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Journal of
African Studies and Development

June 2019
ISSN: 2141-2189
DOI: 10.5897/JASD
www.academicjournals.org



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Full Length Research Paper

Theoretical and conceptual framework for gender analysis of attitudes and adaptation mechanisms to climate change for sustainable livelihoods in Uganda

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Received 14 March, 2019; Accepted 2 May, 2019

Climate change is one of the greatest challenges facing humanity today. The prerequisite to respond to the effects of climate change is widely recognized in scholarly literature. Climate change will bring with it increased frequency of natural disasters that distresses crop farmers and livestock keepers which eventually affects the livelihoods of rural households. Uganda is one of the African countries severely hit by these impacts with women being the most affected. Despite the existence of institutions and policies, evidence shows that climate change effects are real. This paper provides a comprehensive review of different concepts, theories, models and frameworks using a gender perspective. It describes theories and a framework for gender analysis, attitudes and adaptation mechanisms to climate change for sustainable livelihoods. Gender socialization, role constraint; intra-household decision making and institutional theories were underpinned using gender lenses to identify conceptual framework to identify practical strategies for addressing climate change. The paper emphasizes that a successful adaptation hinges on the nature of participation of the existing formal and informal institutions through focusing on the involvement of both men and women. The paper concludes by proposing a gender sensitive theoretical and conceptual framework that should be adopted in rural communities of marginal productive lands in sub-Saharan Africa.

Key words: Climate change, gender, sustainable livelihoods.

INTRODUCTION

Globally, overwhelming climate change effects are increasingly distorting environments and threatening communities' livelihoods. Climate change has grave effects on communities which are most reliant on natural resources to meet their daily needs and have

least capacity and resources to respond to natural hazards (Brock, 2012; Mishra, 2017; Garai, 2016). There is growing evidence of effects of climate change on communities livelihoods, ecosystem resilience and environment that hinder future sustainable development

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(Garai, 2016; Van et al., 2013). Increasing concentration of greenhouse gases in the atmosphere especially carbon dioxide has been found as one of the principal causes of global warming (Thomas, 2011). The increasing human population and their desire to meet their food needs and to improve the standards of living are the primary reasons for increased production of carbon dioxide and other greenhouse gases (Vitousek et al., 1997; IPCC, 2001, 2013). As a result of global warming there is increased incidence of occurrence of prolonged droughts that have affected gender roles and livelihoods of rural communities in sub-Saharan Africa such as Uganda.

It becomes apparent that action needs to be taken to mitigate and adapt to the effects of climate change. The mitigation and adaptation efforts can only be enriched and adopted with better understanding of gender differentiated gender roles and relations; and vulnerabilities of different strategies. This requires development of a theoretical and conceptual framework for carrying out gender analysis. It was against this background that a literature review was done to compile different concepts, theories, models and frameworks that have so far been used in gender analysis so as to identify gaps so that a comprehensive theoretical and conceptual framework used for gender analysis with respect to attitudes and adaptation mechanisms to climate change for sustainable livelihoods would be developed.

METHODOLOGY

The following theories and models were reviewed: gender socialization and role constraint theories; intra household decision-making process theories; bargaining (power) models, non-unitary model bargaining approach (Folker, 1986; Agrawal, 2008; Mader and Schneebaum, 2013); and institutional theory to explain a theoretical and conceptual framework analyzing gender and adaptation mechanisms/strategies for addressing climate change (Agrawal, 2008; Agrawal et al., 2009; IIED, 2014).

Stakeholder analysis was done to find out what had caused failure to bring in full participation of all gender groups in developing and adopting sustainable robust gender responsive mechanisms for mitigating effects of climate change so as to sustain livelihoods. The findings of the stakeholder analysis were compared with what had been done according to the aforementioned literature. Gaps were identified, and the old theories models and frameworks were improved to develop a hybrid conceptual framework for gender analysis of attitudes and adaptation mechanisms to climate change for sustainable livelihoods in Uganda.

