



Farm-forestry in the Peruvian Amazon and the feasibility of its regulation through forest policy reform

Robin R. Sears^{*,1}, Peter Cronkleton, Fredy Polo Villanueva², Medardo Miranda Ruiz, Matías Pérez-Ojeda del Arco³

Center for International Forestry Research (CIFOR), c/o Centro Internacional de la Papa (CIP), Av La Molina 1895, Lima, Peru

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ABSTRACT

In 2015 the Peruvian government launched a new set of regulations associated with the forest law aimed to increase competitiveness of the timber sector, ensure the conservation and sustainable production of timber on public and private forestlands, and improve rural livelihoods. Small-scale timber producers have been marginalized in the sector in the past, and the new regulations claim to provide pathways to formalization for these actors. We draw on policy analysis and field research in the central Amazon region of Peru using mixed methods to characterize smallholder on-farm timber production and evaluate the feasibility of the new regulatory mechanisms for formalizing small-scale timber producers. Through examining a case study on the production and sale of the fast-growing pioneer timber species *Guazuma crinita*, locally known as *bolaina*, we found a diversity of management practices, with the strongest reliance on natural regeneration in agricultural fallows, an informal supply chain, and no case of formal documentation at time of sale. We assessed that none of the new regulatory mechanisms will accommodate the sale of timber produced in agricultural fallow stands. We recommend the inclusion of fallow timber in the new forest plantation registry, which could result in the formalization of the supply chain and create an incentive to increase production by small-scale producers.

1. Introduction

The government of Peru has staked out ambitious environmental goals to halt deforestation by 2021 and reduce greenhouse gas emissions from land use change (MINAM, 2011). As a signatory of the 20 × 20 Initiative, Peru has also committed to reforesting 3.2 million hectares of degraded land. Achieving these goals requires major changes in the agriculture, forest and mining sectors (Finer and Novoa, 2017).

One group of actors that operates at the intersection of agriculture and forestry is the non-indigenous smallholder farmer. Smallholder farmers in the Amazon are important forest stakeholders, benefiting directly from forest ecosystem services while also shaping the forested landscape (Brondízio and Siqueira, 1997; Coomes et al., 2000; Cronkleton et al., 2013; Padoch and Pinedo-Vasquez, 2010). Many integrate agriculture, livestock, agroforestry, and forestry in complex landscape mosaics, producing food, fuel, medicine, timber and other products for subsistence and local and national markets (de Jong, 2001;

Padoch and Pinedo-Vasquez, 2006; Pokorny et al., 2011; Sears and Pinedo-Vasquez, 2014).

The diverse roles played by this heterogeneous population, specifically in the forest sector, are poorly understood by government agencies and even development organizations and are thus unrecognized or underappreciated. Their productive activities in both agriculture and forestry are not accounted for in official statistics. Because they are informal, they are easy to blame as a driver of deforestation (Ravikumar et al., 2016). Policy options that are based firmly on the segregation of forestry and agricultural are largely unworkable for these landholders (ICRAF, 2001; Pokorny and de Jong, 2015), a problem even recognized by the national forest authority (SERFOR, 2015). As a result, smallholders have been either unable to participate formally in the forest sector or felt little incentive to do so. Initiating steps to include smallholders in national environmental strategies requires that policy-makers better understand their land use practices and decision-making processes.

An opportunity to highlight and support the role of these actors in

* Corresponding author.

E-mail address: robin.sears@aya.yale.edu (R.R. Sears).

¹ Present address: Hampshire College, 893 West St, Amherst, MA 01002, USA.

² Present address: Centro de Innovación Científica Amazónica (CINCIA), Jr Cajamarca Cuadra 1, Puerto Maldonado, Madre de Dios, Peru.

³ Present address: Sociology of Development and Change Group, Wageningen University, UR, Droevendaalsesteeg 4, 6708 PB Wageningen, The Netherlands.

the forest sector presently exists in Peru, where the government is instituting a forest sector reform. The reform goal is to alter forest use behavior through the recognition of diverse forest stakeholders and the varied motivations driving their behavior. This has opened a debate on potential mechanisms for the formal participation by small-scale timber producers.

This paper is a result of our collaboration with the Peruvian National Forest and Wildlife Service (SERFOR) to analyze policy reform proposals and our subsequent realization that decision-makers lacked sufficient information on the characteristics of smallholder timber production to define viable policy options. We set out to provide such information through the synthesis of new and previous research and current policy analysis. Our specific research objectives were to characterize smallholder on-farm timber production systems and evaluate the feasibility of new regulatory mechanisms for addressing the needs of producers in the farm-forestry sector. We asked what mechanisms do the new forest regulations present for formalizing the engagement of these timber producers in the forest sector. Our ultimate goal was to provide recommendations for promoting and formalizing farm-forestry systems in Peru, and for this invisible group to gain recognition for their contribution to forest conservation and restoration.

