan Africa, Kenya is not an exception in facing gender and energy challenges (Abdullah and Markandya 2007). The progress towards providing greater access of modern energy services to particularly poor women has been generally slow. This is due to low income levels among the underserved population, lack of financial resources for service providers to build the necessary infrastructure, weak institutional, financial and legal structures that could otherwise encourage private investment. Besides, lack of gender mainstreaming in energy sector, long-term vision and commitment to scale-up services have also proved to be major barriers in the energy sector (Modi *et al.* 2006). Access to electricity in the country is only to 15% and 4% of the households in urban and rural areas respectively. Basic services such as electricity for lighting and cleaner cooking technologies are still a luxury for many rural women and men (UNDP 2012). This study critically examines the gender differences in energy service demands and access to various energy sources in Kenya; the extent to which new and existing alternative sources of energy are presented to and accessed by the local population in a gender equitable manner; the various efforts that have been in place to achieve gender and energy by governmental and non-state actors' (including their successes and challenges); the role of gender

in development of energy policies and programmes and the degree of mainstreaming gender into energy policies; the gender, poverty and energy nexus in rural and urban settings; and the implications of various international agreements and MDGs on energy accessibility and usage by men and women in Kenya. This study concludes with establishment of benchmarks in working with policy makers and other stakeholders in designing, planning and implementing policy frameworks that seek to re-define the gender and energy development paradigm towards achieving sustainable energy solutions for men and women.

1.1 Background

About 1.5 billion people in developing countries lack access to electricity and about 3 billion people rely on solid fuels for cooking. In sub-Saharan Africa, 560 and 625 million people are without access to electricity and modern fuels respectively. In Asian regions, while people may have access to electricity, they often lack access to modern fuels (WHO and UNDP 2009). Although energy access varies widely across developing countries, it is much lower in poorer developing countries placing them at a huge disadvantage. For example, 79% of people lack access to electricity, and 74% in sub-Saharan Africa compared to 28% of those in poorer countries. Grid-based electrical power neither reaches many of the poor people in rural areas nor is there adequate distribution of gas or other cooking and heating fuels (Mbuti *et al.* 2007). A 2013 Human Development Report shows that gender disparities persist in South Asia (0.568), Sub-Saharan Africa (0.577) and the Arab States (0.555) (UNDP 2013). Over decades, Kenya has remained behind in sustaining energy needs for men and women. Its environment and natural resources have been depleted increasing energy insufficiency with great gender disparities throughout the country. For instance, over 70% of its total energy consumption is derived from wood based sources and more than 93% of rural households depend on this source thus, exposing the users to various vulnerabilities including health, physical and psychological problems (MENR 2005). It is against this backdrop that this study seeks to interrogate the underlying issues that affect achieving gender balance in energy in the Country.

1.2 Statement of the Problem

Of the 1.5 billion of the poorest people in the world, 70% of these are women. They are energy poor in that they have an absence of choice in the energy they access or use in their daily lives (Muchiri 2008). It is estimated that in Kenya, 77% of the whole population do not have electricity connections. Over

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85% of the population relies on traditional fuels such as wood and charcoal (KIHBS 2006). Agricultural residues account for 5% and kerosene for 2% of rural household energy use (Barnes *et al.* 1984). The inaccessibility of energy services among the poor in Kenya has been recognised to have negative impacts on their health, education and quality of life. Despite the long-standing efforts of the Kenyan government and non-state actors to improve accessibility of the poor to modern energy resources and services in rural and urban areas, the progress has been generally slow. Such efforts have failed to achieve the objectives due to lack of adequate knowledge by the concerned stakeholders on differential gender and energy needs for men and women leading to adoption of inappropriate strategies in dealing with the problem. Furthermore, studies including (Clancy 2000, Mensah-Kutin 2006; UNDP 2012; ENERGIA 2006; 2011; and Mbuthi *et al.* 2007) have shown that policy makers do not recognise the existence of gender needs in energy resources and services. As a consequence, women's energy needs tend to be marginalised in policy documents. Further, the studies do not indicate how gender in the energy sector can be widely accepted within development circles as a basic need compared to other needs such as water, shelter, and food to avoid marginalisation of women's energy needs, hence, the need for this study.

1.3 Methodology

This study was informed by a desk review research design in reviewing and analyzing qualitative and quantitative secondary data in the form of publications, reports, concept papers, as well as relevant national, regional and international frameworks on studies on gender and energy with a particular interest in Kenya. Purposive sampling was used in selecting specific literature materials to examine and interrogate gender and energy-related issues in development. The study critically analyzed variables such as resource allocation, gender difference in energy service demands, access to various energy sources and the role of gender in the development of energy policies guided by the Gender Approach in Development (GAD) and Gender Analysis (GA). Other variables such as gender mainstreaming, international agreements such as MGDs and gender equality were analyzed. Data was presented by use of qualitative and quantitative techniques. The information was used to identify gaps in existing policies and interventional initiatives on gender and energy and has helped to establish benchmarks for meeting gender needs in energy.

1.4 Organization of the Study

The study is organized into four major sections. The abstract precedes the major sections of the study. The first section is on introduction where a brief background to the study, problem and objectives of the study are described. The second section contains the literature review on gender and energy nexus and theoretical framework that guides the study. The third section is on the findings where results have been logically presented, interpreted and critically discussed. The fourth section is on conclusions and recommendations and thereafter, the study concludes with a conceptual framework and references.

2. Literature Review and Theoretical Framework

2.1 A General Overview on the Development of Gender

and Energy Relations

The world today faces a significant energy divide particularly between rich and poor countries. Access to modern energy services for cooking, heating, lighting, communications and mechanical power for production is a colossal area of unmet need (IEA 2011). Of the estimated two million annual deaths worldwide are attributed to indoor air pollution generated by fuels such as coal, wood, charcoal and dung (Muchiri 2008), 85% are women and children who die from cancer, acute respiratory infections and lung disease (WHO & UNDP 2009). While energy is not considered a basic human need, it is an essential prerequisite for the fulfillment of basic needs and thus, an instrument for the attainment of equitable and sustainable human development (UNDP 2001). More than 95% of the world's population without access to electricity and clean cooking facilities live in sub-Saharan Africa and developing Asia. Within these countries, the wealthiest benefit more from the majority of energy resources. At the same time, 84% of the estimated 1.3 billion people worldwide who do not have electricity in their homes live in rural areas (IEA 2011). For those who have access to electricity in rural areas, lighting and television use account for at least 80% of electricity consumption, while only 2% of the rural population use electricity for cooking (WHO & UNDP 2009). According to the OECD (2012), only 4% of total aid to Africa is spent on energy and the European Union accounts for less than 5% of aid from Europe since 1990. Only a few countries such as China and India have made major strides to energy accessibility to their citizens. For instance, China, the fourth largest producer of wind energy in 2008, is the world's largest producer of solar panels and wind turbines (Suri 2011). In 2011, India's National Solar Mission helped spur a 62% increase in investment in solar energy to \$12 billion, the fastest investment expansion of any large renewable market while Brazil made an 8% increase in investment in renewable energy technology to \$7 billion (CGD 2012). In Nicaragua, electricity has increased the propensity of rural women to work outside the home by about 23% while having no effects on male labour force participation (Grogan & Sadanand 2013). In East Asia and Pacific, less than 200 million people lack electricity access, but almost 1.1 billion people rely on solid fuels for cooking (UNDP 2013). In South Asia, the three driving factors are low female representation in parliament (18.5%), gender imbalances in educational achievement, (28% of women have completed at least secondary education, compared with 50% of men) and low labour force participation (31% of women compared to 81% for men) (Ibid). This implies that several developing countries including Kenya have huge gender gaps in responding to infrastructure, education, health and particularly energy issues. However, some countries in Africa have shown some progress in gender and energy. For instance, Mozambique has developed a new Green Economy Roadmap for provision of renewable energy (Leape 2012). In South Africa, electrification has resulted in a 9% increase in female employment, with no comparable increase in male employment (UNIDO 2012). This means that when clean and modern energy is affordable and easily accessed among the local populations with equal participation by men and women in decisions on energy resources, it is the poor women who benefit most. Energy is the principal mover that thrives the wheel of economic development. As Africa population continues to grow, the demand for domestic and institutional energy increases. Countries with low per capita consumption

