

Green Energy for Sustainable Rural Development: a gender perspective focusing on women participation, in Kisumu West Sub-County, Kenya.

Odera Petronilla Achieng

Department of Applied Science, Kisumu Polytechnic,

Correspondence: petodera@yahoo.com

Abstract

Energy services undoubtedly help alleviate poverty and stimulate economic development. The accessibility of renewables at affordable prices would lighten the women's workload and create new roles that lead to economic growth as well as making the women economically independent. This study sought to explore the factors influencing participation of women in green energy schemes for sustainable rural development in Kisumu West Sub-County. The study targeted 494 Women Groups in Kisumu West Sub -County and the Women Group members as primary respondents. A descriptive survey design was adopted for the study in which simple random sampling method was used to identify 10 Women Self Help Groups as units of analysis and 200 respondents who were included in the study. Data was collected through questionnaires and Focus Group

Discussions (FGDs) guides while data analysis was done using Statistical Package for Social Sciences. Descriptive statistics and presented specifically through, tables, frequency counts and percentages. The findings revealed some of the green energy related activities in which the women are engaged as biogas technology, fireless cookers/energy saving jikos (g charcoal among others. The findings further revealed age, level of education, family size, employment status as some of the factors greatly influencing women participation in green energy schemes while most critical challenges to participation include lack of a repertoire of skills and lack of capital infusion among others. Based on the findings the study recommends among others that participation of the Women Groups be sustained by capacity development through, seminars, workshops and trainings to enhance green energy schemes.

Keywords: *Green energy, Participation, Sustainable, Rural development*

Introduction

The achievement of the Millennium Development Goals is at the centre of sustainable development. Sustainable rural development is vital to the economic, social and environmental viability of nations. It is essential for poverty eradication since global poverty is overwhelmingly rural. It is therefore critical, and there is great value to be gained, by coordinating rural development initiatives that contribute to sustainable livelihoods through efforts at the global, regional, national and local levels, as appropriate. Rural livelihoods are enhanced through effective participation of rural people and rural communities in the management of their own social, economic and environmental objectives by empowering people in rural areas, particularly women and youth, including through organizations such

as local cooperatives and by applying the bottom-up approach. Beyond meeting basic needs, investments must be linked to the potential to raise productivity and income. Women make up half of the world's population and yet represent a staggering 70% of the world's poor (Global citizen, 2013).

Women play a central role in advancing sustainable development. Everyday women take decisions that impact sustainable development be it the use of land, water, energy, or forests or through their contributions to their families and the economy. If they have equal access to resources and opportunities and are part of the decision-making processes, women can become drivers of sustainable development. In partnership with women, their communities, and grassroots organizations, UN Women supports many initiatives that promote sustainable development solutions (UN Women, 2011-2012). Roughly 1.6 billion people worldwide do not have access to electricity in their homes, representing slightly more than one quarter of the world population. The 2.4 billion people who rely on traditional biomass fuels for their energy must collect and burn straw, dung, and scraps of wood to cook their meals. They often go without refrigeration, radios, and even light.

Access to energy is fundamental to achieving development goals such as poverty reduction, improved health, increased productivity and economic growth. As stated by UN-Energy, this energy divide “entrenches poverty, constrains the delivery of social services, limits opportunities for women, and erodes environmental sustainability at the local, national, and global levels. Much greater access to energy services is essential to address this situation and to support the achievement of the Millennium Development Goals.” (UN-ENERGY, 2005). The number of people relying on the traditional use of biomass is projected to rise from 2.7 billion today to 2.8 billion in 2030 (World Commission on Environment and Development, (1987) a number that is projected to rise by 200

million by 2030, with increases in South Asia and Africa (UNEP, 2011). The situation is especially alarming in developing countries, where access to energy is much lower than in the developed countries and where over half of the population rely on solid fuels for cooking. As well as being a source of greenhouse gas emissions, these fuels create serious health problems—indoor pollution resulting from cooking with biomass fuels or coal is responsible for an estimated 2 million deaths every year

UNDP and WHO, 2009

Using World Health Organization estimates, linked to our projections of biomass use, it is estimated that household air pollution from the use of biomass in inefficient stoves would lead to over 1.5million premature deaths per year, over 4000 per day, in 2030, greater than estimates for premature deaths from malaria, tuberculosis or HIV/AIDS (WEO,2010).