RESULTS AND DISCUSSION

According to Babugura et al. (2010) and WHO (2017) the concept of gender, refers to the socially constructed differences between men and women and the unequal power relationships that result. Gender is considered as a social contract that is not determined and fixed by biology. The contract can change with time, among

cultural groupings, age, race, economic and political classes, within and among sexes and during disaster periods. Bravo-Baumann (2000) defines gender relations as the ways in which a culture or society define rights, responsibilities and the identities of men and women in relation to one another. A gender relation is a resource drawn daily, within the household and community to reinforce or redefine the rules, norms and practices which govern the given social institution.

However, throughout history women have been excluded from participating in many institutional processes. They often have a low bargaining power to bring change on how institutions operate (Baden, 2000; Bwanga and Kabonesa, 2015). As a result, most times the effects of climate change are not differentiated between men and women at communal household and intra-households levels. The effect of climate change may impose stress on household members' daily activities depending on the gender relations within the household, thus affecting household security and livelihoods. While people are born either male or female, later they are taught appropriate norms at household, community and workplace levels to be girls and boys who then grow into women and men (WHO, 2002).

According to Intergovernmental Panel on Climate Change (IPCC, 2014) climate change is a long-term continuous deviation from average weather conditions, either due to natural variability or as a result of human activity. Climate is a natural phenomenon that has always been dynamic and varying at a global scale based on time and space (IPCC, 2007). Climate change is characterized with increased frequencies of high temperatures, changes in precipitation and variable rain patterns which pose a greater risk to livelihoods and gender roles, particularly in marginally productive areas in African communities especially in pastoral and agro-pastoral households (Awojobi and Tetteh, 2017; FAO, 2018). According to IPCC (2007) climate change is causing increasing threats to household income and food security as most of these households derive their livelihoods from crop growing and livestock keeping.

Climate change is a wider concept than climate variability, which includes wide variations and occurrence of extremes of the climate variables (rainfall, temperature, wind) on both temporal and spatial scales beyond normal range usually observed over a given period of time (IPCC, 2001; Molua, 2008; Ziervogel and Calder, 2003). The concepts of climate change therefore affect the household behavior depending on gender relations therein and may determine the adaptation strategies to counteract climate change and variability.

Climate change adaptation involves a process through which societies increase their ability to cope with an uncertain future, by taking appropriate action and making the adjustments and changes to reduce the negative impacts of climate change (UNFCCC, 2007). Since

gender is not a stable condition, different societies, communities and households adapt to climate change with different approaches depending on their experiences on effects of climate change, their cultures and cultural norms and the gender relations within a household (Assan et al., 2018). The adaptations include ecological, social and economic adjustments in anticipation of or due to actual changes caused by climate change (Ekpo and Agu, 2014; Lwando, 2013; Guloba, 2014b).

The attitudes and adaption strategies of households to climate change will determine the level of maintaining sustainable livelihoods and management of natural resources. In this regard, households were found to be pivotal in the endeavor to achieve sustainable livelihoods and management of natural resources (Assan et al., 2018). UNdata (2017) defined a household as a basic unit of analysis used in many social, microeconomic and government models. Households are classified as a one-person household or multi-person household. One person household is defined as an arrangement in which one person makes provision for his or her own food or other essentials for living without combining with any other person. While a multi-person household is where a group of two or more persons are living together, make common provision for food and other essentials for living (UNdata, 2017; OECD, 2002).

Households are governed within the framework of gender relations which in turn is determined by cultural norms and attitudes, which later translate into division of roles according to sex. According to UNESCO (2000) this division of labor is categorized depending on how communities and households value their roles, attitudes and likely behaviors of both women and men who bind them together.

