



Ecosystem services from community-based forestry in Nepal: Realising local and global benefits



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ARTICLE INFO

Article history:

Received 8 September 2016

Received in revised form 27 January 2017

Accepted 31 January 2017

Keywords:

Environmental policy

Community forestry

Sustainability

Livelihoods

Biodiversity conservation

Ecosystem services

ABSTRACT

Community-based Forestry (CBF) is now a popular approach for landscape restoration, forest management, biodiversity conservation and support for rural livelihoods worldwide. The Himalayan country Nepal has been at the forefront of CBF for over four decades, with almost 40% of the total population directly involved in protecting and managing more than 32% of the country's forested land. However, in the past, the focus of CBF in Nepal was the provision of goods for local subsistence, and there has been limited analysis of the role of CBF in providing ecosystem services (ES) from restored forest landscapes. Based on material drawn from a literature review and a stakeholders' workshop, this paper analyses changes in Nepalese forest policies to provide a more holistic framework for CBF that provides a wider range of ES and to potentially underpin payments for ecosystem services in Nepal. The analysis indicates that Nepal's forest policy and practices are still dominated by a narrowly conceived notion of forest management that does not accommodate the holistic concept of ES. The study illustrates that CBF provides many ES from local to global benefits as result of forest restoration. For example, timber, firewood, food, and water have local importance, while climate regulation, flood/erosion control, and habitat improvement have global importance. Many innovative cases are emerging in the long journey of CBF in Nepal that demonstrate more diverse management strategies, new forms of tenure rights and autonomy in institutional spaces. These can potentially provide a catalytic platform for the wider adoption of the ES framework in CBF regimes, in order to focus and reward forest management more directly for the provision of services such as water, biodiversity, climate regulation and recreation. Consequently, this study discusses the issues and challenges that are impeding the implementation of the ES concept in Nepal and suggests some ways forward.

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1. Introduction

Community-based Forestry (CBF) is a viable alternative to the historical patterns of state control and industrial forest management. It has become an important approach for forest management, biodiversity conservation and supporting livelihoods (Agrawal and Chhatre, 2006; Ojha, 2014; Purnomo et al., 2012). CBF is primarily a management and ownership model in which the local people have a central role in planning, decision-making and managing forest resources (Agrawal, 2010; Pokharel and Tiwari, 2013). The concept of CBF emerged in response to the failure of centralised

forest bureaucracy in conserving forests and biodiversity, reducing land degradation or supporting the role of forests in contributing to human well-being in many parts of the world (Agrawal et al., 2008). CBF is increasingly being practised in many countries, with both native forests and plantations being managed for livelihoods and conservation as well as for regulating and amenity values (RRI, 2014; Stevens et al., 2014).

According to RRI (2014), indigenous people or communities own or control 511 million hectares (15.5%) of the world's forests as community-managed forests, the vast majority (97%) of which are in low and middle-income countries. In developing countries, approximately one-third of the forests is under the ownership and/or management of indigenous and local communities (Ojha et al., 2009; RRI, 2014). Nepal, a small mountainous country, is becoming a leader in CBF with 2.05 million hectares of forest being managed by community groups deriving multiple benefits (DoF, 2015; Ojha, 2014). However, forest management and poli-

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cies in Nepal have experienced many shifts. Failure of successive government interventions (e.g., enforcement of tough acts and regulations, expanded forest bureaucracy and army deployment) from the 1960s to the 1970s led to a new National Forest Plan (1976) that laid the foundation for CBF (Gritten et al., 2015).

The success of CBF in Nepal demonstrates that active participation is instrumental in achieving sustainable forest management (Adhikari et al., 2014). Management and land-use rights for certain degraded forests were handed over to adjacent communities. Local people were encouraged to use their indigenous knowledge and practices in forest management (Thoms, 2008) and, in most cases, it was found that local people managed forests well if management fulfilled their interests (Roberts and Gautam, 2003). This community-based forest management has resulted in the conversion of eroded lands and shrub lands to managed pasturelands and forests (Gautam et al., 2004), a near-doubling of forest productivity in the mountain regions (Fleming and Puleston Fleming, 2009). CBF has also delivered multiple benefits to local and wider communities. It has proved successful in countries such as Brazil, Costa Rica and Nepal (Ojha et al., 2016).

Ecosystem services (ES) are the benefits that humans obtain from nature (see Costanza et al., 1997; Fisher et al., 2009; MEA, 2005; TEEB, 2010; Wallace, 2007). The catchment values and services from forest restoration in degraded mountainous areas of Nepal resulting from CBF (Paudyal et al., 2015; van Oort et al., 2015) were not originally termed 'ecosystem services'. While there is often a link implied between CBF and the provision of ES, few studies have explicitly addressed the relationship between the two in Nepal (Paudyal et al., 2015). Furthermore, there is a lack of awareness of the ES-based management approach among stakeholders and no clear policy or management framework, empirical data, methods or assessment tools (Crossman et al., 2013; MEA, 2005; Muhamad et al., 2014; Paudyal et al., 2016). This deficiency clearly indicates a requirement for a more refined, scientifically based practical approach that can be used in countries like Nepal to identify the capacity of CBF in providing ES and to underpin payment mechanisms.