of commercial energy continue to exhibit correspondingly low per capita gross domestic products (Yuko 2004). Access to grid electricity across the East Africa region is low at about 29% in Kenya, 10% in Tanzania and about 5% in Uganda. Evidence indicates that lack of integrated approaches in most sub-Saharan African countries in energy designing and planning is a fundamental drawback for access of clean and sustainable energy solutions among the rural poor households (Silva and Nakata 2009). For example, women have less access than men to the credit, extension, land and training, which are necessary for improving access to modern energy resources to support their livelihoods and income generation from micro-enterprises (Wamukonya 2002). Furthermore, interventions and policies fail to recognize that men and women have different kinds of knowledge and experience on energy, either through their traditional roles and above all as professionals in the energy sector (UNDP 2012). Studies have also shown that climate change adds to energy insecurity and increase the work levels of women engaged in subsistence farming in the rural areas (Parikh and Denton 2002). Women and men in rural areas are highly dependent on biomass and forest resources for energy. Women's increased domestic care responsibilities significantly reduce their opportunities to engage in income-generating activities (Masika 2002), and most women in the society do not have the knowledge, capacity and experience to manage natural resources, due to lack of education, engagement in discriminative roles in the household and less time to participation (Lambrou and Piana 2006). Alber (2002) attributes the gender and energy debate to not keeping pace with international developments in climate change to the complex language used during the negotiations which can be a barrier to 'outsiders' wishing to break into the debate. Additionally, approaches used are gender neutral and deliberately avoid women issues. As a result, miss out the gender differences in energy, technology needs and capabilities (Wamukonya and Skutch 2001). Similarly, ENERGIA observes that lack of recognition of the role of women in the energy sector often leads to 'gender-blind' energy policies as well as their financing and execution (ENERGIA 2007). For example, the Clean Development Mechanism, one of the major global climate funds, has been subjected to critique for de-emphasizing investments in small-scale projects that benefit women and poor communities in favour of large-scale projects. According to Reddy (2000), energy poverty is the absence of sufficient choice in accessing adequate, affordable, reliable, quality, safe and environmentally benign energy services to support social development. Therefore, energy poverty interacts with other manifestations of gender and energy and it is essential to explore the gender aspects that surround it.

2.2 Theoretical Framework

2.2.1 Gender in Development Approach

This study employs Gender Approach in Development (GAD) and analysis to give an account on gender inequalities in energy access in Kenya. By the late 1980s, the GAD approach came to the forefront. This approach sought to challenge root causes of gender inequality and increase women's access to resources and decision-making (DFID 2002). The GAD approach focused on empowerment of women and giving them the power to take control of their own lives, through targeted energy interventions, policy formulation and

implementation in Kenya. This approach also emphasized gender equity as the process of being fair to women and men and challenging policies that unfairly bias men or women. The GAD approach in this study is complemented by Gender Analysis approach. According to CIDA (1996) gender analysis provides an understanding of the different impact that legislation, cultural practices, policies and programs can have on women and men. Undoubtedly, the approach argues that if a gender analysis is not conducted during the design of a policy or programme, it may inadvertently increase current gender inequalities or lead to further gender inequalities. Gender analysis approach interrogates variables such as gender division of labour, access to and control over resources, gender needs and interests. Identifying gender differences can help policymakers understand why the differences exist and reveal entry points for designing policies and programmes that can successfully address gender and energy gaps in development. This study is based on the premise that the government and other development practitioners do not put much consideration on gender perspectives in energy interventions. For that reason, the study adopts GAD approach as a gender-energy-development perspective, which not only informs the designing of interventions and affirmative action strategies that will ensure women are better integrated into ongoing energy development efforts, but also emphasize on a fundamental re-examination of social structures and institutions as a commitment to structural changes in the country. This study acknowledges that gender mainstreaming in energy access can be an important entry point to begin tackling gender inequality in Kenya for example, through the 30% women appointment to government institutions. However, this will depend on the attitudes and perceptions directed towards the GAD by the implementers and how the various policies and interventional frameworks created relate with each other, their roles and interaction to promote achievement of gender and energy goals in the country.

3.0 Findings of the Study

This section used a desk review research design approach in reviewing qualitative and quantitative secondary data in Kenya on gender and energy. The study used government materials, data from other agencies such as the UN and Civil society organisations. This section also critically examined gender and energy nexus in Kenya, policies and agreements signed to promote energy accessibility, the progress made towards achieving the Millennium Development Goals, the extent of energy accessibility between populations in both the rural and urban settings, and also the challenges and achievements associated with energy access in Kenya.

3.1 Gender and Energy Situation in Kenya

Energy is central to sustainable development and poverty reduction efforts especially for women and rural populations. It affects human development in social, economic and environmental aspects (Clancy *et al.* 2003). Energy also affects livelihoods, access to water, agricultural productivity, health, population levels, education, and gender-related issues (UNDP 2011). Although, nearly every household in rural areas will use some biomass as an energy carrier, poor households and particularly women will spend more time searching than those in higher income groups (Reddy 2000). Wealthier households will also purchase other higher quality fuels, which

will be used for a greater variety of end-uses than in poor households. As of 2002, the record of the national utility Kenya Power and Light Company (KPLC) in rural electrification was very poor, with only 0.94% of rural households connected (Karekezi *et al.* 2004). Between 1993 and 2001 the number of rural households increased by 1.4 Million, whilst the number of rural households connected to the grid increased by only 24,000. This implies that the rate of grid-based rural electrification is far below the rate of increase in potential customers, despite a levy on electricity bills to fund it. One of the attempts to address this was the establishment of the Rural Electrification Authority (REA) in 2006, which now manages the rural electrification programme. In 2010, the UN Secretary-General's Advisory Group on Energy and Climate Change (AGECC) called for commitment by all nations worldwide on ensuring universal access to modern energy services and reducing global energy intensity through energy efficiency measures (AGECC 2010). However, not much has been done so far and gender inequality is still widening in Kenya. It is both a core concern and an essential part of human development and too often, women are discriminated against in health, education, the labour market and energy, which restrict their freedoms (UNDP 2013). The study found that the efforts to mainstream gender in government budgets began in the 1990s with a three-year initiative. This initiative culminated in gender issues being incorporated in the 1998 budget. With regard to the energy budget, it is noted that the 1998 budget contained some projects classified as having a gender dimension. The concept of gender and energy had broadened from stoves, time saving, woodlots and biomass fuels, and appropriate technology to one that encompassed a broader range of issues including pricing, transport and modern energy forms, such as electricity (Cecelski 1995). Such projects are 'ring-fenced' to ensure that they retained top priority on women and gender issues and most of such projects are still continuing (Sengendo 2008). Currently, little attention to gender issues in energy policies and programmes in Kenya is prevalently impeding overall sustainable development in energy. Kirubi (2006) observes that women deserve special mention not only because they constitute the bigger population in Kenya, but also because they bear a disproportionate burden of household chores. A study done in the coast region (Mpeketoni-Mombasa) found that without electricity, it took half a day to grind 10 Kg of maize using hand and big sticks, enough to feed a typical family of 5 members for 4 days (Kirubi 2006). In urban areas poor people have to purchase cooking fuels, and they spend a higher proportion of their income than higher income households on fuels (ESMAP 2002). Generally, a poor urban family spends 20% of its income on fuels (Barnes, 1995). In rural areas, poor households will generally restrict fuel uses (Clancy *et al.* 2003). This implies that this will only solve the lighting and electrical needs but not cooking where women feature most. When the Private Sector led Electrification introduced Solar Home Systems (SHS) in Kenya in 1980s, it was estimated that 200,000 rural households in Kenya received SHSs. The high level of uptake had been through the sale of products that best fitted the purchasing power of rural households and by making these products available within the mobility range of potential customers, approximately less than 40km from the customers home (Van der & de Graaff 2003). However, its low efficiency in cooking slowed down its adoption in other parts of the Country. The study found that in Kenya, the consumption of

