

An aerial photograph of a dense tropical forest. The canopy is a deep green, with numerous thin, light-colored lines representing roads or paths winding through the landscape. There are several irregular, lighter-colored patches scattered throughout, which appear to be clearings or areas of forest degradation. The overall texture is complex and organic.

Seeing the forest but missing the problem:

National policy responses to drivers of deforestation and forest degradation

Gabrielle A. Kissinger

Propositions

1. The national level is the most effective level of governance to address international drivers of environmental degradation.

(this thesis)

2. Spatial data is essential for assessing impacts and drivers of deforestation.

(this thesis)

3. Increasing public expenditure on environmental problems does not guarantee the resolution of these problems.

4. The behaviour of wild bears is not determined by genetics.

5. Strong espresso increases a researcher's creativity.

6. The adverse ethical impacts of artificial intelligence outweigh efficiency benefits.

Propositions belonging to the thesis, entitled

Seeing the forest but missing the problem: National policy responses to drivers of deforestation and forest degradation

Gabrielle Kissinger
Wageningen, 9 April 2024

**Seeing the forest but missing the
problem:**

**National policy responses to drivers of
deforestation and forest degradation**

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Seeing the forest but missing the problem:

**National policy responses to drivers of deforestation
and forest degradation**

Gabrielle A. Kissinger

Thesis

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Abbreviations

CSO	Civil Society Organization
FAO	Food and Agriculture Organization
FCPF	World Bank Forest Carbon Partnership Facility
FLEGT	Forest Law Enforcement, Governance and Trade
FSC	Forest Stewardship Council
GDP	Gross Domestic Product
GHG	Greenhouse Gases
IPCC	Intergovernmental Panel on Climate Change
MDGs	Millennium Development Goals
LULUCF	land-use change and forestry sectors
MONRE	Vietnam Ministry of Natural Resources and Environment
MPI	Vietnam Ministry of Justice and Ministry of Planning and Investment
MRV	Measurement, Reporting and Verification
NDC	Nationally Determined Contributions to the Paris Climate Agreement
NGO	Non Governmental Organisation
NRAP	National REDD+ Action Plan
ODA	Official development assistance
OECD	Organisation for Economic Co-operation and Development
PRAP	Provincial REDD+ Action Plan
REDD+	Reducing Emissions from Deforestation and forest Degradation and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks
SDG	Sustainable Development Goals
UN-REDD	United Nations Programme on Reducing Emissions from Deforestation and Forest Degradation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
USD	United States Dollar
VPA	Voluntary Partnership Agreement

1. Introduction

1.1 Statement of the problem

The clearing of forests, mainly for agricultural production, has received more focused attention in recent years as countries seek to address the climate crisis or achieve the sustainable development goals. Deforestation, forest degradation and agricultural production are responsible for just under a quarter of all greenhouse gas (GHG) emissions yearly, mainly from deforestation that clears forests for more agricultural land as well as agricultural emissions from livestock, soils and nutrient management (Intergovernmental Panel on Climate Change (IPCC), 2022; Jia et al. 2019). Recognizing the importance of governance and policy to influence deforestation and degradation risks, many developing countries have pursued policy approaches and positive incentives to reduce emissions from deforestation and forest degradation (referred to as REDD+) (UNFCCC, 2010; 2013), and these approaches and incentives are also reflected in many land use sector pledges to the United Nations Framework Convention on Climate Change (UNFCCC) Paris Climate Agreement (UNFCCC, 2015a).

The direct drivers of deforestation and forest degradation are human activities or immediate actions that directly impact forests and land (Geist and Lambin, 2002), such as logging, agricultural expansion, or infrastructure and road development. These drivers are visible to the eye, but the underlying causes that motivate them are harder to detect. Working behind the direct drivers of forest loss or degradation are underlying drivers, which are often harder to identify and quantify but which must be addressed in any effort to reduce pressures on forests (Geist and Lambin, 2002; Kissinger et al. 2012). The underlying drivers are complex interactions of fundamental social, economic, political, cultural and technological processes that influence the direct drivers, and are often distant from their area of impact (Geist and Lambin, 2002).

Under UNFCCC agreements, countries engaging in REDD + must assess both the direct and indirect drivers of deforestation and forest degradation, as part of REDD+ readiness (UNFCCC, 2013). Readiness preparation plans (R-PPs) describe the national REDD+ readiness activities of each country, and they are produced individually by each country and are submitted to either the UN-REDD Programme or World Bank Forest Partnership Facility. In these plans, countries identify their direct and indirect drivers affecting forest cover and quality, which forms a basis to inform the development of national REDD+ strategies or action plans (UNFCCC, 2010; 2013). National REDD+ strategies or action plans are developed to address ‘the problem’ of direct and indirect drivers by implementing REDD+ activities, often with international financial assistance, to reduce GHG emissions and qualify for results-based payments once emission reductions and forest cover improvements have been achieved.

However, are the direct and indirect drivers of deforestation and forest degradation being addressed in practice at the national-level? While there is a growing body of literature on the causes of deforestation and forest degradation, there has been less assessment of what enables effective policy responses to address drivers in the literature. Additionally, despite an ever-expanding literature on REDD+ and its functioning in multiple national contexts (Korhonen-Kurki et al. 2018; Busch and Ferretti-Gallon, 2017), whether this global mechanism has effectively addressed drivers remains understudied. This issue is the pressing research gap addressed in this thesis.

As the demand to reduce deforestation and forest degradation has grown in the international climate arena, a range of methodologies for assessing the direct and underlying drivers has been developed. Spatial assessments have sought to quantify the relative impact of different drivers on forest cover and quality. The expansion of agriculture into forests is the primary direct cause of tropical deforestation (Pendrill et al. 2022; Crippa et al. 2021; De Sy et al. 2019; Curtis et al. 2018; Busch and Ferretti-Gallon, 2017; Hosunoma, et al. 2012; Houghton 2012), although there is debate over the relative extent to which agriculture drives deforestation and the ultimate fate of land use after forest clearing (Pendrill et al. 2022; Dummet et al. 2021). Spatial assessments of land cover change and activity data provide important reference points to infer what the relationship is between direct drivers and the underlying drivers that influence them.

Conceptual models that enable a better understanding of the drivers of deforestation and forest degradation have also been developed in both environmental science and economics. For example, Geist and Lambin (2002) identified proximate (direct) and underlying (indirect) causes as a basis for deciphering the drivers of deforestation and the effects of policies addressing them using spatial analysis and remote sensing (Bos et al. 2020; Ferrer Velasco et al. 2020). Kaimowitz and Angelsen (1998) placed more emphasis on the economics behind the immediate and underlying factors. Furthermore, economic methods such as marginal abatement cost curves, have been used in integrated assessment models to assess GHG emission abatement potential and the associated abatement costs related to climate mitigation policy options, testing the influence of key underlying drivers on outcomes (Gusti et al. 2019).

These models and methods have also informed wider assessments of the implications of the drivers of deforestation. For instance, the policy and governance implications of REDD+ for addressing these drivers have been examined from a forest transition perspective (Angelsen and Rudell, 2013). Others have assessed global REDD+ ambitions and national-level policy responses to address the drivers of deforestation (Hein et al. 2018; Kissinger et al. 2012). In turn, these frameworks have been supported by existing systems models such as the driver-pressure-state-impact-response (DPSIR) framework to identify so called ‘causal chains’ from drivers to impacts and ultimately policy responses (Gupta et al. 2020). These bodies of literature have limited connection to and integration with the literature on governance pathways to address fragmented policy arenas, and this issue is further explored in Section 1.3 on the theoretical perspectives.

The acknowledged role of agriculture expanding into forests, as the primary direct cause of tropical deforestation, implies that national REDD+ interventions should target the main direct driver:

agriculture. However, this is not necessarily the case. Kissinger et al. (2012) reviewed 31 national REDD+ R-PPs, providing a pan-tropical view of the state of REDD+ readiness across Asia, Africa and Latin America. The review, commissioned by Norway and the United Kingdom, was a formative technical contribution to the UNFCCC deliberations on REDD+ and specifically helped forge a collective commitment by REDD+ countries to agree to address drivers as part of REDD+ national strategy development in the Warsaw Agreement on REDD+ (UNFCCC, 2013). The review provided an assessment of how countries define ‘the problem’ of direct and underlying drivers, the scope of their problem identification, and what countries identify as related solutions to the problem. The study found that 64% of the countries reviewed identified large-scale industrial agriculture as the primary driver of concern, and an additional 17% of countries reported small-scale agriculture as the primary driver. Pan-tropical spatial assessments corroborate these estimates, attributing approximately 80% of deforestation to agriculture (Curtis, 2018; Hosonuma et al., 2012). However, Kissinger et al. (2012) found that sustainable forest management (consisting of inventories and management plans, improved silvicultural technologies, forest certification relating to community forest concessions and better management regimes), not interventions to limit agricultural expansion, was identified as the preferred solution by 55% of the countries reviewed. This finding indicates the predominance of forest sector-focused interventions. Few countries focus on the wider drivers of international and market forces, particularly commodity markets, prices, and foreign direct investments. In addition, where these underlying drivers are recognized, they are linked again to forestry rather than to agriculture.

These findings to date raise important questions as to: (1) why the underlying drivers are inadequately identified; (2) why there is a large disconnect between the identification of direct drivers and the corresponding underlying drivers; (3) why there is a lack of adequate understanding of the scale at which these underlying drivers operate; and (4) the apparent mismatches between problem identification (drivers) and the identification and selection of national-level policy responses.

The current body of literature also demonstrates that country progress and the political willingness to tackle the drivers of deforestation and forest degradation are slow and that there is a persistent inadequacy in policy definition and implementation (Frechette et al. 2014). For instance, Olding (2017) found that emphasizing REDD+ as a means of supporting international and national commitments to reduce poverty and unsustainable growth, which are primary underlying drivers of deforestation and forest degradation, has not yet been clearly addressed. Similarly, market mechanisms and public–private hybrid arrangements as a lever to achieve REDD+ policy results have been explored, but they have not been systematically integrated into a framework for addressing drivers beyond the forestry sector (Cadman, Maraseni, OkMa, & Lopez-Casero, 2017; Lambin et al. 2014). Comparative qualitative assessments of country progress in implementing REDD+ policies have assessed the conditions and combinations of factors that influence REDD+ policy adoption (Korhonen-Kurki et al. 2017; Brockhaus et al. 2017). These assessments have also continued to provide granular data on the direct and underlying drivers, raising important questions about long-held assumptions that demand-side and supply-chain measures to improve practices in the largest agricultural commodities driving tropical deforestation are in fact the culprits (Pendrill et al. 2022).

These important developments notwithstanding, it remains unclear how as an international environmental governance instrument, REDD+ is affecting the framing and resolution of drivers in general and the underlying drivers in particular in diverse national-contexts.

