

The political economy of deforestation in the Colombian Amazon

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Abstract

The Colombian Amazon has experienced rapid forest loss in the past decades due to growing colonization, infrastructure development, and commercial agriculture expansion. While much of the analyses of deforestation in the Amazon have been in Brazil, there is a need to extend to Colombia where forest and land use exploitation are driven by post-conflict social and political dynamics. This research contributes to this knowledge gap by unpacking the mechanisms underpinning deforestation on the northwestern side of the Colombian Amazon. We used *theory-building process-tracing* to guide us in conceptualizing the underlying logics of deforestation in the region through qualitative text analysis of policy documents, articles, reports, and grey literature, and virtual semi-structured interviews with key national, regional and local actors. Findings indicate that the power vacuum resulting from the demobilization of FARC (Fuerzas Armadas Revolucionarias de Colombia), Marxist-Leninist guerrillas, acted as a window of opportunity for peasants, squatters, narco-traffickers, cattle ranchers, landlords, and other investors to access public lands and capitalize from converting forests to coca crops and pastures for cattle ranching. Accumulation of land and surplus primarily from cattle ranching and coca production has increased the ability of these actors to reshape the landscape and societal structures. Traditional elites and old and emerging narco-bourgeoisie have capitalized on preexisting power asymmetries by disproportionately accumulating land, money, gun power, influence, and prestige seeking to consolidate territorial hegemony, and controlling the means for material reproduction in society. Powerful actors use their resources and prestige to displace historically marginalized groups – such as indigenous communities, peasants and squatters – from their means of subsistence and production, resulting in the installation of a capitalist economy based on land rent and drug trafficking, where less powerful and marginalized actors engage in deforestation as means for capital accumulation and subsidizing their peasant and subsistence economies. All this has deepened forest loss, inequalities, and conflict over land access between actors.

Key words: Colombian Amazon, deforestation, drug trafficking, rentier capitalism, power accumulation

Résumé

L'Amazonie colombienne a connu une perte rapide de forêts au cours des dernières décennies en raison de la colonisation croissante, du développement des infrastructures et de l'expansion de l'agriculture commerciale. Alors que la plupart des analyses de la déforestation en Amazonie ont été menées principalement au Brésil, il est nécessaire d'étudier ce phénomène en Colombie, où l'exploitation des forêts et des terres est déterminée par des dynamiques sociales et politiques post-conflit. Cette recherche contribue à combler cette lacune en décryptant les mécanismes qui sous-tendent la déforestation dans la partie nord-ouest de l'Amazonie

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colombienne. Nous avons utilisé le processus de construction théorique pour nous guider dans la conceptualisation des logiques sous-jacentes de la déforestation dans la région à travers une analyse qualitative de documents politiques, d'articles, de rapports et de littérature grise, ainsi que des entretiens semi-structurés virtuels avec des acteurs clés nationaux, régionaux et locaux. Les résultats indiquent que le vide de pouvoir résultant de la démobilisation des FARC (Fuerzas Armadas Revolucionarias de Colombia), guérillas marxistes-léninistes, a constitué une opportunité pour les paysans, les squatters, les narcotrafiants, les éleveurs de bétail, les propriétaires terriens et d'autres investisseurs d'accéder aux terres publiques et de tirer profit de la conversion des forêts en cultures de coca et en pâturages pour l'élevage de bétail. L'accumulation de terres et de surplus provenant principalement de l'élevage de bétail et de la production de coca a accru la capacité de ces acteurs à remodeler le paysage et les structures sociales. Les élites traditionnelles et la narco-bourgeoisie ancienne et émergente ont capitalisé sur les asymétries de pouvoir préexistantes en accumulant de manière disproportionnée des terres, de l'argent, des armes, de l'influence et du prestige, en cherchant à consolider leur hégémonie territoriale et en contrôlant les moyens de reproduction matérielle dans la société. Les acteurs puissants utilisent leurs ressources et leur prestige pour évincer les groupes historiquement marginalisés – tels que les communautés indigènes, les paysans et les squatters – de leurs moyens de subsistance et de production, ce qui entraîne l'installation d'une économie capitaliste basée sur la rente foncière et le trafic de drogue, où les acteurs moins puissants et marginalisés s'engagent dans la déforestation comme moyen d'accumulation de capital et de subventionnement de leurs économies paysannes et de subsistance. Tout cela a aggravé la perte de forêts, les inégalités et les conflits entre les acteurs concernant l'accès à la terre.

Mots clés: Amazonie colombienne, déforestation, trafic de drogue, capitalisme rentier, accumulation de pouvoir.

Resumen

La Amazonía colombiana ha experimentado una rápida pérdida de cobertura boscosa en las últimas décadas, debido a un incremento de la colonización, la infraestructura y la expansión agrícola. Si bien gran parte de los análisis de la deforestación en la Amazonía se han realizado en Brasil, existe la necesidad de estudiar este fenómeno en Colombia, donde la explotación de los bosques y el uso de la tierra está impulsada por nuevas dinámicas sociales y políticas en el post-conflicto. Esta investigación contribuye a cerrar esta brecha de conocimiento al revelar los mecanismos que sustentan la deforestación en el noroeste de la Amazonía colombiana. Utilizamos *theory-building process-tracing* para guiar nuestra conceptualización de las lógicas subyacentes de la deforestación en la región a través del análisis cualitativo de textos de documentos de políticas, artículos, informes y literatura gris, y entrevistas semiestructuradas virtuales con actores clave nacionales, regionales y locales. Actores. Los hallazgos indican que el vacío de poder resultante de la desmovilización de las FARC (Fuerzas Armadas Revolucionarias de Colombia), una guerrilla marxista-leninista, actuó como una ventana de oportunidad para que campesinos, invasores, narcotraficantes, ganaderos, terratenientes y otros inversionistas accedieran a tierras públicas y puedan capitalizar la conversión de bosques a cultivos de coca y pastos para la ganadería. La acumulación de tierras y excedentes principalmente de la ganadería y la producción de coca ha aumentado la capacidad de estos actores para modelar el paisaje y las estructuras sociales. Las élites tradicionales y la narcoburguesía antigua y emergente han capitalizado sobre asimetrías de poder preexistentes al acumular desproporcionadamente tierra, dinero, poder sobre las armas, influencia y prestigio buscando consolidar una hegemonía territorial y controlar los medios para la reproducción material en la sociedad. Los actores poderosos usan sus recursos y prestigio para desplazar a grupos históricamente marginados, como comunidades indígenas, campesinas y ocupantes ilegales, de sus medios de subsistencia y producción, lo que resulta en la instauración de una economía capitalista basada en la renta de la tierra y el narcotráfico, donde los actores menos poderosos y marginados se dedican a la deforestación como medios para la acumulación de capital y el subsidio de sus economías campesinas y de subsistencia. Todo esto ha profundizado la pérdida de bosques, las desigualdades y los conflictos por el acceso a la tierra entre los actores.