commercial energy has seen a decline over the last three decades due to a weak and sluggish economic performance. Conversely, the cost and accessibility of energy has significantly impacted on all economic activities in rural and urban areas. The main sources of firewood in the country are rangelands (25%), government forests (28%) and small farmlands (47%). Ninety two percent of all households that use charcoal purchase it from the market, while 7% produce their own (Kamfor 2002). Out of the estimated 5.14 million households in rural areas, 78% use traditional stone fires, while another 4% use ordinary charcoal jikos while in urban areas, out of the estimated 1.71 million households, 9.1% use traditional stone fires with 16.6% using ordinary charcoal jikos. According to the Kenya national target, the challenge is to provide close to 2.1 million households, which are 50% of national total currently using traditional fire stones and another 245,000 households which are 50% of the households using traditional charcoal jikos with improved cook stoves and/or substitute for biomass (KHIBS 2006). Households in rural villages tend to use kerosene for lighting and purchase it in small quantities that are under one-litre (Tracy and Jacobson 2012). Nationally, 13.2% of households use kerosene for cooking where approximately 44.6% of urban households use it for cooking compared to 2.7% in rural areas and 46.3% of urban households use it for lighting compared to 86.4% in rural areas (Ngigi 2008). The penetration of improved biomass cooking technologies in Kenya has been frustrating. For example, apart from Meru South with 14.4% of the population using improved firewood cookstoves, the rest of the millennium districts registered less than 8% (KIHBS 2006). The study also found that gender disparities in access to energy are drawing back social development of families and communities. For instance, there are disparities in energy use between female and male-headed households, with 15% of male-headed households compared to 11% of the female-headed ones, using electricity for lighting. Female-headed households rely more on the woodfuel than the male-headed households. Overall, the consumption of clean modern energy particularly by women has seen a decline over the last three decades, which negatively affects social development in the country. The author argues that with multiple renewable energy opportunities now being developed, and on a larger scale, energy policies can catalyze national and local development and play a vital role in poverty alleviation and mitigation of the negative effects of energy inaccessibility. The gender energy situation in Kenya is still a challenge with huge disparities between various regions in rural and urban settings

3.1 Gender, Poverty and Energy Linkages in Kenya

Access to a sustainable energy services is vital for the achievement of all the eight Millennium Development Goals (WFC 2010). Analysis done by this study found that in Kenya like other poorer countries people with no or limited access to energy are generally poorer than those with energy access (Picolotti & Taillant 2010), they are unable to cook with modern cooking fuels and the lack of a bare minimum of electric lighting to read, and other household and productive activities after sunset. They are less productive, face heavier work, are more exposed to health risks, and lack the benefit of modern technologies and communication (Picolotti & Taillant 2010). Most of those who get disadvantaged due to lack of energy access are women and children in Kenya. Interestingly, this stems from the traditional cultures, which have assigned roles,

access and ownership rights of resources along gender lines. Within this context, women have been allocated the responsibility for household energy provision. For most households, cooking energy is the most important need (Khamati 2001). As women's reproductive and household work, they also participate to a large extent, in the informal sector of the economy. This implies that women have become experts at multi-tasking and able to manage their time. However, this ability is not valued in the broader context of the labour market and thus, they don't access opportunities such as labour saving, income generation, health improvements and social empowerment (Clancy 2003). Most policies designed in Kenya neither give much consideration to household energy needs by women nor propagate for alternative energy options. Household energy refers to all the activities that take place within a household and the linkages to a much wider system of energy supply and demand for example agriculture, health, education and income generation (Clancy 2002). Women are often supported in their work by girls and sometimes boys, who are kept out of school and in so doing, damaging their own future livelihoods. A study done in Western Kenya by IFAD/FAO found that women often spend 2 to 5 hours a day on collecting firewood while women in female-headed households from several villages listed water and firewood collection among their most time-consuming tasks (IFAD/FAO 2003). A study by GVEP found that people with no electricity in their homes rely on expensive candles or kerosene lamps, which provide poor illumination and affect their health and are a fire hazard. Radios use expensive batteries and charging a mobile phone could mean walking long distances (GVEP 2013). The study also noted that women's energy needs have not been taken into account as a key variable in energy interventions. Despite a growing knowledge base on linkages between gender, energy and poverty, much of Sustainable Energy for All (SE4ALL)-related debate is gender-unaware (Danielsen 2012). For instance, the study found that poor and uneducated women particularly from rural areas have less access to finance and energy-related resources and services than men. Consequently, increasing their poverty levels. The energy audit report by ENERGIA found that while women supply bulk of the energy for cooking and heating, they do not participate in commercial energy production and derive their energy services from non-conventional energy sources including renewable energy (Mbuti *et al.* 2007). In Kenya, women-headed businesses generally face more impediments than those of men in accessing grid electricity (UNDP 2012). More often than not, women entrepreneurs face greater discrimination than men in the form of delays in obtaining electrical connections and the expectation is that they will pay bribes to get these services hence, increasing their vulnerabilities to high poverty levels than men. The study observes that gender, poverty and energy situation in Kenya remains complicated. Evidence has shown that poverty underlies power usage in the country. There are assumptions that rural populations don't use a lot of energy thus, disadvantaged during power rationing. Additionally, when for example it is raining, local populations experience more power black outs than those living in urban areas. Moreover, it may take up to three days for power to get reconnected. Power in rural areas is also little and the supply restricted to 60 metres from the main transformer. Any extra metre is paid for extra cost and sometimes compromised. Additionally, they will have to cater for other cost such as

purchase of electrical appliances. Even though various efforts have been put by the government and non-state actors to remove barriers that impede women from accessing modern energy, most women, especially those in poor rural areas are still living without modern energy and languishing in poverty. In a nutshell, this study observes that if sustainable development has to be achieved, there is need for equal balancing of energy resources in terms of gender and regional balance throughout the country. Interventions that have worked elsewhere within the country need to be replicated for regional balance and accessibility. It is also paramount to improve women's living conditions and knowledge through education, advocacy, awareness, community mobilization and capacity building. To ensure sustainability of energy interventions, women's equal participation and involvement should be enhanced to increase potential for benefits for both men and women.

3.2 Gender Difference in Energy Service Demands in Kenya

Studies by Practical Action (2010) and UNDP (2011) have revealed that there exist huge gender and energy differences in Kenya. Due to diminishing biomass energy supplies, women and children in some parts of the country are spending much time fetching firewood and other biomass fuels leaving little time for other productive activities. Gender roles in rural Kenya still adhere to traditional and cultural codes. Women do the heavy work of fetching and carrying water and fuelwood, in addition to household chores, childcare and tending crops. Many are left to run farms alone while their husbands migrate in search of paid employment in town (UNIDO & UN WOMEN 2013). Poor women continually face energy-related hurdles including having to collect firewood, scarcity of fuel and health problems from burning and collecting woodfuel and usage (Karlsson 2007). They also tend to be more reliant on small-scale agriculture and locally available resources like biomass and wood (UNDP 2012). Women are the first ones to bear the burden of energy shortages. The Kenyan women are still largely excluded from decision-making within the household and community (Clancy *et al.* 2003), and are underrepresented in leadership roles. Decision-making is largely in the hands of men, who assume that the unpaid work of women is free and forever available (Karlsson 2007).

Over three decades now, meeting gender and energy needs in Kenya has been fruitless despite numerous gender policy frameworks and interventions. The study found that policy makers do not recognise the existence of gender needs in energy services and as a result women's energy needs tend to be marginalised in policy documents (Clancy 2000; Mensah-Kutin 2006). There has been a lack of progressive changes towards gender mainstreaming in the energy sector (Mbuti *et al.* 2007). Gender mainstreaming is the process used to ensure that women and men's concerns and experiences are integral to the design, planning, implementation, monitoring and evaluation of all legislations, policies and programmes (DFID 2002). Like many developing countries, in Kenya, gender mainstreaming has taken a foothold in many other sectors of the economy particularly those strongly associated with women such as health, education and agriculture, with little focus in the energy sector and particularly on matters like women's access to trainings, awareness, affordability and accessibility of energy resources and services. There is also inconsistent focus on gender perspectives of energy policy, project planning and management. Kealotswe (2006) noted

that men in the energy sector did not know how to mainstream gender. This contention is noticed in the Kenya Sessional Paper 2004 on Energy, which states that deliberate steps will be taken to integrate women in policy formulation and management of the energy sector, but without any insinuation of an approach how women integration in energy policy is to be achieved. Women being the backbone of rural economies in Kenya, play a significant role to ensure their families' well being (UNDP 2013). Overall, this study observes that as much as policy implementers are not giving gender mainstreaming much consideration, mainstreaming gender in energy policies and programming is a superior undertaking, an intervention and pathway to achieving different gender needs of men and women in energy. This will be enhanced by efficiency of energy policies and integration of gender perspectives in energy projects, planning and management.

