



Household participation and effects of community forest management on income and poverty levels: Empirical evidence from Bhutan



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ABSTRACT

The objectives of the present study are to (1) identify and analyze the factors influencing household participation in community forest management programs, and (2) assess the effects of community participation in forest management on household income and poverty levels in Bhutan. The study is based on a comprehensive dataset of 4173 rural households from all the agro-ecological regions of Bhutan. The probit estimation on the factors influencing household participation indicates that educated, young and wealthy households are more likely to participate in the community forest management program. The propensity score matching (PSM) approach was employed to correct for potential sample selection bias that may arise due to systematic differences between the participant and non-participant households. The PSM analysis was carried out by employing different matching algorithms i.e. nearest neighbor matching, kernel-based matching, radius matching and mahalanobis metric matching. The empirical results indicate that participating households have higher income levels in the range of Ngultrum 2605–3169. In addition, the study finds that the participation in community forest management by households may reduce poverty in the range of 5–12 percentage point. The participating households have higher food security levels in the range of 12%–19% as compared to non-participating households.

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1. Introduction

One of the important reasons for the rapid degradation of forest resources in developing countries is the lack of well-defined and secure property rights (Behera and Engel, 2006; Panayotou, 1993; Pearce and Warford, 1993). Under the predominant state-controlled forest management regime, the governments of most developing countries nationalized their forests in the belief that forest-dependent people were the main cause of forest degradation and deforestation, and that an exclusionary, state-controlled, top-down approach is required to achieve sustainable forest management (Kumar and Kant, 2005; Behera, 2009). However, it is now widely recognized that state-controlled forest management frequently gives rise to violent conflicts and severe mistrust between forest dwellers and forest bureaucrats (Behera and Engel, 2006), as it frequently ignores and/or tolerates incidents of illegal forest use, resulting in unabated forest degradation and negative impacts on local livelihoods and forest conservation.

To overcome these pressing problems facing forest resources and forest dwellers, many developing countries have opted to devolve forest resource management and access rights to local communities (Edmonds,

2002; Larson and Ribot, 2004). This policy shift was largely attributed to failed state policies and shrinking government budgets (Behera, 2007). In principle, devolution of forest management responsibilities from central government agencies to the local communities implies a transfer of some important decision-making authorities and benefits in order to make local user groups more active in the management of forests (Behera, 2007). In addition, devolution is fueled by the idea that local communities can establish and enforce micro-level institutions that promote sustainable development and enhance local livelihoods by building a social barrier to protect forests from grazing, fire and illegal logging (Kolavalli, 1995). Moreover, it is also believed that local communities can manage forests at lower costs as they may rely on existing informal monitoring and sanctioning institutions (Baland and Platteau, 1996). Experience with community-based forest management institutions suggests that these institutions may, in principle, be successful not only in promoting effective management of forests, but also in contributing to an equitable distribution of benefits derived from the managed forests (Ostrom, 1990).

Moreover, the promotion of livelihoods and living standards of forest-dependent people is critically linked to sustainable management and the use of forest resources (Behera, 2008), which has increasingly been recognized during the last three decades or so. As a result, a plethora of community-based forest management institutions has emerged in a variety of forms namely social forestry, community forestry, joint

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forest management, and conservation and development projects (Carter and Gronow, 2005; Shepherd, 2004). It is estimated that about one billion of the world's poor directly depend on forest resources to sustain their livelihoods (Scherr et al.).¹ Studies have shown that rural households regularly supplement their income from forest resources (Adhikari et al., 2004; Babulo et al., 2008; Cavendish, 2000; Fisher, 2004; Mamo et al., 2007; Pattanayak and Sills, 2001; Shackleton et al., 2007). Giving access and management rights over forest resources to local communities is expected to enhance livelihoods and other benefits of these impoverished people. Predominantly, it has been observed that the two main objectives of most community-based natural resource management approaches have been to increasingly contribute towards improving rural livelihoods and reducing poverty levels (Bowler et al., 2011; Brown et al., 2002) and to increasing the efficiency of natural resource management (Ribot et al., 2008).²

Although the community-based forest management policy started relatively recently in 2000 in Bhutan compared to other neighboring developing countries such as India and Nepal, Bhutan occupies a unique place in the world for its efforts to conserve a large portion of its forests over a long period of time. It is estimated that a total of 26,826 km² (which constitutes about 73% of the total geographical area of Bhutan) is covered in forest (FAO, 2012). It should be noted that Bhutan's forests form an important component of the country's fragile Himalayan mountain ecosystem and the conservation of its forests is necessary to maintain this sensitive ecosystem for the overall development of society and nature. On the other hand, Bhutan is largely an agrarian and subsistence economy in which a large number of people critically depend on natural resources such as forests, streams and meadows for their livelihoods. About 69% of the total Bhutanese population lives in rural areas and most of them are directly or indirectly dependent on natural resources for their subsistence livelihood (Tempel and Beukeboom, 2007). About one third of these people are living below the poverty line (NSB, 2007).