Palabras claves: Amazonía colombiana, deforestación, tráfico de drogas, capitalismo rentista, acumulación de poder

Resumo

A Amazônia colombiana sofreu uma rápida perda florestal nas últimas décadas devido à crescente colonização, ao desenvolvimento da infraestrutura e à expansão da agricultura comercial. Embora grande parte das análises do desmatamento na Amazônia tenha sido realizada principalmente no Brasil, há uma necessidade de estudar

esse fenômeno na Colômbia, onde a exploração florestal e do uso da terra é impulsionada pela dinâmica social e política pós-conflito. Esta pesquisa contribui para essa lacuna de conhecimento ao desvendar os mecanismos que sustentam o desmatamento no lado noroeste da Amazônia colombiana. Usamos o rastreamento do processo de construção de teoria para nos orientar na conceituação das lógicas subjacentes ao desmatamento na região por meio da análise qualitativa de textos de documentos de políticas, artigos, relatórios e literatura cinzenta, além de entrevistas virtuais semiestruturadas com os principais atores nacionais, regionais e locais. As descobertas indicam que o vácuo de poder resultante da desmobilização das FARC (Fuerzas Armadas Revolucionarias de Colombia), uma guerrilha marxista-leninista, funcionou como uma janela de oportunidade para camponeses, posseiros, narcotraficantes, pecuaristas, proprietários de terras e outros investidores acessarem terras públicas e capitalizarem com a conversão de florestas em plantações de coca e pastagens para a criação de gado. O acúmulo de terras e excedentes, principalmente da pecuária e da produção de coca, aumentou a capacidade desses atores de remodelar a paisagem e as estruturas sociais. As elites tradicionais e a antiga e emergente narco-burguesia capitalizaram as assimetrias de poder preexistentes ao acumular desproporcionalmente terras, dinheiro, poder de fogo, influência e prestígio, buscando consolidar a hegemonia territorial e controlar os meios de reprodução material na sociedade. Atores poderosos usam seus recursos e prestígio para deslocar grupos historicamente marginalizados – como comunidades indígenas, camponeses e posseiros – de seus meios de subsistência e produção, resultando na instauração de uma economia capitalista baseada no aluguel de terras e no tráfico de drogas, em que atores menos poderosos e marginalizados se envolvem no desmatamento como meio de acumulação de capital e de subsidiar suas economias camponesas e de subsistência. Tudo isso aprofundou a perda de florestas, as desigualdades e os conflitos sobre o acesso à terra entre os atores.

Palavras-chave: Amazônia colombiana, desmatamento, tráfico de drogas, capitalismo rentista, acumulação de poder

1. Introduction

Colombia has almost ten percent of the Amazon basin, and for many years the Colombian Amazon was known for being one of the largest continuous forests in the tropics (Sánchez-Cuervo *et al.*, 2012). Up until 2005 only 7.3% of the Colombian Amazon had been deforested, largely due to the country's 60-year armed conflict between the government, multiple left-wing guerrillas such as FARC, and several far-right paramilitary groups (Murad & Pearse, 2018; Roca *et al.*, 2013). The conflict was fueled by a long history of political violence, lack of state capacity to control vast areas of the country, and the unequal distribution of power, wealth and land (Centro Nacional de Memoria Historica, 2015). Today it is clear that, unlike Brazil where most deforestation analysis has been conducted (Revelo-Rebolledo, 2019), in the Colombian Amazon deforestation has been driven by complex synergies between illegality, informality and armed conflict (Armenteras *et al.*, 2013; Murad & Pearse 2018).

Differences in its causation have resulted in distinct patterns of deforestation between the two countries, which share a border. Deforestation in the Brazilian Amazon is concentrated along the main roads. These routes "then open the gateway to even greater deforestation by spurring extensive 'fishbone' patterns of secondary roads that fan out from the main routes [...]" (Armenteras *et al.*, 2013a; Ungar *et al.*, 2018). In Colombia, however, deforestation resembles an easterly directed wave (Armenteras *et al.*, 2013b; Etter *et al.*, 2006; García, 2013). The northwestern Colombian Amazon is subject to higher colonization pressure due to its proximity to the more densely populated Andean region. As a result, expansion of the colonization frontier has moved in an eastward direction from the Andes over the years (Etter *et al.*, 2006). Thus, forest loss on the Colombia side of the shared border is heavily concentrated in the northwestern side of the region, mostly the western areas of the Putumayo and Caquetá departments, and the southwestern region of the Meta and Guaviare department (Ruiz *et al.*, 2011).

Since the late 1970s, deforestation in the Colombian Amazon has been driven by colonization, agriculture expansion, cattle raising and coca expansion (Castiblanco *et al.*, 2013; García, 2013; Perz *et al.*, 2005; Ruiz *et al.*, 2011). However, since the signing of the Peace Accords between Revolutionary Armed Forces of Colombia (FARC) guerrilla and the national government in 2016, the Colombian Amazon basin has experienced a significant increase in forest loss due to a combination of historical and novel deforestation drivers (EIA, 2019; Global Forest Watch, 2020; González *et al.*, 2018; Revelo-Rebolledo, 2019; Van Dexter

& Visseren-Hamakers, 2020). Where violence and war had prevented large-scale deforestation, the Peace Accords have presented smallholders, large landowners, international companies and criminal organization an opportunity to expand their economic activities to forest remote areas (EIA, 2019; Krause, 2020). Growing investment and expectations of economic development in the post-conflict scenario have resulted in land grabbing, land speculation, and massive forest conversion to cattle ranching (Furumo & Aide, 2017; González *et al.*, 2018; Krause, 2017; Van Dexter & Visseren-Hamakers, 2020). Coca cultivation has also increased due to the influence of residual and emerging trafficking organizations, and poor implementation of the peace agreements (van Dexter & Visseren-Hamakers, 2020).

Under this new scenario, the Colombian government has launched multiple strategies to control unprecedented deforestation in the region. Some examples of this are the *Vision Amazonia* project – a strategy that seeks to cut to zero forest-based net emissions by 2020, create the Colombian Tropical Forest Alliance to promote zero-deforestation commodity supply chains (Ministerio de Medio Ambiente y Desarrollo Sostenible 2020), and consolidate the Intersectoral Commission to Control Deforestation (Ministerio de Medio Ambiente y Desarrollo Sostenible 2020). The national government also launched *Operación Artemisa* as a military and law enforcement strategy to reduce illegal deforestation activities in the Amazon (van Dexter & Visseren-Hamakers, 2020). Yet loss of primary forests is still significantly high with large forest areas being cleared in protected areas and indigenous reservoirs (Global Forest Watch, 2020).

Many argue that failure of current governmental strategies is rooted in an oversimplified diagnosis of the deforestation phenomenon as a criminal-related activity, which results in a disproportionate criminalization of smallholders and coca growers (Krause, 2017). Scholars point out that a more holistic understanding of the problem is needed to preserve the ecological integrity of the region, including an understanding that the underlying logics under which different actors convert forest areas are distinct and often contradictory (González *et al.*, 2018). For this reason, adequate solutions to reduce forest loss in the Colombian Amazon need to acknowledge and incorporate information about the varied social, political and economic logics and motivations that drive deforestation (Armenteras *et al.*, 2013b).

This research intends to contribute to a growing body of knowledge that seeks to better understand deforestation in the Colombian Amazon. The aim of the study is to understand the mechanisms underpinning deforestation in the Northwestern Colombian Amazon by drawing out the underlying logics behind actions and behaviors of different actors (e.g., peasants, squatters, narco-traffickers, cattle ranchers, landlords) driving forest conversion and expansion of the agricultural frontier, and to examine those logics through a lens of power. To do this, we used "theory-building process-tracing," a method that seeks to conceptualize the cause-effect relationship between two entities by making inferences on hypotheses about how the process took place and how it generates the observable outcome. We combine empirical evidence with theoretical insights of Marxism and social power theory to provide a mechanism-based explanation of deforestation in the region.

The article is structured as follows. Section two discusses analytical concepts of hegemony, accumulation by dispossession, rentier capitalism, and social power in socio-ecological systems, which collectively illuminate different vectors of power (e.g., money, land, ethnicity, political status) that mediate the access and appropriation of land and natural resources in political ecology. Section three is a description of the study area, while section four describes the methods used for identifying trends of forest use and unpacks the logics of deforestation in the region. Sections five and six present the findings, reflections and the limitations of this study.

2. Rentier capitalist economy and deforestation in the Colombian Amazon

In this section we aim to provide a mechanism-based explanation of how deforestation is driven in the northwestern side of the Colombian Amazon. Mechanism-based explanations seek to open the black box containing a cause-effect relationship between one or more entities connected via one or more causal mechanisms (Beach & Pedersen, 2018; Hedström & Ylikoski, 2010; Ingo Rohlfing 2012). Causal mechanisms are complex systems of interlocking entities (e.g., actors, organizations, structures) that transfer energy, information, or matter to other entities in the system producing an observable outcome under specific conditions (Beach, 2016; Beach & Pedersen, 2018; Bennett & Checkel, 2015).