3.3 Strategies and Policy Frameworks on Gender and Energy in Kenya

3.3.1 Evolution of Energy Policies in Kenya

Energy policies in Kenya have evolved through sessional papers and Acts of parliament. The first policy was on sessional paper No. 10 of 1965 also referred to as the electric power act (CAP 314) which was used to regulate the electricity sector. The second sessional paper was No. 1 of 1986 which called for establishment of department of price and monopoly control within the finance ministry to enforce pricing. In 1981 National Oil Corporation of Kenya Limited was established through companies act (CAP 486) to coordinate oil exploration. Act No.22 of 1997 allowed Kenya Power Lightening Company to be divided into three sectors: KPLC, KENGEN and Electricity Regulatory board to regulate power sector. The Sessional paper No. 4, 2004 came into force to ensure enough, quality, cost-friendly and affordable supply of energy to meet development while protecting the environment. The Energy Act No.12, 2006 called for energy regulatory board to be changed to Energy Regulatory Commission (ERC) in 2007 to offer regulatory stewardship to electricity, petroleum and new renewable sub-sector. This act also saw the establishment of Rural Electrification Authority and Energy Tribunal. In 2012 the Kenyan government established an energy policy 2013, which is aligned to Vision 2030 and the Kenya Constitution 2010. The mission of the policy is to facilitate provision of clean, sustainable, reasonably priced, reliable and secure energy service at a least cost while protecting the environment. The policy is important to the country as Kenya tries to achieve vision 2030. This policy advocates for the use of renewable energy for all Kenyans.

3.3.2 Progress on Gender and Energy Policies in Kenya

In the early 1980s, the main focus during policy making was on the modernisation of the rural sector through a transition to commercial energy use. By the end of the 1980s, studies revealed a complex picture of labour allocation in the rural economy, and showed that women worked longer hours than men and were largely unpaid, which made women's labour contribution invisible (Clancy *et al.* 2003). At the household level, it restricted women's bargaining power and decision-making. None of the energy governance domains, however, were able to incorporate women's invisible and unpaid labour into its policy and practice (Cecelski 2004). Programme responses continued to focus on improved stoves and fuels

and did not sufficiently support women's need for energy for productive activities (Cecelski and CRGGE 2006) and overall, did not challenge the main barriers to realizing women's energy rights. Today, Policy makers are beginning to view this transition in the context of the wider welfare of the population (Karekezi *et al.* 2004) and women empowerment in order to accurately describe the benefits of new energy technologies (OECD 2012). During the 1980s and 1990s, the modern energy domain underwent reforms that paved way for the private sector to provide more energy services, and the government's role was modified to that of a regulator (Clancy 1999). Studies for the first time showed that national policy decisions regarding energy investment priorities and energy pricing affected men and women differently. In 1990s, the perception of gender and energy issue in the development circles remained very much ruralised (Wamukonya 2002). Until recently, Kenya has made notable progress on gender issues targeting both the rural and urban populations (Kirai 2009). Kenya has drafted and effected a number of policies to address energy issues in support of its development challenges. They include a National Policy on Gender and Development, which is intended to facilitate the mainstreaming of the needs and concerns of men and women in aspects of development; Women's Enterprise Development Fund to facilitate the availability of funds and training for women entrepreneurs; production of Kenya Gender Data Sheet that provides a general overview on gender position and condition across social economic, political, education, health and energy; and most recently (September 2013), the Uwezo Fund for Women and Youth empowerment. The Uwezo fund was inspired by political influence when the Jubilee Government came into power in March 2013 as a reward to the women and youths voters who supported them during the general elections. However, despite all these initiatives, implementation is still slow and wide gender gaps still exist in access to energy opportunities in the country. In general, women continue to have less access to energy services than men. This study believes that increasing gender awareness at the policy and operational levels can finally provide the prerequisite for stimulating energy needs for women in development. This study discusses the progress of some of the selected strategies and energy policy frameworks in Kenya.

Kenya Vision 2030 and The Kenya Constitution 2010

Kenya's Vision 2030 was launched in 2008 with the aim of driving the country into a globally competitive and prosperous economy with high quality of life (GoK 2008). The Constitution of Kenya 2010 helps to give guidelines and regulation towards achieving social, economic and political development in the country. The need to provide adequate and affordable energy is one of the pillars of the government's economic strategy for development. Vision 2030 and the Millennium Development Goals with their flagship projects such as Millennium village Projects find their roots in the Kenya's New Constitution. They also recognize energy as a catalyst to socio-economic development and advocate for energy access by all populations in the country. They believe that improvement in availability to modern energy resources and services will increase its use leading to reduced exposure to indoor air pollution (Muchiri *et al.* 2005) and other health hazards for women and children. However, if these strategies are not

adequately implemented, it is expected that domestic woodfuel consumption will increase by 38% from 11.06 million tonnes in 2005 to 15.25 million tonnes in 2020 (GTZ 2007).

Sessional Paper No. 4, 2004 on Energy

The energy policy was launched to create a framework within which cost effective, affordable and adequate quality energy services will be made available on a sustainable basis to the domestic economy over the period between 2004 and 2023. The policy sets out to address issues such as access and availability of energy supplies, electricity tariffs, pricing and infrastructure construction (GoK 2005). The policy recognizes the societal designated role of women as household energy providers and that due to decreasing quantities of biomass resources, women and children are spending increasingly longer hours fetching for energy. This leaves limited time for women to engage in commercially rewarding engagements. The policy recognizes the need to streamline electricity tariffs to achieve better targeting and thereby enhance delivery of the intended benefits to the needy and vulnerable members of society. However, it does not indicate who the needy and vulnerable members are, or what specific measures will be undertaken to ensure that the benefits actually trickle down to these groups and mitigate the negative implications. The policy does not show how lack of appropriate credit and financing mechanisms affects different men and women differently. Besides, critical review of key issues in the electricity, petroleum and renewable energy sub-sectors shows that the policy document is silent on gender dimensions, such as gender-based interventions in energy production, distribution and use.

Energy Act 2006

The energy sector has been undergoing restructuring and reforms since mid-1990s, which culminated in the enactment of the Energy Act, No 12 of 2006. The Energy sector in Kenya has four sub-sectors over which Ministry of Energy exercises oversight on behalf of the Government of Kenya (GoK), namely Electricity Supply Industry (ESI), Petroleum importation and Supply Industry, Renewable Energy Industry and Energy Sector Regulation. The Energy Act 2006 forms the main legal and regulatory framework in the country with the government's role being coordination, management and policy formulation. The objectives in the Kenya energy Act 2006 are to expand and upgrade infrastructure; promote energy efficiency and conservation; mobilise financial resources for expansion of services to meet demand; diversify sources of supply in a cost-effective manner; and increase energy access to all. To realise the objectives, the government has come up with strategies to provide quality, cost-effective and affordable energy services to households. However, despite the restructuring of the energy sector, the energy Act 2006 is yet to make a positive impact to the lives of many Kenyans. For instance, Kenya does not provide incentives or subsidies for household solar PV systems. Besides, some planned reforms in the Energy Act are yet to be effected. For example, establishing a Centre of Excellence for Energy Efficiency and Conservation; Energy and Equipment Testing Laboratories; and development of Standards and Codes of practice on cost-effective energy use.