“When women have access to resources and opportunities and participate on an equal footing in economic life, they are in a better position to fill their roles as drivers of development outcomes and take advantage of sustainable and inclusive economic growth.” UN Women, (2012).

Changing climate and weather patterns are predicted to have severe negative impacts on food production, food security and natural resources in East Africa. Without appropriate responses climate change is likely to constrain economic development and poverty reduction efforts and exacerbate already pressing difficulties in a country like Kenya. Kenya is one of the countries whose economy is deeply rooted in climate sensitive sectors like agriculture, fisheries and forestry. Kisumu West Sub-county is expected to be hardest hit since poverty is a deep rooted challenge in the county whereby 70% of its residents are poor. The county contributes 1.26% to national poverty. Further, the Sub county is not self sufficient in food production. Worst hit are: the aged, physically challenged, small

land holders with less than 0.05 hac, landless squatters, children and female headed households. In areas of the world where gender inequality pervades, the role of women in community development may be even more important.

Problem Statement

One objective of sustainable development is to satisfy the needs of the present. The socio economic problems in developing countries have encouraged different communities to engage in strategies which enable them to uplift their standards of living and promoting their social function.

Kenya is one of the countries whose economy is deeply rooted in climate sensitive sectors like agriculture, fisheries and forestry. Kisumu West Sub-county is expected to be hardest hit since poverty is a deep rooted challenge in the Sub-county whereby 71% of its residents are rural poor. Kisumu County contributes 1.26% to national poverty. Poverty in the Kisumu West Sub county manifests through food insecurity, high mortality and morbidity rates, high school dropout rates, high dependency ratios and high HIV and AIDS prevalence. The main causes of poverty include HIV and AIDS pandemic, collapse of local agro-based industries, unemployment, low agricultural and fisheries production. Further, the Sub-county is not self-sufficient in food production. Worst hit are: the aged, physically challenged, small land holders with less than 0.05 hac, landless squatters, children and female headed households. Many rural women spend up to four hours a day collecting fuel for household use, sometimes travelling 5 to 10 kilometres a day and those in Kisumu West Sub-county are no exception.

In an attempt to address their problems women engage in activities that lead to the process of sustainable rural development as an attempt to survive in rural areas. Women in Kisumu West Sub county have engaged in self-help group various activities related to

green energy schemes to help alleviate the myriad challenges they face as household heads.

In view of problems mentioned above the study explored factors influencing participation of women in green energy schemes for sustainable rural development in Kisumu West Sub County.

The study objectives

1. To determine the socio-cultural and economic factors influencing women's participation in green energy schemes for sustainable rural development in Kisumu West Sub-County?
2. To validate women's contribution in green energy schemes for sustainable rural development in Kisumu West Sub-County?
3. To identify the challenges emerging from women's participation in the green energy schemes for sustainable rural development in Kisumu West Sub-County?

Research Questions

1. What are the socio-cultural and economic factors influencing women's participation in green energy schemes for sustainable rural development in Kisumu West Sub-County?
2. What are women's contribution in green energy schemes for sustainable rural development in Kisumu West Sub-County?
3. What challenges emerge from women's participation in the green energy schemes for sustainable rural development in Kisumu West Sub-County?

Methodology

Study Area

Location and Size

Kisumu West Sub county covers a total are of 360km² and borders Kisumu East Sub-county to the East, Vihiga to the North East,

Emuhaya to the North, Siaya to the North West and Rarieda to the West and Lake Victoria to the South.

Settlement Pattern

Settlement patterns in the Sub-county are influenced by various factors such as physical features and agricultural potential and opportunities for fishing and business development. Highly populated areas are those with large proportions of arable land, such as Maseno Division and those closer to the fish landing beaches in Kombewa Division. This is because livelihoods of majority of people living in the Sub-county depend on agriculture and fishing.

Population profiles and projections

By the end of 2012, the population of males was estimated to be 76,304 while that of females to be 86,444(KWDDP 2008-2012). The high population increase is expected to impact negatively on socio-economic development of the Sub-county. Some of the undesirable effects of the population increase include increased dependency, unemployment and increased pressure on land and other basic facilities such as health, education, water and infrastructure.

Rural population is 147,016 with females 78,026 and males 68,990. Life expectancy is 37.8 for females and 43.2 for males. Adult Literacy indicates drop-out rates at 70%. The number of active women groups is 494 (KWDDP, 2008-2012).