We have assumed causal mechanisms to be unobservable ontological entities in the world, recognizing their study to be possible only through hypothesis-testing of theories or schematics that describe the causal forces producing the observable outcome (Bennett & Checkel, 2015). Thus, we use realist constructivism, combining a realistic ontology with a constructivist epistemology, to present a theoretical understanding of the causal process of deforestation in the Colombia Amazon. Using this approach, we understand deforestation as a byproduct of social formation in the region, where agents are power seekers. Causality is the causal power of both agency and structure. More precisely, we recognize agents' exercise of power as a real-world process upheld by their interests, morality and the power they hold. Agents' rationality, however, is heavily determined by situated normative structures and social context. In other words, causality is the process that results from the assumption that, while the agents' rationality driving physical phenomena can escape the process of social construction, it is heavily influence by it (Prieto, 2020).

Our "theory-building process-tracing" guided content analysis to provide a mechanism-based explanation of forest loss and conversion. The method builds theories and identifies causal mechanisms, explaining the relationship between two entities that can later be generalized to similar cases (Beach & Pedersen, 2018). The method is used for tracing the steps of a causal process of interest (Beach, 2016), attempting to identify the intervening causal mechanism between an independent and dependent entity. Hypotheses are formed about how the process took place and how it generates the observed outcome (Beach & Pedersen, 2018; Bennett & Checkel, 2015; Ingo Rohlfing, 2012). This method combines inductive and deductive approaches to construct a generalizable explanation in a case study, assuming that there is a more general causal mechanism (Beach & Pedersen, 2018; Ingo Rohlfing, 2012).

We identify the actors driving deforestation, their rationality and the conditions underpinning cause-effect relationships. We begin with assuming that today's economic rationalities and relations are embedded in a global capitalist order. More precisely, we recognize that, after the signature of the Peace Accords in 2016, the integration of the Colombian Amazon with the global capitalist economy has led to an opening for land grabbing and speculation, since material wealth of involved actors is rooted in agrarian rentier economies underpinned by processes of accumulation by dispossession (Krause *et al.*, 2022). We first use Marxist theory to conceptualize economic relations of the agrarian rentier economy. We later introduce Boonstra's (2016) conceptualization of power to better understand how actors' behavior is linked to power. A summary of the key definitions and concepts used for our analysis is presented in Appendix A.

In a capitalist economy, relations of capital together with the means of production heavily determine all societal relationships and ideas (e.g., culture, law, morality, religion, political power, and institutions) – i.e., the superstructure of social reproduction (Marx, 1991). Gramsci describes how, in a capitalist economy, the dominant class or bourgeoisie – those who own the means of subsistence and production – exerts its power to consolidate its hegemony (Bates, 1975; Baeg Im, 1991). Hegemony is understood by Gramsci as the rule by consent of a dominant class in both civil and political society (Baeg Im, 1991; Bates, 1975). Although this does not mean that forms of coercion disappear from society, hegemony refers to exercise of political leadership over of a ruling class over subaltern classes by winning them over. Consent is attained through an organizing accord between the bourgeoisie and the workers' class, where the dominant class allocates some profits from capital accumulation to the improvements of the material conditions of workers, and establishes political, intellectual and moral leadership in the spheres of the superstructure. When a social group has insufficient material or ideological bases to establish hegemony over the subordinate class or classes, their rule is incomplete and mostly based on coercion.

Richani (2002, 2012) argues that in Colombia the inability of the dominant classes to sustain their hegemony in vast areas of the country since the colonial period led to the installation of a system of war between the state, left-wing guerrillas, paramilitary groups and narcotraffickers for whom violence and illegality has become a conduit for capital and land accumulation, and (or) political legitimacy. Today, the emergence and re-organization of criminal and insurgent groups in the FARC's old strongholds and the persistent inability of the state to control vast areas of the territory suggest the country's hegemonic crisis continues despite the signing of the Peace Accords.

Here, we can use the concept of "accumulation by dispossession" described by Harvey (2010) to reflect contemporary processes of primitive capital accumulation resulting from market integration of rural economies and neoliberal capital policies, and the centralization of power and wealth by the hegemonic class (Glassman, 2006; Harvey, 2010; Richani, 2012) of landlords, elites, wealthy cattle ranchers and narco-traffickers. This process is based on the commodification of land, and its re-conceptualization as a freely tradable asset usable for capital accumulation where land acquires value regardless of agricultural production (Harvey, 2018; Marx, 1991). Land commodification results in a rentier economy where investments in land are heavily driven by expected rent surplus or speculation – i.e., the trade in land to achieve a capital gain as a result of a rapid change in land prices (Roebeling & Hendrix, 2010). Dispossession also proceeds, of course, by force.

Accumulation by dispossession has resulted in forest loss in many remote forest areas, and has created conflicts between customary and statutory forms of land tenure in frontier areas (Byerlee & Rueda, 2015; Rudel & Hernandez, 2017; van Bodegom, 2013). This phenomenon has been documented in Brazil and other Latin America countries where privatization of public forestlands has resulted in forest conversion for cattle ranching, oil palm and soybeans (Roebeling & Hendrix, 2010; Graesser *et al.*, 2015; Sy *et al.*, 2015; Furumo & Aide, 2017; Mcsweeney *et al.*, 2017; Devine *et al.*, 2020a, 2020b). In Colombia, violence in the context of a civil war has been used as a conduit for dispossession resulting in the displacement of six and a half million people (Centro Nacional de Memoria Historica, 2015). It is estimated that 8.3 million hectares have been dispossessed by force (Centro Nacional de Memoria Historica, 2015), and six million hectares are under the control of drug trafficking organizations that since the mid-1970s have established rentier capitalism in vast areas of the country (Richani, 2012).

We recognize that material and societal domination of the dominant class results not only concentration of wealth but power. Although in a capitalist economy wealth concentration is more self-evident, the conceptualization of power is not straightforward due to its polymorphous nature (Wright, 2010; Elias, 2012). Yet its conceptualization is important to the study of socio-ecological interactions. Here, we adopt Boonstra's (2016) conceptualization of power to study socio-ecological interactions with the intention of operationalizing Gramsci's concept of hegemony and power dynamics in a capitalist economy. Boonstra (2016) conceptualizes power in three different levels. The first level of power or social power is constituted by two dimensions that can be understood as "conduct-shaping" and "context-shaping" (second level). Power as "conduct-shaping" refers to people's ability or power to directly affect an outcome and, as a result, the exercise of this forms of power can be observed and empirically verified. On the other hand, power as "context-shaping" is an indirect and often unintended consequence of human behavior and includes the structures and events altering people's subsequent actions.

The third level of power includes the attributes or sources (e.g., monetary, natural, artifactual, human, mental) of the second level of power. Attained sources of power and forms constitute this third level. Social power "[...] always depends on both conduct-shaping and context-shaping power, but the constitution of these two dimensions of power depends on the various ways in which sources are available, distributed, and mobilized" (Boonstra, 2016). Figure 1 summarizes the three levels of power presented by Boonstra.

