

The role of human livelihoods activities and their impact on forest ecosystems in Tanzania

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Introduction

Community forestry refers part of national forest handover to ‘users’ group pursuant the forest for its development, conservation and utilizations for the collective interest. It is village level forestry activity, decided on collectively and implemented on communal land, where local populations participate in the planning, establishing, managing and harvesting of forest resource and receive a major portion of the socio-economic and ecological benefits from the forest. FAO (2014) originally adopted the term “Community Forestry” as an umbrella term for “any situation which intimately involves local people in forestry activity”. It embraces a spectrum of situations ranging from woodlots in areas which are short of wood and other forest products from local needs, through the growing of trees at the farm level to provide cash crops and the processing of forest product at the household, artisan or small industry level to generate income, to the activities of forest dwelling communities”

The Tanzania Forest Act 2002 provided a clear legal basis for community forestry, enabling the government to handover identified areas of state-owned forest to Community Forest User Groups (CFUGs). Active participation, equity, ownership, people-centred, responsive and participatory planning, accountable, partnership, sustainable approach are the important values of Community forestry.

Human livelihoods activities and their impacts on forest ecosystems

Anthropogenic activities may improve livelihoods of local communities while at the same time degrading forest ecosystems. For instance, mining activities may involve a total removal of trees and vegetation in favour of mineral extraction. Similarly, timber harvesting is normally meant to offer people with building materials and income for improved livelihoods. However, in so doing may impair forests to offer different ecosystem services.

A forest is a resources base that can offer varieties of livelihoods opportunities and the main issue is how to maintain sustainable livelihoods Kimengsi *et al.*, (2019). Under normal circumstance the notion of sustainable livelihoods emphasizes the balance between current and future generations, i.e. the interests of present and future individuals. The crucial issue being human interests are protected across generations.

The livelihood approach calls for a people-centred development where human needs become the primary basis for policy development. The starting point for policymaking as well as for sustainable livelihoods is the classification of households by livelihood assets DFID, (1997; Kimengsi *et al.*, 2019). There should be a way to guide people to make use of the five groups of livelihood assets. When dealing with livelihood options from forest, the main focus is on the poorest and most vulnerable groups who make ends meet through extracting ecosystem services from forests. DFID (1997; 2000) introduced the concept of household livelihood security (HLS) emphasizing capacity building for the poor. Alongside this understanding, DFID developed a sustainable livelihood framework (SLF), which has been widely adopted in development practice to assess local community's livelihoods DFID, (2003).

In the context of livelihood framework, DFID emphasizes poverty reduction in poor stricken countries and areas, while also emphasizing that there are different ways to apply the livelihood approach. Although the application of the livelihood approach is flexible and adapted to local situations and has a goal defined by the participatory approach, it reflects to some fundamental principles.

However, first it must be people-cantered and holistic, i.e. it must consider the livelihoods of those involved as a whole and put them in perspective; and ,second, it must be adaptive meaning that it must improve along with changes in order to minimize the negative effects while enhancing the positive effects; Third; it must build on strengths, i.e. the core issue of the approach is to recognize everyone's inherent potential; Fourth, it must contain a macro-micro link, meaning that the approach must bridge the gap between these two; Lastly, it must be sustainable and long-term Kimengsi *et al.*, (2019). In some instances, the policy failure is so threatening and the inconsistency between policy and practice manifests in the continuing loss of forest while the people's livelihoods are not improving.

Forest ecosystems and their conservation status

Majority of people in rural areas depends on forest resources as the major source of household energy. In-turn, harvesting of forest resources for wood fuel (fire wood and charcoal) has been the major source of deforestation Massawe, (2016). Harvesting of trees for fuel wood leads to deforestation. There are a number of drivers for deforestation in rural setting. The conversion of

forests and deforested lands for livestock grazing, commercial crops and wood fuel production has led to forest loss while the livelihoods of the people in some instances, fail to be improved.

It is believed that, in the near future, only the conversion of poor forests into livelihood forests should be encouraged. SIDA (2000) pointed out that increasing the quality of life is not simply a matter of improving income for the poor. More than that, it involves building people's capacity for escaping poverty by their own efforts while conserving nature. Another issue is whether it is possible to simultaneously use forests for services such as food, timber, and fuel in a sustainable manner, and conserve biodiversity. This is a matter of live debate among researchers on conservation and development and that is what this study seeks to find out in Kishapu District.

According to Lauren. E (2011) Argue that the number of timber species as an index for forest wealth has been assessed by in 84 villages in 6 countries. The percentage of households whose livelihoods depend on forests has been used as an index for forest economy and social participation. This research has shown that a sustainable forest system is one in which the level of biodiversity and people's contribution to the economy are both above average. It also identifies 27% as a good level to be at, mainly in the case where local forest users can become involved in forest governance Kimengsi *et al.*, (2019).

