Gender Mainstreaming for the Adaptation to Weather and Climate Extremes in African Cities

Oluoko-Odingo, A. Alice

Department of Geography and Environmental Studies, University of Nairobi,
alice.odingo@uonbi.ac.ke

(Received 30 June 2018, received in revised form 30 July 2018, Accepted 14 January 2019)

ABSTRACT

Although women constitute one-half of the human population and provide most labour in farming, they remain poor and most vulnerable to weather and climate extremes due to inequalities in ownership and decision-making on most important livelihood resources like land, assets and cash. Peri-urban farming offers an important adaptation strategy to weather and climate extremes and through gender mainstreaming, can become a vital tool for sustainable livelihoods and sustainable development. The paper points out that although well-planned cities offer better services to urban communities and their hinterlands, the African cities, particularly, those in Sub-Saharan Africa have been accompanied by myriads of developmental and environmental challenges, which continue to perpetuate inequalities, discrimination and under-development. For instance, the low-income communities live in risky areas without access to important services which increase their vulnerability to weather and climate induced hazards and disasters. The paper discusses the links between gender mainstreaming, peri-urban farming, weather and climate extremes and sustainable development in Africa, where literature review is supported by fieldwork results for better policy formulations. This was an invited paper to the conference and is supported by a research gap on the need for gender mainstreaming in peri-urban farming to enhance equity and equality for sustainable development. The study was carried out in peri-urban areas of Nairobi (Machakos and Kajiado Counties) in Kenya. The results provide hope as these peri-urban areas seem to have some form of spontaneous gender mainstreaming that when positively supported would yield good results. The article underscores the fact that a number of Sustainable Development Goals (SDGs) could be achieved by simply targeting the attainment of SDG 5 on gender equality and women empowerment, including SDG 13 on adaptation to climate change.

Keywords: Gender mainstreaming, Weather and Climate extremes, peri-urban farming, Sub Saharan Africa, Cities
1. Introduction

1.1 Gender, peri-urban agriculture and adaptation to weather and climate extremes in cities

Women constitute one-half of the human population. In agriculture, women account for almost 80 percent of the agricultural sector in Africa, yet 70 percent of the 1.3 billion poor are women. During drought, women are the last to eat as drought interferes with food availability and incomes (Oluoko-Odingo, et al 2016). This means that women have not been able to reap the benefits of farming, and as such, no agricultural development without gender mainstreaming is likely to succeed. Besides, women play a very important role in prevention and management of weather and climate extremes and related hazards and disasters. Peri-urban farming is viewed as one of the adaptation strategies towards weather and climate extremes. A study carried out in Narok County among the Maasai community revealed that decision-making on the use of land, livestock and cash was very important in livelihood sustainability. Yet, nearly 80 percent of these decisions were made by men who also had an upper hand in ownership of these resources (Oluoko-Odingo and Kathambi 2017). Confinement of women and girls to inferior roles in resource ownership and management is one of the contributing factors to perpetual gender-based violence, discrimination, inequality and under-development in many sectors. It is only through gender mainstreaming in all development activities, including farming that these resources would be placed in the hands of women for equity and equality.

Research has shown that some 200 million people are engaged in urban agriculture and related enterprises. Bafana et al (2012) noted that the share of urban farming often exceeds 50 percent of the income among poor households. In this case, urban farming includes peri-urban farming on areas close to the cities, which may take place on homesteads or plots some distance away in parks, along roads, streams, schools and hospitals. This type of farming offers supplies of fresh vegetables and nutritious food to urban dwellers where poor roads and weak supply chains make it difficult to transport highly perishable produce from rural areas. Urban and peri-urban farming can entail the cultivation of food crops, rearing of animals (poultry, goats, sheep, cattle, pigs, guinea pigs, grass cutters and fish), and producing non-food products like medicinal plants. Urban and peri-urban farming may encompass a range of other services- processing, packaging, compost and animal health services. About 130 million urban and peri-urban farmers in Africa engage in urban agriculture to produce food for their households or for income.