In Kisumu West poverty levels are at 70% which is one of the highest in the region. Poverty in the Sub-county is manifested through food insecurity, high mortality and morbidity rates, high school drop-out rates, high dependency ratios and HIV and AIDS prevalence. The main causes of poverty include: HIV and AIDS pandemic, collapse of local agro-based industries, unemployment, poor infrastructure, low agricultural and fisheries production. The impact of HIV and AIDS has continued to negatively affect development of various sectors. The prevalence which stands at 8%

is higher than the national prevalence. HIV and AIDS has contributed to low food production, increased dependency ratio and school drop- out rates. HIV and AIDS has also increased pressure on health delivery systems and weakened social support leading to marginalized orphans and widows.

Gender Inequality

Kisumu West has put in place strategies to ensure socio economic development. It has been noted that women and girls are disadvantaged in some areas yet they bear a bigger burden for the society seen from such as caring for the sick, fetching water and firewood.

Research Design

This study was conducted through a descriptive survey design. It was specifically intended to determine the factors influencing women participation in green energy schemes. The target population for the study comprised active Women Groups in Kisumu West Sub-County engaged in green energy related activities.

Sampling frame and Sampling Procedure

The number of registered active Women Groups in Kisumu West Sub-county are 494 which acted as a sample frame. For the selection of the actual sample, proportional, purposive and simple random was used to identify 10 active Women Groups.

Sampling Technique

The Simple random and purposive sampling techniques were employed to select the sample for this study while for the selection of the actual sample, proportional, purposive and simple random techniques were employed. The target population was 2000 and a sample size of 200 respondents was selected from 10 Women Groups in the study which represented 10% recommended for a descriptive study.

Data Collection Instrument

A questionnaire was the main instrument used for the collection of data for the study. A set of questionnaires containing 15 items were designed for the respondents. The questionnaire included closed-ended and open-ended items.

Data Collection Procedure

The researcher with one assistant administered the questionnaire. Within the Kisumu West Sub- County, we interacted with the Women group members to expected to participate in the study. Some women who sought for explanations on some statements were given the necessary attention. The completed questionnaires were returned the same day, even though there was an option for respondents to opt out, they all responded promptly. This made it possible to record a 100 percent return.

Data Analysis

Data collected using questionnaires and documents was described and analyzed through descriptive statistics specifically frequency counts and percentages. Qualitative data from interview schedule was transcribed, organized thematically and reported in an ongoing process.

Findings and Discussions

This section presents the results of investigation and the discussions related to the findings. It shows the results of socio-cultural and economic information of the respondents, their contribution towards in sustainable/green schemes and emerging challenges/barriers they are going through.

Green energy is energy that is produced in such a way as to minimize its negative impact on the environment. Traditional energy sources, most notably fossil fuels, produce greenhouse gases that are believed to be the primary cause of an effect known as global warming or climate change. Sources of green energy, such as solar,

wind, geothermal, and hydro energy, are developed and promoted as alternative sources that make little or no contribution to climate change.

The findings of this study reveal that most the main objective why the women came together was mainly for economic and social gain hence poverty alleviation. Majority of the women groups were mainly self help hence for social welfare and for table banking purposes. The findings of this study revealed that majority of the women were unemployed and hence not economically empowered. They also lack formal training and management skills to run the group activities.

Socio cultural and economic characteristics of the respondents

Distribution of the respondents by age

The study population comprised 200 respondents majority of whom were aged between 33 and 41years 83 (41.5%), while those aged between 15 to 23 years were 21(10.5%), age 24-32 years were 53(26.5%) and age 42-50 years were 43(21.5%).

Further in depth analysis from the FGDs revealed that oldest age set women, those above forty years of age were more committed to the group activities like regular attendance of meetings among others. This could be as a result of the amount of work on their shoulders, being household heads and their maturity level being optimum.