This thesis explores the extent to which drivers are being addressed through national level policy interventions, such as sectoral policy and public finance allocation. Furthermore, this analysis is placed within the broader context of the fragmented national-level policy arena into which REDD+, as a global policy mechanism, must fit, including the diverse policy domains of agriculture, energy, water, climate and rural development (Hogl et al., 2016). Fragmentation is defined as the implications of institutional variety in the absence of hierarchical coordination (Zürn and Faude, 2013). Fragmentation in national-level REDD+ initiatives is characterized by incoherent or conflicting sectoral goals, disconnects between global and local ambitions and actions and imbalanced power dynamics between actors (Hogl et al., 2016; Winkel and Sotirov, 2015). It may also be affected by the multi-level nature of regulation, between the national and the sub-national, and the devolution of rule-making authority to private initiatives such as forest certification (Clapp and Scott, 2018).

The need for multi-actor coordination, defined as the collaboration of different policy actors via their participation in decision-making processes, has been extensively explored in the REDD+ literature (Peters, 2018; Fujisaki et al. 2016; Korhonen et al. 2015). Coordination failures are observed in national-level REDD+ initiatives, attributed to the inability to recognize key multi-level problems in the relations among actors, including a lack of accountability, agreement, and alignment (Fujisaki et al. 2016; Korhonen-Kurki et al. 2016). The implication is that fragmentation further complicates national policy responses to realize REDD+ goals, but how fragmented and uncoordinated action makes addressing the direct and indirect drivers of deforestation even more challenging remains less explicitly addressed.

Thus, the problem addressed in this thesis is the mismatch between the identification of the direct and underlying drivers (the problem) fuelling deforestation and forest degradation and the development of national-level policy responses to advance REDD+, with implications for whether the ambitions identified in the global environmental policy agenda are being and can be met.

1.2 Research objectives and questions

This thesis explores whether and how national-level policy approaches in REDD+ developing countries are focusing on and are able to address the multi-scale and multi-sectoral direct and underlying drivers of forest loss and unsustainable land use change. In doing so, the thesis explores what implications this mismatch has for whether the ambitions identified in the global environmental policy agenda are being met by national governments.

The overarching question that this thesis addresses is as follows: In what ways do global environmental policy agendas such as REDD+ help to address the underlying drivers of environmental degradation, when confronted with fragmented cross-sectoral and multi-level policy processes at the national level?

Exploring fragmented cross-sectoral and multi-level policy processes at the national level is an important contextual aspect that frames characteristics that are particular to the REDD+ context. The overarching question is addressed via two main cross-cutting research questions that the chapters in this thesis explore:

1. To what extent do national-level REDD+ policy responses identify or conceptualize the problem of direct and underlying drivers of deforestation?
2. In what ways do national-level REDD+ policy responses seeking to affect driver pressures help overcome the cross-sectoral and multi-level governance challenges in the fragmented policy arena?

Both questions seek to develop a new understanding of the challenge that addressing drivers poses, in relation to the modalities and methods that countries pursue to implement REDD+, and what the implications are for the national implementation of global environmental agreements more generally.

1.3 Theoretical perspectives

This section explores various strands of the environmental policy and governance literature, to consider whether and how they address drivers. This overview is intended to be illustrative rather than comprehensive, with a selective set of literatures considered (see Table 1). The two key questions shaping this review are (1) whether and how this literature frames or includes the direct and underlying drivers of environmental degradation in their conceptualizations and analyses, and (if so) (2) how problem framing and identification around drivers are linked to solution oriented policies and policy processes.

Since the Rio Convention of 1992, a wide body of literature that assesses the dynamics of sustainability and governance has emerged. This literature has explored the challenges that international policy responses face in addressing global environmental challenges, such as biodiversity and forest loss as well as desertification. REDD+ is one of a multitude of global environmental policy agendas that seek to describe and articulate new environmental policy responses to address sustainability challenges. Investigating innovation in environmental policy responses has been one key focus of this burgeoning literature (Chaffin et al. 2016; Jordan, Wurzel and Zito, 2013; Bernstein and Cashore, 2012). Such investigations often start with the recognition of the fragmented policy arenas (dispersed, multi-level, multi-sector) that global environmental policy agendas face, in their quest to be translated into national and sub-national policy and regulation, and between the public and private sectors (Ostrom, 2010; Van Asselt and Zelli, 2014; Jordan et al., 2018). The translation of global agreements into national policy leads to fragmentation as goals and objectives are divided horizontally between ministries and vertically between levels of government (Zürn and Faude, 2013; United Nations, 2018). Policy responses also drive fragmentation when problems and solutions are divided and repackaged to fit the expertise and mandate of different parts and levels of government (Howlett et al., 2015). Sector-specific, uni-

dimensional, and uncoordinated policies are recognized as being unfit for the purpose of addressing the complex, multi-dimensional problems that societies face in sustainable development (Cejudo and Michel, 2017), which characterizes REDD+.

Polycentric governance has emerged as a means to describe contemporary multi-level, multi-actor, multi-issue policy landscapes. Implicitly, decision-making takes place at multiple scales and across a number of jurisdictions in support of common goals regarding different public goods that can be delivered by different combinations of agencies that self-organize at different scales and that actors choose accordingly (McGinnis and Ostrom, 2011; Carlisle and Gruby 2017). Emphasis is placed on the functionality of the polycentric system, what enables it and what hinders it, with an implicit assumption that polycentric systems are fit for the purpose of improved relations for solving complex commons problems. Somewhat related is the literature on institutional interaction and interplay (of rules, norms and strategies, as per Ostrom (2005)), which explores institutional interaction in environmental governance, and the mechanisms through which conflict and interference among different regimes and institutions can be overcome through interaction and linkages (Oberthür and Gehring, 2011). Integrative environmental governance seeks to bring various topics in the regime fragmentation literature under one heading to explore the relationships between governance instruments and/or governance systems (Visseren-Hamakers, 2015), although the consequences of this fragmentation for the development of new policies have received relatively little attention (Visseren-Hamakers, 2015).

A related strand of literature on multi-level and networked governance explores jurisdictions of authority, including coordination and the nesting and embeddedness of different governance arrangements (Weber and Khademian, 2008). Participants in the network bring different experiences and expertise to the network, which shapes their sense of the problem and how to address it (ibid.). This literature does not provide insight into how the network or levels prioritize problems and how ‘collaborative capacity-builders’ effectively overcome sectoral siloes.

Related to networked governance is transnational climate governance, which is concerned with the behaviour of non-state and sub-state actor participation in transnational climate initiatives. Participation is motivated by incentives and diffusion processes that create and spread normative and market-based pressures across different institutions (Andonova et al. 2017). The focus is on participation in the network (across different institutions). This aspect also helps explain the lack of focus on problem conceptualizations in the network and how that relates to the solutions sought. Hale and Roger (2014) investigated the role of orchestrators to initiate and shape solutions in these transnational governance contexts and orchestration as a means to address collective action problems. Orchestration is an indirect mode of governance that relies on inducements and incentives rather than mandatory controls, with orchestrators working through intermediaries to encourage the adoption of targets in line with the orchestrator’s goals (Abbott, 2018). Here, the emphasis is on the motivations, legitimacy, authority, and institutional capacity of actors, and the processes (conditions for and types of) orchestration that may occur. Orchestration by national governments and international organizations increases the effectiveness of the networks (Michaelowa and Michaelowa, 2017). The quality of 109 networks was assessed by Michaelowa and Michaelowa (2017) to decipher the degree to which they contained

climate mitigation targets, clear incentives for mitigation, the definition of a baseline from which to measure progress, and a monitoring, reporting, and verification procedure. Approximately half of the initiatives did not meet any of these criteria, and less than 15% satisfied three or more. Many initiatives were created only for the purpose of networking. Given the challenge of achieving global climate targets, focusing on how to create coalitions of willing actors to coordinate and orchestrate action is necessary, but the role of analytics in problem framing (e.g., what problem the collective action needs to solve) is not emphasized in this literature. Thus, this literature largely omits a focus on direct and underlying drivers.

Cross-sector collaboration is the linking or sharing of information, resources, activities, and capabilities by organizations in two or more sectors to jointly achieve an outcome that could not be achieved by organizations in one sector separately (Bryson et al. 2015). Sectoral divisions and entrenched boundaries that deter coordination have persisted in many development contexts, motivating external organizations to advocate for greater cross-sectoral policy and programme coordination (Neely et al. 2017). Bryson et al. (2015) ascertained that theory, empirical research, and practice all reveal that because cross-sector collaborations are so complex and dynamic and operate in such diverse contexts, it is unlikely that research-based recipes can be produced. Their literature review identified leadership as a key determinant of success, and called for grounding collaboration research in a multilevel, dynamic systems view (ibid.). Policy integration goes beyond coordination to explore how environmental (or other) objectives influence outcomes in other sectors. The integration literature increasingly explores the complexities of vertical and horizontal linkages as well as the conditions of linkages, including the political economy of policy-making. Environmental policy integration seeks to determine the relative weight (or 'principled priority') of environmental objectives in relation to other sectoral policy objectives (Jordan and Lenschow, 2010).

The proliferation of food and forest product production and product certification schemes, corporate net-zero or reduced greenhouse gas emission pledges, and agriculture commodity platforms over the past decade has highlighted a global interest in private sector responses to global environmental challenges. These responses include private environmental regulation (e.g., voluntary product sourcing and production/manufacturing certification, corporate net-zero or reduced GHG emission goals) and public private hybrid arrangements (e.g., multi-stakeholder initiatives). The need for companies to demonstrate corporate social responsibility gave rise to these initiatives. The governance literature has investigated this struggle for rule-making authority between the state and the private sector, questioning to what extent certification should be viewed as private capture of regulatory power (Moog et al. 2015), or as an adequate replacement for state-led regulation (Lister, 2011). Research has investigated the degree to which public agencies have capitalized on or reclaimed certification and regulatory authority through state-led mandatory schemes, such as timber legality (Giessen et al. 2016). Organizational ecology has provided a vantage point to investigate the role of markets to set standards, induce participation and check compliance (Abbott, Green and Keohane, 2016). The focus of this literature is on agency-centred factors and power dynamics in the policy arena as well as the interaction between public and private actors, but it has lacked emphasis on drivers.

A primary goal of transformative governance is to shift degraded social-ecological systems to improved states by altering the structures and processes that define the systems (Chaffin et al. 2016). The literature tends towards collective learning and reflection, space for innovation, non-linear thinking that integrates complexity across multiple dimensions and scales, inclusive consultation, and ownership (countries or jurisdictions). Based on a literature review of transformation change in land use and climate change, Atmadja et al. (2021) identified that the literature rarely provides hands-on practical advice on how to bring about transformational change. Rather, the emphasis is on networks, collaboration, and institutional and organizational shifts (Korhonen-Kurki et al. 2018; Termeer et al. 2017), and the role of agency, and conflicting interests and unequal power positions, and how all of this relates to forging solutions. These findings indicate an emphasis on process and institutional aspects. Robust theoretical frameworks for considering problem framing are lacking in this literature, and the direct and underlying drivers appear to be largely overlooked. This observation was affirmed by Olssen et al. (2014), who identified that a coherent theory for the emergence of new configurations of interconnected social-ecological systems with different sets of feedbacks (such as barriers to change via cognitive maps, power, and politics) is still lacking.