Peri-urban farming is done as a strategy of economic diversification and according to Owen (2010), peri-urban and urban farming are not necessarily evidences of poor or incomplete adaptation to urban life. Owen mentioned that most urban farms do not exceed 3 to 4 hectares, often separated from neighbouring homesteads by walls or barbed wire fences. Peri-urban areas may encompass a fragmented mixing of urban and rural worlds, transforming previously rural communities and livelihoods and reorganizing local and regional food systems (Tacoli 2003).

Cities receive less sunshine and more cloud cover, the buildings act as windbreaks, thus reducing wind velocity, they have lower relative humidity, thicker and more frequent cloud cover, higher mean annual precipitation total and the number of days with 5mm of rainfall (5 to 15 percent) and, possess more dust particles (3 to 7 times) than rural areas. With climate change, there will be increased temperature and precipitation with adverse impacts on human settlement and health (Cunningham and Cunningham 2005). Slum dwellers make 828 million or 33 percent of the urban population, expected to rise to 70 percent by 2050. The low-income groups inhabit areas most exposed to weather and climate hazards such as steep slopes (subject to landslides) and river valleys (prone to
flooding). These are also the areas where urban and peri-urban take place and any hazards and disasters in these areas have greater impact on these vulnerable communities. The weather and climate extremes (floods, and droughts) destroy buildings and infrastructure with greater impact on communities living in informal settlements. The women are most vulnerable due to income, age, knowledge and education differentials. They have less access to climate information and knowledge, provide care giving services during disasters to children and aged, have limited mobility and shelter facilities. By mainstreaming gender in peri-urban farming, women would be enabled to become active participants in farming, provide labour and benefit from the fresh products from these enterprises.

This article is based on literature review, supported by fieldwork results from a study to investigate any existence of gender mainstreaming in peri-urban areas of Nairobi (Machakos and Kajiado counties) in relation to farm ownership, labour supply and decision-making as contribution to the realization of the gender equality goal (Goal 5) of the Sustainable Development Goals (SDGs). In this context, peri-urban agriculture is seen as one of the adaptation strategies to weather and climate extremes within urban and peri-urban environments. The Article underlines the fact that gender mainstreaming is a core issue not only in farming but all other activities directed towards sustainable development. Secondly, the Gender equality and women empowerment sustainable development goal (SDG) would only be realized after attaining other SDGs on poverty eradication, food security and food sovereignty, education, health, Availability of adequate water and sanitation, affordable, reliable and sustainable energy and decent work, which directly contribute to vulnerability of women to weather and climate extremes. These 8 SDGs, are also directly related to the achievement of other remaining SDGs, and without ensuring the realization of SDG 13 on Climate action, the developments on all the weather and climate dependent sectors of the economy would be futile (UNGA 2012).

1.2 African cities, peri-urban farming and adaptation to weather and climate extremes for sustainable development in Africa

1.2.1 African cities and their challenges

The last 30 years has brought in a large number of urban dwellers living in poverty, lacking provision of basic infrastructure and services that should protect them from environmental health hazards and disasters (Satterthwaite, et al 2007). A high proportion of these are on sites at risk of flooding or landslides.

In Africa, within the informal settlements, even small/minor hazards may be associated with disasters as human vulnerability- associated with, for example, poverty, undernourishment and general poor health- is often high. In the absence of alternatives, people in urban areas are increasingly settling in unstable hillsides. Secondly, slums are naturally vulnerable to disasters as these areas lack basic services- water and sanitation and inadequate building structures and are over-crowded (Kavali, Llyod and Scovronick 2014). Climate related hazards that affect urban areas include floods, flash floods, tropical cyclones, droughts, fires and heatwaves-which are all expected to increase in frequency and /or intensity with climate change and sea level rise (UN Office for Disaster Risk Reduction, 2009).

