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# Analysis of land management and legal arrangements in the Ecuadorian Northeastern Amazon as preconditions for REDD+ implementation

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ABSTRACT

Ecuador is currently completing the readiness phase for the implementation of the Reducing Emissions from Deforestation and forest Degradation (REDD+) mechanism at the national level. Many challenges regarding rights, multilayered governance and land tenure remain open in this country where Indigenous Peoples (IPs) occupy 68% of the Ecuadorian Amazon. We focused on the Yasuní Biosphere Reserve to exemplify obstacles and answers found in the last years. In a REDD+ pilot project, six communities of the most widespread ethnicities (Shuar, Kichwa and Colonists) living in the buffer zone of the Yasuní National Park (YNP), were chosen. We used literature research, analysis of international and national agendas, as well as primary data on REDD+ perception obtained through semi-structured household interviews and personal observations. First, we reconstruct the historical development of territorial configuration and present the actual land tenure arrangements. And then, we analyze persistent management conflicts within institutional, planning and normative instruments. Finally we explore legal frameworks with a focus on participation and consultation. Our results show that insecure and overlapping land rights, as well as unclear and contradictory institutional responsibilities are major problems for REDD+ implementation. Despite great advancements that have been made, establishing equitable mechanisms to engage IPs and forest owners and stakeholders across many sectors in REDD+ is required. Especially in Ecuador where oil extraction is a priority and the central government has an exclusive competence over ecosystem services including carbon rights. Implementing fair methods for participation, benefit sharing and transfer of knowledge remains a challenge.

## 1. Introduction

Deforestation and land use change are considered the second highest source of total global greenhouse gas (GHG) emissions, accounting for 12.5% of total anthropogenic emissions between 1990 and 2010 (Houghton et al., 2012). Despite efforts to reduce forest losses, tropical deforestation continued unabated between 2000 and 2012, increasing by 2100 $km^2$ per year (Hansen et al., 2013). The world's largest continuous rainforest areas are located in Latin America and principally in the Amazon basin (RAISG, 2015). They represent high carbon sinks (60–80 billion tC; Carvalho et al., 2004) and provide important ecosystem services (Ruesch and Gibbs, 2008). On top of that, Amazonian forests significantly support livelihoods, especially of Indigenous Peoples (IPs) whose territories cover 27.5% of the biome (RAISG, 2015) and directly depend on forest resources. According to Walker et al. (2014), Amazonian IPs territories store nearly one third (32.8%) of the region's aboveground carbon.

In Ecuador, nearly 40% of the original forests have been converted to other uses (Sierra, 2013). The majority of the remaining forests are located in the Amazon, where 10% of them have been transformed (RAISG, 2015). Also located in the Amazon are the majority (86%) of Ecuador's IPs' territories (Lopez et al., 2016). However, IPs have recognized rights over only 68% (ca. 44,437 $km^2$) of those territories (RAISG, 2015; Lopez et al., 2016). Ecuadorian tropical rain forests are among those with highest deforestation rates in South America (FAO, 2015). The FAO (2015) calculated an annual forest loss rate of 0.6% for the period 1990–2015.

Located in Ecuador's northeastern Amazon, the Yasuní National Park (YNP) has been described as one of the most biodiverse ecosystems in the world (Bass et al., 2010). Along with the Waorani Ethnic Reserve

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and the Tagaeri-Taromenane Intangible Zone (ZITT), the YNP forms the UNESCO Yasuní Biosphere Reserve (YBR). The YBR is home to nearly 45,000 people, including 2000 indigenous Waorani who live in the nuclear area (Comité de gestión de la reserva de la biosfera Yasuní, 2011). Other groups include the Kichwa (Quichua), the Shuar, and the Mestizos who reside in the buffer zone (Larrea and Warnars, 2009). The Tagaeri and Taromenane are two semi-nomadic tribes living in voluntary isolation. Their total population is roughly estimated to include 300 individuals (Larrea and Warnars, 2009).

Yasuní is a strategic area due to the non-renewable energy reserves located underneath the YBR upon which Ecuador largely relies (Larrea and Warnars, 2009). Considering its outstanding biological and cultural richness, in 2007 Ecuador offered to abstain itself from extracting such resources from the Ishpingo-Tambococa-Tiputini (ITT) block inside YBR if, in return, the international community assumed half of the otherwise extracted revenues. The initiative was unsuccessful and a recent executive decision to drill in the area showed how at risk ostensibly secure landscapes like the YBR are. Historically, the exploitation of non-renewable resources has caused major shifts in landscape structures (Pappalardo et al., 2013). This has also affected the livelihoods of the native inhabitants, causing serious social and environmental conflicts.

IPs' lands under recognized common property rights serve as natural and social barriers to deforestation and thus enhance sustainable management of resources (Hayes and Murtinho, 2008). However, due to land tenure insecurity, population growth, external pressures such as oil exploitation as well as expansion of the agricultural frontiers, there is uncertainty on how IPs' institutions will adapt and respond to these challenges (Hayes and Murtinho, 2008). Community-based institutions and household decisions regarding land use are already evolving and adapting, influenced by legal and governmental policies (Loaiza et al., 2016), posing the necessity to analyze and perhaps partially revise legal frameworks and development policies to sustainably plan future local development.

