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Integrating Gender and Conservation of Biodiversity as a Climate Change Adaptation Strategy

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ABSTRACT

There is a growing concern that the global climate is warming to dangerous levels with serious implications on biodiversity components and development. The Millennium Ecosystem Assessment identified climate change as a major driver of biodiversity loss and indicated that it will adversely affect key development sectors; including the provision of clean water, energy services and food. An analysis of the relationship between climate change and biodiversity conservation suggest that the causes and impacts of biodiversity loss are gender-based. Consequently, the international community is paying more attention to women and their role in managing and preserving biodiversity. Understanding the gender relations in biodiversity practices forms part of the solution to climate change. This article reviews some of the links between women and the environment, with an explicit focus on the gender dimensions of biodiversity conservation and climate management. The paper looks at the link between women and the environment and aims to develop gender sensitive strategies with regard to climate change adaptation interventions in developing countries. It will inspire the environmental community to better understand the importance of gender and the decisive roles women play in managing and preserving biodiversity. This will inculcate the need to integrate a gender perspective in climate change management in line with the Sustainable Development Goals, in particular, Goals 5, 10 and 13, which call for promotion of gender equality, reduced inequalities and climate action, respectively.

Introduction

Climate change is a major global threat to people's livelihoods all over the world and with adverse impacts on biodiversity, ecosystem services and key development sectors (MEA, 2005). The main policy responses to these challenges are adaptation and mitigation. While people everywhere have developed their own adaptation strategies, most funding goes into mitigation efforts that include large-scale technological projects (Röhr, 2009).

Biodiversity, broadly refers to the variability among living things and the ecosystems that support them (Brown, 1998). Agrobiodiversity encompasses all components of biological diversity of relevance to food, agriculture and sustainability of agro-ecosystems (UNEP, 2004). Biodiversity plays a critical role in meeting human needs directly while maintaining the ecological processes that sustain the underlying ecosystems. Unfortunately, the loss of biodiversity is accelerating at an unprecedented rate. The most important drivers of biodiversity loss are unsustainable production and consumption, inequalities in distribution of wealth and resources, demographic developments and inappropriate agricultural policies. These result in land conversion, climate change, pollution and unsustainable harvesting of natural resources, consequently, threats to food and water security. Different groups of people perceive differently the value of the components of biodiversity and how it can be conserved leading to different management options and conflicts between uses (CBD, 2010). Protection and conservation of biodiversity is part of the solution to climate change as it provides natural mechanisms that help people adapt to the adverse impacts. In the developing countries, biodiversity is entwined with the social dimensions of the human society and is crucial to protecting and enhancing livelihoods, especially for the vulnerable sectors, mainly women and children (CBD, 2009).

Climate change adaptation is the most feasible strategy in developing resilience to unavoidable impacts (Berkhout, 2005). At the same time, some adaptation approaches further threaten the components of biodiversity and compromise key development resources (Jones *et al.*, 2012; Campbell, 2009; CBD, 2009; Pérez *et al.*, 2010). This happens where the adaptation responses do not involve relevant stakeholders in integrated and adaptive planning and implementation, are not locally contextualised, and safeguard communities against risks and costs (Guy, 2012). For instance, Huq *et al.* (2013) contend that due to persistent gender-based discrimination and the exclusion of women in the public sphere, they are often less likely to have access to the necessary resources and information to successively adapt to climate change. This confirms the sentiments of former UNEP Executive Director who contended that although women play decisive roles in managing and preserving biodiversity, their centrality is often ignored or exploited (UNEP, 2004).

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Climate change does not affect women and men in the same way. Women, particularly those in poor countries, are affected differently than men because of differences in roles, rights, responsibilities, knowledge, use of and access to natural resources (Masika, 2002). In Africa, climate change disproportionately impacts rural communities that are reliant on the natural environment for their basic needs and who lack other means of accessing the resources needed. Women are among the most vulnerable to climate change, partly because in many countries they make up the larger share of the agricultural work force and producers of food and tend to have access to fewer income-earning opportunities (Lambrou and Piana, 2006; UNEP, 2004). The increasing poverty of subsistence and small scale farmers, for example, in rural Kenya, who are primarily women, is directly linked to the degradation of the natural environment on which they depend (GBM, 2012; Ngigi, 2010). Such human-induced climate change as a result of unsustainable practices and poor governance continue to drive deforestation in the highlands of Kenya affecting water sources, and women are already driven to walking further and further for clean drinking water and to source fuel wood for their homes (GBM, 2012). Their problems have demonstrated the urgency in the need for sustainable development and biodiversity conservation practice to protect key resources in the light of changing climate patterns which threaten the forests and water sources further.

