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# Community-Based Forestry and Livelihoods in the Context of Climate Change Adaptation

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**ABSTRACT:** Community-based forest management (CBFM) is so far perceived as the best model for forest management in many developing countries. The contribution of CBFM in livelihoods of the local community is thought to be positive but the emerging contemporary discourse of climate change and its impacts on livelihoods is less recognized in CBFM modalities. In order to make the CBFM modalities more successful, there is a need to assess the linkages between climate change and community-based forest management in relation to climate change. It is crucial to explore adaptation practices that can help rural communities to respond effectively to climate change. The present collaborative research attempts to understand how climate change is affecting forest-dependent communities in one of the world's most vulnerable regions, and the actual and potential adaptation measures that would enable communities and community networks to remain resilient.

**KEYWORDS:** *community forestry, livelihood, climate change, adaptation*

## Introduction

Rural populations dependent on agriculture and forest management ecosystems are particularly vulnerable to both direct and indirect impacts of climate change. Increasing temperatures, erratic rainfall pattern, and rising sea levels are major threats to sustainable livelihoods. The effects of climate change are expected to deepen poverty and adversely affect livelihoods, infrastructure, environmental resources and economic growth as developing countries have a lesser capacity to adapt and are, in effect, more vulnerable. Therefore, adaptation is now acknowledged as necessary for responding effectively and equitably to the impacts of both climate change and climate variability. Although

local communities possess relevant indigenous knowledge and experience coping with climate change, this kind of knowledge needs to be documented and disseminated in order to be used effectively. Community forests user groups (CFUGs), who are the main stakeholders in CBFM, are mostly represented by the poor and marginalized sectors of society and are the most vulnerable to climate change-induced hazards (e.g. flash flooding, landslides and drought), which have been more frequent and of higher magnitude in recent years.

Forests are an important resource base for rural livelihoods. The dynamics between the five assets — natural, socio-political, human, physical and financial — that belong to each livelihood determine the management of natural resources and its sustainability. These assets

also determine people's ability to respond to the impacts of climate change and to implement activities intended to reduce GHG emissions. Thus, the enhancement of sustainable forest-based livelihoods should therefore form the basis of any adaptation and mitigation effort. Community-based adaptation is perhaps the best and most appropriate option for a country with participation of local communities to conserve, manage and optimize the utilization of natural resources. The inter-dynamics between forest and climate change is incomplete in relation to understanding the socio-cultural aspects of this issue.

Communities in developing countries are heavily dependent on climate sensitive resources like forests, agriculture and fisheries; have lesser capacity to adapt; and are more vulnerable to the effects of climate change (IPCC, 2001; Saleemul, *et al.*, 2003; Stern, 2006; Mirza, 2003). The Climate Change Vulnerability Index by Maplecroft's Climate Change Risk Atlas (2011) illustrates a higher risk in poor and developing countries. The index rates 16 countries as at "extreme risk," the 16 mostly represented by developing and poor countries, including all of our project countries: Bangladesh (1), Nepal (4), Viet Nam (13), and Thailand (14). These "extreme risk" countries are already threatened and the extra pressure of climate change impacts places additional socio-economic burden on the nations, mostly affecting the ultra-poor. There is a lack of research to understand the impacts of climate change on livelihoods and design measures to improve adaptive capacity to cope with climate change (Hedger *et al.*, 2008).

Yohe and Tol (2002) state that spatial and temporal scale, nature of sector, climatic zone, and socio-economic base of actors, or combination of these factors, play a vital role in designing adaptation measures. Therefore, there is a need to develop policies at the sub-national level rather than at the central level alone for effectively improving the adaptive capacity of communities (Puppim de Oliveira, 2009) and increase the resilience of resource-dependent communities.

With these views, the present study was undertaken covering larger geographic areas (Bangladesh, Nepal, Thailand and Viet Nam) to understand the status of community-based forestry and other livelihood activities and adaptation scenarios in the face of climate change within and across the regions of South Asia (Bangladesh and Nepal) and Southeast Asia (Thailand and Viet Nam).

## Methodology

The field-based research was conducted at each project country site. Four case studies from the four

countries were conducted and the study used the multiple research approach to meet the research objectives. After the inception workshop in each project country, the research sites were finalized and the International Forestry Resources and Institutions (IFRI) research methodologies together with other social sciences research methods such as interviews, site observations, Participatory Rural Appraisals (PRA) and climate change risk assessment tools, were used extensively to conduct the research. The concerned government departments and literature developed by them were also used as a secondary source to explore their responses to climate-related threats at the national level.