In summary, the literature above provides a comprehensive emphasis on the processes and contextual descriptions of new or emerging forms of institutional interaction, collaboration, networking, regimes, accountability, and actor and power dynamics. What is lacking here is a core focus on drivers, the related direct and indirect dimensions of drivers, and how these dimensions relate to actors, institutions, power dynamics, and institutional dimensions. In contrast, two emerging bodies of governance literature focus more directly on drivers in the context of modern complex, cross-sectoral, multi-level problems. These bodies of literature are the food–energy–water nexus literature and the wicked problem literature. However, as explored below, even they contain limitations.

Recognizing policy fragmentation and competition across the water, energy and food sectors, the nexus approach seeks to address externalities across sectors, to achieve policy coherence by identifying synergies and trade-offs, optimizing policy options, and adapting governance arrangements (Hoff, 2011). A robust literature on the nexus approach has developed over the past ten years, across various disciplines. Some nexus studies acknowledge the role of drivers, particularly the underlying drivers. The Food and Agriculture Organization of the United Nations (FAO) (2014) posited that globally relevant drivers (e.g., demographic changes, urbanization, agricultural modernization, international and regional trade, and markets and prices) relate to context-specific drivers, and have a strong impact on the resources base, proposing that these drivers be inputs into a) evidence and data gathering, b) scenario development, and c) response options to assess nexus interactions. Thus, the conceptual focus is not on institutional interaction or policy instruments or regimes, but on analytical and procedural framing to unpack the nexus ‘problems’ and assess the impacts on natural, economic and social systems given certain scenario options.

Research in the environmental science and spatial planning fields conceptualizes nexus problems and trade-offs between socio-economic and biophysical at different temporal and spatial scales while integrating cross-scale effects (Mpandeli et al. 2020; Nhamo et al. 2020; Givens et al. 2018). Nexus

inquiries apply interdisciplinary systems approaches to model the integration of components, connections and interactions in the sustainability nexus (Fürst et al. 2020; Gragg et al. 2018). Such inquiry appears to enable iterative assessments of barriers to solutions, possible impacts, and difficult-to-answer questions about inequality, power, and effects of multiple indicators. Political economy considerations such as cross-sectoral conflict, mistrust, and inadequate political will are considered (Rasul et al. 2021).

However, there is more recent recognition of a gap in the nexus literature regarding the exploration of governance implications and how the nexus can connect with decision-making processes (Liu et al. 2018; Weitz et al. 2017; Al-Saidi and Elagib, 2017). Weitz et al. (2017) called for more robust research on why fragmented policies pose problems and elaboration of what policy coherence entails. This call is an indication of interest in more empirical connections to the governance literature and theory. Yet Liu et al (2018) sought answers from the transformative governance literature on integrative metrics and methods to measure interrelationships across sectors, as well as the inter-sectoral and inter-regional interactions. These consider process, relationships and institutional regimes, while obscuring the focus on the complexities of the problem as a basis for conceptualizing governance solutions.

A distinction is observed in how the driver literature and nexus literature conceptualize ‘the problem.’ While the nexus literature includes some consideration of drivers, the focus is on nexus interconnections. Thus, the framing of ‘the problem’ is potentially quite different, especially in contexts of evaluating the risks and trade-offs of future policy priorities. Due to the conceptualization of the problem as nexus inter-connections, the underlying drivers are not consistently considered in the nexus literature, although the environmental science nexus literature increasingly explores underlying driver dimensions such as the financialization of commodities (Schmidt and Mathews, 2018) and international trade (Taherzadeh and Caro, 2019), among others.

The wicked problems literature explores the complex characteristics of many challenges facing humanity—land degradation, biodiversity loss, climate change, rural poverty and the increasing gap between rich and poor. Wicked problems contain multiple, overlapping, interconnected subsets of problems that cut across multiple policy domains and levels of government, across hierarchies and authority structures within and between organizations and across policy domains, political and administrative jurisdictions, and political "group" interests (Weber and Khademian, 2008). Rittel and Webber (1973) defined ten distinguishing properties of these planning and policy problems—including that they contain multiple variables, that by nature they cannot be solved through linear systems analysis problem-solving, and that understanding the problem itself depends on what options can be considered to solve it. While indicators and focusing events are well documented in the literature as ways in which society or stakeholders prioritize problems (Kingdon, 1995; Birkland, 2007), wicked problems are harder to decipher, only one aspect of the problem may make it on the policy agenda, and ‘focusing’ may raise awareness of the highest profile aspects of a problem without illuminating the underlying aspects that contribute to it.

Wicked problems involve interconnected market-based, biophysical, political, cultural and socio-economic aspects, and solving a problem in one area can result in unintended effects in other areas (World Bank, 2011), which calls for interdisciplinary and transdisciplinary approaches. The wicked problem literature reviews how the way that a problem is defined is very closely tied to the type of solution that is proposed. The way a problem is defined is inherently part of a persuasive process, which affects the choice of solutions and is informed by social, political, and ideological structures that come into play (Head, 2018; Birkland, 2007). Especially with wicked problems, framing the problem(s) can be highly contested, with differing perspectives, ideologies and power dynamics (including electoral considerations) (Peters et al. 2018). While wicked problem theorists identify that problem framing must include consideration of the goals, and the variables that can be manipulated through policies, incentives or other means (Weimer and Vining, 2011), such consideration raises questions of how to measure the adequacy of problem framing and diagnostic exercises (as per McGinnis and Ostrom, 2014), and what impact that has on policy effectiveness (Howlett et al. 2015). The literature on wicked problem identification is focused on the characteristics related to the complexity of the problem and not necessarily on drivers, underlying drivers and the connections between them. Nevertheless, wicked problem framing elucidates the complexities of interconnected problems, and does point towards what the implications are for governance.

Table 1 summarizes the key findings from this governance literature review. A key finding of this literature review is an observed absence of conceptualization of drivers as a central subject of assessment or as a core objective in each of these environmental governance concepts.

Table 1: Governance concepts in relation to the consideration of drivers as a core objective

Governance concept	Approach/key messages	Framing of direct and underlying drivers (the problem)	Includes consideration of drivers as a core objective	References
Polycentric governance	Requires a complex combination of multiple levels and diverse types of organizations drawn from the public, private, and voluntary sectors that have overlapping realms of responsibility and functional capacities in problem-solving	Explores cooperative processes related to decision-making and the role of actors; emphasis is on the cooperation process, not the analytical and information inputs into that decision-making process. No emphasis on drivers.	No	Carlisle and Gruby, 2017; Jordan et al. 2017; McGinnis and Ostrom, 2011
Multi-level governance/ Networked governance	Explores the transfer, receipt and integration of knowledge across participants seeking to solve a problem. Considers jurisdictions of authority, coordination, and the nesting and embeddedness of governance arrangements	Dispersion of authority, and the allocation of competencies among actors in the network, transcending path dependency to address problem. Network actor interpretation of the problem and what to do about it is observed, but problem drivers are not central to the approach.	No	Stephenson, 2013; Weber and Khademian, 2008; Bache and Flinders, 2004; Hooghe and Marks, 2001
Institutional interaction/ interplay and management	Explores institutional interaction in environmental governance, and the mechanisms through which conflict and interference among different regimes and institutions can be overcome through interaction and linkages	The focus is on the institutional regime. Does not contain a broader scope of investigation to include a robust view of the socio-economic, political or other factors (underlying drivers) that influence the context in which the institutional interaction occurs and in relation to the specific policy goals sought	No	Gehring and Oberthür 2009; Oberthür and Gehring, 2011; Zelli and van Asselt 2013

Environmental policy integration	'Principled priority' for environmental protection in other sectors	Distinguishes between institutional, political and cognitive logics. However, what to prioritize and to what extent are contested. Drivers not a priority.	No	Jordan and Lenschow, 2010
Policy fragmentation/orchestration/coordination/integration	Recognizes that multi-level governance is inherently fragmented; thus, explores the conditions under which sectors or governance levels link or share approaches to achieve joint outcomes. Integration explores the extent to which one sector can exert its interests on another sector.	Explores institutional arrangements, relationships and interactions of different sectoral actors. The integration literature increasingly explores the complexities of vertical and horizontal linkages, the conditions of linkages, including the political economy of policy-making. No emphasis on drivers.	No	Zürn and Faude, 2013; United Nations, 2018; Howlett et al., 2015; Candel and Biesbroek, 2016; Hale and Roger, 2014; Tosun and Lang, 2013
Cross-sectoral coordination	Collaborative problem-solving, conflict resolution	The emphasis is on solutions through collaboration, multi-stakeholder platforms. No emphasis on drivers.	No	Neely et al. 2018; Korhonen-Kurki et al. 2016; Bryson et al. 2015
Public private hybrid	Emphasizes coalitions of the willing, motivated by incentives and/or functional legitimacy, the role of the private sector and supply chains to address environmental challenges	The focus is on institutional and agency-centred factors in the policy arena, particularly the role of private actors and the interaction between the public and private sectors. No emphasis on drivers.	No	Grabs, Auld, Cashore, 2020; Abbott, Green, Keohane, 2016; Lambin et al. 2014; Bernstein and Cashore, 2007; Bartley, 2007
Integrative environmental governance	Seeks to unite relatively isolated debates under a common a conceptualization, relationships between governance instruments and/or governance systems. Includes private and hybrid instruments	Seeks to move the perspective from individual instruments to the relationships between instruments and groups of instruments. No emphasis on drivers.	No	Visseren-Hamakers, 2015
Transnational Climate	The focus is on participation in the network	By definition does not aim to bring about a shift in governmental policies. No emphasis on drivers.	No	Michaelowa & Michaelowa, 2017;

Governance Initiatives				Andonova et al. 2017; Hale and Roger, 2014
Transformative governance	Seeks regime shifts in social-ecological systems at multiple scales	The emphasis is on networks, collaboration, and institutional and organizational shifts. No emphasis on drivers.	No	Atmadja et al. 2021; Korhonen-Kurki et al. 2018; Termeer et al. 2017; Chaffin et al. 2016; Olssen et al. 2014
Food – energy – water nexus	Recognizes that policies are fragmented across the water, energy and food sectors; the goal is to achieve policy coherence by identifying synergies and trade-offs, optimizing policy options, and adapting governance arrangements	The focus is on interconnections, not drivers, but some studies consider direct and underlying drivers. The literature is thin on theoretical explanation of how governance can respond to nexus problem-solving.	Yes	Hoff, 2011; FAO, 2014; Weitz et al. 2017; Liu et al. 2018; Al-Saidi and Elagib, 2017
Wicked problems	The problem contains multiple variables, by nature cannot be solved through linear systems analysis problem-solving, and understanding the problem itself depends on what options can be considered to solve it	Problem identification is focused on complexity, not necessarily on drivers, underlying drivers and the connections between them. Does consider implications for governance.	Yes	Rittel and Webber, 1973; Alford and Head, 2017; Head, 2018

1.4 Conceptual lens

A key finding from the literature review above is the absence of a clear conceptualization of drivers that allows for assessment across a range of policy domains. Nevertheless, the various literatures do provide a basis upon which to develop a new conceptual lens for assessing the ways global environmental policy agendas, such as REDD+, affect the underlying drivers of environmental degradation when confronted with fragmented cross-sectoral and multi-level policy processes at the national level. This lens conceptualizes REDD+ as a global governance instrument, and its interaction with national and sub-national levels that in turn steer the multiple sectors that shape the underlying drivers of deforestation is summarized in Figure 1. This lens is used to structure the questions and analysis in the rest of this thesis (see Figure 1).