An analysis of the gender-differentiated results of biodiversity conservation demonstrate that programmes are more effective when women and vulnerable groups are empowered to participate as equals in conservation and sustainable development strategies (CBD, 2010). In its preamble, the Convention on Biological Diversity (CBD) recognizes "the vital role that women play in the conservation and sustainable use of biological diversity" and affirms "the need for full participation of women at all levels of policymaking and implementation for biological diversity conservation" (CBD, 1992). Although, women's organisations have been advocating a gender perspective at most of the Convention's recent meetings of the Conference of the Parties (CoP), it has not yet been fully implemented. Uncertain rights of access to and ownership of natural and economic resources may hamper the achievement of the CBD objectives and considerably restrict the scope of structures that encourage sustainable forms of resource use (Christine *et al*., 2002; Lambrou and Piana, 2006). The Convention underlines the centrality of gender sensitivity in biodiversity conservation and climate change adaptation, in order to include vulnerable women whose land tenure is not secure and whose access to the natural resources is critical for survival.

The study followed a literature review-based approach and was informed by case studies in developing countries in Africa on how women have integrated different biodiversity conservation strategies to deal with the threat of climate change. The study was guided by the following specific objectives;

- To review how gender has been integrated into biodiversity conservation approaches to manage the challenges of climate change.
- To identify examples that showcase how these approaches provide sustainable solutions to the threat of climate change on biodiversity and social development.
- To develop a set of strategies that are useful in enhancing climate change adaptation approaches that advance gender equality and women's capacity to reap the benefits of resources equally with men.

Gender and Biodiversity conservation

Gender holds central relevance in biodiversity conservation and it situates the roles that male and female members of the household perform in relation to the access and use of the natural resource commons. It recognises that there are differences in responsibilities, resource use rights, legal status, division of labour and decision-making between men and women (Makindi, 2010; CBD, 2010). For many women, biodiversity is the cornerstone of their work, their belief systems and their basic survival. A Participatory Rural Appraisal in Kenya (PRA, 1999) indicated that while women's participation in biodiversity conservation is recognised as important, traditionally men are the most influential members in Kenyan rural families, resulting in women's exclusion, as men are regarded as the heads of households. This compares with Makindi (2010) in a case study on protected areas (a biodiversity conservation strategy) in Kenya who found out that there was unequal gender representation where the majority (72%) of the participants were men. A similar study by Southgate and Hulme (2000) in the Kenyan Maasai community describes gender inequality as closely associated with resource ownership and that a large proportion of the women were denied group membership in the project and with it the opportunity to acquire property rights. A study by Coupe *et al.* (2002) on the sustainable livelihoods of communities living adjacent to conservation projects in Kenya reported that women are likely to be marginalised in conservation interventions, for example, through inequitable distribution of benefits from ecotourism initiatives. Frequently, women have subordinate roles, less power in decision-making and see fewer benefits from biodiversity conservation projects as a result of their unequal status in the household (Baral and Heinen, 2007).

Makindi (2010) contends that there were more males (73%) compared to females employed in protected areas in Kenya. This further implies that women are also marginalised when it comes to employment opportunities in biodiversity conservation. While this can be attributed to the gendered nature of the jobs available, for instance, among the Maasai communities in Kenya there are fewer females working in the protected areas because many of the jobs (40%) are related to security matters (Makindi, 2010), traditionaly, positions held by men among the Maasai community (Bonner, 1993). Lim (2008) asserts that in many African societies the responsibility of earning income for the household is reserved for men and there are serious constraints and barriers that often hamper women's participation in employment activities.

Considerable efforts over the years at national and international fora have brought the Convention on Biological Diversity (CBD) to understand the fundamental roles that women play in managing and conserving biodiversity and the need to integrate the gender perspective into their framework (CBD, 2010; 2009). The Convention strongly commits to recognising and promoting the integral yet distinct roles that women and men play in conserving, and sharing biodiversity benefits. Today, women continue to gather firewood and other bush products for food, medicine, plant and house-building. An example of women contribution to biodiversity conservation is demonstrated in the Tree Planting for

Watersheds programme by the Green Belt Movement in Kenya (GBM, 2012) which has worked with rural communities, particularly women, over the years to help them address their needs for essential basic services such as water, fertile soil, and a healthy ecosystem through planting trees on critical watersheds. The GBM provides training on the production of a variety of resilient food crops helping communities diversify their nutritional sources useful during extreme weather conditions.

Gender and Climate Change

Climate change impacts are not only physical and economic, but also social and cultural. Because of gender differences in social and economic roles and responsibilities, the effects of climate change affect men and women in varied ways. Women, particularly in developing countries, are more vulnerable than men to the consequences of climate change (CBD, 2010). Similarly, men and women play different roles in dealing with climate change, whereby women are often called upon to be actors in several areas of mitigation and adaptation (Sandra, 2010).