This paper aims to assess the relationship between CBF and ES in Nepal. The paper analyses the evolution of CBF policies and the innovations that shifted forest management from a focus on subsistence-oriented forest management, through a focus on the provision of timber and other commercial resources to more holistic management objectives related to the concept of ES. We also explore the potential for ES provision through CBF from the perspective of different types of beneficiaries. Through document analysis and a workshop, we examined the potential opportunities to utilise the ES approach in a way that would provide additional incentives for forest conservation and sustainable management of forests. Some issues and challenges that impede the mainstreaming of ES in CBF regimes are discussed and ways forward to address these challenges are suggested.

2. Methods

2.1. Sources of literature

The study involves an extensive literature review based on methods used by other researchers (e.g., Alamgir et al., 2014; Balvanera et al., 2012; Chaudhary et al., 2015; Fisher et al., 2009; Luederitz et al., 2015). We used the Scopus database (www.scopus.com), the "single largest abstract and indexing database" (Burnham, 2006; Falagas et al., 2008; Kulkarni et al., 2009) and the ISI Web of Knowledge.

The literature search was undertaken in December 2015 and focussed on three areas of interest, i.e. ecosystem services, a shift

in forest policies and outcomes of CBF, particularly in the context of Nepal. The search first identified articles containing the words 'ecosystem services(s)' OR 'environmental service(s)' AND 'Nepal' in the title, abstract and keywords. Many combinations of keywords (Fig. 1) were used to find more articles. We conducted a quick review of the abstracts of the retrieved articles to evaluate their relevance to ecosystem services. Out of 177 articles, this search revealed only 11 papers that addressed ecosystem services in Nepal. To capture additional relevant information, we continued to search using databases for articles including conference proceedings, book chapters, government publications, technical reports, agency reports, student theses and synthesis papers in regards to ES in Nepal. We also visited various organisations in Kathmandu (the Ministry of Forest and Soil Conservation (MFSC), World Wildlife Fund, Nepal, the Integrated Centre for International Mountain Development and other governmental and non-governmental agencies) and collected nine grey literature reports and unpublished documents related to ES. A few recent important ES articles were collected and appraised briefly (e.g., Arkema et al., 2015; Braat and de Groot, 2012; Daw et al., 2015; Guerry et al., 2015; Grima et al., 2016; Polasky et al., 2015; Reyers et al., 2015; Scarlett and Boyd, 2015; Scolozzi et al., 2014; Wong et al., 2015). The aim of reviewing these articles was to glean the latest developments in ES science as practised in other countries and to utilise this learning in the context of Nepal.

In the second part of the literature review, we carried out a similar search for documents having the words 'forest policies' OR 'forestry sector policies' AND 'Nepal' related to forest policies. We found some 208 articles, of which 15 were selected as being most relevant for our forest policy review. Some important policy documents were also collected from the MFSC. Moreover, we performed a Scopus search using the combination of keywords 'community forestry' OR 'community-based forestry' AND 'Nepal' to find articles related to CBF. In this case; we focused solely on peer-reviewed articles because of the huge number of hits in Scopus. In a quick review; the number of relevant papers fell to 29 that addressed CBF outcomes; that is; issues related to water; biodiversity; carbon; forest cover; forest quality; forest restoration; governance; local forestry institutions; working plans; and local capacity in forest management.

2.2. Applied thematic analysis

The most significant articles, reports and policy documents related to CBF and ES were selected, reviewed and qualitatively analysed. For this, we utilised the 'applied thematic analysis' (ATA) approach (Guest et al., 2012) to analyse the evolution of CBF and its relationship with ES, as applied to a recent study in South Africa (Sitas et al., 2014a). ATA involves the synthesis of key concepts in one methodological framework and their adaptation to an applied research context (Guest et al., 2012, 2013). This process is designed to identify and scrutinise themes from textual data in a transparent and credible way (Guest et al., 2012; Tuckett, 2005). Themes are created through induction and verified through deduction, moving back and forth between concepts and the data (Guest et al., 2012). It promotes a more discursive interpretation and represents a view of reality through the text to find topics that are progressively integrated into higher order themes as a process of de-contextualisation and re-contextualisation (see Fig. 2). The results were grouped into six themes (Table 1).

2.3. Analysis of benefits and services from CBF

Various themes emerged through the process of ATA; we discuss each of them in detail in different sections. However, changes in benefits and services from CBF before and after CBF (present

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