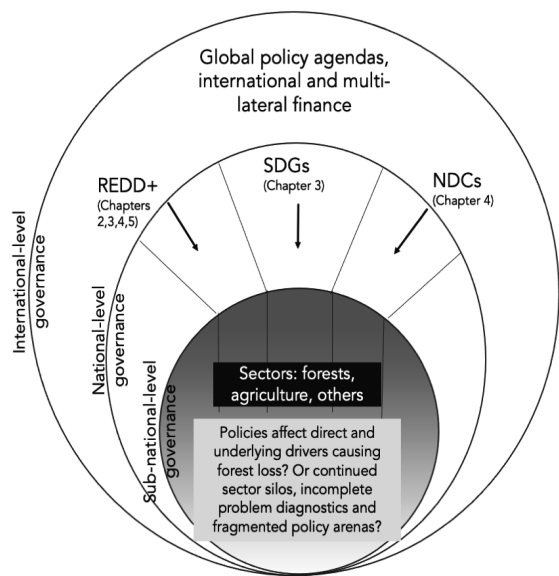


Figure 1: Conceptualization of REDD+ as a global governance instrument interacting at multiple levels and across sectors

Figure 1 is interpreted as follows. The outer layer of the conceptual lens focuses on global policy agendas and international and multi-lateral finance. These agendas and financial mechanisms directly affect the ratification and/or commitment of the national level to various global policy regimes, including REDD+, nationally determined contributions (NDCs) to the UNFCCC Paris Convention (of which

forestry and land use are a part) and the sustainable development goals (SDGs), which contain anti-poverty, environmental and other considerations relevant to deforestation.

Each of these individual regimes integrates into and confronts existing sectors at national and sub-national scales as well as the range of actors, institutions, capacities and other factors that will impact the development and implementation of global policy on the ground. This conceptual lens provides a basis for considering how the identification of problems, such as deforestation, is shaped by different levels of governance that engage with multiple sectoral priorities. It also opens up the possibility of considering the degree to which global regimes remain coherent or are made more fragmented as they confront the complexity governing drivers at (sub)national levels and scales.

1.5 Research methodology and methods

This section explains the overarching research methodology, including the methods and research design applied in the next four chapters. A more detailed explanation of the specific research methods is provided in each of the chapters.

1.5.1 Methodology

The choice of methodological approach was guided by the interest to explore how national governments consider drivers in relation to REDD+ policy formulation, and to explore the ways in which an international governance mechanism such as REDD+ confronts drivers (especially underlying drivers) that span multiple sectors and governance levels.

Being exploratory and explanatory in nature, case studies allow the researcher to gain an understanding of the issue(s) in real-life settings and are recommended to answer *how* and *why* questions, and they are less frequently applied to answer *what* research questions (Harrison, et al. 2017; Yin, 2014). A case study approach is suitable when the objective is to understand and explain complex phenomena embedded in specific institutional, political, economic, cultural and social contexts. This research uses case studies to elaborate on the different research questions.

This research applied an international comparative case study methodology incorporating purposefully selected exemplary cases that made it possible to explore specific phenomena in depth while also enabling the observation of the variation in national-level REDD+ policy developments.

The methodology applied an abductive approach, following a pragmatist perspective, to explore theory and data, identify patterns, make logical inferences and construct theories (Mitchell, 2018). This abductive approach made it possible to move between inductive reasoning, where a series of specific observations leads to a general conclusion that may be true, and deductive reasoning, based on the use of data to test a hypothesis that is found to be true only if it leads to a specific conclusion. The application of an abductive approach drew upon a comparative case study approach across multiple key REDD+ countries to infer explanations of the empirical phenomenon observed, and as a basis for theoretical abstraction and, ultimately, generalization.

1.5.2 Case selection and methods

Country case studies were selected to represent a geographic mix and to capture country progress in identifying drivers and policy responses. Thus, Vietnam, Indonesia and Brazil were chosen because of their relatively long timeframes engaging in REDD+ and, in the case of Brazil, its measurable performance in reducing forest loss due to policy implementation even before REDD+ was conceptualized. Indonesia and Brazil accounted for more than a third of tropical tree cover in the year 2000 and represented nearly half of all tropical tree cover loss between 2001 and 2014 (Weisse and Petersen, 2015). Indonesia and Brazil are also the sixth- and seventh-highest greenhouse gas-emitting countries in the world, with land use change being the largest contributor to emissions in both countries (45% of total emissions for Brazil and 55% for Indonesia) (ibid.). For these reasons, the two countries were priorities for bi-lateral and multi-lateral agreements for REDD+ readiness and performance-based REDD+ finance agreements (Seymour and Busch, 2016). Vietnam was a front-runner in REDD+ multi-lateral investment in REDD+ readiness. Myanmar was chosen as a case study for the assessment of synergies between the SDGs and REDD+ (Chapter 3) due to its relative infancy in engaging both policy regimes; thus, the research conceptualized what was feasible in that country circumstance. The 40-country meta-analysis used in Chapter 4 diverged from a case study approach in the first section of the paper to uncover patterns across 40 country NDCs to the Paris Climate Agreement. However, the case studies of Indonesia and Brazil were reflected upon in the second half of the chapter to elucidate experiences with climate financing to address drivers in Brazil and Indonesia and the role of domestic sources and fiscal reform.

My positionality in the wider climate policy field also played an important role in the design of the case selection. Having a long-term professional involvement with UN agencies, national governments implementing REDD+, civil society and research organizations helped inform the selection of suitable case study countries. In the process of this ongoing work, I explored the policy response and intervention aspects to address the drivers of deforestation and forest degradation in the lead up to the UNFCCC 19th Conference of the Parties in Warsaw (as reported in Kissinger et al. 2012), which resulted in countries agreeing to develop national strategies and action plans to identify and then implement policies and measures to address pressures from the drivers of deforestation and forest degradation (UNFCCC, 2013). Following that report, working as a consulting senior advisor to the UN-REDD Programme, I worked with REDD+ country governments to identify direct and underlying drivers, advance the development of policies and measures to address the drivers of deforestation, and develop pathways to cultivate private sector support and innovative finance arrangements. This thesis builds on that 2012 analysis and subsequent work with national governments actively implementing REDD+ policies by digging deeper into empirical findings on the country-level implementation of REDD+ and exploring theoretical conceptualizations of policy responses to drivers. The research that underpins the various chapters of this thesis was carried out after my paid consultancies. These contracts also permitted the use of data for different purposes and made it possible to assess the data against different criteria. Conflicts of interest were taken into consideration and avoided by not accepting on-going or future contracts with those governments or UN agencies. Thus, the access and real-world

insight from these experiences formed a rich empirical basis for this thesis research, guided case study selection, and provided an empirical basis for the theoretical reflections on the research findings.

The qualitative and quantitative mixed methods approach relied heavily on case studies to explore the context-specific details from which to derive empirical findings. The case study research follows Merriam's (2009) assertion that research largely based on qualitative case studies begins with designing the study and selecting the sample, considering the appropriate theoretical framework, and reviewing the literature, stating the research problem, collecting the data, and analyzing and reporting qualitative data. The overall research approach applied in this thesis is not fully inductive (grounded), as data were selected and organized following framework-driven decisions, such as the research questions, and the drivers of land use change and policy response framework. However, I applied a grounded approach, by drawing upon a wide array of research material collected corresponding to the research interests in land use change and policy change, allowing these data to inform the identifications of patterns within that. Similarly, this grounded approach in data collection and analyses provided a basis to inform theory, rather than being guided by theory, and then collecting data to verify/falsify the theory.

1.5.3 Data collection and analysis

Sources of evidence suitable for case study research were gathered, including documents, archival records, interviews, direct observations, and participant-observations. Physical artefacts, identified by Yin (2014) as the sixth source of evidence for case study research, were not collected. Data were collected between 2013-2022.

Documentation, data and archival records: A primary method of data collection employed was a systematic screening of the literature, to capture a wide array of relevant peer reviewed journal articles. This widely used approach relies on identifying a sample of relevant literature, without attempting to achieve a fully comprehensive study of all available articles. For case studies, in-depth literature searches were conducted according to each country context, with the results often consisting of government-reported documents, peer-reviewed literature, research organization publications, and grey literature. In Vietnam and Indonesia, government documents and published reports in Vietnamese and Bahasa Indonesia were gathered and translated either by Google Translate, paid translators or a mix of both. Brazilian documents and reports reviewed in Portuguese were translated with Google Translate. Burmese documents in the Myanmar case study were translated by a Burmese translator.

When working in the REDD+ case study countries, I applied mixed qualitative and quantitative data methods. Investigative research questions and data collection often started from a basis of observable land use change from satellite data, as the basis to pursue an assessment of the drivers of deforestation and forest degradation and related policy responses. Of relevance to the identification of the drivers of deforestation and forest degradation and correlating the effect of policies or actions on forest cover, this aspect of the approach entailed working with spatial analysts who interpret satellite imagery to decipher what caused forest cover change or degradation, based on activity data. The assessment of attribution is complex and involves finding and interpreting data on which actors operated in specific areas, what the 'fate' of a certain land use was (for instance, in Vietnam's Central Highlands, transitional

crops such as cassava would often pave the way for other cash crops such as coffee). Driver patterns vary over time; thus, the assessment of the 'fate of land use' requires adequate timescales. I completed previous work, undertaken with the national governments of Vietnam, Indonesia and Myanmar, on the assessment of underlying drivers at national and sub-national levels. The method of assessing underlying drivers is based on triangulating between a range of factors identified through statistics, spatial data, economic analyses, and expert interviews. This research contributed to the case studies. This collective body of documentation and real-world insights from working with developing country governments on REDD+ implementation also contributed to the basis for the theoretical reflection based on the transformative governance literature as well as the role of problem identification and addressing drivers at national/local and international scales.

The review of the literature used to inform the conceptual approach (Section 1.3) and the theoretical reflection (Section 6.2) were purposefully chosen to encompass a wide of a cross-section of recent environmental policy and governance literatures. Literature was selected through a) keyword searches in Scopus and the Wageningen University global journal library portal; b) assessment of relevance to the research questions; and c) analysis of the frequency of citations, or quality of citations (e.g., cited by frequently cited journal articles, or referenced by frequently cited journal articles as being a foundational analysis). Once the final cut of literature (roughly 75 papers) chosen to represent each domain was made from the hundreds of papers scanned, a detailed analysis of each paper was completed (e.g., no defaulting to keyword searches; rather, each paper was read and analyzed). The review of each literature source considered the following: a) what its primary objective is; b) how it seeks to address the fragmented policy arenas; c) how it explores the relationship between international and national policy-making; d) how it frames or includes direct and underlying drivers (or not); and e) for those papers that do include consideration of drivers as a core objective, reflect on how that relates to the theoretical objectives of the governance literature domain, as a means to infer how problem identification relates to the identification of policy solution options.