Women's dependence on livelihoods in agriculture, forestry and dependence on the natural resources for biomass energy makes them play an increasingly central role in environmental management to prevent further deforestation, to restore biodiversity and vulnerable ecological systems in climate change programmes. However, women are also positioned as vulnerable because their productive and consumptive roles increases their exposure to danger during weather-related natural disasters. Reported impacts of climate change include changing rainfall patterns as evidenced by periodic drought and erratic rainfall have increased women's labour burden and made their lives more precarious as they do not have resources to deal with the impacts (Lambrou and Piana, 2006). Consequently, a cycle of deprivation, poverty and inequality among women undermines the social capital that is needed to deal effectively with climate change.

Global climate change discourse on gender and women have often highlighted women's proactive agenda as well as their disempowerment. For example, Sandra's 2010 research suggests that women generally advocate a wider set of actions than men for addressing climate change, and that they propose more comprehensive approaches to those advocated by men, but they have less power and influence to affect public policy. Women in the North are reported as being more concerned with lifestyle and social changes to reduce greenhouse gas emissions, including reducing the impact of unsustainable consumption and production patterns on the environment and promoting actions such as energy-saving and greener purchasing (Guy et al., 2012).

Gender, Biodiversity conservation and Climate change

In developing countries, women frequently play a major role in the conservation of natural resources in general (IUCN/UNDP/GGCA, 2009; UNFPA/ WEDO, 2009). Yet, they have hardly ever benefited from these ecosystem services, or even get any form of payments for environmental services rendered. Social, religious, and customary practices exclude women from land ownership and use. Few women own land titles, or have command over commodities and many struggle under legal uncertainty (Christine et al., 2002). Consequently, they have lower incomes and fewer opportunities than men, giving them limited ability to cope with the challenges of climate change (Masika, 2002). Because their livelihoods depend on natural resources directly, land degradation, desertification and loss of biodiversity affect their supply of water, firewood, food and medicine The overall resilience of women to climate change is exhibited in their ability to promote their adaptive capacity through pursuit of practices that reduce their vulnerability and enhance the sustainability of their livelihoods (Lambrou and Piana, 2006).

One approach that has been identified to have the potential to link biodiversity conservation and climate change management with gender dimensions is the Ecosystem based Adaptation (EbA) approach. The EbA promotes the integration of biodiversity conservation with the social dimension of adaptation efforts, taking into consideration social inequality and unequal access to resources as well as disempowerment by vulnerable groups (Doswald and Osti, 2011; Fitter *et al.,* 2010; Girot *et al.,* 2012). This encourages the use of local and external knowledge about ecosystems to identify climate change adaptation approaches, recognise the diversity of local situations and create a facilitating environment for effective local adaptation (CBD, 2009; Huq *et al*., 2013).

With instruments such as the Clean Development Mechanism (CDM) defined in the Kyoto Protocol to promote emission reductions in developing countries, emissions trading, as well as numerous bilateral and multilateral climate funds, recourse is made to resources for compensation and support for these services (Sandra, 2010). The CDM offers new opportunities to sustain the widespread distribution and use of renewable and efficient energy options that target women (Skutsch, 2002). Mechanisms such as Reducing Emissions from Deforestation and Degradation (REDD) is an example of a global United Nations programme with reforestation initiatives in Africa. Yet as argued earlier the potential for women's marginalisation and exclusion remains a potential threat to the success of these projects and do not guarantee that women are consulted about and included or rewarded for forest conservation (UNREDD Programme, 2010).

Approaches to integrating Gender and Biodiversity conservation in Climate change Adaptation in developing countries

Climate change intensifies the existing economic and social gender disparities (Rodenberg, 2009). Various kinds of investments and adaptation initiatives have been advanced in the recent past with the objective of sustaining vulnerable populations to preserve their livelihoods against the threats of climate change (Christine et al., 2002). For instance, small-scale projects in the agricultural sector, food production, and domestic energy generation, areas in which the majority of those involved are women, though low in the level of emission stored, could be included in the CDM. Planting trees by women, particularly in rural communities, help them address their needs for essential services such as food, water, energy, fertile soil and a healthy ecosystem for sustainable livelihoods while on public lands and catchment areas helps to reduce environmental degradation and help the communities build resilience to climate change (Sandra, 2010).

In most developing countries, domestic energy, such as, for cooking, heating or lighting, is still obtained from the energy-inefficient and toxic burning of biomass, such as wood, charcoal or agricultural waste, which is traditionally women's work (Carlsson, 2007). The demand for fuelwood energy for rural households and for low income groups in urban areas in the form of charcoal presents an important

cause of deforestation and consequent land degradation. The practice exacerbates deforestation, land degradation and desertification (GTZ HERA, 2007). A climate-friendly path of development should be supported within the framework of small-scale projects, particularly in areas for which women are traditionally responsible such as food security, water and energy for the household. The use of energy-efficient stoves and ovens could help reduce unhealthy emissions and would contribute to efforts to adapt to depleting sources of energy. It is also conceivable that projects promoting such stoves and ovens are tied to emissions trading that enable a larger number of people to have access to cleaner, safer, time- and cost-saving energy (GTZ HERA, 2009).