Gender roles are categorized as reproductive, productive and community roles. Reproductive roles include biological reproduction, care and maintenance of the work force (male partner and working children), the future work force (infants and school-going children) and child bearing/rearing responsibilities and domestic tasks done by women, required to guarantee the maintenance and reproduction of the labor force (Eisenclas, 2013); while productive roles include work done by both men and women for pay in cash or in kind. This involves exchange of work for value. For women in agricultural production, this includes work done as independent farmers, peasant wives and wage workers. Community roles are activities undertaken primarily by women at the community level, as an extension of their reproductive role, to ensure the provision and maintenance of scarce resources for collective consumption, such as the provision of water, health care and education. This is voluntary unpaid work, undertaken during 'free' time (UNESCO, 2000). It was found that the household gender relations were governed by rules and regulations that can be explained by theories and models. Gender socialization and role constraint theories explain on how

environment influences the coping behavior. They explain gender differences in coping mechanisms from the perspective of the different social roles undertaken by men and women in society. Folkman and Lazarus (1980) used these theories to explain how the different roles of men and women were affected by the stressors to which they were exposed hence their copying behavior. Socialization may influence one's potential to respond to climate change effects regardless of the sex. It may alter the gender roles, as men or women will have to take appropriate response to the impact of climate change irrespective of the gender.

It was found that the role constraints' model assumed that the existing gender role classification influenced one's actual responses to climate change. This implied that there are no alterations on gender roles due to climate change impacts. This constrains men and women ability in coping with climate change and climate variability. Both gender socialization and role constraint theories, therefore suggest that gender roles may not be altered in the event of climate change. Consequently, climate change may affect men and women differently due to their different gender roles. For example, in the case of crop farming communities, the intensity of drought and extreme wetness have significant effects on agriculture productivity, water supply, food security and human welfare. Similarly, in pastoral communities, rising temperatures and low rainfall affect livestock productivity due to lack of pasture and reduced availability of water.

The unitary and bargaining models explained how the different decision-making processes were made within the household both administratively and in terms of power relations, resource control and allocation. These models also show who makes the binding decisions and on what to do within the household (Mader and Schneckbaum, 2013). Here both men and women are typically assigned different responsibilities for distinct household's decisions (Folker, 1986).

Katz (1997) presented the Unitary Model, used in intra household decision making. This model treats the household as a single entity in relation to both consumption and production. All household resources and incomes are pooled and the resources are allocated by an altruistic household head representing the household's tastes and preferences and seek to maximize household utility. More so, an altruistic head of the household is usually the husband, father or a patriarch. Altruistic head aggregates the preferences of everyone in the household to form one joint utility function and sets out on how to maximize that. This model encourages unequal distributions of resources and power within the household based on household head preferences. In the event of climate change and climate variability, the household adaptation to climate change will depend on the attitude of the household head towards climate change.

Bargaining models interpret the intra-household

allocation of resources as an outcome of bargaining processes among the members of a household. These models, therefore, recognize individual members of a household as separate agents with their own preferences and utility functions (Mader and Schneebaum, 2013). The bargaining model allows one to distinguish between command over goods and services established by social norms or habits and the outcomes being determined by contestation and bargaining. Bargaining models differ in their assumptions regarding the sources of a person's bargaining power. They typically emphasize equal access to economic resources such as earnings or wealth based on a person's bargaining power.

According to Agarwal (1997) bargaining approach, intra household interaction is usually having both cooperation and conflict elements. For example, who does what, who gets what goods and services, and how each member is treated within a household? A member's bargaining power is defined by a range of factors, more especially the strength of the person's fallback position. Bargaining could be on division of labor based on socially recognized gender roles that emerge without explicit bargaining. This contrasts unitary model where decision making, access and control of resources is done by men. The bargaining models assume that there are good household gender relations where men and women agree on resource allocation. In such households, there would be less risk posed to gender roles and livelihoods of the communities during periods of prolonged drought.