Kenya Rural Electrification Master Plan

Over decades, Kenya has had centralized national electricity

infrastructures, which have limited accessibility of electricity among rural population. According to the Kenya Household Baseline Survey report, only 15.6% of all households in Kenya have access to electricity for lighting (rural 3.9%; urban 51%); (KHBS 2006). This is due to prohibitive connection cost. Kenya's levels on accessibility to electricity are below the sub-Saharan Africa average with 15% overall access and a breakdown of 51.3% and 5% for urban and rural areas, respectively. Until recently, Kenya developed a rural electrification master plan, expected to provide electricity for the rural poor. The key policy objective for rural electrification is to expand access to electricity to 20% and 40% of rural population by 2010 and 2020, respectively (GoK 2004). This study reveals that since its launch, rural electrification programmes have faced numerous socio-economic, environmental and political barriers, with a key factor being the inability of rural households to connect to electricity and preference on woodfuel over electricity. This is due to the high connecting costs coupled with low incomes among rural households and unreliable supply (occasional blackouts) (KHBS 2006). For example, at present, there are no subsidies for connecting households to grid-electricity. The government has further revised the initial policy of large lumpsum connection charges of Kshs.35000 (which was revised upward to Kshs. 45000 in 2013), making it even harder for poor households to access electricity. Earlier, Abdullah and Markandya (2007) and later Golumbeanu and Barnes (2013) confirmed that the major obstacle or setback to wider access of electricity is the high charges consumers must pay to connect to the electricity network in Kenya. As cooking is women's most important energy need in terms of time and effort Cecelski (2000), electricity in Kenya is too costly to be used for cooking not only by households but also by other business enterprises including hotels. Nonetheless, women still value electricity in their households for other purposes. As one woman narrates:

Even if power is too costly to cook with at home, we are able to watch TV, charge our mobile phones and stay connected (Kirubi 2006).

This implies that if privatization and commercialisation of energy and subsequent removal of direct subsidies on fuels and appliances happens in the country, can affect energy supply to the rural poor in terms of accessibility and availability. Privatization can contribute to sustainable livelihoods for women by offering new opportunities to enter the market in providing and maintaining local renewable energy resources and services for the poor.

Energy Policy 2013

The 2013 energy policy is aligned to vision 2030 and the Constitution of Kenya 2010. Its main objective is to promote quality, sustainable and cost effective energy services are availed in an affordable manner to all sectors of the economy ranging from manufacturing, services, mining, and agriculture to households (MoE 2012). The policy realizes the challenges faced by women and children in accessing energy. In order to address these challenges particularly in the use of woodfuel and kerosene, the government endeavours to mainstream gender issues in policy formulation and in energy planning, production and use; undertake public education and awareness creation on the cultural structures and practices hindering the access by women to alternative sources of

energy. However, not much has been achieved. This is due to lack of coordination among stakeholders, political will and limited trained and qualified personnel to implement and support modern energy initiatives and technologies. The study revealed that there is temptation to focus on electricity as the only source of energy in Kenya, while the rural population particularly women can easily and cheaply benefit from access to wind, solar and biomass energy. This is already working in Central Kenya (Biomass), Turkana and Kajiado (wind and Solar energy), but has not been replicated in other parts of the country. In a nutshell, for this policy to succeed, it needs to address different gender energy needs for women and men in the development process. The study observes that the level of awareness of gender and energy perspectives is still low. As such, the successful implementation of energy policies will depend on the level of gender awareness among stakeholders.

3.4 The Implications of International Agreements on Gender and Energy

3.4.1 UN's Fourth World Conference on Women

In 1995, the UN's Fourth World Conference on Women, held in Beijing, concluded that throughout the world women continue to have fewer options and opportunities than men. Unequal treatment of men and women and their differentiated social and economic roles has led to higher levels of poverty for women than for men in many countries. The Beijing Platform for action called for bringing a gender perspective to all structures, institutions, policies and programs. On gender mainstreaming, it specifically states that governments and other actors should promote an active and visible policy of mainstreaming a gender perspective in all policies and programs so that before decisions are taken, an analysis is made of the effects on women and men (UN 1995). Kenya has made some progress in implementing the agreement in line with other international conventions and treaties on gender such as Convention on the Elimination of all Forms of Discrimination against Women, Commission on the Status of Women and African Platform of Action, the East African Community and the African Union (AU). However, some of the agreements lack the machinery for tracking implementation by the government. Additionally, women are still underrepresented in the energy industry work force, policy institutions and in ministerial positions in the field of energy and are rarely considered as key stakeholders for energy initiatives (Kirai 2009; UNIDO & UN WOMEN 2013).

3.4.2 Millennium Development Goals

It is now universally acknowledged and recognized in Kenya that even though energy in itself is not part of the MDGs, its development, access and use will significantly determine the level of success in achievement of the MDGs (Ngigi 2008). For instance, energy is a key input in the fight against poverty, hunger and malnutrition (MDG1), achievement of universal education (MDG2), gender parity through emancipation and empowerment of women (MDG3), reduction of infant and child mortality (MDG4), reduction of maternal mortality (MDG5), halting and reversal of the spread and associated fatalities of diseases, especially malaria, HIV and AIDS (MDG6), and improved access to water and sanitation and application of sustainable environmental policies and practices (MDG7). Energy collaborations and networks such as GVEP, ENERGIA, Lighting Africa, UNDP, and SCODES also exist to

foster these goals, in accordance to MDG8. For that reason, none of the Millennium Development Goals can be met without major improvement in the quality and quantity of energy and energy resources and services (UNDP 2012). Earlier in 2002, the Johannesburg Plan of Implementation (JPOI) agreed at the World Summit on Sustainable Development (WSSD) to call for the international community to work together at all levels to improve access to reliable and affordable energy services for sustainable development, sufficient to facilitate the achievement of the MDGs. The European Union established the EU Energy Initiative for Poverty Eradication and Sustainable Development. In 2011, the UN Secretary General launched UN's new Sustainable Energy for All (SE4All) initiative by clearly recognizing that increased access to energy is necessary for creating economic opportunities for women in developing countries. Meeting women's energy challenges is also significant in achieving the MDGs (UNIDO & UN WOMEN 2013). Still in 2011, the Paris-Nairobi Climate Initiative Access to Clean Energy for All by 2030 in Africa and in countries most vulnerable to climate change was launched. The initiative emphasizes that national energy policies should take into consideration energy security, access to energy, the economic impact of energy and the environmental consequences of energy use to its population. Public authorities should also seek to maximize the impact of the energy sector on national development goals for health, education, water and rural development as well as on the MDGs.

In 2012, the UN Conference on Sustainable Development (Rio+20) with the theme "The Future We Want", advocated for commitments to specific actions to achieve sustainable development, which include universal energy access and the launch of a process to develop Sustainable Development Goals (SDGs) to be integrated into the successive framework of the MDGs. In assessing the MDG fulfillment progress in Kenya, the state of affairs is heartrending. On average, 2 out of 3 families mainly in rural areas, live without electricity or access to modern energy services, in what (Sanchez 2010) calls the 'Hidden Energy Crisis'. Despite these efforts at macro-policy level, Kenya like many other African countries is off-track in progressing towards the gender and energy targets. Furthermore, the targets for modern energy access by half of the rural population by 2015, is far from achieving. Consequently, to achieve targets set to address global poverty in Kenya, particular energy concerns of women must be prioritised and addressed through gender-aware strategies, policies and programmes.

3.5 THE PROGRESS MADE BY VARIOUS INTERVENTIONS ON GENDER AND ENERGY IN KENYA

Over decades, energy interventions in Kenya have evolved to address women's various needs in energy. Below is an analysis of the progress of a number of energy interventions that have been employed in Kenya.

3.5.1 ENERGIA Gender Mainstreaming Plan

In 2010, ENERGIA assisted the country's electrical utility Kenya Power and Lightening Company in developing a gender mainstreaming plan (Kenya Power 2010). The plan adopted included commitments to ensure that women and small businesses are able to obtain electrical connections by including women on all decision-making panels, providing gender training for all staff, making progress towards a target

of 30% women for senior management positions, ensuring gender-responsive facilities within Kenya Power including safe and hygienic facilities for women and men at all its offices and depots (ENERGIA 2011), and hiring an independent gender expert to support implementation of the gender mainstreaming plan. The gender mainstreaming plan is currently under implementation and yet to be evaluated.

3.5.2 Millennium Villages Projects

The Millennium Villages Project (MVP) began in 2004 and currently encompasses approximately 400,000 people in 80 Millennium Villages across 10 Sub-Saharan countries (Sanchez. 2010). In Kenya, the Millennium Villages Project, in Dertu (North Eastern) and Sauri (Nyanza) in partnership with the government, private partners and local communities, are showing major gains in extending the electrical grid, increasing access to off-grid electricity and improving energy for cooking. Innovative projects include the implementation of 'shared solar' projects, which use a mobile credit system to pay for household and storefront energy use. The projects also introduced more energy efficient cookstoves, which saves women and children from time-consuming tasks of collecting woodfuel. These innovations also reduce environmental impacts from traditional cookstoves, which emit 3 to 4 tons of carbon equivalents per year (Mills and Jacobson 2007). Notwithstanding, the success of these projects in Dertu and Sauri, most parts of the country are yet to access the benefits of these innovations given that they have not been replicated throughout the country.