Interviews: The second method of data collection was interviewing key informants using open and semi-structured questions related to each chapter's topic (refer to the methods section in each chapter for further details). Wide-ranging formal and informal interviews were conducted in the case study countries and international fora, with interviewees ranging from national government representatives, sub-national government officials (e.g., provincial, district, community), development agency partners, international observers, civil society organization representatives, commodity traders, product manufacturers and producers, farmers, research organizations, commodity production certification bodies, and financiers and lenders. Interviewees were identified following stakeholder mapping exercises to ensure a representative range of views and perspectives and to ensure that those individuals and organizations with informed insight into the case study contexts, in relation to the research questions in each chapter, were identified and interviewed. Interviews were conducted with the assistance of translators in Vietnam, Indonesia, Myanmar and Brazil.

Direct and participant observation: The third method of data collection employed was direct and participant observation, which occurred over multiple weeks in each of the case studies. Direct

observation occurred at UNFCCC meetings and other international fora where countries reported their REDD+ plans, policies, challenges and successes. However, most of the meetings involved participant observation. A risk in participant observation is the potential bias that may occur by not being an external and passive observer/investigator (Yin, 2014). In all case study circumstances, I had a direct role in the REDD+ governance contexts (except Brazil, where my engagement was regional and archival records, expert interviews and document analysis constituted the main forms of data gathering). For the Vietnam, Indonesia and Myanmar case studies, I was not entirely independent of the case study context, as data collection and interviews occurred while working with relevant government agencies via UN agencies. When those consultancies were completed, I utilized the data collected and, in many cases, followed up with additional interviews, data gathering, and literature reviews. Details were transparently reported in the acknowledgement section of each Chapter when published in journals. I believe that rather than producing a bias risk, the in-depth access to key government individuals and agencies at multiple governance levels produced a wealth of evidence that would otherwise not have been available. As the data collection and analysis occurred not only during these observation events, but also significantly after these events through additional interviews and document analyses, I sought to reduce bias and instead increase the credibility of the case studies as a result of the direct engagement.

1.5.4 Research validity

The internal validity of research findings refers to the degree of confidence that the causal inferences being tested or researched are not influenced by other factors or variables (Yin 2014). Methods of data collection and analysis were organized and systematized with a detailed chain of evidence, as per Merriam (2009), with literature, data and interview data sorted according to categories and coded. As per Denzin (2015), triangulation between data sources (data triangulation), between perspectives of the same dataset (theory triangulation), and of methods (methodological triangulation) was applied in the research to enhance its internal validity of the research. By using and triangulating between multiple sources and approaches, the aim was to cross-check and corroborate the phenomena observed (Patton, 2002). Following Patton (2002), initial investigative questions were also iteratively reflected upon as data were gathered in order to reduce bias and adjust to new perspectives or orientations. Thus, the evidence from the case studies was supported by more than one source of evidence, which formed the basis for evaluation research, drawn from inductive, deductive, and abductive methods.

A key means of enhancing internal validity is the use of expert and stakeholder interviews. As described in the research methods section of each chapter, interviewees were selected following stakeholder mapping and practitioner input to represent a range of different interest groups and sectors relative to the research question in each chapter.

External validity refers to the extent to which the results of a study can be generalized to other situations, settings or contexts. External validity is usually enhanced with large sample sizes; however, this thesis undertook only one 40-country comparative analysis, and the rest of the chapters relied on small sample sizes through case studies. Nevertheless, the selection of case study contexts considered

external validity and tried to minimize the presence of variables that would be extraneous or not applicable to similar national REDD+ policy contexts. Importantly, the overarching research question is intended to contribute to external validity by drawing out the characteristics (e.g., fragmented policy arena, multi-level governance, cross-sectoral conflict) and the conditions that would need to be evident in any generalized context. The external validity of chapters two to five was reinforced by peer review, which occurred during the article publication process in international peer-reviewed journals. The initial findings of Chapter 4 were presented at the Earth Systems Governance conference in Utrecht, the Netherlands, in 2018, providing an opportunity to test the preliminary findings with international academic researchers.

1.6 Outline of the thesis

This thesis is organized into six chapters. This introduction is followed by an analysis of how one country (Vietnam) has addressed the direct and underlying drivers of deforestation and forest degradation through its national REDD+ action plan (chapter two). Then, the interactions between REDD+ and other aligned international institutions (specifically the SDGs and Paris Climate Agreement/NDCs) are explored, to analyse their ability to address the drivers of forest loss (chapters three and four). Chapter 5 analyses how REDD+ provides a means of integrating policy responses to the fragmented policy arena at the national level, and how integration fares as a means of addressing driver pressures. An overview of the specific research questions covered in each of these chapters is provided in Figure 2 below. Chapter six presents the overarching findings and conclusions of the thesis.

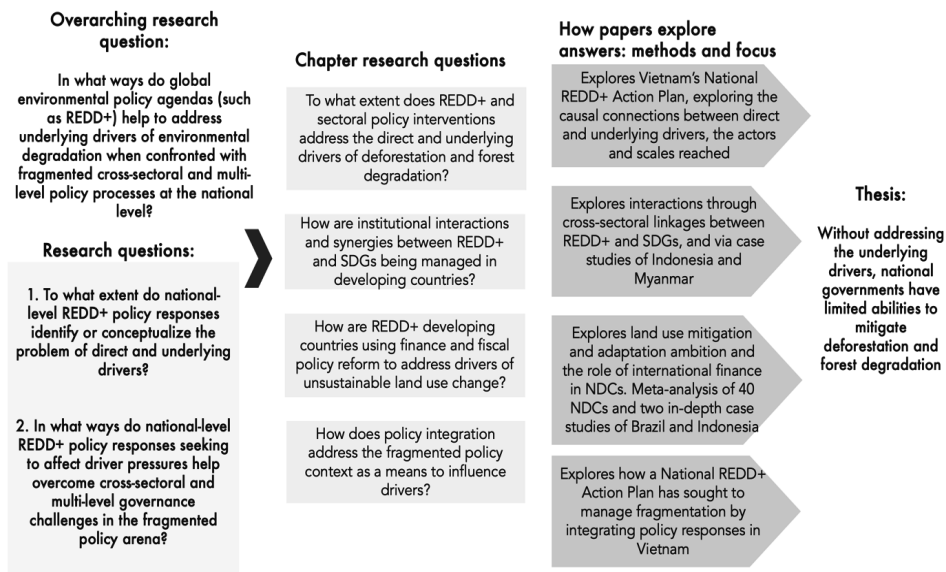


Figure 2: Overview of the thesis

The articles seek to answer the following research questions:

The following chapter helps answer research question #1, applying a case study method to unpack insights into the degree to which Vietnam identified or conceptualized direct and underlying drivers. The geographic focus is the Central Highlands of Vietnam and Vietnam's implementation of the national REDD+ action plan (NRAP). The emphasis of the research is a methodological investigation exploring how the elements the drivers of land use change, interventions, actors and scales framework (Figure 1 in chapter two) played out in Vietnam's NRAP and related responses to driver pressures in the Central Highlands. Due to the application of this framework as a lens applied to the case study, Chapter two also contributes significant insights to answering research question #2 on how the policy responses seeking to affect drivers influenced or overcame the fragmented policy arena. The exploration of this case provides a basis for also exploring missing policy interventions, actors and multi-level scales, and what factors may have contributed to their omission.

Chapter three analyses potential areas of interaction between REDD+ and the SDGs, as a means to explore answers to research question #2. The paper examines how these initiatives relate to one another at their norm-setting and rule-making stages and, given their objectives, what synergies between sectors and policy regimes are identifiable, as well as how these synergies can be pursued and enhanced. There will be conflicts and trade-offs in national-level processes of implementing REDD+ and the SDGs, as both require adjustments in development pathways. However, the analysis focuses specifically on analyzing areas of convergence and synergy. The assessment is based on secondary literature, as well as direct observations of REDD+ negotiations at the UNFCCC (including on the non-carbon benefits of REDD+), as well as primary document analysis of UNFCCC decisions on REDD+ and negotiation of the SDGs as part of the 2030 Agenda for Sustainable Development. Chapter 3 also provides insight into the overarching question of how global environmental policy agendas affect drivers when confronted with the fragmented policy arena at the national level. While the chapter explores potential synergies at the global level, two country case studies are explored for national-level insights: Indonesia, with its long-standing REDD+ programme, and Myanmar, which was in the early stages of implementing REDD+. Both countries are now also engaging nationally with the SDG implementation process. The national-level case studies draw on primary documentation and extensive engagement that I had with a wide array of decision-makers and stakeholders in both countries relating to the implementation of the SDGs, green economy pathways and REDD+. The paper elaborates a conceptual framework based on institutional interactions and distinguishes core, complementary, and supplementary synergies that may be realized between the SDGs and REDD+.

Chapter four explores the potential of climate finance to support developing countries' efforts to shift away from unsustainable land use patterns in the context of the 2015 Paris Climate Agreement, providing insights to answer research question #1 and the overarching research question. Question #1 is addressed by exploring the degree to which countries acknowledge the key underlying drivers of finance flowing to driver activities (often occurring as public support to programmes that undercut climate and sustainable land goals, exacerbating cross-sectoral conflict). The method of research is a meta-analysis of 40 developing countries' nationally determined contributions (NDCs) to the Paris Agreement. This meta-analysis provides a qualitative overview of developing countries' perspectives on climate financing

needs for mitigation and adaptation activities in the land use, land use change and forestry (LULUCF) sectors. The analysis tests the hypothesis that climate ambition (e.g., a country's willingness to address drivers) stems from more from interest to tap into international climate finance than it does from the interest to address drivers. The meta-analysis of NDCs is supplemented by a brief assessment of climate financing in two forest-rich and early-mover REDD+ countries, Brazil and Indonesia, illustrating how these two countries addressed direct and underlying drivers, and how those policy reforms sat in relation to the global environmental agenda of REDD+, thus providing insight to answer the overarching research question.

Chapter five provides answers to research question #2 and the overarching research question in the following ways: The implementation of Vietnam's national REDD + action plan (NRAP) provides a basis to explore policy integration as a means to address policy fragmentation, characterized by conflicting sectoral goals, disconnects between global and local ambitions and actions, and imbalanced power dynamics between actors. The NRAP seeks to reduce emissions from forest clearing and land use, especially from the main drivers: coffee and rubber commodity expansion. I map the degree of fragmentation within this multi-dimensional and multi-level policy portfolio, in all stages of the policy process—from goals and objectives, to actors, policy-making structures and processes, and policy instruments—at various scales. I consider the *processes* (e.g., inter-agency coordination, mainstreaming) and *outputs* (e.g. objectives, strategies, actions) as well as how integration is affected by the dispersion of goals, competencies and authority across multiple levels and scales of governance. I examine what the NRAP sought to integrate, what was not taken into account, what is integrated at which scale, and which actors are part of integration (or not) across the policy process components. These insights contribute to a broader reflection on what the implications are for global environmental agendas.

