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Institutional analysis of causes of deforestation in REDD+ pilot sites in the Equateur province: Implication for REDD+ in the Democratic Republic of Congo

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ABSTRACT

As DRC moves from REDD+ readiness to implementation, analysis of the causes of deforestation at the local level is paramount. The present study contributes to this by assessing both proximate and underlying causes of deforestation in two REDD+ pilots of the Équateur province. The study found that agricultural expansion through shifting cultivation is the main proximate cause of deforestation. This activity is accelerated by logging that simplifies clearing of land. Logging also contributes to the total biomass loss from the forest. Shifting cultivation is driven by the poverty conditions of the study area. Poverty is also linked to the political and institutional structures of forest governance. These structures are controlled by political elites who influence local decisions to clear forests. While actions to curb deforestation might be challenging, this study suggests that addressing the underlying causes through effective land use planning and developing robust accountable institutions while providing alternative economic opportunities to the local population are necessary.

1. Introduction

The Democratic Republic of Congo (DRC) is a focal country in the climate policy area called REDD+ (reduced emissions from deforestation and forest degradation). With approximately 152 million ha of dense tropical forest, the DRC accounts for most of the remaining rainforest in the Congo Basin. Although rates of deforestation in the DRC are low by comparison to countries in the Amazon basin and Southeast Asia, almost half a million hectares are lost annually (FCPF, 2016). Economic growth and poverty alleviation are top national priorities and the country's forests are under increasing threat from small holder agricultural expansion, with the prospect of large scale commercial and industrial agriculture on the horizon (IMF, 2013). As one of the least developed countries in the world, DRC is a high forest cover and low deforestation (HFLD) country. One of the key strategies articulated in the Paris Agreement's strategies to limit temperature increase is continuing to keep deforestation rates low in HFLD countries (UNFCCC, 2015).

Central to a successful REDD+ program is a basic comprehension of drivers of deforestation in order to identify how to best enhance forest carbon stocks. Some studies have argued that agricultural expansion due to population growth is the main driver of deforestation in the DRC (Defourny et al., 2011; Tollens, 2010), issues that are strongly reflected in the DRC REDD+ strategy. However, the conclusions of such studies are weak because of a poor contextual understanding of deforestation dynamics, due to the absence of reliable historical data and detailed knowledge on the diversity of forests in terms of their ecological, economic and social values (Greenpeace-International, 2010; Ickowitz et al., 2015; Mpoyi et al., 2013).

In this paper, we assess the dynamics of deforestation in two REDD+ pilot project sites in Équateur Province of the DRC, by considering both proximate and underlying causes. We ask the following three questions: 1) What activities cause deforestation in the pilot project area?; 2) What are the most important dynamics influencing this process?; and 3)What are the implications of our findings for the DRC REDD+ strategy? The findings make a key contribution to the current debate about drivers of deforestation and REDD+ policies aimed at reducing deforestation at the regional and national level of the DRC.

The paper consists of 5 sections. Following the introduction, Section 2 presents the analytical framework employed. Section 3 provides the geographical context and the research methods used. Section 4 presents the results of our analyses regarding proximate and underlying causes of deforestation in the Equateur province. Finally, in Section 5, we discuss the findings in relation to the DRC REDD+ strategy and

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conclude with key suggestions for policy action.

2. Analytical framework

Tropical deforestation is the direct result of land cover and land use changes. Explaining deforestation demands first, assessing what changes are occurring to the forests (biophysical) and second, what human processes (social and economic) are creating the changes in those specific locations. Focusing on the second set of issues, Geist and Lambin (2002) conceptualize the complex set of social and economic actions and factors that drive deforestation into two categories: (1) proximate causes such as agricultural expansion, wood extraction, expansion of infrastructure and (2) the underlying driving forces such as demographic, economic, technological, policy/institutional, cultural and socio-political factors. The proximate causes can usually be clearly identified for analysis; however, assessing the local direct impact of the underlying driving forces is a more challenging proposition. The effect of underlying forces are linked to socio-economic and political process structured by relations of power (Adger et al., 2001; Bromley 1999; Fairhead and Leach 1998; Hersperger et al., 2010).

In this paper, we use an adapted version of the environmental governance framework by Vatn (2011) to assess the proximate causes and underlying driving forces of deforestation in the REDD+ pilot project areas (Fig. 1). This framework draws on the Institutional Analysis and Development IAD framework (see Ostrom et al., 1994).