This is a lesson for making policies on managing and governing forests that belong to households. Some other cases have not seen the balance between conservation and development. Some of the pertinent weaknesses are: the needs of the community are underestimated; the forest resource base not reaching the desired conservation status; and some of human activities are insufficient to achieve the balance between livelihood and conservation. It is from this basis this research will be carried out in Kishapu District so as to bridge the missing link.

Methodology

The section presents the methodology that was employed in the study.

Design

The study used a mixed research method in collecting and analysing data. The method was used due to the fact that it can incorporate both quantitative and qualitative methods such as participant surveys, interviews, observations and social mapping (Johnson & Onwuegbuzie, 2004). Also, the method was selected due to its complementarity which allows the researcher to gain a fuller understanding of the research problem and/or to clarify a given research result. This can be accomplished by utilizing both quantitative and qualitative data and not just the numerical or narrative explanation alone to understand the social problem in its entirety. Both

complementarity and triangulation are useful for cross-validation when multiple methods produce comparable data (Yauch & Steudel, 2003).

Population and sampling

A total number of 139 respondents engaged in population of study involved villagers, local government leaders including village chairpersons, village executive officers, ward executive officers, ward community development officers and district natural resources officers and other relevant community members present in Kishapu district in Tanzania.

Statistical treatment of data

Treatment of data used descriptive statistics. The research questionnaire was analyzed using descriptive statistics.

Validity and reliability

A study is said to be valid if one can draw meaningful and useful inferences from the prepared instruments (Creswell, 2009). In this study, both content validity and concurrent validity was checked. To ensure content validity, each survey instrument (questionnaires, interviews and documentary review) was examined by the researchers' supervisors or other specialists in researcher in order to make sure if they qualify to be used in the study.

Findings

Income source related to forest

Responses from the study questionnaires have showed that many households depend on natural resources related to forest. The household that depend on activities related to forest were 68.8 % (86 of 125) whereas 31.2 % (39 of 125) explained that don't get income related to forest. This implies that most households' livelihood activities depend on forest. This situation reveals that there are implications including; increased reliance on forests may lead to extensive deforestation, as households' clear forests for various purposes such as agriculture, logging, or fuelwood collection. Deforestation can have severe environmental consequences, including habitat destruction, loss of biodiversity, and increased greenhouse gas emissions. Forests provide numerous ecosystem services like water regulation, climate regulation, and carbon sequestration. If households overly depend on forests without sustainable management practices, it can lead to the degradation or loss of these services, affecting both local communities and global ecosystems.

According to Bauch, S., & Borner, J. (2014); relying heavily on forests for resources like timber, non-timber forest products or medicinal plants lead to overexploitation and depletion of these resources. This can disrupt the delicate ecological balance and affect the livelihoods of local communities dependent on these resources. Cultural and Indigenous Implications: Forests often hold cultural significance and are an integral part of indigenous communities' identities. Many indigenous groups rely on forests for their traditional practices, medicines, and cultural ceremonies. Unsustainable harvesting or clearing of forests can result in the loss of indigenous cultures and their traditional knowledge.

Therefore, this study provides a national comparative analysis of the importance of environmental income, including income derived from forest resources, for rural livelihoods. It examines the relationship between rural households' reliance on environmental income and various livelihood strategies, including forest-related activities. The study highlights the importance of considering the impact of livelihoods on forest resources and emphasizes the need for sustainable forest management to maintain ecosystem services and support rural livelihoods

Table 1: Respondents livelihood sources

Livelihood reliance on forest	Frequency	Percent
Yes	86	68.8
No	39	31.2
Total	125	100.0

Data source: Field data 2023

Income source not related to forest

The study questionnaires responses have showed that few households have alternative source of income that not related to forest. The collected information reveals that only 22.4 % have alternative source of income while the 77.6% said that have no alternative source of income instead forest related sources only.

According to the study findings above; it is obvious that there are several effects for many households to rely mostly on the forest for their livelihoods. Increased reliance on the forest can lead to deforestation, as households cut down trees for fuel-wood, timber, and land for agriculture. This deforestation can lead to loss of biodiversity, soil erosion, and disruption of local ecosystems. Overreliance on the forest can lead to depletion of forest resources, such as

medicinal plants, fruits, and honey. This can have long-term negative impacts on the availability of these resources, affecting not only the households but also the wider community.

Therefore, to address these effects, it is important to promote sustainable forest management practices, diversify livelihood options beyond the forest, and provide alternative income opportunities to reduce pressure on forest resources; Tabitha,w & Mtuku M (2016). Additionally, ensuring land rights, implementing effective governance, and promoting community-based conservation efforts can help in mitigating the negative impacts of relying solely on forest-based livelihoods.