1.2.2 Urbanization and peri-urban farming as an element of human settlement

Human settlement is temporary or permanent community in which people live and which avoids being specific as to size, population and importance (may include hamlets, villages, towns and cities) (Muthoka, Rego and Ruimbui 1998). It develops from a combination of the social, communication-transportation and shelter technology sub-systems (Gwilliam 1966). In well planned urban areas, human settlement may include: a transport facility, Industrial complex, Social services (health, sanitation, and others), Educational institutions (like Universities), Aesthetic aspect (City park),
House of worship (church, mosque or temple), and Cultural aspect (museum) which attract most people to cities. These facilities are rarely available to low-income communities/informal settlements in African cities.

Urbanization is the concentration of people in cities and towns and forms a key feature in economic development (Michael, Rauch and Redding 2012) or the increase in the proportion of a population living in areas that are defined as urban (Dyson 2011). According to Schoultz (1972), urbanization is not similar to modernization, nor industrialization, nor rural to urban migration. It is a process of population concentration which can be measured by the rate of change in rural–urban distribution of a nation’s population. It is a natural process from individual and corporate efforts to reduce the time and expense in commuting and transportation, while also improving opportunities for jobs, education, housing, and transportation. The cities are seen as places where money, services and wealth are centralized.

According to Alaci (2010), urbanization is a process that takes into account human, economic, and social agglomerations, which translate an area of countryside or village into a town or part of one or further growth and expansion of already existing urban centres. Yankan (2005) also viewed urbanization as a development factor capable of enhancing access to adequate shelter in a built environment, and through a gender sensitive and participatory approach, enable communities to have access to infrastructure, governance, security and employment opportunities.

Alaci (2010) continues to say that in sub-Saharan Africa, the process of urbanization has not been accompanied by the necessary economic growth to produce public and private goods necessary for infrastructure and urban employment at required scales, thus leading to many problems. For instance, high rate of urban growth in Ethiopia has led to high prevalence of urban poverty, rapid increase in urban populations, with the poor fuelling vulnerability in various issues: poor sanitation, inadequate shelter, overcrowding, high proportion of vulnerable women, youth, children, elderly and destitute with low incomes, high risk of disease and poverty trap for many residents. However, when well planned, urbanization can be an important tool of reducing inequalities between people and regions. Gender mainstreaming is one such effort of advancing equity and equality within and among regions.

Some of the political effects of urbanization include: growth of democracy and political development, the emergence of multi-party political systems and the weighted level of political awareness and participation from all social classes, and hence is a good process for gender equality and women empowerment strategies. For an individual, some of the effects of urbanization may include: primary group break-down, the destruction of traditional norms and values, and in the absence of re-integrating mechanisms, the development of larger scale alienation and personal anomie, a state that can be said to have liberated most women to oppressive cultural norms and enabled them to pursue their goals and life dreams. Unless economic conditions improve to create a modicum of satisfaction to these marginal urbanites, at a certain point, the emerging slums are likely to be swept by social violence as people continue to demand for services (Schoultz 1972). It is further argued that concentration of the radical poor in large urban centres is conducive to political instability. For gender mainstreaming and equality issues, these are fertile grounds for training for women, from hitherto conservative rural environments to more open and liberal urban economies. They encounter an opportunity to embrace divergent opinions regarding gender, with momentum to experiment and advance the much longed for personal anomie within the liberal urban ecosystems, thus positively contributing to gender awareness and responsiveness within the new community.

The urbanites, meet their livelihood requirements in diverse ways including peri-urban farming. According to Lerner and Eakin (2011), Peri-urban farming refers to farming in the urban fringe or
exurban area- not rural but not yet urban and takes place due to three reasons:

a) As a way to mediate risks in livelihood strategies (risks to food insecurity and hunger)

b) As a response to emergent consumer demand from urban non-producing households, and;

c) As a way of meeting cultural needs, identity and traditions associated with food production within producing households.