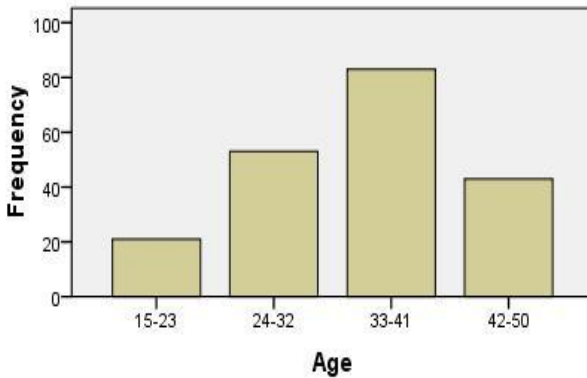


Fig. 1. Distribution of the respondents by age

Distribution of the respondents by Marital Status

The results revealed that half of the respondents 111(55.5%) were widowed, 16(8%) were single, 68(34%) were married and staying with their husbands, and a small population 5(2.5%) were either separated or divorced.

However, the number of female house-hold heads was significant, standing at 132 (66%) of the total number of respondents interviewed. This high number of female household heads was probably attributable to attrition from HIV/AIDS which also compounded the large number of widows 55.5%. In households headed by women, members have less education than in those headed by men in all countries (IFAD, 2010).

Even though women and girls in urban Africa are socialised from an early age to look after family and household, the sum of their duties constitutes a serious burden and rising steadily at this point in time when we are still at the beginning of the twenty-first century. The male role of provider has been eroded to the point that the majority of households in Kisumu West Sub county are female-headed.



Fig. 2. Distribution of the respondents by Marital Status

Distribution of the respondents by Marriage type

The results indicate out of the sixty eight (68) respondents who were married and staying with their husbands, almost an equal number were in either type of marriage. Thirty eight (38) were in monogamous marriage type while thirty (30) were in polygamous. Polygamy is a common tradition in Luo-land and in this study area. From FGD discussions the studies revealed that at any one time, one or more wives and their children may be neglected. This compounds the burden of women heading their families.

Distribution of the respondents by fostered children (family size)

The findings showed that family size is one demographic factor affecting women participation in green energy schemes within Kisumu West Sub county.

All the respondents had additional adopted children in their households. Further findings revealed that those with one adopted child were 80(40%), two adopted children were 70(35%), three adopted children 37(18.5%) and those who had more than four adopted children were 13(6.5%). This findings show that most of the

women had very large families hence many children under their care and therefore spend alot time sourcing for energy to prepare food for their extended families.

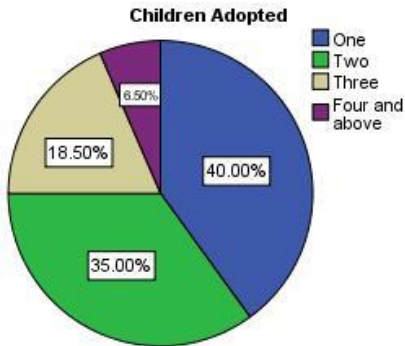


Fig. 3 Distribution of the respondents by fostered children (family size)

Distribution of the respondents by level of education

"Education is one of the most important means of empowering women with the knowledge, skills and self-confidence necessary to participate fully in the development process"(ICPD, 2014).The level of education of the respondents was sought in order to establish the level of knowledge due to formal education with regards to activities of the women groups.

The results indicate that 85(42.5%) had primary education, 76(38%) had secondary education, 22(11%) had college/university education and 17(8.5%) had non formal education. The findings further revealed that those with secondary education and above performed key roles in the structure of the self help groups as relationship and

group management. While majority of those with primary level or non formal education served merely as ordinary members.

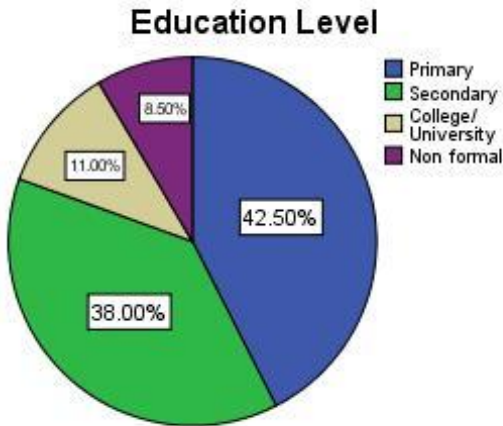


Fig. 4. Distribution of the respondents by level of education

Distribution of the respondents by employment status

Women spend fewer hours in paid employment than men. Many women work part-time to reconcile their employment and family responsibilities. This negatively affects their income and often their career prospects (UNECE, 2012).