Over the years, the forest policy of Bhutan has witnessed a paradigm shift from a traditional centralized bureaucratic science-based forest management system towards a more decentralized and participatory community-based forest management system (Chhetri et al., 2009). In 1995, the first attempt was made to make community forest management formal in Bhutan when the Royal Government of Bhutan enacted the Forest and Nature Conservation Act in which the government for the first time recognized the traditional and cultural rights of local people to access and use forest resources.³ Within the framework of the 1995 Act, the government framed the Forest and Nature Conservation Rules in 2003 and subsequently revised them in 2006, which paved the way for the Social and Community Forestry Program as one of the forest management regimes in the country (Chhetri et al., 2009; Wangchuk, 2011).

In Bhutan, community forestry began as an attempt by the government and aid agencies to provide an alternative way for forest departments to manage forests, that is, by including the local people (Gilmour and Fisher, 1991). The development of community forestry was partly motivated by a desire to allow forest-dependent people to obtain legitimate access to a major source of their livelihoods as well as by the recognition that forests could not be properly managed without some level of active support from local people. Behind this, there was increasing pressure on forest departments to become more efficient in their use of government-funded resources. The fundamental tenets of

community forest management in Bhutan are as follows. A community forest (CF) is managed by local people who are the traditional users of the forest, called the Community Forest Management Group (CFMG).⁴ On approval of a community forest management plan, the government provides CFMG members with the right to utilize forest products from their designated community forest in return for taking responsibility for its management and protection. The management plans, which are formulated by the CFMG with the help of District Forestry Sector staff and approved by the Department of Forest Park Services, form the basis for execution. The management plans act as an agreement between the CFMG and the Royal Government of Bhutan. The community forests supply the basic forest-products such as firewood, fodder/grass and timber to local people on a regular basis (Dhakal and Masuda, 2008). As the members of the community forest management groups started receiving tangible benefits from the program more fringe villages joined the program. As a result, over the past few years, there has been a tremendous increase in the number of community forests throughout Bhutan. There are over 200 community forests in existence today and more are likely to be established in the years to come.

Fully supported by the National Forest Policy, the Forest and Nature Conservation Act and the rules of the *Royal Government of Bhutan, and guided by the national strategy for community forestry (2010)*, community forestry is rapidly becoming a significant movement as rural communities become empowered to sustainably manage their natural resources. In addition to meeting forest product needs through good environmental stewardship, community forestry gives rural communities scope for income generation and poverty reduction through the marketing of timber, firewood, and non-wood forest products.

Bhutan's community forestry policy not only recognizes the community forestry program as a promising strategy for protection, conservation and sustainable use of forest resources in the country, but also strongly emphasizes its contribution to poverty reduction. The policy objective of the national forest policy (2011) for community forestry is to "empower rural communities to manage forests sustainably for socio-economic benefits, poverty reduction and to contribute to overall sustainable forest management at national level". Over the past decade, the community forest program has proven to be one of the most promising avenues for rural communities to meet their basic forest needs and enhance their cash income (Observer, 2008). It has been observed that a great benefit of the community forestry program is its potential to contribute to reducing rural poverty (Chhetri et al., 2009).

However, the international experience of distribution of benefits from community forests among participant households varies widely. Studies in developing countries have concluded that poor people often have restricted access to forest and tree resources, while influential people are able to harness the resources (Mahanty et al., 2009). In contrast, the other studies in developing countries have concluded that community forestry can contribute to poverty reduction as the poor members have easy access to forest resources and that commercialization of the forest products provides benefits to poor members (Baral, 2008; Mahanty et al., 2009; Sharma, 2002). The major barriers to the successful implementation of community forestry are institutional and organizational rather than technical (Fisher and Gilmour, 1990).⁵

However, the success of participatory forest management depends on the active participation of local forest users. Several empirical studies on devolution in natural resource management have shown that households within a given community differ widely in their actual use of natural resources as well as their participation in collective management

¹ Recently, the Food and Agriculture Organization (FAO, 2012) have estimated that around 1.6 billion people in the world depend on forests for their livelihoods.

² Many studies have demonstrated that PFM is contributing to forest conservation (e.g. Blomley et al., 2008; Takahashi and Todo, 2012).

³ A bottom-up approach to forest management in Bhutan began after the 1979 royal decree that called for the involvement of local people in tree planting activities (DoF, 2002; Phuntsho and Sangye, 2006).

⁴ Over the past decade, the CF program has proven to be one of the most promising avenues for rural communities to meet their basic forest needs and enhance their cash income (Phuntsho and Sangye, 2006).

⁵ For many years forest degradation, deforestation and forest resource depletion have been the focus of environmental concerns, especially in developing countries (Agarwal and Gibson, 1999).

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