According to Oluoko-Odengo and Mutisya (2014), peri-urban agriculture creates several opportunities, which are important for sustainability of agriculture in Africa. They limit the need for packaging, storage and transportation of food required, there is high potential for agricultural jobs and income exist, together with non-market access to fresh food for poor consumers, while urban centres also offer proximity to services, including waste treatment facilities, recycling, with possibilities for re-use. In addition, increased use of urban land for agriculture is important in mitigating many of the ecological problems associated with urban development, it is beneficial to the natural environment, humans and urban sustainability and the use of urban land for agriculture enables water to filter into the soil, reduces the effect of urban heat island and increases evapo-transpiration, thus improving the ambience. Further, the vegetation helps in filtering the air, while raised gardens or frequently monitored urban gardens have minimal soil pollution and therefore produce healthy foods for the urban population.

Mclees (2011) tried to differentiate urban open space farming from peri-urban farming and recorded that: open space farming refers to agricultural activities that take place in the urban built up area on the land that is either public or private and that remains undeveloped. Examples include hazardous lands, roads or railway reserves and land suitable for construction under power lines or river valley. On the other hand, peri-urban farming takes place in areas technically inside the city but on land that has not been surveyed or zoned and on which population density is very low.

In Dar es saalam, Tanzania, the government designates specific areas where people can be granted legal rights to engage in urban farming and in a way that does not interrupt planned urban development (Mclees 2011). In this study, the farmers organized themselves into groups (52 groups), where only 2 were women with a place to farm. In these groups, the members had secure land tenure and were able to access funding to develop their farming techniques. This is one of the examples that show the need for gender mainstreaming in peri-urban agriculture to deal with weather and climate extremes, where women and men can both have legal right to secure land for peri-urban agriculture, and access funding to develop their land without discrimination.

Gugler (1975) carried out a study among peri-urban farmers in the periphery of the city of Kampala, commuting daily to their places of work. These farmers supplemented their wages with food grown for their own consumption and for sale. Among the findings, part-time farming was characterized by home-owner occupier and was extremely rare among those who rent their houses. Secondly, the land was securely rented and could have been passed on from the holder’s father. Thirdly, part-time farming is done by the worker’s wife and the worker himself and hired labour was rare. This is a common practice, where women form the largest number of workers in agriculture, yet they barely own any land, a condition that should be addressed through gender mainstreaming in accordance with the gender equality and women empowerment sustainable development goal.

In Kenya, Peri-urban farming is legally recognized by the Nairobi City County Gazette Supplement no. 18 (Bill No. 9 of 2014) on urban farming. The Act is aimed at ensuring food security, development of agriculture in the county, promotion of increase access to agricultural extension, provide support to develop urban agriculture, regulation of access to land and water for use in urban agriculture and to protect food safety, among other objectives.
1.2.3 Importance of Adaptation

The need for Adaptation can be traced from the Millennium Development Goals (MDGs), goal 7. The other MDGs are as follows:

1. Eradication of Extreme Poverty and Hunger
2. Achieve universal primary education
3. Promote gender equality and empower women
4. Reduce child mortality
5. Improve maternal Health
6. Combat HIV/AIDS, Malaria and other diseases
7. Ensure environmental sustainability
8. Develop global partnership for development

Under the MDG 7, the following were the targets:

- Integrate the principles of sustainable development into country policies and programmes and reverse the loss of environmental resources
- Reduce biodiversity loss, achieving, by 2010, a significant reduction in the rate of loss
- Halve, by 2015, the proportion of the population without sustainable access to safe drinking water and basic sanitation
- Achieve, by 2020, a significant improvement in the lives of at least 100 million slum dwellers

The third MDG on gender equality and women empowerment addresses gender mainstreaming while fourth target is categorically talking about slum dwellers whose vulnerability is unparalleled within cities. The MDG 7 also led to the emergence of the 17 Sustainable Development Goals (SDGs), namely:

- Goal 1. End poverty in all its forms everywhere
- Goal 2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture
- Goal 3. Ensure healthy lives and promote well-being for all at all ages
- Goal 4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all
- Goal 5. Achieve gender equality and empower all women and girls
- Goal 6. Ensure availability and sustainable management of water and sanitation for all
- Goal 7. Ensure access to affordable, reliable, sustainable and modern energy for all
- Goal 8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all
- Goal 9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation
- Goal 10. Reduce inequality within and among countries
- Goal 11. Make cities and human settlements inclusive, safe, resilient and sustainable
- Goal 12. Ensure sustainable consumption and production patterns
- Goal 13. Take urgent action to combat climate change and its impacts
- Goal 14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development
- Goal 15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss
- Goal 16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels

Gender equality is found in the five (5) SDG and its achievement would require the achievement of SDGs 1-8 (poverty eradication, food security and food sovereignty, education, health, Availability of adequate water and sanitation, affordable, reliable and sustainable energy and decent work. The attainment of these first 8 sustainable development goals is also directly linked to the achievement of
all other remaining sustainable development goals. Issues of weather and climate are covered under SDG 13, which also has heavy loading on gender equality and empowerment of women due to disproportionate vulnerability of women and girls to weather and climate related hazards and disasters. Furthermore, without achieving the SDG 13 on climate action, all the progress made on other SDGs could be derailed due to increasing weather and climate related hazards and disasters as a result of climate change.

1.2.4 Mainstreaming Gender in Adaptation process

UN ECOSOC (1997) defined Gender mainstreaming as follows: “Mainstreaming a gender perspective is the process of assessing implications for women and men of any planned action, including legislation, policies and programmes in any area and at all levels. It is a strategy for making the concerns and experiences of women and men an integral part of the design, implementation, monitoring and evaluation of policies and programmes in all political, economic and societal spheres, so that women and men benefit equally, and inequality is not perpetuated. The ultimate goal of Gender mainstreaming is gender equality”. Gender Equality and Economic empowerment of women requires: zero tolerance to gender-based violence, elimination of hunger, affordable health care, quality education, and access to water and sanitation; secure, safe and environmentally benign energy, decent work (including equal pay and ending of all unpaid care work; addressing discrimination and inequalities in gender, class, and society”.

The possible areas for adaptation include: Power relations and decision-making; Land use planning for sustainability of human settlements; Accessibility to Weather and Climate risks information- Knowledge and information for adaptation; Provision of basic Services-food and clothing, water and sanitation, shelter/housing, transport, education, health, clean energy and decent work; Waste management- Green House Gas emissions, solid waste, E-waste, among others; Weather and climate change negotiations; Access to relevant safety nets- access to credit facilities and insurance). It would be important to underline Power relations and decision-making, Accessibility to Weather and Climate risks information-Knowledge and information for adaptation, Weather and climate change negotiations; and Access to relevant safety nets- access to credit facilities and insurance), where women are rarely visible.

1.2.5 Summary of Literature Review, Justification for the Study and Conceptual Framework Model

The literature review has pointed out that there are both positive and negative elements of urbanization just as there are many benefits of peri-urban agriculture which contribute to livelihood sustainability not only in urban areas but also rural environments of Africa. Further, the importance of adaptation to weather and climate extremes was first captured under Millennium Development Goal 7 on Environmental Sustainability and where target 4 was directed at informal settlements/ slums in cities. The Millennium Development Goal 7 leads to the emergence of the 17 Sustainable Development Goals. On the other hand, Gender equality and women empowerment issues are found under MDG 3 and SDG 5 and cannot be achieved until other related SDGs are attained (poverty eradication, food security and food sovereignty, quality education, health, adequate water and sanitation, sustainable energy and decent work). The strategies towards adaptation to weather and climate extremes (SDG 13 on Action on climate change) will determine to what extent other sustainable development goals will be achieved. This was an invited paper to the Conference which is also supported by a study gap identified on gender mainstreaming in peri-urban farming to address gender inequality regarding farm ownership, access to financial resources and decision-making as a response to sustainable development goal on gender equality and women empowerment. The relationships between Peri-urban farming, Gender Mainstreaming and Sustainable Development in Cities is shown in Figure 1
Figure 1: Conceptual Framework Model: Relationship between Peri-urban Farming, Gender Mainstreaming and Sustainable Development
2.1 Sampling frame, sampling design and sample size