The findings indicated that only 77(38.5%) of the respondents were employed and a large majority 123(61.5%) were not employed. This agrees with Bureau Labour Statistics (BLS), 2013] that unemployment rate for adult women (Over 20years and above) was 7.7% in 2012. In addition the findings are consonance with the those of National Women's Law Center, (2014) which revealed that

unemployment among women especially those who head families remains high.

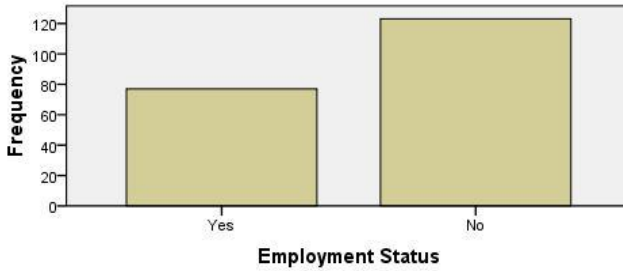


Fig. 5. Distribution of the respondents by employment status

Out of those who were employed only 16(8%) were in the formal sector, 37(18.5%) in the informal sector and 24 (12%) were in the private sector.

Table 1: Distribution of the Respondents by Employment Status.

	Frequency	Percent
Valid Unemployed	123	61.5
Formal Sector	16	8.0
Informal Sector	37	18.5
Private Sector	24	12.0
Total	200	100.0

Source: Field Study 2014

Distribution of the respondents by Length of Stay in the Community

To establish whether the respondents identified with and understood the needs of the community, the respondents were asked how long they had lived in the community.

The results were as follows:

Table 2: Distribution of Respondents by Length of Stay in the Community.

Year	Frequency	Percentages
Below 5years	21	10.5
6-10 years	29	14.5
Above 10years	150	75
Total	200	100.0

Source: Field Study 2014

The frequency table revealed that those who had stayed in the area below 5years formed only 17% of the total number of respondents. Those who had stayed in the area for between 6years and 10 years 30% of the total number of respondents. While the majority 75% had been staying in the area for over 10years. This indicates that majority of the respondents understood the needs of their community hence supported rural development by engaging in the Self Help Group activities.

Women's contribution in green energy schemes for sustainable rural development.

Roughly 1.6 billion people worldwide do not have access to electricity in their homes, representing slightly more than one-quarter of the world population.

This lack of electricity deprives people of basic necessities such as refrigeration, lighting, and communications (Modi, 2004).

Solar home systems (SHS) may be used for running lights, televisions, and radios for a few hours every day, usually replacing kerosene or candles.

Some of the Green energy (clean energy) technologies include the solar cooking, solar lighting and biogas technology. Clean energy technology eradicate extreme poverty by promoting and disseminating while empowering women and youth. Women and youth are most affected by open fire cooking. Many low income communities in Kisumu West Sub county use tin kerosene lamps and candles as their only source of light after the sun goes down. Kerosene and candles are expensive and can cause burns or fires. Around 80 percent of the expenditure on energy services by poor people is on fuel for cooking (UN-ENERGY, 2005). Many rural women spend up to four hours a day collecting fuel for household use, sometimes travelling 5 to 10 kilometres a day (IFAD 2010).

The findings revealed that households with electricity connection are 20%, those using solar energy are 0.7% and those using biogas are 0.2% [KWDDP 2008-2012]. The studies further revealed that the women concentrated on activities which had quick financial returns as 26% engaged in making recycled charcoal which are sold as charcoal balls made from either a mixture of charcoal dust and soil or making and selling of fireless cookers and green stoves 15.5%, greenhouse/horticulture management 11.5% among others. The findings also showed that the women groups that had tree nursery establishments mainly concentrated on selling of seedlings but did not actively engage tree planting and afforestation in their villages hence a lot of sensitization and awareness creation needs to be done to empower the women with information on environment remediation.

The study found that the involvement of women in the group activities enhanced community development and therefore had a

positive impact since the income from women ensured food security for their families. There was acknowledged recognition of what women did in the community and the infrastructure or community resources were slowly being developed.

The findings further revealed that very few members of the group have had received any kind of training with regards to the activities they engage in and therefore their knowledge level and skills is wanting. As observed in this study, rural communities were in dire need of skills to develop themselves and improve their lives. The shortage of resources in rural areas was also one of the major problems facing people. The women participation therefore needs to be sustained by capacity development through, seminars, workshops and trainings to enhance green energy schemes.