REDD+, an international mechanism adopted in 2007 under the UNFCCC framework aims to mitigate climate change by reducing GHG emissions that originate from deforestation and forest degradation. It can therefore be of particular importance for complex forest landscapes like the YBR. REDD+ has the potential to provide incentives for forest conservation, and encourage sustainable development while enhancing the living conditions of local inhabitants (Blom et al., 2010). Efforts to maintain and restore forest carbon pools such as those proposed by mechanisms like REDD+ aim to help secure important ecosystem services' provision worldwide. However, other mitigation mechanisms under the Kyoto Protocol, such as the Clean Development Mechanism (CDM) have shown to be inflexible, non-replicable and inaccessible to small landholders (Blom et al., 2010). Therefore, REDD+ must overcome these obstacles. In Latin-America REDD+ will need to focus in building capacities in forest related institutions, reinforce inter-institutional communication, public participation and safeguards (Larson and Petkova, 2011). Good forest management is related to integrative policies and strong engagement of all actors. Reed (2011) believes that IPs in Ecuador will consider entering into REDD+ if the institutional and legal frameworks will protect their culture, lands and independence.

In Ecuador REDD+ has just finished its preparation phase, however, its implementation can be extremely complicated due to the interwoven complexity of land arrangements, as is the case of YBR. In 2008 the Ecuadorian government launched the Socio Bosque program, which is a national conservation scheme that gives direct monetary incentives to private and communal forest owners that conserve vulnerable ecosystems. Socio Bosque is now part of the national strategy of REDD+, foreseen as an implementing partner.

Based on the multifaceted region of Yasuní, we analyze the historical and current land arrangements regarding land occupation and tenure systems in a selected case study area. We consider a profound understanding of these factors as a precondition for the effective implementation of REDD+. First, we present an analysis of the YBR land arrangements in two time series: the historical land configuration and a revision of current land tenure and rights arrangements. Understanding rules of tenure and their origin could guide solid strategies to address land rights insecurity in areas that are key to REDD+ success in Ecuador. Secondly, we assess the management layers of territorial administration through normative, administrative and planning instruments at the regional and national levels. Multilayered and harmonized guidelines can ensure clear responsibilities and actions of each actor and forest owner. Thirdly, we examine the actual legal framework for REDD+ implementation in Ecuador with a special focus on participation and consultation. Transparent domestic policies and legislation on REDD+ can assure not only climate change mitigation but also provide social and environmental safeguards. We seek to illustrate the complexity of implementing sustainable development strategies in culturally and biologically diverse areas where non-renewable resource extraction has priority. For that, the YBR is used as an exemplification to show how the overlap of diverse territorial management layers can lead to maladministration. The YBR is probably the most complex case in Ecuador, as it has more land planning and management layers than any other area in the country. The overlap of different land categories coupled with conflicting administrative entities' competences hinder its management and thus the overall conservation goals.

### 1.1. Case study area and research methods

The present research is based on a REDD+ pilot project in the YBR. The DEIC Yasuní project (Deforestación Evitada Integral con las Comunidades) was conducted by the German NGO Welthungerhilfe and its Ecuadorian partners (FEPP-HIVOS) and co-financed by the European Commission. The DEIC project included activities like land planning and management, as well as productive activities to promote food security, income diversification and reduce the pressure on forests.

To explore the legal, management, and REDD+ frameworks, literature research, analysis of international and national agendas, as well as expert interviews ($n$ = 12) were undertaken. Other primary data on REDD+ perception, intra-communal decision-making and land tenure was obtained through semi-structured household interviews ($n$ = 111) and personal observations. Within the DEIC Yasuní project implementation area, two communities each of the Shuar, Kichwa and

**Table 1**
Studied communities.
Source: own elaboration, based on data from Loaiza et al., 2015, 2016.

| | La Reina | Union Lojana | Tiguano | Rumiñahui | Mandarina | Sinchi Napo |
|---|---|---|---|---|---|---|
| Ethnic group | Mestizos[a] | | Shuar | | Kichwa | |
| Legal constitution (year) | 1980 | 1991 | 1985 | 1996 | 1998 | 1975 |
| Total area (ha) | 1437 | 1269 | 1394 (1500)[b] | 235[b] | 3076 (2000)[b] | 8420 (8000)[b] |
| Households | 41 (20)[c] | 28 (20)[c] | 35 (20)[c] | 13 (11)[c] | 34 (20)[c] | 38 (20)[c] |

[a] Including European descendant-indigenous mixed migrants that arrived in the Amazon in the 20th century.
[b] Land claimed is inside protected areas or/and in conflict with neighboring communities.
[c] Number of surveyed households. Total surveyed households $n$ = 111.