3.5.3 Visionary Empowerment Programme (VEP)

Netherlands Development Organization-SNV partnered with the Visionary Empowerment Programme-VEP in addressing some of the energy barriers facing women. VEP enables rural population to save money, provide a cushion against economic fluctuations and encourage a cooperative and community feeling. VEP lending follows the Grameen Principles where groups save a standard amount of money every month, which they then lend out to themselves at an agreed interest rate. This approach targets the poorest women who live in households that own little or no assets. Between January and October 2012, more than 7000 solar products were sold (75% through credit) reaching more than 10,000 people with clean lighting. As an implementing partner of the Kenya National Domestic Biogas Programme, VEP had by end of November 2012 facilitated the construction of 812 biogas digesters half of which were financed through credit provided to women. VEP being a women initiative has enabled it to reach to the real people using the social capital approach. Some of the products require large upfront investments and the credit provided by VEP at low interest rates of 1% per month on reducing balance and serves as an incentive for low income households to acquire the new technologies.

3.5.4 Upesi Cook Stoves Project

According to Zulu and Desanker (2001) and Muchiri (2008), Kenya has a good reputation for developing and promoting the use of more efficient stoves in rural areas. In 1995, the Intermediate Technology Development Group (ITDG) initiated Upesi Cook Stoves Project whose objective was to improve the living conditions of rural women in western Kenya by giving them access to fuel-saving wood stoves (Khamati 2001). Existing women's groups learned how to produce and

market the cookstoves and how to draw up business plans, organize and manage production activities and access credit facilities. Over 16,000 stoves had been installed, providing significant poverty alleviation and improved health and time savings for users of the energy efficient stoves, as well as relief from pressures caused by woodfuel shortage (Khamati 2001). Project sustainability was assured since the women were trained in stove production, distribution, marketing skills, and stove installation. The groups also had good leadership through, which they could channel resources, support from key government, non-governmental funding. The women's groups also engaged in tree planting, and helped to raise awareness of the need for conservation among the rural and urban populations. From this case study, it is evident that ICS can do much to reduce the pollution levels in the kitchen, as well as giving cleaner kitchens. They also reduce women's work burden and gives them a sense of modernity and increases their sense of wellbeing. In 2006, the penetration of improved charcoal stove was estimated at 60% of the rural households that is 3,136,739 stoves. This penetration was mainly for the improved charcoal stove used by urban households. Whereas the level of penetration of improved efficient woodstoves for the rural households is still below 5% (Zulu and Desanker 2001). This study observes that when women, who previously were making use of fuel wood for cooking purposes, start using ICS, their workloads normally decrease. However, in many instances there is no financial incentive to replace women's labour rendering the marketing of improved cook stoves more difficult (Cecelski 2000). In contrast, if women's time has an accepted economic and monetary value because of opportunities to earn cash income, there is pressure for the household to economize on their time investments and there is thus an economic incentive to invest in improved cook stoves or domestic biogas (Nijland 2013). Marketing such technologies is thus, likely to be most effective when women's time is economically valued in real monetary values or when fuel has to be bought.

3.5.5 Solar LED lamps from Afri-Ireland

Afri-Ireland an advocacy NGO-Non Governmental Organization from Ireland in partnership with PAJAN Kenya introduced solar lamps into North Eastern region of Kenya. Since its inception the solar lamps have reduced childbirth risks in a number of ways. For instance, instead of relying on moonlight or dangerous and smoky kerosene lamps, midwives now use solar-powered lamps to make childbirth safer in remote regions that are off the electric grid. Hasna a midwife narrates that:

For 25 years I have been using kerosene lamp and sometimes bright lights from the moon,"...I have been bitten three times by snakes and that affected my work, inconveniencing many pregnant women in Sankuri village. Furthermore..."I have contracted respiratory infections (from smoke) on various occasions and also the use of moonlight is quite tricky as I have to conduct deliveries in open space-outside (AlertNet 2013).

Since the solar lamps were introduced, one birth attendant is able to attend to 185 deliveries in Sankuri village. This has reduced the prices for services to come down from Kshs. 425 to Kshs. 255 USD \$3. This project has reduced the challenges faced by women. Similarly, evidence from elsewhere shows

that lack of electricity has other drawbacks on women. For example, one woman who has lived in Mpeketoni-Mombasa since 1970s narrated that:

Before electricity, we looked bad and poorly groomed because there were no hair salons; the nearest was in Mombasa 450km away. Delivery was the biggest risk for women since maternity services at the local clinic could only be offered using kerosene lamps and dry-cell flash lights (Kirubi 2006).

A recent World Health Organization (WHO) survey of available data in 11 Sub-Saharan countries indicated that about a quarter of clinics had no electricity, and less than one-third had what could be called "reliable" electricity (UNIDO & UN WOMEN 2013). It is worthy noting that health workers in clinics that have been electrified even with very small PV systems have reported results such as fewer infections, fewer delays in providing life-saving care, more timely blood transfusions, and more successful child deliveries. Johnstone *et al.* (2009) using self-reported data in Kenya, found that LED lighting had a positive impact on night market business prosperity through reduced kerosene expenditures and increased traffick to shops using LEDs.

3.5.6 Efficient Biomass Stoves by UNDP

Over 95 % of around 20,000 institutions such as schools, colleges, and hospitals in Kenya use fuelwood as the main source of energy for cooking and heating (UNDP 2011). In 1996, with support from GEF's Small Grants Programme (SGP) implemented by UNDP, the Renewable Energy Technology Assistance Program (RETAP) was established to assist 20 schools in Mt. Kenya with planting woodlots in their schools and installing energy-efficient stoves in their kitchens. Each school used, on average, 160 tonnes of non-renewable wood per year. A revolving credit fund was successfully established (with \$50,000 from SGP) to facilitate the purchase of the stoves, with loan repayments made within two years from the savings on firewood purchases. Based on the success of pilot project, the UNDP/GEF-funded programme Market Transformation for Efficient Biomass Stoves for Institutions and Medium-Scale Enterprises in Kenya was implemented from 2007 to 2010 with funding of \$1 million. Over four years, the project sold and installed approximately 1,500 institutional stoves to more than 1,000 schools, small and medium-sized enterprises and households and planted 500,000 trees. The revolving credit facility has expanded four-fold and Rural Technology Enterprise (RTE) was spun off as a private sector company and registered Microfinance Industry that fabricates and installs energy efficient stoves in the country. From the foregoing discussion, the study observes that women crave for energy for various reasons, which include practical, productive and strategic needs at the household, community and at national level. As evident from the above discussion, access to modern energy can significantly support the functioning of health centres in rural areas that are fundamental for improving women and children's health. Access to modern energy also improves their livelihoods through income generation and reduces environmental impacts from traditional fuels. However, despite various interventions highlighted in the preceding discussion, a critical review shows that most of them are donor driven, short-term and lack sustainability components. Additionally, the author observes that some of the interventions implemented in

the country are seasonal and only come at a particular time to address a specific problem and disappear. Consequently, little impact is made on the lives of vulnerable women. Moreover, successful interventions are not scaled up and replicated in other parts of the country for adoption.

3.6 Challenges by Government and Non-state Actors on Women and Energy Access

In Kenya, various factors influence women's access to energy resources. This study highlights some of the key challenges to women and energy access.

3.6.1 Social Structures

The patriarchal system in Kenya has been blamed on the widened gender gaps in the energy sector. For instance, in the traditional society, production and use of biomass fuels is the responsibility of women and children. Men only get involved when these activities get commercialized (Mbuthi *et al.* 2007). Great gender disparities exist between women and men when it comes to governance and accessibility to energy resources. Men are the heads of households and therefore, top decision makers in resource use and management. Evidence shows that households use multiple fuels and the choice of fuels is influenced by income, cultural preferences and socialization among others aspects (WB 2011). Women remain marginalized from decision-making processes in relation to energy (ENERGIA/DFID 2006). This implies that the choice of fuel is gendered and determined by intra-household decision-making, the status of women as well as the value attached to women's labour (Danielsen 2012).