Chapter six brings the thesis to a conclusion by summarizing and exploring the implications of the empirical research findings from the chapters. A theoretical reflection further expands on the empirical findings to answer the overarching research question, and in relation to the gap identified in the governance literature on a relative absence of focus on direct and underlying drivers.

2. Policy responses to direct and underlying drivers of deforestation: examining rubber and coffee in the Central Highlands of Vietnam¹

Abstract

Viet Nam's Central Highlands is a priority region for its National REDD+ Action Plan (NRAP), but is under strong pressures from rubber and coffee production and expansion into forests, and future climate stress. This research explores to what extent REDD+ and sectoral policy interventions have addressed both the direct and underlying drivers of deforestation and forest degradation in this region, bringing particular focus to the actors and scales that policy interventions must reach to affect driver pressure. National-level policy responses to driver pressures are assessed, with the results indicating poor correlations between the direct drivers and related underlying drivers. The research proposes a framework to guide policy design and evaluation of response options to enable identifying the causal connections between direct and underlying drivers, consider future pressures, which actors to target (or not miss), and which scales are best suited for interventions (from international to national, sub-national and local). This is highly relevant for countries pursuing forest and land use sector solutions through Nationally Determined Contributions to the Paris Agreement and REDD+.

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2.1 Introduction

Viet Nam was an early adopter of reducing emissions from deforestation and forest degradation (REDD+²), joining the UN-REDD Programme in 2009, and its World Bank Forest Carbon Partnership Facility project was approved in 2013. While Vietnam has successfully increased its forest cover since 1990, with natural forest, forest/tree plantations and rubber plantations expanding from 9.4 million ha in 1990 to 14.8 million ha nationally by 2015 (FAO, 2015), the quality of the forest has declined, and mature natural forests decreased 13.5% between 1995 and 2010 (MARD, 2018). Particularly in the Central Highlands of Viet Nam, which is a priority region for the National REDD+ Action Plan (NRAP), natural forest area has decreased, while agricultural production has increased for coffee, rubber, pepper, cassava and other products that compete for expansion into forested areas (McNally et al. 2016).

Based on Viet Nam's NRAP and other policy implementation efforts, this paper explores to what extent policy interventions are addressing direct and underlying drivers of deforestation and forest degradation in the Central Highlands of Viet Nam. The emphasis of this research is on the underlying drivers, specifically in the rubber and coffee sectors, which Viet Nam has identified as the two largest drivers within the timeframe assessed in Viet Nam's NRAP (McNalley et al, 2016). Based on the assessment of underlying drivers in these two commodity sectors in the Central Highlands, this research then explores the actors and scales that have been prioritized in policy interventions. That provides a basis for also exploring missing policy interventions, actors and scales, and what factors may have contributed to that. The objective is to test the utility of the drivers of land use change, interventions, actors and scales framework [Figure 1] below. This paper does not attempt to evaluate effectiveness of these interventions to date to measurably impact driver pressures, though that could be an area of future research, when Viet Nam is farther along in NRAP implementation.

The insights from this research may be relevant to other countries seeking to implement REDD+, and those with land use sector mitigation pledges to the Paris Climate Agreement. Developed and developing countries agreed to the Cancún Agreement at the United Nations Framework Convention on Climate Change (UNFCCC) COP in 2010 and the Warsaw Framework at UNFCCC COP 19 in 2013, that a phased approach for REDD+ was required, and for countries to first assess drivers, develop national strategies and action plans to identify and then implement policies and measures to address pressures from drivers of deforestation and forest degradation (UNFCCC, 2013; UNFCCC, 2010). Decision 15 of the Warsaw Framework reflected the need for the scope of action by countries to also include organizations and the private sector to contribute in taking action to reduce direct and underlying drivers (UNFCCC, 2013). International sources of support to developing countries for REDD+ have emphasized the need to focus on assessment of direct and underlying drivers, and develop policy interventions in response to those (Global Environmental Facility, 2018; World Bank, 2018; UN-REDD Programme, 2018). UN agencies and the World Bank have to date supported 64 and 47 developing countries respectively across

² REDD+: Reducing emissions from deforestation and forest degradation and the role of conservation, sustainable management of forest and enhancement of forest carbon stocks

Africa, Asia-Pacific, and Latin America and the Caribbean to promote climate, forest and development goals (World Bank, 2018; UN-REDD Programme, 2018). More than 60 countries have included avoided deforestation (and 100 included agriculture actions) in their Nationally Determined Contributions to the Paris Climate Agreement (Global Environmental Facility, 2018). While these programmes assist countries in achieving joint commitments and funding under the UNFCCC, it is up to countries to determine how to respond to driver pressures in their forest and land use sectors, based on national circumstances. However, country progress, and political willingness, to tackle the drivers in REDD+ readiness was found to be slow and inadequately defined in policy and strategy development and implementation across 47 countries reviewed (Frechette et al. 2014).

There is a lack of clear causal links between direct and underlying drivers in the REDD+ literature, thus this study seeks to provide evidence on this link, and the role it plays in designing policy solutions to drivers. While there is a growing body of literature on the causes of deforestation and forest degradation, there has been less assessment in the literature on what enables effective policies to address drivers and influence transformational change in the REDD+ policy domain. A Center for International Forestry Research (CIFOR) Global Comparative Study on REDD+ provides insights on the role of institutional settings and policy arenas at national levels affecting the direction of REDD+ policies and their implementation (Korhonen-Kurki et al. 2018). Another meta-analysis across a range of countries affirms that policies that can successfully insulate the forest frontier from the influence of high commodity prices have great potential to reduce deforestation (Busch and Ferretti-Gallon, 2017). Forms of hybrid public-private interventions on land use are expanding, and aligning private and public regulations of land use is found to influence effectiveness (Lambin et al. 2014). Yet, despite corporate commitments and government efforts to stem deforestation, the rate of agricultural commodity-driven deforestation has not declined (Curtis et al. 2018). Though forest area is decreasing globally, and the rate of loss has slowed between 2015 and 2020 compared to the 1990s and early 2000's (FAO and UNEP, 2020), agricultural expansion continues to be the main driver of deforestation and forest fragmentation (*ibid.*). This research contends that the lack of connection between direct and underlying drivers largely explains why deforestation rates have not declined despite policy efforts.

The analytical framework used to assess the data and information gathered in Viet Nam and the Central Highlands and an overview of the methodology applied in the inquiry is presented below (Section 2). Section 3 provides an overview of the direct and underlying drivers of deforestation in the Central Highlands of Vietnam. Section 4 details the results of the analysis of Viet Nam's policy responses to direct and underlying driver pressure from agricultural commodities in this context, followed by a discussion of what conclusions can be drawn from the assessment, and what implications these have for policy-makers.

2.2 Analytical framework and Methods

Direct drivers of deforestation or forest degradation are human activities or immediate actions that directly impact forests and land (Geist and Lambin, 2002), such as logging, agricultural expansion, or infrastructure and road development. These are visible to the eye, but the underlying causes that

motivated them are harder to detect and quantify. Working behind the direct drivers of forest loss or degradation are the underlying drivers, which must be addressed in any effort to reduce pressures on forests (Geist and Lambin, 2002; Kissinger et al, 2012). Underlying causes are complex interactions of fundamental social, economic, political, cultural and technological processes that are often distant from their area of impact. Interactions and feedbacks occur between the direct and underlying drivers, which are often complex, and the mechanisms that convey them may be hard to decipher. Here we use the term ‘drivers’ to refer to both direct and underlying drivers.

This paper expands upon the drivers of deforestation and forest degradation framework developed by Geist and Lambin (2002) and refined in Kissinger et al (2012), which added policy response and intervention aspects to addressing drivers of deforestation and forest degradation. This added the policy process aspects that must be implemented to affect driver pressure—that incentives, disincentives and enabling measures will need to reach the actors responsible for addressing the drivers of deforestation and at the appropriate scale (international, national and local). Enabling factors such as effective information systems to guide decisions, institutional capacity, transparency and accountability, political will, and consultation with stakeholders underpin strategies to affect drivers. Kissinger et al (ibid.) also identified that many drivers will require interventions at multiple scales, ranging from international (e.g. in relation to international commodity demand), national (e.g. national laws and incentives), and local (e.g. local zoning, enforcement). The policy response component of the framework is viewed from the vantage point of national-level governments and policy-makers, who are in a position to balance both the public and private values in the response (and hence most able to consider the economic, environmental and social aspects).

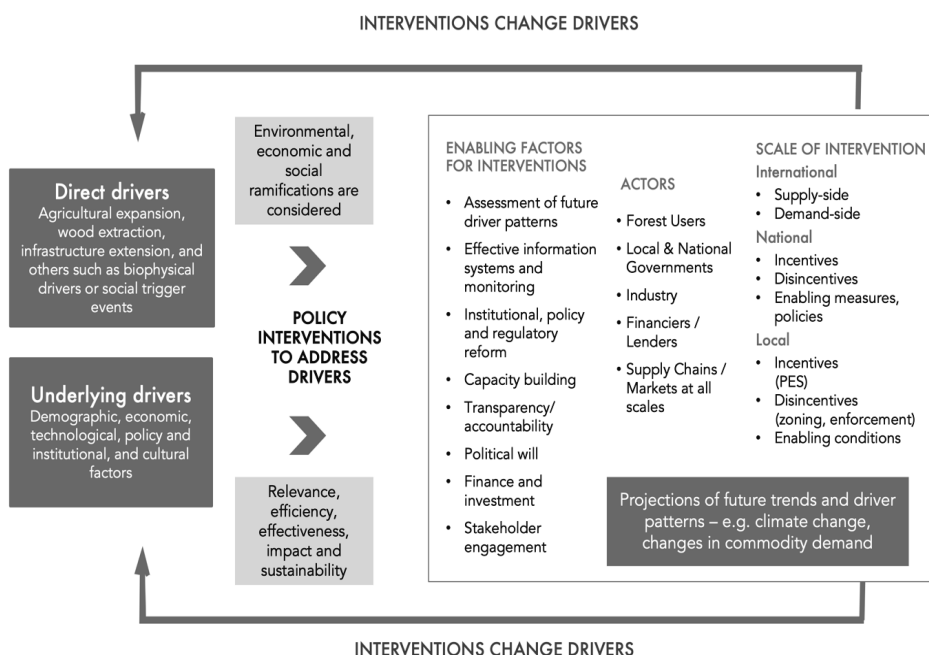


Figure 3: Drivers of land use change, interventions, actors and scales framework Drivers of land use change, interventions, actors and scales framework

Source: Adapted from Kissinger et al (2012)

This research pursued analyzing how the elements in *drivers of land use change, interventions, actors and scales framework* (the framework) played out in Viet Nam's NRAP and related responses to driver pressures in the Central Highlands. The research relied on a mixed methodology approach consisting of qualitative analyses of policy documents, and primary data gathered through interviews with 130 individuals from 78 organizations and departments (see Table 2). Interviews were held in May 2018 with relevant government officials at central, provincial and district levels; agriculture sector actors (ranging from international agribusinesses sourcing in Vietnam to traders and smallholder producers); research organizations, and farmer organizations. Interviewees were determined based on consultations with multi-lateral development partners, CSO input, and open calls for participation by MARD staff at Central and Provincial government levels, and DARD staff at district levels. Additional interviews occurred in October 2018. Interviews occurred in Hanoi, Ho Chi Minh City, Da Lat in Lam Dong Province, Gia Nghia in

Dak Nong Province, and two districts in each of the provinces. Secondary data assessed was based on remote sensing information developed by the Government of Vietnam. The Viet Nam rubber and coffee case studies were based on both secondary and primary data, starting with a comprehensive literature review on drivers in the Central Highlands, and then on each of the two commodities. Policy documents were coded according to the core elements of the conceptual framework above, with added emphasis on capturing all relevant information related to policy responses to the underlying drivers. Vietnamese documents were translated with Google translate, and verified by native Vietnamese speakers.