In the next section, we briefly introduce the concept of farm-forestry and highlight trends in Peru's current forest policy reform. Subsequently, we present field research results, including a case study on production and value chain dynamics of a fast-growing pioneer commercial timber species produced in agricultural fallows, *Guazuma crinita* Mart. (Malvaceae), known as *bolaina* in Peru. We then analyze the current situation, assessing the feasibility of formalizing this value chain.

2. Farm-forestry in the Amazon

Smallholder farmers around the world manage diverse, complex and dynamic production landscapes, and, in many cases, integrate timber production in their agricultural systems (Alcorn, 1984; de Jong, 2001; Hoch et al., 2009; Holding Anyonge and Roshetko, 2003; Pokorny et al., 2011; Summers et al., 2004). In these endogenous systems of forest production and conservation, small-scale farmers produce timber employing a diverse spectrum of interlinked practices, including forestry, agroforestry, agro-pastoral, and agro-silvo-pastoral systems. These “domestic forestry” systems (Michon et al., 2007), or farm-forestry, are distinguished from conventional forestry in that they integrate timber into a diverse production landscape. This type of production is also distinct from the extraction of timber from natural forest or forest remnants.

Throughout the Amazon, farm-forestry relies on multiple silvicultural approaches. Farmers typically manage the natural regeneration of timber species in cyclical successional systems in clearings periodically opened for crop fields or pasture. The secondary forests developing on fallowed land are dominated by fast-growing pioneer tree species (Portocarrero Silva, 1999) and can be considered managed secondary forest of anthropogenic origins. Another common component of the farm-forestry system is enrichment planting, where farmers plant or transplant both fast-growing pioneer species and high-value, over-exploited species on their landholdings. Both the fallow forests and mixed stands with enrichment plantings serve multiple ecological and productive functions, including soil conservation and rejuvenation, weed and pest control (Marquardt et al., 2013), creation of animal habitat, and production of wood and non-wood forest products (Klemick, 2011; Padoch and Pinedo-Vasquez, 2010).

In some cases, farmers may establish monoculture plantation systems, planted with orderly rows and spacing based on project-defined technical specifications. Such a technical approach entails high labor and capital input, as well as specialization, and often depends on external incentives for farmers to justify the investment. Thus, it is rarely adopted or successful (see, for example, contributions in Scoones and

Thompson, 1994). On their own, farmers typically opt for more diverse agroforestry and successional silvicultural systems that are more resilient and have lower risk and establishment costs. These systems comprise part of the integrated farming systems typical of long-time resident farmers in Amazonia.

3. Forest sector reform

Peru has launched a comprehensive forest policy reform, with new legislation to better accommodate the country's administrative decentralization and to respond to a call for social inclusion in forest governance processes. In 2013, Peru approved the National Forest and Wildlife Policy to serve as a guideline for forest and wildlife management at all levels of government (D.S. No 09-2013-MINAGRI). The central pillar of the policy was the 2011 forest law (Law No. 29763), whose development was guided by principles of social inclusion and equity regarding access to forest resources. The forest policy established that the State should support forestry and productive agroforestry systems among diverse actor groups at different levels of governance, including small-scale producers. This was the first law in Peru to be developed in accordance with the new requirement for “prior consultation” with indigenous groups (Law No. 29785), and additional measures were taken to open the participation to a wider range of stakeholders. The forest law entered into force in 2015 when the forest regulations associated with it were passed.

Our forest policy analysis was initiated in 2014 and 2015, prior to the field research reported here, and is based on prior knowledge of the smallholder forestry systems. We reviewed drafts of the forest regulations, evaluating their suitability for facilitating the formal engagement of smallholder farmers in the timber sector. We limit our analysis to the few components of the regulations that are relevant to rural farming landscapes in non-indigenous villages in the Amazon. We contributed to the ongoing discussions of these draft regulations with national and regional forest authorities. Our final analysis, presented in the discussion section of this paper, was refined based on fieldwork results from mid-2015 reported in this paper.

There are three mechanisms defined in the regulations that could potentially apply to smallholder forestry systems: Management Plan, Management Declaration, and Plantation Registry. Which mechanism is relevant to who depends on a combination of the type of property right (title or usufruct rights contract) held by the farmer, and the kind of silvicultural system (agroforestry, plantation, natural forest management) employed (Table 1).

An important point underlying these options is that Article 4 the forest law stipulates that trees in forest plantations on private and communal property are considered private property, and thus do not require state authorization to harvest. Whilst trees and forests established naturally, either on public or private land, is national forest patrimony and do require a management plan and authorization prior to utilization. Its timber is subject to taxation.

To be able to understand the policy options in the context of farm-forestry, we introduce the relevant mechanisms under natural forest management and plantations, and later assess their feasibility for smallholder farmers against the actual production practices we have found in the field.

3.1. Natural forest management

There are two types of authorization to extract timber from natural forests, according to the level of harvest intensity. Holders of a concession to natural forest on public lands who wish to harvest at medium- to high-intensity (i.e., mechanized) can access this timber only under an approved forest Management Plan (Article 88, DS 018-2015-MINAGRI). Developing such a plan requires advanced technical knowledge and skills and the signature of a professional forester. The forest authority must review and approve all plans and operations

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