Forest Policy and Economics 94 (2018) 1–10

Contents lists available at ScienceDirect

Forest Policy and Economics

journal homepage: www.elsevier.com/locate/forpol

Making a bridge between livelihoods and forest conservation: Lessons from non timber forest products' utilization in South Sumatera, Indonesia

Jun Harbi[a], James Thomas Erbaugh[b], Mohammad Sidiq[c], Berthold Haasler[c], Dodik Ridho Nurrochmat[d,*]

[a] Forestry Department, Faculty of Agriculture, Muhammadiyah University of Palembang, Indonesia and Northeast Forestry University, Harbin, China
[b] School for Environment and Sustainability, University of Michigan, Ann Arbor, USA
[c] Biodiversity and Climate Change (BIOCLIME), Deutsche Gesellschaft fuer Internationale Zusammenarbeit (GIZ), Germany
[d] Department of Forest Management, Faculty of Forestry, Bogor Agricultural University, Indonesia

ARTICLE INFO

Keywords:
Biodiversity conservation
Forest management units
Livelihoods improvement
NTFPs utilization

ABSTRACT

Promoting forest conservation as well as the well-being of forest proximate people requires an appropriate balance of regulation, enforcement, and incentives. When regulation and enforcement are minimal, economic incentives for low-intensity and non-deleterious forest use can provide conservation and livelihood benefits. One management option for promoting low intensity and non-deleterious forest use includes the harvest and production of non-timber forest products (NTFPs). This research identifies and examines strategies to promote sustainable livelihoods in a conservation landscape. We assess Pangkalan Bulian Village, Musi Banyuasin District, South Sumatra Province using the Community Livelihood Appraisal and Product Scanning (CLAPS) method to describe potential commodities and conduct value chain and market analyses on downstream sectors. Data collection included in-depth interviews, focus group discussions, and household surveys disseminated through snowball sampling. We find that rattan is a priority NTFP due to the presence of abundant raw materials, trained human resources, and potential markets. Actors involved along the value chain are collectors, local brokers, large collectors, small processors, large processors, retailers and end consumers. Profit margins earned along each link of the value chain are around 25%. Thus, we encourage rattan harvest and production as a low-intensity and non-deleterious forest use that can simultaneously benefit local livelihoods and forest conservation in a landscape where protected area rules and regulations are difficult to enforce.

1. Introduction

The relationship between forest conservation and the well-being of forest proximate people is of crucial concern to conserving biodiversity, reducing carbon emissions, and promoting sustainable development (Kanowski et al., 2011; Thompson et al., 2011). In this text, we use the most formal interpretation of forest proximate people: human actors within communities that directly rely on forest landscapes for commercial and/or subsistence needs (Newton et al., 2016). Without specific regulation, enforcement, and incentives, forest proximate communities tend to reduce forest cover in order to provide short-term as well as long-term benefits (see Nurrochmat et al., 2017); however, with the appropriate set of rules and norms, communities are able to conserve forests while benefiting directly and indirectly from forest areas (Birgiantoro and Nurrochmat, 2007; Roslinda et al., 2012; Adalina et al., 2014).

Forest use can be categorized as consumptive and indirect (Gregersen, 1995) as well as deleterious and non-deleterious. Consumptive forest use refers to the collection of extractive goods from a forest: timber, fruit, fodder, bushmeat, etc. Indirect uses include activities that do not result in extraction, including recreation, tourism, education, intercropping, etc. (see Darusman et al., 2001). Deleterious uses decrease or otherwise alter forest cover, a common metric used to measure the efficacy and success of conservation programs (Blackman, 2013). Non-deleterious uses are those which do not reduce forest canopy cover. Fig. 1 presents a conceptual model for considering the intensity of consumptive use and the percent change in forest cover.