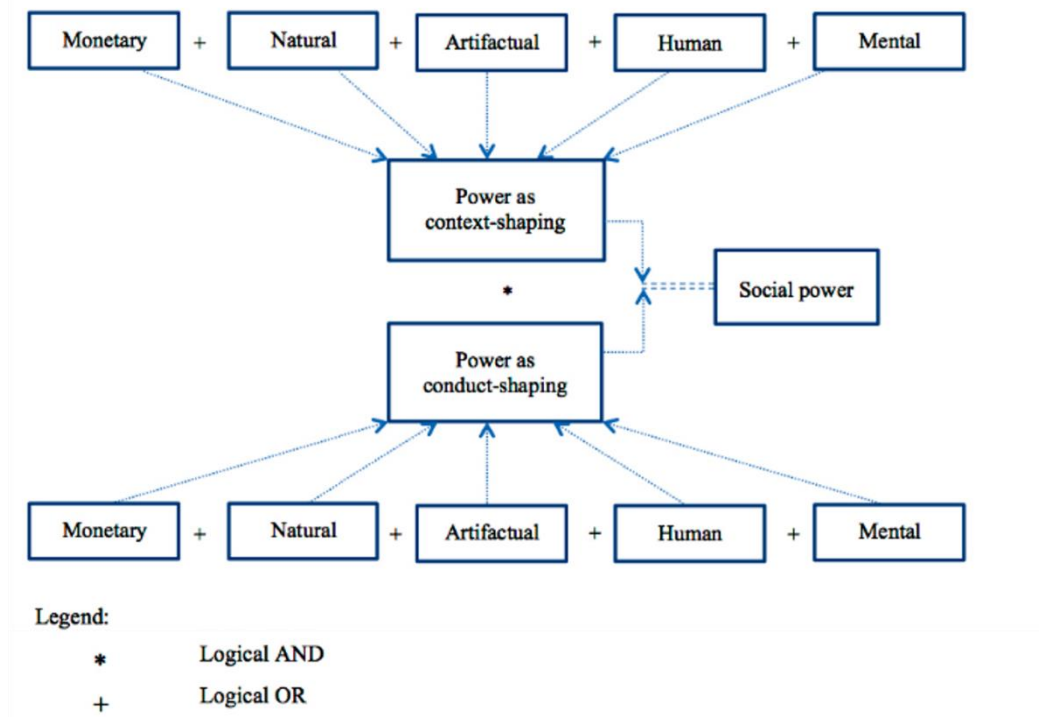


Figure 1: Conceptualization of the three levels of social power resulting from different forms (conduct-shaping and context-shaping) and sources of power (monetary, natural, artifactual, human, mental). Modified from Boonstra (2016).

3. Study area

The Colombian Amazon region is the largest continuous forest coverage in the country (Ruiz *et al.*, 2011), and with 48 million hectares it makes up more than one third of total national territory (CEPAL & Patrimonio Natural, 2013; Mendez Garzón & Valánszki, 2019; Ruiz *et al.*, 2011). This region is known for its cultural and biological diversity, being inhabited by 50 different indigenous groups and having 317 mammal, 258 reptile, 233 amphibians, 616 bird, and more than 25,000 plant species (CEPAL & Patrimonio Natural, 2013). It has been historically known for its ecological integrity (CEPAL & Patrimonio Natural, 2013; Murcia *et al.*, 2007; Roca *et al.*, 2013; Sánchez-Cuervo *et al.*, 2012), holding 38 million legally protected hectares within 178 indigenous reserves and 12 national parks, and another 8 million hectares of forest reserve areas (CEPAL & Patrimonio Natural, 2013). Recent efforts for conserving the biological and cultural diversity of the region have resulted in growing legal and institutional strategies to maintain its socio-ecological diversity (Peláez *et al.*, 2015; Roca *et al.*, 2013). However, the Colombian Amazon has also been the scene of unresolved social conflicts (Mendez Garzón & Valánszki, 2019) with periods of great violence and political instability (Baptiste *et al.*, 2017; Peláez *et al.*, 2015). With little state presence the Amazon was considered for many years to be an inhospitable and low-priority area for state activities (Peláez *et al.*, 2015; Revelo-Rebollo, 2019), suffering from natural resource extraction, deforestation, and displacement of indigenous communities (Instituto Amazónico de Investigaciones Científicas SINCHI 2016; Peláez *et al.*, 2015).

The northwestern side of the Amazon, which is constituted by the departments of Guaviare, Caquetá and Putumayo, and the southern areas of the departments of Meta, Nariño and Cauca (Murcia *et al.*, 2007; Ruiz *et al.*, 2011), have experienced higher colonization pressure, ecosystems transformation (Etter & McAlpine, 2006; Murcia *et al.*, 2007), armed conflict and illegal crops due to their proximity to the Andes Mountains (Mendez Garzón & Valánszki, 2019). Thus, the northwestern side of the Colombian Amazon region has the

highest levels of deforestation (Mendez Garzón & Valánszki, 2019). Figure 2 shows deforestation intensity in the Colombian Amazon in 2015. Today, this part of the Amazon holds more than 84.9% of the region's total population, and reports the highest rates of urbanization and infrastructure development in the region (Roca *et al.*, 2013). Extensive cattle raising and mining have become the main economic activities, resulting in the conversion of forest to pastures, land concentration, speculation and grabbing (CEPAL & Patrimonio Natural, 2013).

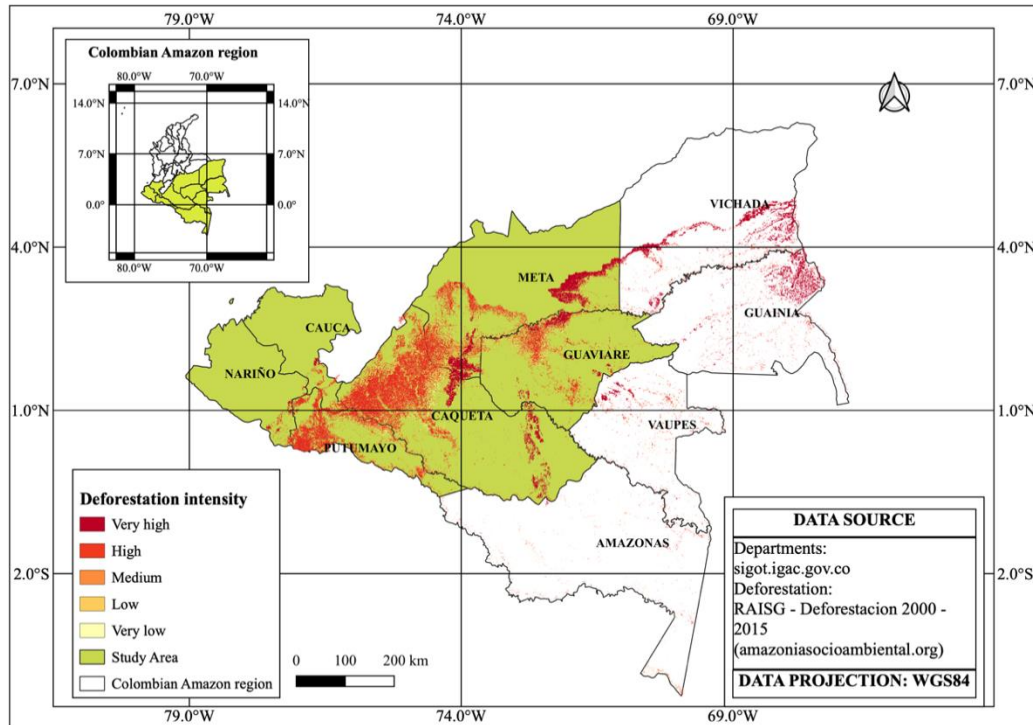


Figure 2: Map of the study area.

Unpacking the mechanisms underpinning deforestation in the northwestern Colombian Amazon

A review of the literature in combination with 15 semi-structured interviews (Appendix B) were used to provide a mechanism-based explanation of deforestation informed by *theory-building process-tracing*. Interviews were conducted online (Zoom version 5.4.9) due to travel and social restrictions; audio recordings were transcribed and anonymized. Participants included key national and regional actors from academia, multilateral organizations, the public sector, and civil society. To elicit the perspectives of local actors and grassroots organizations, two pre-recorded publicly available panel discussions of the School of Local Scientists for Restoration (*Escuela de Científicos Locales por la Restauración*) (Jerez, 2019; Peña, 2019) were used to represent local insights regarding deforestation in the region. Panel discussions included the reflections of Kelly Peña, a sociologist and activist working with indigenous communities in the department, and Cesar Jerez, founder of the Association of Peasant Reserve Zones (ANZORC), on interculturality and territorial planning in the Amazon. "Theory-building process-tracing" was used to guide content analysis for identifying relevant entities, relationships, processes and conditions constituting the mechanisms of deforestation. Figure 3 shows the process for identifying plausible causal relationships and conditions explaining deforestation in the region. Based on our literature review, we formulated preliminary cause-effect relationships between identified entities. When there was not enough evidence to prove the existence of these relationships, we collected more information either through secondary information or semi-structured interviews. On the other hand, when

evidence did not support the initial hypothesis, we treated this as new evidence and proposed a new causal relationship. Plausible causal relationship formulation was done deductively, inductively or both depending on whether theoretical evidence was useful to explain the observed outcome. New information was gathered throughout the analysis until a sufficient causal explanation was reached.