Climate change impacts negatively on the environment which is a public good. A public good is a good that is both non-excludable and non-rivalrous because individuals cannot be effectively excluded from its use and also where its use by one individual does not reduce availability to others (Kotchen, 2012). Public goods by nature are susceptible to the tragedy of the commons. This is a situation where a shared-resource can be spoiled or depleted due to collective uncontrolled selfish individual use of the common resource. This assumes that when individuals are left uncontrolled to use a public good they will over-exploit it leading to loss of livelihoods. Consequently, institutions need to play a pivotal role as stewards of the environment.

According to institutional theory (Amenta and Ramsey, 2010), climate change will have an effect on public goods. As an adaptation to impacts of climate change, if left unprotected the public goods, are likely to be over exploited. Public goods play a major role in maintaining a stable climate. Therefore, adaption to climate change will require the concerted efforts of diverse institutions across multiple scales (Agrawal, 2008; IIED, 2014) to protect natural resources. It was urged that the success of these adaptation and attitudinal change among the communities depend upon the nature of existing formal and informal rural institutions and their ability to enact and enforce regulations and guidelines to manage public goods (Agrawal, 2008). Informal institutions are usually

socially embedded with cultural norms and social expectations that are gender based (Agarwal and Perrin, 2009). These include membership to social groupings such as farmers associations, livestock associations and drama groups. Informal institutions respond to climate change effects by restricting households' access to local resources and take collective action by linking local populations and national interventions and seeking external support from different social groups. According to Agarwal (2009) it is very crucial for informal institutions to collaborate with formal institutions in responding to the effects of climate change in any community. Formal institutions are those that relate to laws and policies about climate change mitigation and adaptation. Therefore, favorable policies, appropriate laws and supportive institutions that are gender based have been found to be vital in responding to the effects of climate change and variability (Mubaya and Mafongoya, 2016). Within the institutional theory, formal institutions use Tracking Adaption and Measuring Development (TAMD) approach in monitoring and evaluating responses to climate change. The TAMD framework uses a twin-track approach to evaluate the success of institutional response. According to IIED (2014) it combines the mechanism the institutions use to respond to climate risks (Track1) with how successfully adaptation actions reduce climate vulnerability (Track2). Besides, institutions have the mandate of not only prosecuting the errant individuals but also mainstreaming gender issues in climate change adaption and mitigation approaches. In order to reduce the vulnerability of women and children to the effects of climate change, institutions should recognize their key roles in tackling this issue.

Brocklesby and Fisher (2003) based on institutional theories argued that family's livelihood was sustainable when they could cope with and recover from stresses and shocks of climate change effects. This meant that households that were institutionally supported easily adapted and were ensured of sustainable livelihoods in the face of climate change, unlike households that were not supported. Government, non-government and social institutions have been shown to influence communities to adopt gender based responses to effects of climate change (Blackstone, 2003; OCHA, 2012; Sullivan, 2004).

According to IFRC (2014) livelihood is a means of making a living. It encompasses people's capabilities, assets, income and activities required to secure the necessities of life. A livelihood is sustainable when it enables people to make a living, but at same time enables natural resources to cope up and recover from shocks and stress such as natural disasters and social/economic upheavals to ensure continued well-being of future generations. According to Haan and Zoomers (2005) livelihood creates a deeper understanding of the scopes of poverty. Livelihoods are understood not only in terms of income earning but a much wider range of activities, such as gaining and

retaining access to resources and opportunities, dealing with risk, negotiating social relationships within the household and managing social networks and institutions within communities (Baell and Kanji, 1999).

From what has been reviewed, a model needed to be developed that can be used to analyze the effects of climate change on gender roles, livelihoods and the responses to climate change. The concepts reviewed especially unitary and barraging models show that intra household decision making is important in making a success in managing climate change. Intra household decision making is important in determining socio-economic variables within the house household which can lead to successful adaptation of positive attitudes and strategies in management of climate change. Positive men and women's attitude towards climate change is expected to manifest within a decent gender relations environment

UN Women Watch (2009) asserts that women and men in rural areas in less developed countries were more vulnerable to effects of climate change because when they were highly dependent on local natural resources for their livelihood. According to (UNDP, 2011) the success of men and women's participation in responding to the climate change effects will depend on their gender relations within the household. In households where women experienced unequal access to resources and decision-making processes the effects of climate change were more adverse as compared to those with gender good relations. It was thus envisaged that poor gender relations were going to constrain the women's ability to cope up with climate change (Donald et al., 2016).