Table 2: Summary of interviews

<i>National government</i>	Individuals	Organizations
MARD staff	8	3
Other govt ministries	8	5
<i>Provincial government</i>		
Lam Dong	15	8
Dak Nong	8	4
<i>District government</i>		
Lam Dong - Lac Duong district	11	5
Lam Dong - Di Linh District	3	3
Dak Nong - Dak Song district	6	4
Dak Nong - Dak R'Lap district	7	6
Dak Nong - Dak Glong district	7	6
<i>Banks and lenders</i>	7	3
<i>Industry</i>		
Rubber - public sector	1	1
Coffee - private sector	8	6
Smallholder producers - cooperatives	5	3
Smallholder producers - farm-level assoc.	5	5
Forest companies	3	2
Forest cooperatives	4	2
<i>CSO</i>	3	2
<i>Research</i>		
CGIAR center representatives in Viet Nam	7	3
<i>Donors, multi-lateral and bi-lateral assistance</i>	14	7
Total:	130	78

Source: Author generated

In assessing the information according to each element of the framework, the following questions were posed: a) to what degree were direct drivers identified, b) to what degree were underlying drivers identified, c) were interlinkages between the direct and underlying drivers made clear, d) did policy interventions reach key actors responsible for driver activity, e) did policy interventions touch actors at the scales they operate at? Thus, the assessment sought to identify how policymakers attune their policy responses to direct and underlying drivers, which actors are reached with interventions, and at what scale those interventions occur at.

2.3 Direct and underlying drivers in the Central Highlands of Vietnam

This section begins with an overview of the direct and underlying drivers of deforestation and forest degradation that Viet Nam identified in preparation for the NRAP, and other sources, with an emphasis on those that are relevant for the Central Highlands region (including the Provinces of Kon Tum, Gia Lai, Lam Dong, Dak Lak, and Dak Nong). This section then summarizes the key policy interventions that Viet Nam has taken to advance its forest sector emission reduction goals, and policy interventions that occurred in the driver sectors of rubber and coffee.

Viet Nam defines forest³ as an area with perennial timber trees, bamboos and palms of all kinds of a minimum height of 5 meters, minimum tree cover of 10%, and a minimum plot area of 0.5 hectares or forest tree strips of at least 20 meters in width and of at least 3 tree lines (MARD, 2018). Rubber trees count as forest if they meet the aforementioned definition in an area (*ibid.*). Forest cover change and forest loss in the Central Highlands was considerable during the Viet Nam War. Forest cover nationally declined to an estimated 28% by 1993, compared to 43% in 1943 (Vo and Le, 2004). After the mid-1990s, forest cover increased. Meyfroidt and Lambin (2008a) found that nationally, reforestation during the 1990s and 2000s occurred at a higher rate than deforestation, due to a rapid increase in plantations and regrowth of some natural forests. Natural forest, forest and tree plantations and rubber plantations expanded from 9.4 million ha in 1990 to 14.8 million ha nationally by 2015 (FAO, 2015). However, the quality of the forest has decreased, and by 2010, two-thirds of Vietnam's natural forests were considered poor or regenerating, and rich and closed-canopy forest constituted only 5% of the total by 2010 (MARD, 2018). There was a decline in cultivation on hillsides (attributed to shifting cultivation), followed by reforestation (Meyfroidt and Lambin, 2008a). Population growth and land scarcity drove an intensification of agriculture, mainly based on increased labour inputs on the most suitable plots and abandonment of marginal lands to reforest (Meyfroidt and Lambin, 2008b). Other causes were new policies that allocated forest land to households, scarcity of forest products for local markets that spurred planting, and increased urban and industrial demand for timber (*ibid.*). However, the Deltas and the Central Highlands regions were less affected by these patterns, and continued to show high levels of deforestation (Cochard et al. 2017). Between 2000–2010, the Central Highlands had the third largest area of deforestation and forest degradation compared with other region, with 8.4% of the total natural area (Khuc et al. 2018). Between 2005–2015, the loss of natural forests was 582,657 ha (32% reduction

³ Source: Circular No. 34/2009/TT-BNNPTNT.

in area) (IPSARD, 2015; General Statistics Office of Vietnam, 2017), and in the same period, 2.4 million ha of forests in the Central Highlands was degraded (MARD, 2018).

The largest driver of deforestation, and thus conversion of forest to other uses between the years 2005-2015 was commercial agriculture. Table 3 summarizes the primary direct drivers and corresponding underlying drivers, as per studies which informed development of the National REDD+ Action Plan. The largest direct driver was rubber, closely followed by coffee. Between 2005 and 2015, rubber area increased by over 172,308 ha (a 198% increase), coffee area increased by 106,000 ha (a 29% increase), cassava area reached 157,292 ha and pepper planting area increased by 52,000 ha (106% increase) (General Statistics Office of Vietnam, 2018). Coffee expansion was highest between 1990 and 2000, when 500,000 ha was converted across the Central Highlands (Pham et al. 2012; Marsh, 2007), and in the five year period between 1995 and 2000, Lam Dong Province saw coffee area increase by 77% (USAID, 2013). Cassava is a crop that quickly depletes soil nutrients (MARD, 2017), and is a transition crop. The establishment of forest plantations also drove conversion of forests for the international woodchip market after 1995 (General Statistics Office of Vietnam, 2017), but this has slowed, and more recent policies favour native tree species and long-term rotation plantations for saw-log production (McNally et al. 2016).

Table 3: Direct and underlying drivers of deforestation in the Central Highlands of Viet Nam

Driver	Direct driver impacts	Related underlying drivers	Cross-cutting underlying drivers
Direct – Rubber expansion	Between 2005-2015, increased 198% (< 172,308 ha)	<ul style="list-style-type: none"> • High commodity prices up to 2011 • Lack of ability by Central government to limit rubber area (land allocation decisions occur at district levels and Provincial planning) • Legal loopholes allowed for conversion of natural forest to rubber • Low operational standards 	<ul style="list-style-type: none"> • Perceived abundance of land resources • High poverty rates • Lack of access to land and unclear land tenure rights • Poor agronomic practices
Direct – Coffee expansion	Between 2005-2015, increased 29% (106,000 ha)	<ul style="list-style-type: none"> • High commodity prices, especially in the mid- to late-1990s • Mass migrations, supported by government policies and institutions, • Utilization of annual crops (mainly cassava) as a stepping-stone toward tree-crop establishment (in freshly cleared forest) • Lack of smallholder access to finance 	

Direct – Cassava expansion	Reached 157,292 ha by 2015	<ul style="list-style-type: none"> • Annual crop, easy to grow on freshly cleared land as transition plant before establishing tree crops (such as coffee) • Difficult to regulate 	<ul style="list-style-type: none"> • Disconnect between national priorities and Provincial implementation
Direct – Pepper expansion	Between 2005 and 2015, increased 106% (52,000 ha)	<ul style="list-style-type: none"> • High commodity prices 	

Sources: (General Statistics Office of Vietnam, 2017; MARD, 2017; General Statistics Office of Vietnam, 2018; MARD, 2016; Dak Nong DARD, 2018).

The general cross-cutting underlying drivers identified in Viet Nam’s updated 2017 NRAP are: a) high poverty rates in the forest dwelling communities, and a lack of access to land and forests, especially in the Central Highlands where much of the forest remains under the management of State Forest Management Units and Commune Peoples Committees; b) prioritisation of economic growth over forest protection, resulting in forest being lost legally (such as planned loss due to hydropower development), and illegally (such as illegal expansion of agriculture into forested areas); c) current agronomic practices are generally of poor quality and therefore yield increases often come at the expense of forests; d) inadequate implementation of national policies to promote sustainable development at the provincial level remains an underlying cause, particularly in the more remote regions (McNally et al. 2016).

More specific underlying drivers are associated with each of the commodities, with unique causal linkages forming between underlying drivers and direct drivers over time.

2.3.1 Rubber

For rubber, the high prices for natural rubber up to 2011, lack of ability by Central government to limit rubber area (land allocation decisions occur at district levels and Provincial planning), and loopholes which allowed for conversion of natural forest to rubber are notable. The impact of the commodity prices clearly had a large effect driving rubber expansion. When rubber prices were high (US\$6.26/kg on world markets in February of 2011), the area of crop production in Dak Nong Province between 2008 and 2011 increased over 400%. Only after record low prices of US\$1.23/kg in early 2016, did planted area significantly contract, and this also illustrates the delay in response to the downturn in price signals (Dak Nong DARD, 2018). Current prices today are around US\$1.5/kg (Index Mundi, 2019). Though overall production remains strong, the return on the investment is very low.

Another key underlying driver was the lack of ability by Central government to limit rubber area, lack of coordination and enforcement at Provincial levels, and gaps in policies regarding forest conversion for

plantations that weakened enforcement processes. Though the Central government sought to limit expansion, rubber area is expected to reach 343,893 ha in the Central Highlands by 2020, far exceeding the 280,000 ha target identified in the 2009 Rubber Development Strategy (Government of Viet Nam, 2015). In many areas, it was also found the areas planted fell far short of the goals identified in the original investment certificates, indicating some actors cleared land and sold the trees (e.g. conversion timber), but never followed through on establishing plantations (Dak Nong DARD, 2018; Lam Dong DARD, 2013). By 2012, 79% of the rubber plantation areas in the Central Highlands were converted from natural forest and were not necessarily classified as degraded forest, which would have been the suitable forest type to covert to other uses under Vietnamese law (Phuc and Nghi, 2014). This indicates legal loopholes which allowed for conversion of natural forest to rubber. The criteria to classify poor forest was based on volume of trees (with diameter >8cm) being less than 100m³/ha, which resulted in other attributes such as biodiversity or protection functions not being part of the selection criteria. Also, decisions on converting natural forest on less than 200 ha is authorized as a provincial level decision, rather than requiring central level approval. This resulted in mistakes in implementation at the local level, without central level input or monitoring (ibid.). These aspects, combined with high expectations based on rubber prices, resulted in rapid expansion.

Poor governance of the sector's production standards and practices is an underlying driver, and this extended into neighboring countries, notably when Viet Nam Rubber Group's Forest Stewardship Council (FSC) certification was revoked in 2015 (Forest Stewardship Council, 2015).