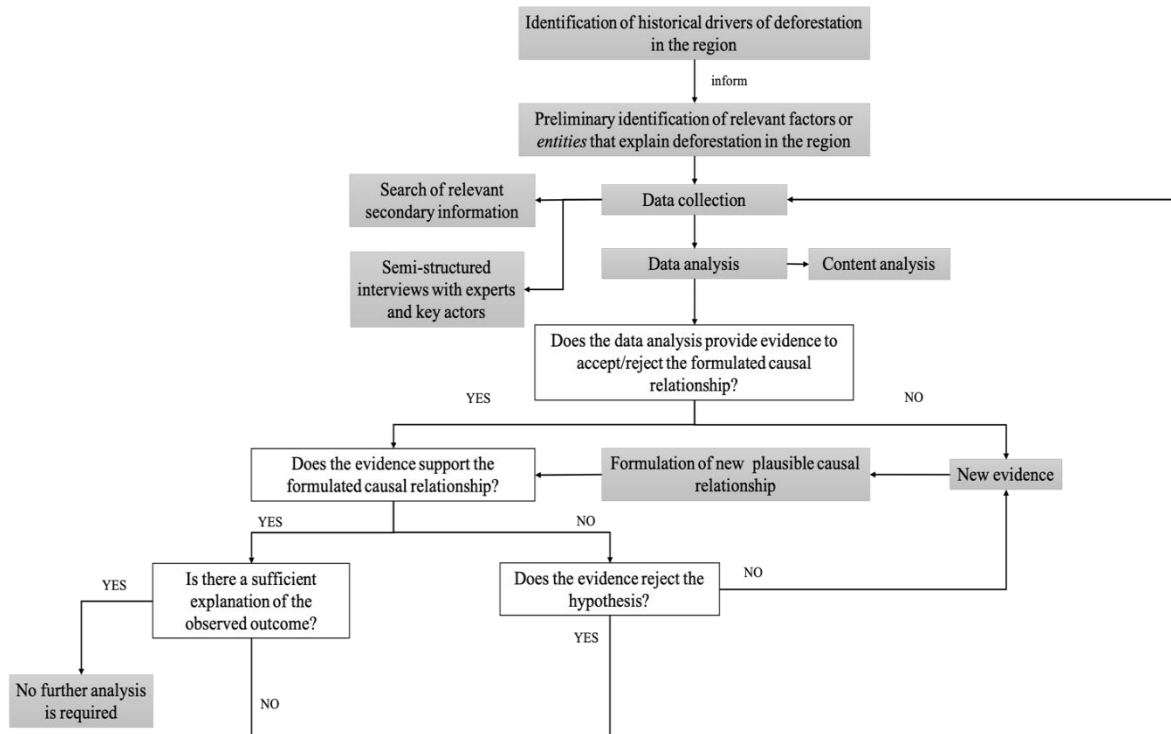


Figure 3: Steps for the identification of plausible causal relationships and conditions explaining deforestation in the northwestern Colombian Amazon.

4. Results and discussion

Identifying the trends of deforestation in the northwestern Colombian Amazon

Based on the literature reviews, we identified three main deforestation patterns over a period of 520 years (1500-2019). From pre-colonial times to the early 20th century, land-use change was reported to be low and concentrated in the Putumayo and Caquetá departments (Etter *et al.*, 2008, Peláez *et al.*, 2015, González *et al.*, 2018). From then until the 1950s, colonization caused most of the deforestation in the region, and it was heavily driven by natural resource extraction – e.g. plundering and mining of gold and emeralds, exploitation of chinchona (a source of quinine) and rubber, and urban development (Etter *et al.*, 2008, García 2013, Roca *et al.*, 2013, Peláez *et al.*, 2015, González *et al.*, 2018). With the introduction of coca crops between the 1960s and the 2000s, the region experienced increased deforestation from interdiction strategies launched by the national government (Viña *et al.*, 2004, González 2005, Perz *et al.*, 2005, Etter *et al.*, 2006, García, 2013, Roca *et al.*, 2013, Peláez *et al.*, 2015). Exclusions and urbanization atomized the plantations throughout the region and the country (Etter *et al.*, 2006, Murcia *et al.*, 2007, Armenteras *et al.*, 2013b, García 2013, Dávalos *et al.*, 2014, González *et al.*, 2018, Tellman *et al.*, 2020). Cattle ranching grew significantly during the 21st century, becoming the main deforestation driver in the country in 2008 (Etter *et al.*, 2008, Mbaididje-Bianguirala, 2019). After the implementation of the Peace Accords, cattle ranching together with spontaneous colonization and

coca crops consolidated the main drivers of deforestation in the Northwestern Colombian Amazon (Krause 2017, González *et al.*, 2018, IDEAM 2019a, 2019b, Mbaididje-Bianguirala, 2019).

In this section, we present a detailed description of these three deforestation patterns. Until the 1800s, colonization caused most of the deforestation in the region, and it was heavily driven by natural resource extraction and urban development. Indigenous people's lands and bodies were dispersed and appropriated through the missionary campaigns of the Catholic Church (Acosta García & Fold, 2022; Etter *et al.*, 2008; García, 2013; González *et al.*, 2018; Peláez *et al.*, 2015; Roca *et al.*, 2013). During the independence movement (1800-1850), the country experienced great social and political turmoil, which spurred population growth and agricultural expansion in frontier areas (Etter *et al.*, 2008) including the Amazon. This was later reinforced by the first rural agrarian reform seeking to grant land titling to peasants in remote forest areas as a way to solve the lack of land access for material reproduction of peasant and subsistence economies in the Andean and Caribbean region (González *et al.*, 2018; Law 106 1873; Roca *et al.*, 2013).

At the beginning of the 20th century, colonization of poor and landless peasants was reinforced by a civil war, the international demand for commodities such as coffee, tobacco and sugar cane, the development of railway infrastructure, and the implementation of a second agrarian reform (Law 200, 1936; Etter *et al.*, 2008; García 2013, Peláez *et al.*, 2015; González *et al.*, 2018). Spontaneous and state-driven colonization did little to solve land concentration in the hands of agrarian elites in the country, but rather reinforced the dispossession of Amazonian indigenous people, who were enslaved, killed or retreated further into the forest (Peláez *et al.*, 2015, Krause, 2017). Cattle ranching was introduced in the region in 1912, rapidly resulting in cattle ranchers becoming a new political power by replicating the large-estate model of *latifundios* in the region (Acosta García & Fold, 2022). Cattle ranching also promoted the forced displacement and dispossession of smallholders.

Simultaneously, the oil industry gained importance (Decree 1056, 1953; Sierra, 2000; Viña *et al.*, 2004; Krause, 2017), and in 1959 oil exploration in the Amazon started under the supervision of the Texas Petroleum Co. (Viña *et al.*, 2004; García, 2013). The growing oil industry reinforced infrastructure development and spontaneous colonization, especially in Putumayo department (Viña *et al.*, 2004; Etter *et al.*, 2008). Together with the low enforcement of conservation policies, this promoted the informal appropriation of land in the Amazon region, mostly by poor and landless peasants (García, 2013; Roca *et al.*, 2013; Dávalos *et al.*, 2014). New settlers claimed land ownership through slash-burn practices, converting forest areas into agricultural uses (Viña *et al.*, 2004).

In 1965, a new agrarian reform was launched (Law 135, 1961) further increasing forest clearing (García, 2013; Dávalos *et al.*, 2014). Although the reform increased land titling from about 90,000 to 600,000 hectares per year, agrarian elites were able to defund the public agency and land redistribution soon petered out (González, 2005; Faguet *et al.*, 2020). Unattended claims for land redistribution by smallholders triggered a new armed conflict between the left-wing guerrillas rising in strength – e.g., Fuerzas Armadas Revolucionarias de Colombia (FARC) and Ejército de Liberación Nacional (ELN) – and the national government across the country (Krause, 2017, 2020). Violence provided the working classes, who were excluded from capital accumulation, with an instrument of defense against the expansion of capitalism. However, violence was also used to legitimize the actions of powerful actors for capital accumulation through dispossession (Richani, 1997). Guerrillas rapidly gained control and became the *de facto* state across vast rural areas, regulating land-use and natural resource access, and rigorously controlling forest clearing (Clerici *et al.*, 2020; EIA, 2019). The conflict for land access and tenure led to another rural agrarian reform in 1982 (Law 35, 1982) which drove a new way of migration to the Amazon basin (Etter *et al.*, 2008; García, 2013; González *et al.*, 2018). In Caquetá department, the colonization wave was reinforced by a growing livestock industry financed by the national government and the World Bank (Viña *et al.*, 2004; García, 2013; Revelo-Rebolledo, 2019), reinforcing the place of cattle ranchers at the top of the social order in the region.