Also it was found that community's attitude towards climate change affected their gender roles. Aboud (2011) asserted that climate change was not gender neutral; it affected men and women differently. Women were often confined to household labor such as cooking, looking after children and elderly, and walking long distances to look for water. This made women more susceptible to the effects of climate change unlike the men who were not engaged in reproductive roles. This will also affect their productive and community roles. Men and women behaved negatively in light of climate change variability because there was low or no household income during prolonged dry spells hence impacting on their livelihoods.

It was envisaged that women's reproductive roles like looking after the elderly and sick, child nurturing and general family care would be altered. This would also affect their productive and community roles. Men and women behave negatively in light of climate change because there would be low or no household income needed for their livelihoods.

Men and women attempt to respond when the climate changes especially prolonged drought periods differently. Communities try to look for alternative survival means, like finding alternative sources of income like trading and charcoal selling. In the face of climate change, women

are the hardest hit simply because they are more vulnerable than men (Ndaruzaniye, 2013). Also, women lack information about climate services and were more dependent on natural resources for survival than men. According to FAO (2008), in Africa women spend 60% of their time on agriculture activities. It can favorably be argued that if women had the equal access to and control over productive resources as men, there could be less effect of climate variability and felt by women.

Based on the concepts, theories, frameworks and models used in gender analysis reviewed earlier and findings of what was being practiced on the ground, a theoretical and conceptual framework for gender analysis of attitudes and adaptation mechanism to climate change for sustainable livelihoods shown in Figure 1 was developed.

Figure 1 shows that gender; Men, Women, Boys and Girls (MWBG), the environment and climate change interact. This impact of this interaction of the environment and climate change with humans is influenced by gendered roles (reproductive, productive and/or community roles) of MWBG performed on a daily basis. These gender roles may impact positively or negatively on natural resources. If responses were negative to the environment, there was a need for institutions to regulate the activities of MWBG on the environment. The institutions should make and enforce bidding laws, regulations and guidelines to guide the MWBG's activities to reduce over exploitation of natural resources as an adaptation strategy to climate change. In case the laws and regulations were not enforced this could result into loss of livelihoods, including loss of crop, loss of livestock, income loss -socio-cultural losses and consequently to unsustainable livelihoods of the households. The reverse is true if the regulations and laws are not bidding. This suggests the climate change and sustainable livelihoods are positively related.

CONCLUSION AND RECOMMENDATION

Therefore, due to the urgency of mitigating adverse effects of climate change, institutions need to work out strategies with communities on how to respond to these effects. Additionally, a success of adaptation efforts hinges on the nature of participation of existing formal and informal rural institutions. For Uganda, concerned institutions like National Environment Management Authority (NEMA), Uganda Wildlife Authority (UWA), Uganda National Meteorology Authority (UNMA), Local Governments and Non-Governmental Organizations (NGOs) should work with communities to extend climate mitigation and adaptation services. There are chances of improvement where men and women gain and retain access to resources, opportunities that deal with climate change risks, negotiation of social relationships within the household, and manage social networks when men and