We provide the consumptive intensity and percent forest cover change curve –as one of the important indicators for an alarming situation of forest conservation- in order to outline how, as intensity of consumptive forest use increases, the percent of altered (i.e. removed, replaced, etc.) forest cover similarly changes. Two interrelated theories of intensification and land cover change form the basis of this curve. First, the relationship between population and agricultural land

* Corresponding author.
E-mail addresses: jerbaugh@umich.edu (J.T. Erbaugh), mohammad.sidiq@giz.de (M. Sidiq), berthold.haasler@giz.de (B. Haasler), dnurrochmat@ipb.ac.id (D.R. Nurrochmat).

https://doi.org/10.1016/j.forpol.2018.05.011
Received 28 February 2017; Received in revised form 20 May 2018; Accepted 23 May 2018

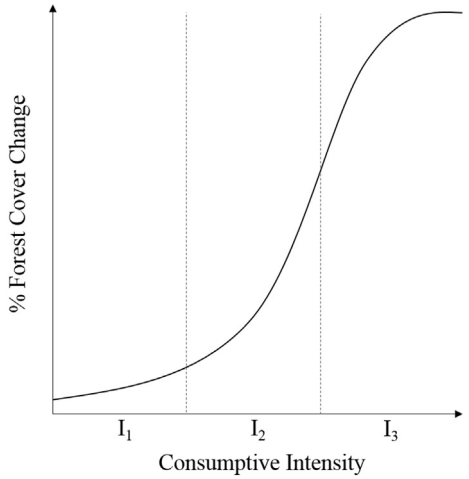

Fig. 1. Consumptive intensity by % forest cover change.

(Lambin and Meyfroidt, 2011); second, the relationship between natural ecosystems and forest frontiers with land-use intensity (Foley et al., 2005). Although the nature of these relationships can vary across time and location (Ashraf et al., 2017), each of these conceptual models illustrate that in a complex situation of forest tenure (see Nurrochmat et al., 2014), an increase in land-use intensity –which is influenced by power and interests of actors (Maryudi et al., 2018; Maryudi and Sahide, 2017) is directly related with land cover change. Further, each of these instances posit shifting marginal change along the curve. In the example we provide (Fig. 1), the intensity of consumptive forest use demonstrates shifting marginal change in the percent of altered forest cover, until no more forest cover can be altered (i.e. complete deforestation). While we recognize the simplified nature of this curve, we use it as a conceptual device to illustrate how increasing intensity of consumptive forest use results in increasing forest cover change and even complete deforestation due to forest conversion into other land uses, e.g. plantation (see Susanti and Maryudi, 2016; Prabowo et al., 2017).

As consumptive intensity moves from I_1 to I_3, the amount of forest cover that is altered increases. Thus, assuming static forest cover is the most "conservation friendly" state, activities within I_1 include forest uses that are best aligned with conservation. Such activities include indirect uses, such as recreation, tourism, or education (see Ekayani et al., 2014), in addition to the low intensity collection of many non-timber forest products, such as honey, mushrooms, fruit, fodder, and etc. (e.g. Dave et al., 2017; Ingram et al., 2017). Consumptive uses in I_2 alter a greater amount of forest cover than natural processes, indirect uses, or low-intensity consumptive use. I_2 forest uses may include intercropping, low-levels of selective logging, or intensified collection of products from I_1 (Bhagwat et al., 2005, van der Werf et al., 2009). Finally, consumptive uses in I_3 greatly affect change in forest cover from baseline. Forest uses in I_3 generally refer to the harvest of wood products, and so represent more intensive selective logging through clear-cutting or complete deforestation. However, I_3 uses may also include excessive collection of products from either I_1 or I_2. Forest use intensity is not entirely determined by a given product, but by the combination of the product and the extent to which it is harvested (Arnold and Ruíz Pérez, 2001).

To align the forest use of forest proximate people and conservation agendas, lower-intensity use is crucial. To promote low-intensity forest uses, states and communities often rely on a combination of state mandated policy and enforcement (see Maryudi, 2016), market incentives, and community management (Agrawal and Lemos, 2007). For the conservation of forests, these three methods for promoting forest conservation can be grouped, broadly, into regulation/enforcement or economic incentives for indirect and low-intensity forest use.