The study was carried out in Machakos and Kajiado Counties in areas adjacent to and which act as dormitory settlements from excess population from Nairobi City. The aim of the study was to investigate gender mainstreaming in adaptation to weather and climate extremes among small-scale peri-urban farmers. Multi-stage sampling technique was used, where the Sub-counties were selected on the basis of their proximity to Nairobi County and their ability to absorb extra population from Nairobi city. Gap analysis was also carried out to identify the exact locations for sampling. Upon identification of these locations, simple random sampling, systematic sampling and snowball sampling techniques were used to sample households. Any adult above 18 years of age was interviewed using a questionnaire with both structured and open-ended questions. A total of 400 questionnaires were administered, 200 in Machakos and Kajiado likewise. Figure 2 shows the study area. The questionnaire results were supplemented with key informant interviews and focus group discussions to find out some information that could have been missed during the interviews. The data was in put into Statistical Packages for Social Sciences (SPSS), version 20 for both descriptive and quantitative analysis. At each stage of the analysis, only the number of questionnaires with complete variables under investigation were used to form a sample size. Although the Author is aware of the many gender analytical frameworks, the Chi-square technique was considered the most appropriate in this case to bring out the existing relationships using the available data. As a result, a Chi-square Statistical Analytical technique of independence at 0.05 confidence level was used to determine the relationship between gender and farm ownership, farm work/labour and decision-making within peri-urban areas of Nairobi city (in this case Machakos and Kajiado Counties). The results were as shown below:

Regarding farm ownership, Table 1 below provides the parcels and numbers of farm sizes owned by women and men:

Table 1: Farm Ownership: Source: Field data

<table>
<thead>
<tr>
<th>Farm Size (Acres)</th>
<th>Male Ownership</th>
<th>Female Ownership</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.1-0.2</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>0.21-0.5</td>
<td>7</td>
<td>6</td>
</tr>
<tr>
<td>0.51-1.0</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>1.1-2.0</td>
<td>31</td>
<td>7</td>
</tr>
<tr>
<td>2.1-5.0</td>
<td>52</td>
<td>11</td>
</tr>
<tr>
<td>5.1-10.0</td>
<td>0</td>
<td>2</td>
</tr>
<tr>
<td>More than 10</td>
<td>19</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>123 (81 percent)</td>
<td>29 (19 percent)</td>
</tr>
</tbody>
</table>

Figure 2: The study area. Source: Author

Table 1 shows that the women were beginning to own land in the city thus a good step in removing
inequalities and reducing poverty. It also means that decisions that touch on land must involve women.

Table 2: Gender and the Farm worker Source: Fieldwork

<table>
<thead>
<tr>
<th>Response</th>
<th>Gender/Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Household (the work is shared)</td>
<td>104</td>
</tr>
<tr>
<td>Wife</td>
<td>3</td>
</tr>
<tr>
<td>Self</td>
<td>9</td>
</tr>
<tr>
<td>Owner</td>
<td>3</td>
</tr>
<tr>
<td>Total</td>
<td>121 (61 percent)</td>
</tr>
</tbody>
</table>

The responses show that at least two-thirds of the farm workers in peri-urban areas and among farming households are women. As a result, it would be important to reach out to women with weather and climate information if any adaptation process is to be carried within urban areas.

Table 3: Gender and Household decision-making on what to consume or sell: Source: Fieldwork

<table>
<thead>
<tr>
<th>Responses</th>
<th>Gender/Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Wife</td>
<td>27</td>
</tr>
<tr>
<td>Husband</td>
<td>49</td>
</tr>
<tr>
<td>Self</td>
<td>8</td>
</tr>
<tr>
<td>Spouse</td>
<td>11</td>
</tr>
<tr>
<td>Total</td>
<td>95 (59 percent)</td>
</tr>
</tbody>
</table>

There is agreement that both men and women make decisions on agricultural operations. Agriculture is one of the important sectors in climate change adaptation. Secondly, peri-urban agriculture is seen as an option to rural farming to deal with perennial urban food shortages.