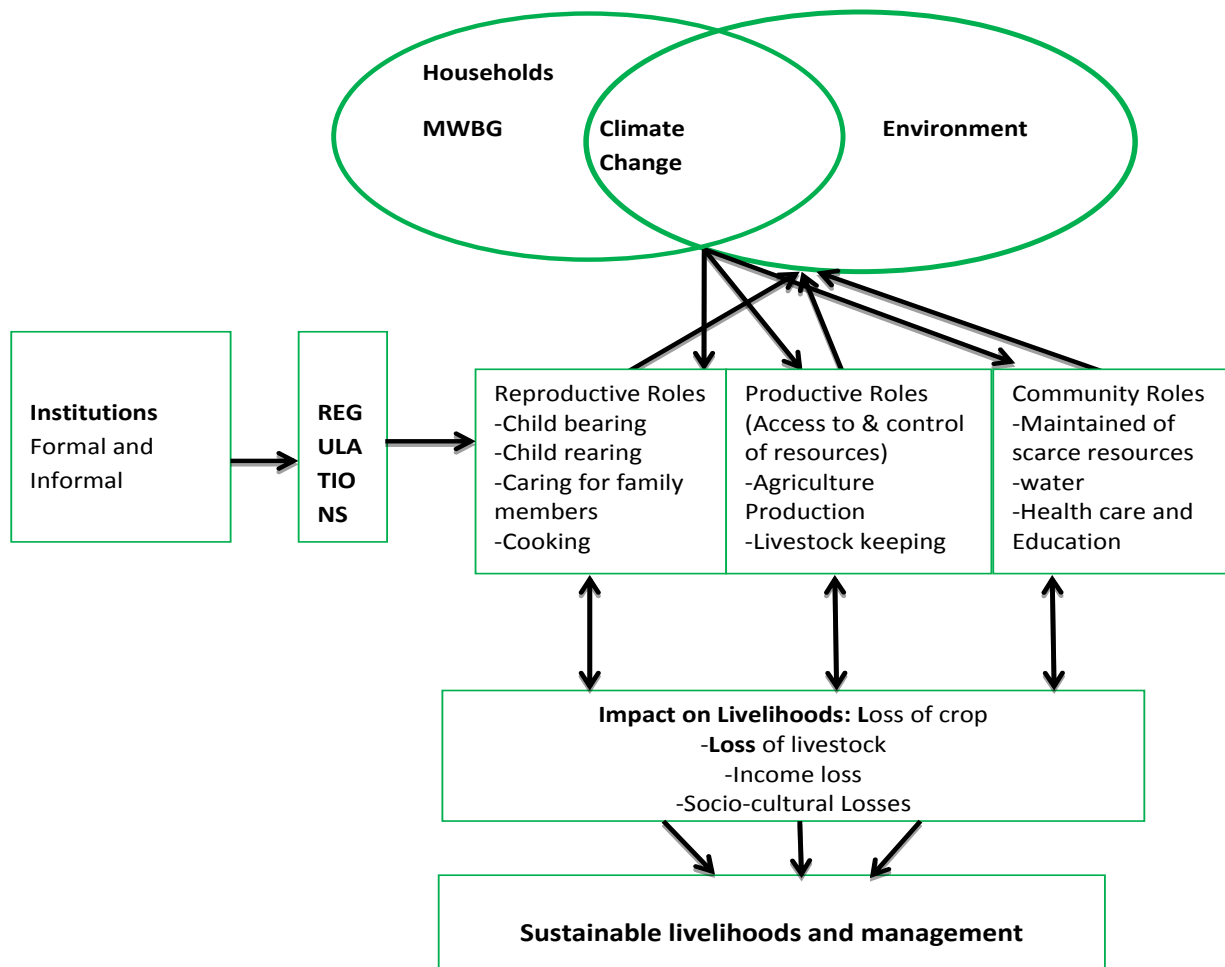


Figure 1. Theoretical and conceptual framework for gender analysis of attitudes and adaptation mechanisms to climate change for sustainable livelihoods.

women respond positively to the climate services offered. Once men and women attitudes towards climate change and variability is positive, adaptation to the copying mechanisms would easily be achieved.

It was therefore recommended that the aforementioned proposed theoretical and conceptual framework for gender analysis of attitudes and adaptation mechanisms to climate change for sustainable livelihoods should be adopted in rural communities of marginal productive lands in sub-Saharan Africa.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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