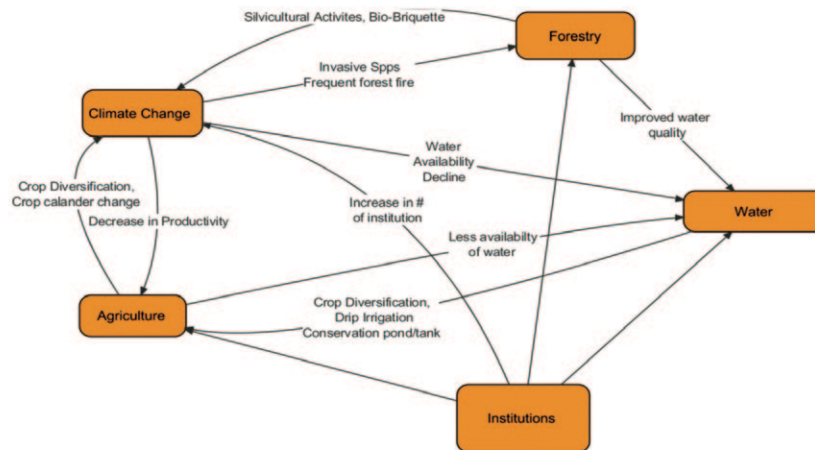
Major activities of this project were centred at IFRI Collaborative Research Centre (CRC) at ForestAction. Based on the agreed research design, the IFRI CRC, based at AIT in Thailand; CORENARM in Viet Nam; Bangabandhu Agricultural University in Bangladesh; and CRC in Nepal, carried out respective country case studies. The research design was developed after the inception workshop organized in Thailand and frequent email communication was the key tool utilized to guide research in each country. Partner countries were engaged in data collection, data coding and data analysis; and are currently in the phase of drafting the report.

## Insights

By accomplishing field-level activities and in-house sharing among different partner countries, the present study brought to light the following key insights:

1. Community forests are put at the lowest priority in climate change adaptation strategies. Local people are mostly concerned about agricultural production and livestock grazing activities because these appear to be more directly affected by climate change compared to the resilience of the natural forest. In addition, the already poor and degraded conditions of the allocated community forest results in a lack of interest from the surrounding population as it is not seen as a main source of livelihood.
2. The community by itself is not sufficient to develop an adaptation mechanism. There is a need for continuous technical and economic support to realize efficient adaptation strategies. The best way could be to collect traditional knowledge of the local community and, with infrastructure and technological innovation from an external agency, develop the best, or more appropriate, adaptation strategies.
3. Institutional involvement has been increasing

**Figure 1. Integrated approach to develop climate change adaptation strategies**



with increasing impacts of climate change in sectors such as agriculture, forestry, water, health, etc. Different institutions working on a common agenda for climate change should strengthen and develop an integrated approach to intervention (Figure 1).

4. Changing the orthodox mindset of the community: Due to contemporary developmental issues such as carbon trade (REDD+) and payments for ecosystem services (PES) in the global and regional arenas, the community has also changed their mindset on the conventional use of forest resources. Willingness to adopt market-based mechanisms to get direct economic benefit from CF has started in community forests of Nepal.
5. Most adaptation activities of local people toward climate change are from their own experience or learnt from each other. There are no actual programmes from the government/local authorities to help/show local people how to adapt to climate change both in their daily lives as well as their production activities. The concern of the government is focussed on coastal areas, where the impacts of climate change are much greater.
6. Diversification of livelihoods and income source based on natural resources are necessary in order to enhance the adaptation capacity of local communities.

## FORESTRY AND LIVELIHOOD OF LOCAL PEOPLE OF NATIONAL SAL FOREST

### — A SITE IN BANGLADESH

The study site is located in the Periphery of the National Sal (*Shorea robusta*) forest under the Tangail District of Bangladesh where local communities were once completely dependent on the Natural Sal Forest and its natural diversity for their livelihoods. Currently, the dependency on forest and forest products has been drastically reduced. These changes are because of the poor condition of the forest and productivity decrease in natural products. The reasons for this are climate change and anthropogenic activities. Among the anthropogenic activities, deforestation (through illegal forest harvesting) and over-exploitation of the forest are the main culprits. In relation to climatic factors, the most important events are erratic rainfall (such as a delay of the on-set of rain, fewer rainy days, high levels of rainfall within short time), high humidity (long foggy weather), and disease infestation. To protect the remaining forest, the Forestry Department has leased out surrounding land to local people for community forestry/participatory forestry, where both local people and the Forestry Department have some sort of benefit sharing arrangement. Local people have also shifted their livelihood activities like practicing different types of farming (especially agroforestry) in their homestead and surrounding areas and other off-farm activities (small shops, working on other farms as day labourers, etc.), and migrating to other places during the off-season. However, the overall lifestyle of forest dependent people is very poor. The government or concerned authorities should take appropriate measures to rebuild the forest and to create alternative livelihood opportunities for the local people.

## Conclusion

In assessing community-based forestry and livelihoods in the context of climate change adaptation scenarios, there are several factors related to climate change vulnerability of households and communities such as: economic conditions, asset and infrastructure development, health and nutrition, diversity in livelihood options and education, and the accessibility of educational programmes. Most of the information related to climate change at the research sites is the perception of local people and there was less accurate measurement of climate variables to measure the effects of climate change on the lives of local people and their production activities. There should be in-depth and continuous research to measure and monitor these factors and observe their actual effects. This would be beneficial in long-term adaptation and mitigation strategies against climate change impacts in the local context.

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## COMMUNITY INITIATION OF BIO-BRIQUETTE PRODUCTION-LAMATAR, LALITPUR, NEPAL

Communities in Lamatar (project sites) have been managing their forest for a long time. They have started producing the bio-briquette commercially from the invasive species, *Lantana camera*. In the first year (2011) they produced more than 1,000 pieces of bio-briquette worth 20,000 Nrs. This kind of initiative in community forests improves management of unwanted species and raises funds to support their livelihood.

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2 years

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