3.6.2 Land Tenure System

Lack of land tenure in Kenya hampers women's' ability in increasing production of woodfuel since they would not own the trees, and men would use wood for other purposes other than fuel. Cecelski (2004) observes that the rights to tree products, including fuelwood, tend to be customary and unwritten, where planting trees confirm land ownership, hence women are not allowed to plant trees on land that belong to men as doing so is to challenge men's authority. They can however, plant woody bushes for fuel supply. Agarwal (1986) asserts that there has been displacement of women's informal rights to fuel collection on communal lands, through privatization of communal lands for 'community' forestry where proceeds are controlled by men or the elite. Additionally, women-headed households in particular, are excluded from access to modern energy services because of insecure tenure, often as a consequence of gender inequitable legal rights (UN-HABITAT 2009). Due to these barriers and attitudes towards women, they are often ineligible for financing for new equipment that can improve the productivity of their labour (ENERGIA 2011).

3.6.2 Over-reliance on Fuelwood

Fuelwood demand in the country is 3.5 million tonnes per year while its supply is 1.5 million tonnes per year. Fuelwood accounts for over 70% of the total energy consumption in Kenya (GoK 2004). The massive deficit in fuelwood supply has led to high rates of deforestation in both exotic and indigenous vegetation resulting to adverse environmental effects such as desertification, land degradation, droughts and famine. Since 1930, Kenya has lost about 65% of its original standing wood volume. Women and girls tend to be responsible for gathering

firewood, affecting their health and keeping girls away from school. The several hours a day spent in collecting fuel means that this time cannot be used for other livelihood activities, with the amount of time spent increasing as environmental degradation increases (ENERGIA 2010). Analysis of fuel types in Kenya by urban and rural areas shows that the most popular fuel types in terms of their various uses are: kerosene (80%), charcoal (60%), woodfuel (55%), electricity (37%) and LPG (21%) in that order. The usage of fuel wood, charcoal and kerosene in rural areas is higher, compared to urban areas. However, the use of LPG and electricity in the rural areas is lower, compared to that of urban areas (GoK 2007). Overall, the use of renewable energy from solar, biogas and wind is very low in Kenya with 3%, 0.2% and 0.1%, respectively.

3.6.3 Education Access by Women

Most women in Kenya are disadvantaged when it comes to access to education. As a result, they are underrepresented on issues on gender and energy. Illiteracy is more prevalent for women than men due to less access to schooling, which can make access to formal loans and other credit opportunities practically impossible. Low education is an impediment to empowerment, affecting these women's capacity and confidence to face the challenges in their lives (Karlsson 2007). Studies show that promotion and sales of energy products such as stoves have been difficult because the production and distribution are done by women's groups with little or no experience in competitive marketing (Khamati 2001). Moreover, most poor households have little capital to help them acquire energy conversion technologies and associated labour saving equipment or get grid connection or an LPG cylinder. For women, there are additional problems of access to capital not faced by men. For example, banks and lending institutions have conditions for lending, such as collateral and credit history requirements that disadvantage women (Sengendo 2008). Though women have a better record of credit repayment than men, women still receive a disproportionately small share of credit from formal banking institutions. The informal credit channels may also not be directly accessible to women. This implies that these requirements have a greater impact on women, who may face legal restrictions making it difficult for them to own land or other assets, or to take action without their husbands' consent. Khamati (2001) notes that over the years, the Improved Cooking Stoves have been more difficult to introduce in rural areas because they cost money, yet the traditional three stone cooking systems is free. As such, most rural women and children collect their woodfuel for free, meaning that there is less incentive than in the urban areas to spend money on ICS for reasons of fuel conservation. This study observes that educated women are few and have not been given opportunity to occupy influential positions in policy making institutions. As a consequence, their energy needs remain unaddressed and/or unmet. Additionally, other professionals particularly men perceive that women do not have knowledge and experience in gender and energy issues to enable them to effectively take up decision-making positions in the long-term. The study advocates for women inclusion in energy policies that support women access to modern energy technologies and promote their participation and involvement in designing, planning, implementing and adapting to those energy technologies.

3.6.4 Production and Cost of Improved Cooking Stoves

Production of Improved Cooking Stoves entails use of resources, mainly sand and clay, which are majorly owned and controlled by men who also control the use of benefits emanating from the Improved Cook Stoves businesses. The use of ICS is almost entirely a women's affair and therefore, getting men and women to change their attitude towards gender equity in relation to ICS is potentially a challenge (KIBHS 2006). With the increasing availability of ICS in the market, there is bound to be stiff competition in marketing the ICS. This study notes that past programmes addressing the woodfuel shortage have centered on promoting fuel efficient stoves to reduce the drudgery experienced by women and the in-door air pollution to, which they are exposed to. However, there is very little monitoring and evaluation to assess the impact of the energy programmes on the health and drudgery issues being addressed. The reason behind this is the lack of gender disaggregated data and slow implementation of existing energy policies.

4.0 Conclusion and Recommendations

Gender and energy is a reflection of the level of development of the society. Every aspect of development in the society solely depends on the energy sector. Findings of the study indicate that modern forms of energy empower humans in immeasurable ways. For instance, by reducing drudgery, increasing productivity, transforming food, providing illumination, transporting water, fuelling transportation, powering industrial/agricultural processes and facilitating electronic communication. The government of Kenya has made some strides in designing and implementing various gender and energy policies in the country. However, slow implementation of these policies has led to high and variable costs, limited availability and unreliable energy sources, which have significantly undermined women's needs in development. Slow implementation of gender mainstreaming into the energy interventions has also remained a major point of concern in Kenya. Gender insensitivity and lack of political goodwill to mainstream gender in existing energy policies and programmes, coupled with lack of consultation with women as the main stakeholders in energy, have slowed down the whole process. This has led to a disconnect between energy resources and services and women as recipients or main users. The study observed that in Kenya, there is a powerful synergy and interaction between electricity and other alternative energy sources, which include wind, solar and biomass energy. However, the government has given little attention to these other sources of energy. Access to electrification is only one portion of the intricate conundrum of achieving gender balance in development in the country. For instance, households that are reached by national grids often receive intermittent and unreliable energy or are unable to pay for electricity altogether. Furthermore, electricity is not the cheapest option for cooking in many households. For example, households only use electricity for radio listening, television watching and lighting. As such, other energy options can compliment electricity and the utilization of other forms of energy can be more cost-effective than expanding existing grids in the country. There has been a cynicism with improved cookstoves programmes and other interventions, such as biogas and solar cookers, because they have failed to live up to their expectations. There have been major problems also with the access, acceptability and adoption of these types of cooking for the reason that the cookers are too slow, small and

may not be used to prepare some of the staple foods. New technologies may be perceived as risks if new in a region in case people have no confidence in it due to ignorance about it. Therefore, the solution to this can be the provision of appropriate improved cookstoves at subsidized prices throughout the country as well as training the users to adapt to the new culture of cooking using modern techniques and provision of appropriate improved cookstoves at subsidized prices throughout the country as well as training the users to adapt to the new culture of cooking using modern techniques. Besides, women can draw on their natural circles of family, friends and community for customers, in distributing solar technology to rural households. As a result, become key actors in creating and disseminating sustainable energy solutions. This will create income and opportunity for women to take part in and drive sustainable development of their local communities. In so doing, their socio-economic and social statuses are enhanced.

The study notes that access to modern energy *per se* is not the only significant issue in considering the effect of modern energy on social development of a country, the energy as well as the electric tools and equipment need to be available, reliable and affordable for effective use. In Kenya, income generation is a strong incentive to promoting the achievement of gender and energy goals. For example, the success of improved stove programmes in rural areas in the country has largely been attributed to greater income-earning opportunities for women. The study observed that where women have few opportunities to earn cash incomes, there is little incentive to reduce the time and effort they expend in collecting fuel by adopting improved stoves.

This study espouses the GAD approach as a gender-energy-development perspective, which not only informs the designing of interventions and affirmative action strategies, which will ensure women are better integrated into ongoing energy development efforts, but also emphasize on a fundamental re-examination of social structures and institutions as a commitment to structural changes in the country. As studies have noted, the perceptions of women's work should be changed through strengthening women's leadership and participation in the energy sector. More essential is that more women in formal energy institutions can act as role models and result in a change of negative attitudes towards women in other social institutions such as households and communities. The author observes that power is constructed by social systems and in most communities, unequally distributed between women and men and always to the detriment of women. Unequal power relations are evident at every level, in the political sphere, in the community, and within the household. This is the reason why most gender policies in the country make little impact in the lives of women. Unless such perceptions and attitudes are changed, we may not achieve gender and energy needs as a country.