Table 2: Households income not related to forest

Household income not related to forest	Frequency	Percent
Yes	28	22.4
No	97	77.6
Total	125	100.0

Data source: Field data 2023

Benefits of livelihoods activities to the households

The study findings revealed that livelihood activities have various benefits to the families which have effects on forest sustainability. The questionnaire responses from the interviews shows the benefits from the livelihood’s activities; the benefits include fulfilling households’ expenses 36.8 percent, running business for more income gain 16 percent, health expenses 8.8 percent, building the house/house improvement 9.6 percent and paying school requirements for the children 28.8 percent.

Therefore, the findings signify that livelihood activities provide families with a source of income, reducing their dependence on forest resources for their survival. This reduces the pressure on natural resources and allows forests to regenerate and thrive. Livelihood activities can improve the overall living standards of families. With increased income, families can afford better education, healthcare, and nutrition. This reduces their reliance on forest resources as a means of survival, further contributing to forest protection.

According to Benhin, J. (2014), Livelihood activities often involve community participation and collaboration. This fosters a sense of ownership and empowerment among community members, allowing them to take an active role in forest protection. It can also lead to the formation of

cooperatives or self-help groups, which can collectively work towards preserving the forest ecosystem. Engaging in livelihood activities provides families with alternative income sources. This diversification reduces their reliance on forest resources as the sole source of income, reducing the pressure on forests and facilitating their protection.

Table 3. Benefits of livelihood activities to families

Benefits of livelihood activities to families	Frequency	Percent
Fulfilling household expenses	46	36.8
Run business to get more income	20	16.0
For health expenses	11	8.8
For build /repair house	12	9.6
Education expenses	36	28.8
Total	125	100.0

Data source: Field data 2023

Effects of human activities on forest sustainability

The survey questionnaire responses from the field indicated that human activities have diverse effects on forests sustainability in study area. The responses indicated that the effects includes deforestation 32.8 percent, loss of biodiversity 32.8 percent, food insecurity 12.8 percent, drought and floods 14.4 percent and soil erosion 7.2 percent. The survey concludes that human activities have adverse effects on forest sustainability in study area.

The findings above reveal that effects of human activities on forest sustainability are significant and wide-ranging. Deforestation is one of the major challenges facing Tanzania's forests. Human activities such as logging, agriculture expansion, and fuel wood collection contribute to deforestation. It leads to the loss of biodiversity, degradation of habitats, and the release of carbon dioxide, exacerbating climate change. Conversion of forested areas into agricultural land and settlement not only leads to deforestation but also results in habitat destruction. This affects many plant and animal species, potentially leading to their extinction and disrupting the ecological balance.

Soil erosion is a result of unsustainable agricultural methods such slash-and-burn farming and poor land management, according to Rudel, T. K., & Roper (2012). As a result, soil fertility

declines and forest ecosystems deteriorate. Forest degradation and deforestation play a large role in climate change. By absorbing greenhouse gases from the atmosphere, forests function as carbon sinks. The carbon held in trees is released back into the atmosphere when forests are destroyed, causing global warming;

Effects of human activities on forest sustainability

Effects of human activities on forest	Frequency	Percent
Deforestation	41	32.8
Loss biodiversity	41	32.8
Food insecurity	16	12.8
Drought floods	18	14.4
Soil erosion	9	7.2
Total	125	100.0

Source: Field data 2023

Conclusion and Recommendations

The Tanzanian government and a number of groups are working to address these problems and promote sustainable forest management. They include of establishing protected areas, carrying out reforestation and afforestation projects, promoting sustainable farming methods, and involving neighbourhood groups in conservation activities.

Engage in tree planting initiatives by participating in community tree planting programs or supporting organizations working towards reforestation efforts. Additionally, ensure the protection of existing forests and avoid illegal tree cutting activities.

Cooperate and encourage the implementation of sustainable forestry practices by supporting policies and initiatives that promote responsible management and conservation of forests. This can include advocating for stronger environmental regulations and supporting organizations working towards sustainable forest practices.

Support local communities that depend on forests for their livelihoods by buying sustainably sourced products from them. This encourages sustainable forest management practices and provides economic incentives for communities to protect their forests. Educate themselves and others about the importance of forests and ways to support their sustainability. Raise awareness

through community events, and discussions to promote sustainable actions and engage others in conserving the forests.

By combating climate change with measures like lowering greenhouse gas emissions and supporting campaigns to switch to renewable energy sources, reduce fuel wood consumption by embracing sustainable energy source alternatives, such as the using of solar power and energy saving cook stoves. By implementing these recommendations, the community can work towards forest sustainability and contribute to the preservation of these vital ecosystems for future generations.

Promote collaboration and knowledge-sharing with facilitation research collaborations between local and international scientists, universities, and research institutions to exchange knowledge and expertise on forest sustainability.

Conduct socio-economic studies so as to investigate the socio-economic implications of forest conservation efforts in Tanzania. Assess the impact of forest management practices on local communities, including income generation, employment opportunities, and social well-being.

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