A growing body of literature that examines protected area impacts on reducing deforestation provides substantial evidence that protected areas in Indonesia (Gaveau et al., 2009; Shah and Baylis, 2015) and around the world have reduced deforestation (Nolte et al., 2013; Ferraro et al., 2015). It is very important to make a bridge between livelihood and forest conservation because "treat" from human activities is often recognized as a proxy for a set of regulations and enforcement aimed to conserve forest area and reduce human impact; indeed, protected area assignment cannot effectively conserve forest areas if it allows and/or promotes high intensity consumptive uses (Wilkie et al., 2001). However, aligning livelihood opportunities for proximate forest people provides another avenue to conserve forest lands that can reach beyond territorialization, regulation, and enforcement (Vang-Rasmussen et al., 2017) as well as formalization (Erbaugh et al., 2016).

By aligning the livelihood opportunities and incentives for forest proximate people with consumptive but non-deleterious forest use, community managed forests have demonstrated the ability to conserve forest land at a level on par with protected areas (Miranda et al., 2015; Porter-Bolland et al., 2012). This "alignment" of opportunities and incentives is particularly prurient for conservation landscapes that lack sufficient regulation and enforcement necessary to deter forest proximate people from consumptive and deleterious forest use.

The Meranti[1] Protection Forest (MPF), located in the Meranti Production Forest Management Unit (FMU) in Batang Hari Leko subdistrict, Musi Banyuasin district is one of a number of protection forests in South Sumatra. "Protection forests" are a particular classification of land use type, defined and managed by the state (Law 41/1999). The MPF is adjacent to Dangku Wildlife Reserve, which is part of the Dangku Bentayan Conservation FMU. The Dangku Bentayan landscape has a very high level of biodiversity (Prasetyo et al., 2014; Ministry of Forestry, 2014), including the Sumatran tiger (Imada et al., 2013; Mahanani and Pitria, 2013). However, the landscape is currently under threat from conversion for other land uses, including poaching, illegal logging and wildlife trading (Kumar and Shahabuddin, 2005).

Although the MPF and other regions within the Dangku Bentayan Conservation FMU have been designated as protected areas, regulation and enforcement have not been sufficient to appropriately conserve forest cover. Based on law No. 41/1999 on forestry, deforestation within protection forests is prohibited. However, the MPF is located within an FMU where there exist overlapping claims on 38.5% of its land area (Napitu et al., 2017). Overlapping claims make regulating and enforcing limited human impact in the protection forest area difficult (see Nurrochmat et al., 2012; Nurrochmat et al., 2014), often leading to a misalignment between forest use and forest conservation (Gaveau et al., 2017).

In similar contexts, where protected area regulation and enforcement are outweighed by consumptive economic forest uses, non-timber forest products (NTFPs) have demonstrated an ability to align forest use and conservation (Ticktin, 2004). NTFPs encourage communities to conserve forest landscapes in order to receive both short- and long-term benefits for livelihoods, food, and health security (FAO, 1999). In this manner, NTFPs can support sustainable forest management and conservation strategies (Arnold, 2002), while providing alternative sources of cash income for the rural poor (Dash et al., 2016; Ros-Tonen and Wiersum, 2005; Ndangalasi et al., 2007; Giliba et al., 2010; Kar and Jacobson, 2012). Furthermore, NTFPs contribute significantly not only to the livelihoods of rural residents (Sunderlin et al., 2005; Wunder, 2003; Wunder et al., 2014; Neumann and Hirsch, 2000; Steele et al., 2014), but also to those who are less formally forest proximate people (Newton et al., 2016). That is, people and communities who own homesteads, live in open spaces within towns, or on the urban periphery (Kaoma and Shackleton, 2015).

Planning for livelihood improvement requires analytical tools and

[1] In Indonesian context, Meranti refers to all trees of the family of Dipterocarpaceae.