Overall, various attempts have been made to ensure equal access to energy resources and services. However, the failure to understand the gender differences in the energy services has resulted in the failure of the specific energy interventions to improve the lives of women and men equally in rural and urban settings in Kenya. Given that access to benefits and impacts are experienced differently by women and men, it is necessary to include a gendered analysis in gender and energy development and men and women should be taken as participants, beneficiaries, stakeholders and decision makers.

Therefore, Gender in Development Approach and gender analysis are fundamental in gender and energy as it examines women and men's specific activities, conditions, needs, access to, and control over resources, access to development benefits and decision-making power.

Increasing energy access to both men and women is not simply about supplying lighting or better cooking stoves, but also wealth creation, providing power for entrepreneurship, improving healthcare, education and transportation and the overall outcome is social development in the country. All these can be achieved through creation of a platform where women are key stakeholders in energy matters that concern their lives. It is the conclusion of the study that if Kenya has to achieve gender and energy goals, government actions are needed at both the national and the county levels to remove the barriers that impede the spread of sustainable gender and energy initiatives in rural and urban areas. Therefore, Kenya is yet to achieve gender and energy goals. For that reason, a lot of efforts are needed in designing, planning and implementing gendered policies if we are to achieve gender balance in energy production and usage. It is the recommendation of the study that:

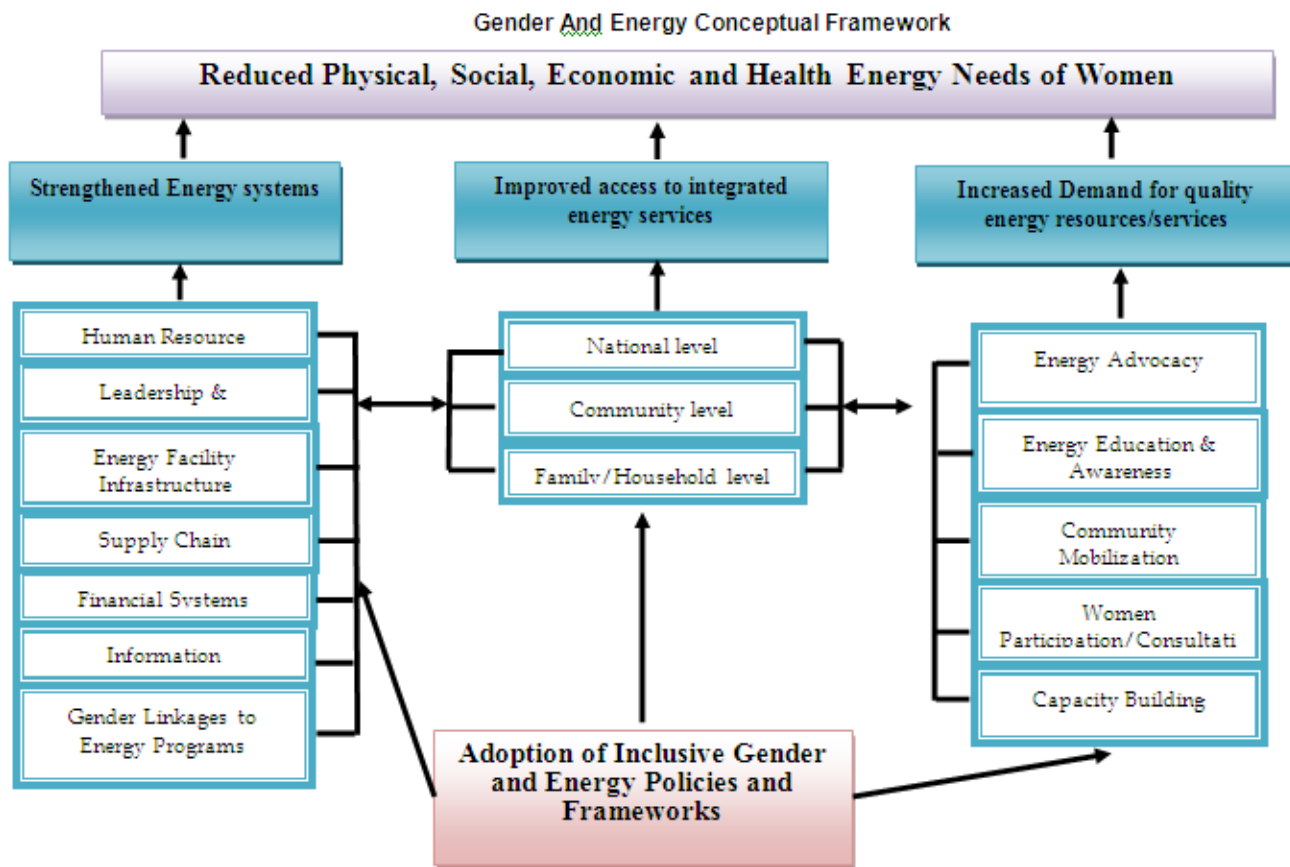
1. The national government in conjunction with county governments can launch promotional campaigns and exhibitions with a gender perspective with a view to enlighten local populations on available, reliable, affordable and sustainable energy alternatives. The study found that most rural people and particularly women are not aware of the opportunities associated with alternative energy options. Thus, become late adopters of new innovations in energy technologies they are exposed to.
2. Participatory approaches in which national government and county governments and energy recipients are responsible for all the essential phases of the planning, formulation and implementation of the energy policies should be implemented.
3. There have been data gaps on gender and energy in Kenya. Therefore, research with specific objectives and variables on gender and energy needs, need to be conducted. Research has always assumed that energy projects that are implemented meet the needs of men and women equally. As a result, the government and non-state actors have difficulties receiving adequate gender-sensitive data, necessary for decision-making purposes. This will be vital in coming up with:
 - i. Innovative, analytical and data gathering tools for practical use in research to bring out the gender and energy dimensions adequately
 - ii. Comparative studies of rural and urban gender-energy nexus linked to control of resources, resource distribution and livelihoods.
4. There is need to work on strategies that can remove cultural and social gender stereotypes that encourage common perceptions and/or unproven hypothesis statements on women and gender such as women's place is in the kitchen. This can be through gender mainstreaming and education as well.
5. There is need for decentralization of renewable energy-based solutions in rural areas and ensure universal access by all users as well as replication of successful

energy interventions that have worked elsewhere to all parts of the country.

In order to build up a body of knowledge in the area of gender and energy, the study proposes further research on gender-energy nexus in the following areas:

- i. Mapping out of regional energy needs in the country, will be key in addressing specific energy needs in a particular region. Analysis at household, community and regional levels could provide a more comprehensive understanding of gender and energy needs and issues, and advice or inform on appropriate strategies and policy frameworks to be employed.
- ii. Carry out an analysis of energy policies that are sustainable in the country for adoption and implementation, while addressing barriers to adoption and seek possible solutions to adoption of new energy products and services.
- iii. Interrogate the factors accounting for gender-specific problems that women face in relation to their roles in the production and utilization of energy services in rural and urban contexts.
- iv. Gender-energy-poverty nexus within the urban context is under-researched. From the review of literature, it is evident that this area has limited information. Therefore, more scientific research is needed particularly on how women participation and involvement account for their efforts to address access to modern energy in poor rural and urban households and also interrogate the obstacles to women's inclusion in research.

To contribute to knowledge, the study concludes with a conceptual framework illustrated below:



Source: Author, (2013)

Figure 1.1: Gender and energy conceptual framework

Figure 1.1 shows that for Kenya to achieve reduced physical, social, economic and health energy needs of women, there is need for strengthened energy systems through sufficient human resource, leadership and management, establishing adequate energy facility infrastructure, development of a realistic energy supply chain management, strong financial and information management systems that link gender to all energy interventions. Secondly, there is need for improved access to integrated energy services through adoption of inclusive gender and energy policies and frameworks that impact the implementation of energy interventions positively at household level, community and at national level. Finally, Kenya should address the increased demand for quality energy resources and services, through energy advocacy activities, education and awareness, women participation and consultations and community mobilization.

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