Coca plantations were introduced to the Guaviare and Caquetá departments in the 1970s (Murcia *et al.*, 2007; González *et al.*, 2018) and in the 1980s the Amazon experienced rapid growth of the coca economy due to growing international demand for cocaine and the crisis of state hegemony (Viña *et al.*, 2004; González, 2005; Perz *et al.*, 2005; Etter *et al.*, 2006; García, 2013; Roca *et al.*, 2013; Peláez *et al.*, 2015). The expansion

of coca crops was heavily promoted and financed by criminal organizations and insurgent movements across the country (Roca *et al.*, 2013). The coca plantations became the major driver of deforestation during the following decade (Etter *et al.*, 2008; Armenteras *et al.*, 2013b; García, 2013), expanding market integration of frontier areas to capitalist dynamics by providing an opportunity to both powerful and marginalized actors to profit from illegal economies (Richani, 1997).

In an attempt to regain control over the region, the national government promoted the colonization of the northwestern Amazon and criminalized coca plantations (e.g., Special Plan for the Colonization of the Middle and Low Caguan, 1985; Law 30, 1986). Thus, the national government in close collaboration with the U.S.A launched the *Plan Colombia* to eradicate coca production and narcotics commercialization in 2000 (García, 2013). During the first decade of the 21st century, interdiction policies fragmented coca production (Etter *et al.*, 2006; Murcia *et al.*, 2007; Armenteras *et al.*, 2013b; García, 2013; González *et al.*, 2018, Tellman *et al.*, 2020), spreading the plantations to Nariño department and the Pacific region (Rincón-Ruiz *et al.*, 2013, Mendez Garzón & Valánszki, 2019, Anaya *et al.*, 2020). All this resulted in the criminalization of historically marginalized groups such as landless peasants, squatters, African-Americans and indigenous people, who expanded coca crops into frontier areas like the Amazon seeking land and capital for reproducing their subsistence economies. Atomization also led to the expansion of the colonization frontier and the abandonment of old settlement areas on the northwestern side of the Amazon (Armenteras *et al.*, 2013b; Tellman *et al.*, 2020). Abandoned areas were either left to forest recovery (Armenteras *et al.*, 2013b; Etter *et al.*, 2006; Ruiz *et al.*, 2011; Sánchez-Cuervo *et al.*, 2012) or sold to land buyers who converted abandoned areas to pastures for cattle ranching (Etter *et al.*, 2006; Armenteras *et al.*, 2013b). Low-priced land and poor economic integration of the region set the conditions for the initiation of a rentier economy, primarily in areas where FARC control was weak or replaced by paramilitary groups.

With the peace negotiations in 2012 and the weakening of FARC forms of law enforcement, the region experienced a resurgence of coca plantations (González *et al.*, 2018; Krause, 2020; UNODC & Gobierno de Colombia, 2012, 2013, 2014, 2015, 2016) and an increase in forest clearing for mining, logging and farming activities (González *et al.*, 2018; Krause 2017; Mbaididje-Bianguirala, 2019). The signing of peace accords in 2016 was the government's latest attempt to seek an integral agrarian reform, with the re-distribution and titling of 3 million hectares of land to smallholders (Mesa de Conversaciones, 2018). However, poor implementation and the increasingly evident interest of the right-wing ruling party in defunding the agreements has slowed down the process (Congreso de la República, 2020; Contraloría General de la República, 2020). It is estimated that compliance with the agreements will take 25 years (*ibid.*). The power vacuum that resulted from FARC demobilization together with the lack of state presence led to anarchy in many rural areas, where new illegal actors and settlers started to occupy old rebel-held areas (Clerici *et al.*, 2020; Furumo & Lambin, 2020; Mbaididje-Bianguirala, 2019). In the Amazon, FARC demobilization has been followed by spontaneous colonization, unplanned infrastructure development, and an increase in the number of pastures for cattle ranching and speculation (González *et al.*, 2018; IDEAM, 2019a, 2019b; Krause, 2017; Mbaididje-Bianguirala, 2019), with a general reduction and concentration of coca plantations towards the Putumayo, Nariño and Cauca departments (UNODC & Gobierno de Colombia 2019, 2020).

Growing national and international concern to protect the Amazon has resulted in the implementation of a large number of public policies and strategies for its conservation financed by large international funding bodies and foreign countries. In 2015, the national government launched the *Vision Amazonia* project as part of the REDD+ strategy in the country financed by three foreign countries: Germany, Norway and United Kingdom. The national government also launched the Colombian Tropical Forest Alliance in 2017 by signing four public-private zero-deforestation agreements for beef, milk, oil-palm, and cacao (Ministerio de Medio Ambiente y Desarrollo Sostenible, 2020). Later, the Intersectoral Commission on Controlling Deforestation established the national agricultural frontier (Decree 1257, 2017; Resolution 261, 2018), and removed incentives to clear forest in order to obtain land titles (Decree 902, 2017). The Amazon was declared a subject of rights in 2018 (Sentence 4360, 2018) and in 2019 the national government launched a military strategy to crack down on illicit deforestation activities in the Amazon – *Operación Artemisa* (Van Dexter & Visseren-Hamakers, 2020). Unfortunately, deforestation continues to spread in the Amazon (IDEAM, 2019a, 2019b),

where forests areas are understood by most powerful and marginalized groups as open access areas for natural resource exploitation, land commodification and capital accumulation.

One mechanism underpinning deforestation in the Colombian Amazon: Three underlying logics of deforestation

We categorized the main logics driving forest clearing into three general mechanisms based on actors' economic activities. We first explained how the quest for the land of poor settlers promotes forest clearing and spontaneous colonization, and the intertwined relationship between coca cultivation and cattle. Second, we described how criminal organizations acquire and clear forest land for illegal activities, and third, how investors use deforestation as a conduit for power and capital accumulation. With the demobilization of FARC guerrilla forces, limits to deforestation were weakened in the Amazon, presenting an opportunity for poor and landless peasants and squatters to access public lands as a mean for reproducing their traditional peasant economy and accessing new sources of income to escape rural poverty.

Yet, due to the poor economic integration of the Amazon, new colonizers have been forced to engage in the well-established coca and cattle ranching economies of the region, resulting in the conversion of forests to coca crops and pastures. These economic activities are the best, if not the only, available source of income in remote forest areas due to their connectivity to regional and global markets. In the case of coca production, drug traffickers directly collect coca leaves and paste at the production locations, eliminating the need for road infrastructure and market access. Similarly, because cattle are mobile and non-perishable, peasants can relatively easily access beef and milk markets – primarily in the Caquetá and Guaviare departments – despite poor infrastructure. The information in this section is mostly based on the interviews we conducted, yet citations are used when secondary information is presented.

The relationship between cattle ranching and coca cultivation in the Amazon is that cattle ranching is used by peasants to legally incorporate surplus capital generated from coca plantations into the economy. Cattle are also a pathway to save money over time, providing peasants with insurance against injury and sickness year-round. One person told us:

...something that livestock and coca have in common, and that is why livestock is consolidated, is that if one of your children or your mother gets sick, you can sell a cow and you have 600 thousand [pesos] or you can sell a kilo and take your 600 thousand [pesos]. In contrast, with the other products you have no guarantees of how to handle that [situation]. (Researcher, February 24, 2021)

However, the growing herd size also creates the need for land acquisition for new pasture areas, and due to the higher price of land in better connected zones the expansion of pasture tends to occur in remote forest areas where land prices are lower. As described by a government official, "the deforestation balloon swells to that side because it cannot do it to the other side. If I was Colombia, and this is the Amazon, I cannot inflate [the balloon] inwardly because the land is much more expensive inward, it's that simple" (March 5, 2021).