Table 3. Distribution of the Respondents by Women Group activities

Domain	Frequency	Percentage
Biogas Technology	13	6.5%
Solar energy/solar lamp business	15	7.5%
Solar cookers/Fireless-cookers/energy saving jikos	31	15.5%
Energy saving charcoal(recycled)	52	26%
Tree nursery establishment	20	
	15	7.5%
Plastic waste collection	23	11.5%
Green house/Horticulture management	31	15.5%
Rural handicraft/woven products/Sisal ropes/Pottery		
	200	100%

Source: Field Study 2014

Distribution by Usefulness of the Women Group Activities to the respondents

Respondents were then asked how useful the group activities so far were to them and the responses were tabulated as shown below

Table 4. Distribution by Usefulness of the Women Group Activities to the respondents

ACTIVITIES	RESPONSES				GRAND-TOTAL
	Very Useful	Useful	Not useful	Undecided	
Biogas Technology	13	0	0	0	
Solar Lamp Business	10	5	0	0	
Solar cookers/Fireless Cookers	20	11	0	0	
Recycled charcoal	38	14	0	0	
Tree nursery establishment	13	7	0	0	
Plastic waste collection	11	4	0	0	
Green house/horticulture	15	8	0	0	
Rural handicraft/Pottery	22	9	0	0	
TOTAL	142	58	0	0	200
FREQUENCY	142	58	0	0	200
PERCENTAGES	71%	29%	0%	0%	100%

The findings showed an overwhelmingly 142(71%) who affirmed that the activities of the self-help group were useful to them while only 58(29%) responded useful while no respondent responded negatively. When further probed the respondents revealed the earnings from the group activities supplemented their meagre incomes and helped in a big way supporting their family finances. Others felt the regular meetings offered a convenient place for socialization and relaxation hence offered them a stress management strategy.

Challenges/Barriers to Participatory Schemes for Sustainable Rural Development

Focus Group Discussions

In this section the Focus Group Discussion (FGD) contained 8 questions which aimed at probing the respondents further on the activities they engaged in as a Women group. There were 10 FGDs, one from each Women group and each focus group comprised 7 to 12 members (Kothari, 1990).

Recent reports confirm what international development practitioners have long suspected: that, in developing countries, women are the group most affected by energy scarcity and related environmental degradation (Bucherer, 1988).

This is because women are intimately tied to energy given their roles as primary procurers and users of most energy sources for the household, agricultural, and small industrial subsectors in developing countries. In rural areas, women spend disproportionately more time than men engaged in survival activities such as firewood collection, water hauling, food processing and cooking. Worldwide, the median time for collecting water stands at 1.6 hours per day in the dry season. While this exertion of human energy goes largely unmeasured, non-monetized and unrecorded in international energy statistics, it nonetheless is abundantly evident

when examining health, economic and quality of life indicators at the micro level.

Since women are disproportionately responsible for household tasks, they, together with children, suffer high incidences of health-related problems associated with the use of traditional fuels for energy needs. For example, the open fire commonly used in Latin America for cooking in poorly ventilated indoor kitchens exposes women to high amounts of particulate pollution causing respiratory infections in children and chronic lung disease in non-smoking women. Indirectly, scarce fuel for proper cooking and water boiling can lead to malnutrition, diarrhea, and parasites. Safety is also a factor. Use of kerosene lighting has also been known to cause fires or burns, while women may search for firewood or water in dangerous locations and/or gather oversized wood or water loads (Reddy *et al*, 1997).

Women are “often in the driver’s seat as entrepreneurs and providers of sustainable energy solutions at the community level” said on of the respondents however the face a number of challenges. Pertinent issues raised from the Focus Group Discussions (FGDs) rampant loan defaulting by some members of their groups and this has slowed down the pace and desire for borrowing loans from most Micro Finance Institutions (MFIs) like Kenya Women Finance Trust (KWFT), Women Enterprise Fund (WEF) and Constituency Development Funds (CDF) among others. “High rate of loan defaulting has mas de most women groups to be loan shy”, one member exclaimed.

Further FGD discussions revealed unique challenges that various Women Self Help groups their participation hence diminish their ability to contribute effectively to sustainable rural development. Lack of managerial training and experience, inadequate education and skills and lack of credit were among many challenges sighted.