The framework emphasizes the role of actors and their actions. They are defined as social entities, in our case involved in the use and management of forests. They are grouped in two categories—political and economic (some actors 'move between' the two categories). Economic actors are those who use resources e.g., private agents such as farmers and loggers, but also the state as the *de jure* forest owner receiving revenue from concessions. Political actors define and enforce rules of use and control of forest resources and can include politicians, government agencies involved in forest management as well as traditional or customary authorities

The motivations that drive actions – in our case use of forests – are strongly influenced by attributes of the resource, technology, infrastructure, socio-economic characteristics of the communities and institutional arrangements. For example, the hydrological conditions of the forests influence availability of resources. The construction of roads for commercial timber exploitation opens up the forest to other land use activities (shifting cultivation, charcoal production, and hunting). Socio-economic characteristics of the communities such as ethnicity, proximity to the resource base, market access and social networks, influence individuals' and households' (economic actors) decisions to convert the forest to other land use activities. Determining why an actor chooses a specific option thus requires an analysis of the socio-cultural context, to reveal important relationships and moral codes that interplay with economic motives (Cleuren, 2001).

The institutional arrangements influence the motivations and actions of both political and economic actors. These structures include procedures governing rulemaking, e.g., constitutions, customary law or collective action, as well as rules governing access and use of forests (resource regimes). Of key importance are institutions affecting the interactions between actors (Vatn, 2011). Actors may interact through voluntary exchange (involving the state and logging companies or traditional authorities and local loggers) or by command (state and communities), the granting of formal property rights, or by following local norms/customary rules.

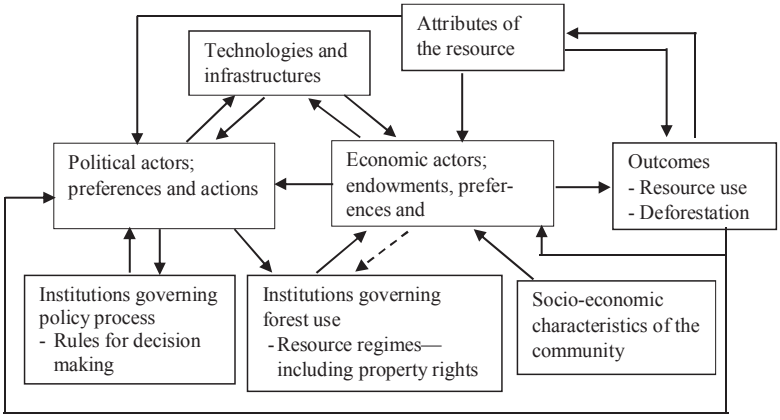
From the institutional arrangements perspective, deforestation outcomes largely depend on three key factors: 1) the political and institutional structures; 2) the characteristics of the resource and; 3) the interests and values of the actors themselves. The resource regime may fit well the aims defined and the dynamics of the forest resource, but may have limited effect if actors are motivated to manipulate the rules (rule breaking, corruptions, illegality, and patronage). Such actions may require changing institutional structures.

3. Study area and methods

3.1. The study area

This study was conducted in two territories of Équateur province—Bikoro and Gemena territories—where the Woods Hole Research Centre (WHRC) has initiated a REDD+ capacity building program and community level pilots in partnership with the Ministry of Environment and Sustainable Development (MECNT), supported by the Congo Basin Forest Fund (CBFF). The Equateur province has a total area of 403,292 km^2 (equivalent to the land area of France) and contains 28% of the total forest area in the DRC (UNDP, 2009) (Map 1). In 2008, the population of the province was estimated at 3,574,385 inhabitants distributed into two main ethnic groups, the Bantu and the Batwa (also known informally as Pygmies). The Batwa form only about 20 per cent of the total population and are located in the southern part of the province. The Bantu consists of different sub-ethnic groups, such as the Bangala; the Ngwaka in the north of the province; and the Mongo, Ntumba and Ekonda in the south. The province was divided into five new provinces in July 2015, following the national decentralization reform, but our analysis is based on the political and governance structure of the province before the division.

The study site in the Bikoro territory is located in the southwest of the province accommodating swamp equatorial rainforest, inundated



The bold arrows indicate strong interaction while the dashed arrow indicate weak interaction

Fig. 1. Environmental governance framework for analyzing resource-use problems.
Source: Adapted from Vatn (2011)