Peasants' need to access land for reproducing their economy has catalyzed social mobilizations for acquiring land titling since 1980s. For example, the mobilization of coca growers during this period led to the consolidation of the *Zona de Reserva Campesina del Guaviare* in 1996 (ANZORC, 2019). Mobilizations have also created and deepened intercultural conflicts over land tenure between peasants and indigenous groups across the region. In many cases, conflict is expressed through armed violence, as described by sociologist Kelly Peña (2019):

[...] a colonist began to establish himself in an area today called Charras, and when cutting down the jungle he met the Nukak [indigenous people]. The Nukak said that they show up because this man was cutting down his ancestral *Pipirelas* and that caused them pain, and [then] the man warns the commissioner of that time that the Nukak were appearing where he was founding [his land]. Months later [...] this man had called the police. The guy shoots the Nukak killing three of them.

FARC demobilization also presented an opportunity for narco-traffickers and other criminal organizations to increase capital accumulation by monopolizing the labor force and means of production of coca leaf and paste, gold mining, logging, and other illegal activities in the region. The appropriation and monopolization of the coca economy by drug-trafficking organizations has resulted in the conversion of peasants and indigenous people into free workers, and the de facto appropriation of land in insurgent areas. The former has changed coca cultivation dynamics in the regions, forcing local inhabitants to migrate to frontier areas. For indigenous people, land dispossession reinforces the loss of cultural heritage that began during the colonial period with the evangelism campaigns of the Catholic Church in the Amazon. With the loss of their territories for cultural reproduction many indigenous communities have been forced to become *raspachines* (coca leaf-pickers) in remote areas where peasant colonization is less prominent. An example of this is the rapid disappearance of the Nukak indigenous people which were an un-contacted community up until the 1960s.

DTOs (drug trafficking organizations) attain territorial control by 1) financing forest conversion to coca crops and pasture along trafficking routes or 2) using coercion and armed violence to eject peasants and indigenous inhabitants from their lands, a phenomenon that has been reported in the region since 1996. Narco-ranching – i.e., the process by which drug trafficking organizations directly finance deforestation or buy previously cleared areas for cattle ranching to launder money, claim territorial control and smuggle drugs (Devine *et al.*, 2020a; Tellman *et al.*, 2020) – has led to conflicts among trafficking organizations for securing trafficking routes. This has increased armed confrontation. Violence tends to be concentrated in key areas for securing trafficking routes, particularly closer to the border with the Pacific region (Putumayo, Nariño and Cauca departments), which is the main access route to the USA market.

Cattle ranchers, investors, agribusiness, landlords and the narco-bourgeoisie are also using deforestation for capital accumulation through land privatization and commodification. In the Amazon, these actors do this by 1) persuading peasants to sell their lands, paying a high price for low-value lands in frontier areas, and 2) directly financing conversion of public (public lands and Natural Protected Areas) and communal (Indigenous and peasant reserves) lands. The first process is incentivized by obscure property rights in rural areas, where peasants and squatters know the difficulty of obtaining formal titling themselves. The second involves the use of a low-cost workforce for forest conversion.

Deforestation and appropriation of low-priced lands in the Amazon leads to the generation of large amounts of surplus from agrarian production and land speculation, which are expected to continue to grow as remote areas become more connected with urban centers. Agrarian production mostly focuses on cattle ranching since speculators can easily access the consolidated regional beef and milk markets. As explained by a former government official,

They know how to lift up [its] value. When the road is coming closer, when the school is coming closer: these things give [it] value, and that is good business from the start. [Later,] you put in cows because that is another business that add to the speculation of the land, and with cows you have meat or you have milk. (January 19, 2021)

Conversion of forest to pastures is also reinforced by the prestige and power gained from large landholdings and cattle ranching. The same official continued: "the cattle man has social status. You go on horseback, wearing a hat, with several women by your side, singing '*corridos*,' with your own iron to brand your own cattle; that is the best measure of success that exists" (Government Official January 21, 2021).

Drug-trafficking organizations and other criminal actors also use this mechanism to legitimize their economic activities and launder money, a process that has been reported in other Latin American countries such as Honduras, Guatemala, Nicaragua, and in other regions of Colombia (Devine *et al.*, 2020a; Devine, *et al.*, 2020b; Tellman *et al.*, 2020). Deforestation as a mechanism for money laundering is heavily incentivized by the precariousness of rural property rights and the informality of agricultural production in the region. Another person told me that "it may be that it is [related to] money laundering dynamics. Why? For the same reason: there is so much dirty money in Colombia, and it is so easy to spend it in agricultural production, which

is mostly still informal, at least in the first links of the chains, where everything is paid in cash" (March 23, 2021).

Drug-trafficking organizations also invest in corrupt political, judicial, and military organizations to reduce law enforcement and secure their economic activities. This, together with the accumulation of wealth and social status, blurs the line between criminal organization and local elites creating new narco-bourgeoisie groups as suggested by McSweeney *et al.* (2017) and Richani (2012). The organized narco-bourgeoisie seek to co-opt state institutions participating in decision-making to secure their interests, reducing law enforcement and legitimizing their economic activities, in many cases in banned areas such as Natural Protected Areas, *Reservas Campesinas*, and *Resguardos Indígenas*. Evidence of this political alliance in the region are the legal allegations against several former regional majors and governors who have been accused of driving deforestation for land grabbing and using public policy and funding to illegally promote the expansion of palm oil and cattle ranching in the region.

Mechanisms underpinning deforestation in the Colombian Amazon: Deforestation as a conduit for capital and power accumulation

As discussed previously, the power vacuum that resulted from the FARC demobilization weakened the control over capital accumulation and allowed multiple actors to benefit from deforestation. Capital accumulation has increased actors' ability to reorder landscapes and social organization on the colonization frontiers, by accumulating different forms and sources of power, especially social power. This is deepened by the historically weak presence of the state in the region. Figure 4 conceptualizes social power accumulation and the potential overlap between actors in the region, with indigenous groups and peasants having natural, financial and human forms of power, while narco-traffickers, criminal organizations and investors have context-shaping forms of power based on artificial, natural, financial and human assets. The Figure summarizes the identified forms and sources of power that these actors acquire through deforestation. Recognizing that this classification of actors in the region is schematic and, in reality, many of these actors transit between positions, we now provide a description of the overall mechanism by which these actors attain these forms and sources of power.

Deforestation is a way of accumulating social power that has resulted in a sharp increase in the conversion from forest to pastures for low-productivity cattle ranching, and an increase in the production of coca leaf and paste in the region, despite the attempts by the state and other multilateral organizations to intervene. Access to cheap labor and land in frontier areas heavily increases the surplus of powerful actors, incentivizing deforestation and reinforcing preexisting power and material asymmetries between actors. The process deepens the domination of traditional elites, and both old and emerging narco-bourgeoisie, at regional and national levels. Evidence of this is the growing interest of the State in economic growth through agribusiness and cattle ranching. As stated by a researcher,

...there are very important entities in Colombia that lobby, where extensive cattle ranching is pushed. You know that FEDEGAN [The National Federation of Cattle Ranching] has a lot of power in Colombia. Much of the political class is cattle ranchers, so they have a direct interest in maintaining certain types of processes. [They say] 'why save biodiversity, the animals, with all this wilderness doing nothing? Let's make it productive.' (January 27, 2021)

Material domination also allows powerful actors to drive the consolidation of the cattle ranching culture, shaping the regions' social consciousness and mental models. "A cultural factor," another researcher told us, "[is] that historically in many of these areas cattle [ranching] is seen as a symbol of power, of economic prosperity. So, I think that there are a lot of people wanting to have cattle" (January 21, 2021).

The growing influence of historically powerful actors over the region's civil and political society positions them to exert hegemony over the region. Yet international pressure on the country's national government to conserve the Amazon basin has also pressured the state to showcase actions curbing deforestation. Complying with these international demands is in the interests of the national elites whose material bases depend on corporate conglomerates tightly linked to foreign capital investments (Richani, 2002).