Further probing revealed that some married members had to get full approval from their husbands to join the women groups and even get further permission to attend meetings and even further participate in group activities. This acted as a stumbling block to rural development. A major finding of the study is that time constraints due to their triple burden of paid work for those in formal employment, care and housework are one major obstacle to women's economic participation in green energy schemes. Time poverty also implies less flexibility in terms of working hours for household chores. In addition the young mothers decried lack of time to fully participate in group activities as they had to fend for their young families.

Further limit to women's full participation in the green energy schemes in this study revealed that most women in the study had no formal employment hence struggling to stay a float financially. Majority had very large families and additional children under their care to be supported. The study further found that the women face myriad constraints in their development attempts. These include lack of a repertoire of skills and lack of capital infusion. Consequently, women's development efforts remain at subsistence level. They have not fully liberated women from poverty. It also came to light that there was a need for many external development agents in the area, to enable community women share resources to avoid duplication of services which have resulted in the retardation of progress towards their development and their upliftment in general. Removing obstacles to women's full involvement and participation in sustainable development is one side of the coin of women's empowerment. The other side is to target women directly to enable them to get more involved. Training programmes which are tailored to the needs of women are an obvious tool. Capacity-building can be at the level of access to relevant information and knowledge, of concrete skills, and with respect to increasing the financial capacity necessary to implement certain actions.

Conclusion

From the results and findings the following conclusions can be drawn:

- Women's contribution to sustainable development, and their knowledge and skills, must be recognized. Women have a strong role in educating and socializing their children, including teaching them care and responsibility with regard to the use and protection of natural resources.
- The involvement of women in community development had a positive impact since income from women group activities ensured food security for their families.
- Women face constraints in their development attempts and the challenges include lack of a repertoire of skills and lack of capital infusion among others.
- Women need to be empowered to take more proactive role in management of self help initiatives and translate these into better service delivery for rural development and also ensure transparency in utilization of funds.

Recommendations

Based on the findings to overcome the challenges of women participation in green energy for sustainable rural development:

The study recommends that institutional support from Governments and private institutions like NGOs need to address Self Help group activities' support structures. These efforts should focus on improving quality in services to women groups such as training, providing technical advice and improving access to funding, improving saving and lending practices among other activities.

Women Self Help groups not only provide an important local strategy to serve financial needs but can and should be structured to provide opportunities for relationship and empowerment of the rural poor especially the women.

References

- Anabella Rosenberg (2012), Decent and Green Jobs with a Just Transition: A Step Towards Sustainable Development, International Trade Union Association, 2012, p. 5.
- Agarwal, Bina. (1986). Cold Hearths and Barren Slopes: The Woodfuel Crisis in the Third World, London: Zed Books, 209 pp.
- Banks, Leslie, Bongani Mlomo and Phumeza Lujabe. (1996). Social Determinants of Energy Use in Low-Income Households in Metropolitan Areas (Eastern Cape), Johannesburg, South Africa report to the Department of Minerals & Energy, October, 147 pp.
- Bowen Alex . (2011). Green growth Green jobs and Labour Markets; Report prepared for World Bank
- Becherer Hanan, Jean, ed. (1988). Women and Energy, The International Network: Policies and Experience
- Brouwer, I.D., et al. (1989). Nutritional Impacts of An Increasing Fuelwood Shortage in Rural Households in Developing Countries, Progress in Food and Nutrition Science 13.
- Cecelski, Elizabeth. (1989). Women's Involvement in ESMAP Activities: A Review of Past Experience and Implications for a Future Strategy on Energy and Women, Report to ESMAP, March, 37 pp.
- Cecelski, Elizabeth. (1992). Energy and Rural Women's Work: Crisis, Response and Policy Alternatives, International Labor Review 126 (1) 41-64.
- FAO. (1987). Restoring the Balance: Women & Forestry, Rome: Food and Agriculture Organisation (FAO), 32 pp.
- Global Citizen, (2013): Gender Equality International Conference on Population and Development (ICPD): Beyond 2014; Global Report
- International Energy Agency (IEA), (2004): World Energy Outlook (Paris: 2004), p. 342.