Table 4: The Link between Gender and farm ownership, farm work and farm decision making in Peri-urban areas: Source: Analysis

<table>
<thead>
<tr>
<th></th>
<th>Farm ownership</th>
<th>Farm work</th>
<th>Decision</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>123</td>
<td>121</td>
<td>95</td>
<td>339</td>
</tr>
<tr>
<td>Female</td>
<td>29</td>
<td>77</td>
<td>41</td>
<td>147</td>
</tr>
<tr>
<td>Total</td>
<td>152</td>
<td>198</td>
<td>136</td>
<td>486</td>
</tr>
</tbody>
</table>

Using a Chi-square test for independence at 0.05 level of significance, the results showed that the work and decision making between men and women within households support each other and so are all important for the success of peri-urban farming within the city, thus indicating that some form of gender mainstreaming is already taking place in peri-urban farming.

It was concluded that, cities allow unconscious gender mainstreaming in different activities and therefore offer friendly environments and opportunities to implement gender mainstreaming policies, programmes and projects for adaptation to weather and climate extremes in Kenya.

3. Discussions and Recommendations

This study revealed that women are beginning to own land in peri-urban farming, they provide the most labour (two-thirds) and they also make decisions together with their spouses regarding what to sell or consume. This means that there is already a positive development towards gender mainstreaming in peri-urban farming that may require just a little push through regional planning and management between urban, peri-urban and rural areas to optimize the outcomes for sustainability.

Secondly, the secret to the attainment of Sustainable development goals lie in achieving the Gender equality and women empowerment goal as this goal forms an intersection with almost all other SDGs. Besides the first seven SDGs already discussed,
SDG 5 on gender equality, with a well-planned, inclusive and participatory peri-urban farming, the following SDGs and targets will be met. SDG 11 on sustainable cities (target 11.1, 11.3, 11.5, 11.6 and 11.9, where 11.5 and 11.6 are also directly linked to addressing weather and climate extremes) and SDG 13 on Action for climate change adaptation (targets 13.1, 13.2, and 13.3, which would all be met through gender mainstreaming in peri-urban farming).

Looking at the SDG 5 on gender equality and women empowerment alone, gender mainstreaming in peri-urban farming would lead to achievement of these targets:

5.1- End all forms of discrimination against all women and girls everywhere
5.2-Eliminate all forms of violence against all women and girls in private and public spheres-
5.3-Eliminate all harmful practices (child, early, forced marriage, including Female Genital Mutilation (FGM)).
5.5-Ensure women’s full and effective participation and equal opportunities for leadership at all levels
5.a- Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, in accordance with national laws
5.b- Enhance the use of enabling technology, in particular information and communications technology, to promote the empowerment of women
5.c- Adopt and strengthen sound policies as enforceable legislation for the promotion of gender equality and the empowerment of all women and girls at all levels

By carrying out deliberate gender mainstreaming in peri-urban areas and enhancing women’s ownership to land and other financial resources, most of the above target would be achieved. This is because gender inequality in ownership of land and economic resources is a major cause of discrimination and gender-based violence both in the private and public spheres. As the study revealed that already a form of gender mainstreaming is already taking place, when accompanied with a good strategy would produce good results. Besides, gender mainstreaming in peri-urban farming would nature leadership skills in women beyond the farm while young girls would not need to rush to early marriage due to insecurity. A well mainstreamed gender equality would reduce vulnerability to weather and climate extremes as the vulnerability issues of the low income, living in informal settlements, together with vulnerable groups would have been addressed.

In conclusion, mainstreaming gender in peri-urban farming would provide first choice to address vulnerability of weather and climate extremes with regional benefits, leading to sustainability of livelihoods in cities.

REFERENCES


Oluoko-Odingo, A.A.; Ogallo, L.A.; Oludhe, C. and Odingo, R.S. (2016): Climate Risks, Gender Perspectives and Livelihoods in the Greater Horn of Africa (GHA), USA, Charleston, SC.