This has resulted in a tension between the national and regional dominant classes as explained by a researcher, who told us that:

In Guaviare, and in other areas of the Amazon, some local elites depend a lot on cattle ranching and, although their planning strategies and POTs² address environmental issues, their constituencies and [political] networks are made of ranchers or people who are seeking to introduce agroindustry or putting mining or oil in the Amazon. At the national level [the government] is very pressured by the international conjuncture, by the Paris Agreement, etc. So, there is a very difficult tension between these regional elites and national elites (January 27, 2021).

Conflicting interests of national and regional dominant classes result in contradictory policies, interinstitutional conflicts and compartmentalization of state agencies, where key institutions have contradicting agendas, and do little or nothing to meet zero deforestation commitments. An embassy officer stated that

...the Ministry of Agriculture has inherent contradictions in the way it structures its initiatives and development plans [...]. I believe that very important political agendas are mobilized there, and [the Ministry of] Agriculture has always been a political card, highly politicized in the country, clearly having the objectives of business associations and big players, where it is difficult for the discourse of sustainability to permeate, because a lot of power moves there. (April 7, 2021)

Moreover, the State's need to curb deforestation together with its collusion with powerful regional and national actors to promote the economic integration of the Amazon results in the criminalization of less powerful actors driving deforestation, where forest conversion is argued to be driven by powerful criminal organizations that have little or nothing to do with institutions or legal economies. Consequently, interdiction policies are argued to be the most suitable solutions for controlling deforestation, as argued by a member of the National Federation of Cattle Ranchers: "Fight drug trafficking very firmly and decisively, apply glyphosate, [...] what is causing deforestation is the expansion of illegal crops, that is why we must return to spraying. As long as you are spraying [glyphosate], you are affecting the crops. The [narco-traffickers] will automatically start to have a totally different response, because they will start to lose a lot of money" (February 19, 2021).

The criminalization of landless and poor inhabitants in the Amazon has resulted in a growing tension among actors in the region, deepening historical interethnic, intercultural and interclass conflicts, primarily over land access and tenure. Means of violence are regularly used for solving conflicts, which in turn legitimizes discourses claiming military action is needed to regain control over the region, and this reinforces displacement, criminalization and deforestation. As explained by Cesar Jerez, (2019):

I mean, look at the Artemisa operations that are being carried out against the peasants in [National Natural] Parks. That was what I said to Julia Miranda³, "Where are these people going? Do you think these people take [a bus] to the terminal of Bogotá?" No, they go further inside the Park. It is absurd that they launch an operation, burn their house, steal their pigs, chickens, everything, their livestock. I said to Julia, "Do you think they are going to take a bus to the Bogotá terminal?" No, they are going inside because they have already been expelled from other parts. I mean, it is a totally ridiculous thing, and it shapes the way they [the State] perceive the peasants of the Amazon as the internal enemy, the coca grower, the "*guerrillero*."

The inability of peasants, squatters, indigenous and ethnic groups to establish themselves in a capitalist economy has resulted in their organized responses contesting regional dominant classes, and demanding national government assistance.

² Planes de Ordenamiento Territorial (POTs) are the country's administrative figures for regional land-use planning.

³ Former Director of *Parques Nacionales Naturales* or National Natural Parks.

Figure 4: Accumulation of social power in the region.

Actor	Description	Power forms	Power sources
Cattle ranchers, landlords, investors	These actors use money to buy peasants' lands or finance forest conversion to pastures securing land tenure. Cattle ranching and wealth provide actors with prestige and social status, which can be later use this to influence policy and decision making	Conduct-shaping or "power to", Context-shaping	Natural, Money, Human*
Narco-traffickers and criminal organizations	Criminal organizations use gun power to secure land appropriation, and control over illegal activities and wages	Conduct-shaping or "power to"	Artifactual, Natural, Money
Social Mobilizations	Social mobilizations are used to force own state-institutions to recognize property rights of land. Examples of this was the declaration of the social mobilizations that led to the constitution of the <i>Zona de Reserva Campesina del Guaviare</i>	Conduct-shaping or "power to"	Human
Peasants	Peasants use their own and family workforce to convert forests primarily to subsistence crops and coca crops. Informal appropriation of land and surplus from coca cultivation to subsidize their livelihoods	Conduct-shaping or "power to"	Natural, Money
Indigenous people	Social mobilizations are used to force state-institutions to recognize property rights of land for culture reproduction	Conduct-shaping or "power to"	Natural

5. Conclusions

In this article we show that, although the power vacuum resulting from FARC guerrilla demobilization presented a window of opportunity for peasants, squatters, narco-traffickers, cattle ranchers, landlords and other investors to accumulate capital and power by converting forests to coca crops and pastures, their underlying logics for forest conversion are not the same. On one side, new and old squatters and peasants convert forest to coca crops and cattle ranching to subsidize their peasant economy, a productive cycle that was instituted in the region in the 1980s. Meanwhile, narco-traffickers and investors seek the integration of the Amazon with global and national markets, illegally appropriating lands to monopolize illegal surplus, and speculating with land prices through 'accumulation by dispossession.'

We also see evidence that traditional elites, and the old and emerging narco-bourgeoisie have capitalized on preexisting power asymmetries by disproportionately accumulating social power, seeking to consolidate territorial hegemony and dispossessing historically marginalized groups – such as indigenous communities, peasants, and squatters – from their means of subsistence and production. This has resulted in the implementation of a capitalist economy based on land rent and drug trafficking, thus deepening forest loss, inequalities and conflict over land access, and increasing the tension between national and regional elites.

We argue this creates the need for a diversity of forms of policy intervention that goes beyond traditional military and security law enforcement strategies, combining law enforcement with livelihood support and land access to less powerful actors in the region. This will depend heavily on the ability of peasants, indigenous and other marginalized groups, and other national elites (whose wealth is not linked to drug trafficking or rentier capitalism), to elaborate an accord for consolidating the states' authority and legitimacy in the region. Yet, we argue cooperation will rely on the Colombian national elites' ability to engage with local inhabitants in a more horizontal decision-making process to improve local people's material conditions, providing access to land for the material reproduction of the rural economy and its culture. With the historical mistrust and conflict among actors in the region, trust-building is expected to be difficult and hard to maintain.

Under this scenario, the roles of academia, NGOs, multilateral organizations and other civil society groups are key to accelerate and facilitate this process. They must acknowledge their political role in society and recognize their colonial past and historical debt with local inhabitants, primarily indigenous and ethnic communities. Thus, national and international aid, research and assistance for conservation should be used to bridge between actors and facilitate true participatory processes where marginalized groups can reimagine and/or materialize their own means and ideas for being and becoming forest inhabitants. Conservation should be seen as an opportunity to enhance the ability of marginalized groups to exercise and attain new forms and sources of power in determining local visions of conservation.

Due to pandemic restrictions during the research period, it was impossible to reach local actors and grassroots organizations and, as result, this research misses local actors' perspectives on how they perceive, respond to and resist deforestation dynamics in the region. More critically, their different ambitions and visions for sustainability are not included. Further research should include local actors' perspectives on how to attain transformation towards more just and equitable forest conservation of the Amazon basin. Also, it is important to highlight that a causal mechanism derived from reviews of literature represents only a small version of reality. Deforestation is highly dynamic, and constantly evolving. Complex causal processes are influenced by social, political and economic conditions and drivers at national and international levels, as we have shown. The processes we have uncovered will continue to evolve in the coming years.

By conceptualizing both the sources and forms of power, we have been able to unpack the causal forces and mechanisms linking capital accumulation and forest loss in the Colombian Amazon. Our research shows the importance of understanding historical dynamics in socio-ecological systems research. Conducting a historical analysis has allowed us to identify key pre-existing conditions and processes that create and sustain power asymmetries among actors, better explaining inequality and conflict in the region. This study provides useful insights on how to study complex synergies between political, economic and social conditions driving biological and cultural loss in socio-ecological systems, and showing that attaining conservation in frontier areas will most likely require a deep political and economic transformation of current capitalist dynamics.

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