- International Fund for Agricultural Development (IFAD) (2010): Enabling Poor Rural People To Overcome Poverty
- International Labor Organisation (ILO). (1987). Linking Energy with Survival: Energy, Environment & Rural Women's Work, Geneva: International Labour Organisation (ILO), 32 pp.
- ILO, (2012) Global Employment Trends
- Intermediate Technology Development Group (ITDG). (1998). International Programmes: Focus on Intermediate Technology Group (ITDG) Energy Programme, ENERGIA News, vol 2. no. 2 (pp. 4-5).
- Jones, Sean, Robert Aitken, and Leanne Luckin. (1996). An Ethnographic Study of the Social Determinants of Fuel Use in Cato Manor, Durban, Report to the Department of Mineral & Energy Affairs, Johannesburg, South Africa, February, 203 pp.+app.
- Kelkar, Govind. (1981). Gobar Gas: Showpiece of Sadiqpur, Economic & Political Weekly, XVI (9), Bombay, India, February.
- KWDDP, (2008-2012) Kisumu East District Development Plan
- Kumar, Shubh K. and David Hotchkiss. (1988). Consequences of Deforestation for Women's Time Allocation, Agricultural Production, and Nutrition in Hill Areas of Nepal, Washington, DC: International Food Policy Research Institute (IFPRI), 72 pp.
- Mehlwana, Anthony and Nomawethu Qase. (1996). Social Determinants of Energy Use in Low-Income Metropolitan Households in the Western Cape (Phase 1), Report to the Department of Mineral & Energy Affairs, Johannesburg, South Africa, May, 66 pp.+app.
- Peskin, Henry M., Willem Floor and Douglas F. Barnes. (1992). Accounting for Traditional Fuel Production: The Household Energy Sector and Its Implications for the Development

- Process, Industry and Energy Department, Washington, DC:
The World Bank.
- Reddy, Amulya K.N., Robert H. Williams, Thomas B. Johansson,
(1997).
- Energy After Rio: Prospects and Challenges. New York: United
Nations Publications.
- REN21, “Renewables 2005 Global Status Report” (Washington, DC:
2005), p. 38.
- Sow, Fatou. (1986). Les Femmes et Les Projets D'énergie Au
Senegal: Impact sur le Travail Feminin et le Bien-etre
Familial, World Employment Programme Technical
Cooperation Report, Geneva: International Labour
Organisation (ILO).
- Smith, Kirk R. (1993). Fuel Combustion: Air Pollution Exposures
and Health in Developing Countries, Annual Review of
Energy and Environment (18).
- U.K. Department for International Development (DFID), (2002)
“Energy for the Poor: Underpinning the Millennium
Development Goals” (London: 2002).
- UNDP. (1997). Energy After Rio: Prospects and Challenges, New
York: UNDP, 176 pp.
- UNDP. (1995). Human Development Report 1995, New York: UN,
230 pp.
- UNDP & WHO (2009): The energy access situation in developing
countries: A review focusing on the least developed countries
and sub-Saharan Africa (New York, UNDP, 2009).
- UNEP, (2008) Background Paper on Green Jobs
- UNEP, ILO, IOE, ITUC (2008), Green jobs: Towards Decent Work
in a Sustainable Low-carbon World, 2008, p. 5.
- UNEP, (2011) Towards a Green Economy: Pathways to Sustainable
Development and Poverty Eradication.

- UNESCAP, (2007) Grameen Shakti: Pioneering and Expanding Green Energy Revolution to Rural Bangladesh, www.tinyurl.com/d63jpyc . www.gshakti.org .
- [United Nations Economic and Social Affairs, Division for Sustainable Development] Sustainable development platform
- UN-Energy,(2005).The Energy Challenge for Achieving the Millennium Development Goals(New York: 2005), p. 2.
- United Nations Economic Commission for Europe: (UNECE) (2012) Empowering Women For Sustainable Development Geneva, Switzerland United Nations UN-Women, (2011-2012): UN Nations Entity for Gender Equality and Empowerment of Women
- UN-Women,(2012): Forwarding-Women's-Leadership-In-The-Green-Economy
- UN Women,(2012): The Future We Want
- World Commission on Environment and Development: Our common future (1987) (Oxford, OUP). Available at: <http://www.un-documents.net/wced-ocf.htm>
- Vijay Modi (2004), "Energy Services for the Poor," paper commissioned for the Millennium Project Task Force (New York: 1 February 2004).
- World Energy Outlook (WEO), (2010)
- World Health Organization (WHO) (2005), "Indoor Air Pollution and Health," Fact Sheet #292 (Geneva: June 2005).