Women too have a high share of agricultural activities in many developing countries but only little decision making power or control over inputs and outputs (Denton, 2001). In other cases women are traditionally excluded from the commercial production of agricultural produce (cultivation of cash crops) (GTZ programme, 2008; USAID, 2005). Areas in which women are traditionally engaged and which are closely tied to the availability of natural resources like food security, domestic energy and water have been hit particularly hard by the consequences of climate change (WEDO/ ABANTU/ Action Aid/ ENDA 2008) and require greater adaptation. This refers primarily to the use of cultivation and irrigation methods that allow for crop security even in the case of natural resource depletion or unforeseen weather events.

Besides adapting production methods, it is also important to conserve soil and water sources as the basis of agricultural production. Here, too, women across the world are involved as central players and therefore could make a significant contribution towards meeting adaptation requirements (IUCN/UNDP/GGCA, 2009). According to a case study from Senegal, women are keen to address the problem of erosion mainly because erosion reduces their agricultural productivity and makes it more difficult for them to access water .Women today are already often engaged in work that addresses the rehabilitation of eco-systems encompassing not just traditional forests but, for instance, mangrove forests as well. They thus help combat desertification and the loss of biodiversity in coastal regions (WEDO/ ABANTU/ Action Aid/ ENDA. 2008). These environmental services that facilitate adaptation and partly help mitigate the effects of climate change could be paid for within the framework of related programmes.

A notable case in point is the Green Belt Movement (GBM) in Kenya. The GBM is a Kenyan women's Non-Governmental Organisation (NGO) that began to plant trees at the grassroots level in 1977 to tackle the problems of deforestation, soil erosion and water scarcity. Women's centrality in biodiversity conservation and restoration of the forests in Kenya through the GBM have inspired environmental activists in many other countries to prevent degradation and destruction of the natural resource commons. The programme has since evolved into an instrument that facilitates the empowerment of many women. It pursues a holistic approach, as trees (including fruit and other commercial trees) are planted by voluntary networks of women and their families. The participants are also trained in sustainable agriculture with the aim of diversifying their livelihoods and earning an income. They undergo comprehensive capacity building, for example, in food production, processing and marketing, apiculture, and the planting and care of trees, activities that aim to empower women to generate an income of their own. The programme makes an overall contribution to climate change mitigation, as carbon emissions are absorbed through reforestation and planting of new ones. A contribution is also made to climate adaptation, as the communities learn about the sustainable use of scarce resources and about sustainable agricultural techniques. And finally, the Green Belt initiative also empowers women economically, as they now have alternative sources of income created by the planting and caring of trees. In 2006, the World Bank and GBM signed an Emission Reduction Purchase Agreement under which the World Bank's BioCarbon Fund pledged to buy the GBM emission reductions that resulted from the cultivation of trees on land in Kenya.

Conclusion and Recommendations

While there is potential for women to be empowered and to lead, this may not be the case and many biodiversity conservation and climate management programmes have not seen this potential developed fully. There are also critiques of programmes which increase land hunger among vulnerable groups which reflect how communities are being further marginalised from key resources. The carbon trade and CDM are also open to abuse and this has been written about as gender is not necessarily a priority in many climate change management programmes. Moreover, many of the technological changes and instruments now proposed may not be gender-neutral and may negatively affect women or bypass their role completely.

Women should play a larger role in confronting climate change since they make the majority of consumption decisions for households. The role of women in confronting and adapting to climate change should be increased in order to draw on a wider range of mitigation actions and better targeting of adaptation strategies. As a result of their land-based work and knowledge of natural resources, women represent an untapped asset in coping with the effects of climate change on livelihoods and providing relief in the event of natural disasters. The present lack of women's participation in most policy-making signals a gap in the resources devoted to the climate challenge. More balanced and effective approaches could be developed if international climate change negotiation processes as well as national climate policies considered gender aspects. By increasing the female presence in climate decision-making, holistic solutions to mitigate adverse effects would be given greater weight.

This paper recommends that for successful integration of gender aspects into biodiversity conservation and climate change management, the role of women in helping communities adapt to the adverse effects of climate change should be factored into development assistance policies and climate change strategies. In their function as household managers, women could be more productively involved in producing renewable and sustainable energy for heating and cooking. Technology transfer and Clean Development Mechanism (CDM) projects must be designed in a gender sensitive way to promote the dual purpose of climate protection and building the gender equality of women.

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