2.3.2 Coffee

The causal linkages between direct drivers and underlying drivers are nuanced across the Central Highlands, and varied over time. Overall, a range of underlying drivers influenced coffee expansion, including mass migrations, supported by government policies and institutions, surging coffee commodity prices (especially in the mid- to late-1990s), lack of tenure rights for ethnic and poorer farmers, utilization of annual crops (mainly cassava) as a stepping-stone toward tree-crop establishment (in freshly cleared forest), and lack of smallholder access to finance and dependence on supply chain finance with high interest rates.

Though government policy support, planning and subsidies initiated the industry through collective farming systems during the late 1970s and early 1980s, government enabled farmers (at household levels) to expand the industry through the *Đổi Mới* market liberalization and land reforms during the late 1980s and 1990s. Viet Nam is now the world's second largest exporter of coffee (behind Brazil) and the biggest *Coffea canephora* (*Robusta*) coffee producer. The sector provides a livelihood for around 2.6 million people – 600,000 of which are smallholder family farmers on one hectare or less, sometimes dispersed among several plots (IRC, 2018).

In-migration to the Central Highlands is a complex underlying driver, with added side effects related to poverty, land rights, landlessness, and perceived conflicts between indigenous ethnic people, ethnic migrants, and the Kinh ethnic majority nationally. The population of the Central Highlands almost

doubled between 1991 and 2014 (Thaái, 2018). The migration and development of industrial crops in the Central Highlands is one of the main reasons that traditional patterns of ethnic people living with the forest has shifted (Thi Mai Duong et al. 2016), displacing ethnic people deeper into forest frontiers. This pattern is particularly evident in Dak Nong Province (Dak Nong Provincial Committee of Ethnic Minorities, 2014; Hurri and Quang, 2015). The de-collectivization process of the *Đổi Mới* market liberalization and land reforms weakened indigenous people's communal land tenure and stewardship practices, and the land reforms favoured permanent agricultural land (Thaái, 2018). Thus, many poorer and ethnic households do not have "Red Book" land title certificates, which is standard collateral for loans and financing (Hurri and Quang, 2015). Ethnic minority farmers are found to have less liquidity than Kinh ethnic majority farmers, thus are less able to ride out changes in commodity prices, and more likely to switch to other crops (Ha and Shively, 2008; Doutriaux et al. 2008). The lack of access to finance for poor and ethnic people restricts their ability to invest in both annual and perennial crops that require high upfront investments, such as coffee and rubber, which pushes them towards transitional crops such as cassava.

Cassava cultivation has been a driver of forest loss, and enabler of longer-term perennial crops such as coffee (Meyfroidt et al, 2013). Deforestation was mainly caused by the acquisition and conversion of agricultural lands to perennial crops by capital-endowed households, often from the Kinh ethnic majority, and corresponding displacement of poor households of ethnic minorities relying on shifting cultivation towards the forest margins (ibid.). Cassava is lucrative, with the export volume of cassava products in 2017 roughly US\$ 1.03 billion (Vietnam Customs, 2017), the majority of which goes to China. Most of the current cassava area is believed to be cultivated on forestry land or former forestland. Cassava expansion traces a unique pattern, as small and undetectable incursions into forest occurs, to occupy land for the future purpose of creating a new source of land for other commodity crops such as rubber, coffee, pepper or dragon fruit. After a few years of cassava cultivation, these areas are often transferred to other owners and uses (Vân et al. 2016). This disrupts societal patterns, creating a change in the concept of land value, the right to access, use and benefit of forest and forest land in some areas, especially for ethnic minorities (ibid.). Cassava is thus directly related to coffee expansion, but is harder to regulate and manage than other crop types, and is of growing economic importance to ethnic minorities living in the forest frontier.

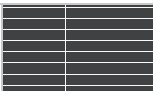
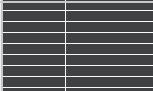
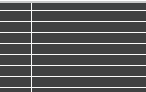
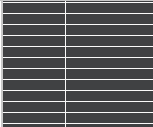
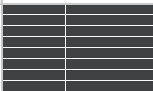


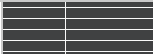


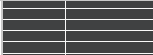
While important to chart the historical trajectory of drivers and underlying causes, indications are that the contemporary and future patterns are different. During the past 2-3 years, more farmers were switching from producing coffee to growing other cash crops such as black pepper, avocado, and passion fruit to generate higher incomes. This is due to the low coffee commodity prices, and current rates of high production could suppress the coffee price to a point that farmers would no longer find it financially feasible to grow coffee (Financial Times, 2018). This change is reducing coffee areas especially in Dak Lak, where arable land is limited. In other provinces like Dak Nong and Lam Dong, where arable land reserve is still available, the new arable land is used more for growing black pepper and avocado (USDA, 2017).

2.4 Policy review and discussion

This section analyzes Viet Nam’s policy responses to REDD+ and rubber and coffee drivers, in relation to advancing it’s National REDD+ Plan (2012 and 2017 versions) and sector responses to rubber and coffee expansion. Interviews helped inform decisions on which policies to include in the analysis, given the abundance of policy directives in Viet Nam. Policies and directives were assessed according to whether they include interventions targeted at direct drivers, underlying drivers, if they have no specific provisions related to drivers, and if the policy objectives are in conflict with REDD+ objectives. The analysis seeks to decipher the degree to which policy interventions sought to address not only direct drivers, but also the related underlying drivers, and to draw out how these causal connections were addressed in policy responses (as per Figure 2). Findings are summarized in Table 4, and further detail on each policy is contained in Appendix A. This section includes an analysis of how the policy interventions considered key actors and scales, focussing on those that were missed in the policy processes, yet have a clear role in driver activity (either positive or negative). Future driver pressures are also considered (as per Figure 2), as these have implications for policy responses. The discussion of the implications of these findings is contained throughout the section.

Table 4: The degree to which policies and laws related to NRAP implementation include interventions aimed at direct and underlying drivers

Policy	Interventions directed at coffee and rubber direct drivers	Interventions directed at related underlying drivers
General and forest sector		
Law on Forestry—No. 16/2017/QH14 (2017, effective January 2019)		
FLEGT VPA —Viet Nam and European Union (2018, effective June 2019)		
Incentive policies for enterprises investing in agriculture and rural areas—Decree No. 57/2018/ND-CP (April 17th, 2018)		
Planning Law—Law No. 21/2017/QH14 (2017, effective January 1, 2019)		
Criminal code—Law No. 100/2015/QH13 (June 2017, effective January 1, 2018)		
Decision No.: 886/QĐ-TTg,—Target Program for Sustainable Forest Development for the 2016-2020 Period (2107)		

Decision No. 419/QĐ-TTg of Prime Minister—2017 National REDD+ Action Programme) (5 April 2017)		
Directive 13-CT/TW —Enhancing Party’s leadership in forest management, protection and development (January 12, 2017)		
Prime Minister’s Notice No. 191/TB-VPCP—Conclusion of the Prime Minister at the Conference on Sustainable Forest Restoration Solutions in the Central Highlands (2016–2020) (22 July 2016)		
Law on Crop Production —Law No. 31/2018/QH14 (2018)		
Viet Nam’s Nationally Determined Contribution to Paris Climate Agreement (NDC) (submitted to UNFCCC in October 2015)		
2012 National REDD+ Action Programme—Prime Minister’s Decision No. 799/QĐ-TTg (27 June 2012)		
Sector-specific: Rubber		
Decision of the Prime Minister 899/QĐ-TTg, 2013 –Agricultural restructuring towards raising added values and sustainable development		
Directive No. 1685 / CT-TTg of 2011		
Sector-specific: Coffee		
Sustainable Coffee Plan to 2020 and Vision to 2030 (2016)		
Viet Nam Sustainable Agriculture Transformation (VNSat) programme (2015)		
Decision of the Prime Minister 899/QĐ-TTg, 2013 –Agricultural restructuring towards raising added values and sustainable development (2013)		

Key:



Interventions clearly target drivers and are legally enforceable



Interventions loosely target drivers and may or may not be legally binding



Interventions do not target drivers



Interventions are at cross-purposes to REDD+ objectives

2.4.1 Policies that include interventions targeted at direct drivers

Under the category of general laws/policies and forest sector-specific ones, Viet Nam's 2012 NRAP stands out for having lacked policy objectives to address drivers outside the forestry sector. Recognizing this, the 2017 NRAP (Decision No. 419/QĐ-TTg of Prime Minister) included the principle, that "the REDD+ activities address, inter alia, the drivers of deforestation and forest degradation, (*and*) forest governance issues (Government of Vietnam, 2017a)." In defining this broader scope, the NRAP included the following policies and measures directed at both direct and underlying drivers: a) review and adjust the land use master plan and land use plans to ensure the target of 16.24 million hectares of forest land is achieved by 2020, b) promote sustainable and deforestation-free agriculture and aquaculture; c) improve forest governance and livelihoods for people living near and in the forest; d) strengthen law enforcement (*ibid.*).

Although the 2017 NRAP intended to promote sustainable and deforestation-free agriculture, this intention must find its way into the matrix of already existing and emerging policies and programmes. This inherently results in the fragmentation of intervention actions and instruments, which are difficult to coordinate programmatically and temporally. A Crop Production Law, new Planning Law, and Forest Law were passed by the National Assembly in 2017-2018, but none of these contain specific provisions that reference the NRAP goals and specify implementation modalities. Although a new Law on Forestry was passed in 2017, most policies and measures that would be necessary to affect rubber, coffee and any other drivers outside the forest sector would occur through other laws, with the exception of provisions related to conversion and repurposing of forest land. Understandably, it may be challenging to include interventions aimed at rubber and coffee in the Forest Law, but these presumably could have been included in the Crop Production Law. This issue raises the challenge of influencing priorities in other sectors.

Notably, the Prime Minister's Notice 191 of 2016 placed a moratorium on any new clearing of natural forest, freezing the remaining 2.25 million ha of natural forest. It is identified by those interviewed as having the most impact on direct drivers from rubber and coffee pressure in the Central Highlands. This simply worded policy commitment signaled that no more rubber and coffee expansion is allowable. Notice 191 has been integrated into land allocation decisions at district and provincial levels, and even into lending decisions by banks, such as the Viet Nam Bank for Social Policies (VBSP) which lends to smallholders, Viet Nam Bank for Agriculture and Rural Development (VBARD) which is the primary agriculture sector lender, and the Bank for Investment and Development of Viet Nam (BIDV). Loan officers at the commune or district level screen applicants for bank loans, for deforestation risks. If evidence of deforestation is found, loans will not be extended, and previous loans will be recalled. This form of monitoring appears to be highly effective. However, there are also weaknesses in policy design and implementation of Notice No. 191, as land users who are at most risk of making incursions into forests (e.g. cassava growers) largely do not access formal financing mechanisms, thus are outside the scope of bank screening.

Directive 13 of the Communist Party is viewed by some interviewees within government as a strong policy directive on direct drivers, as it requested the Party to control socioeconomic development planning and projects which negatively affect forest area and quality, particularly in natural forest and protection forests. Yet other interviewees were unaware of this Directive.

The other major policy interventions sought to direct provincial and district planners to limit areas allocated to key commodities. While these were aimed at the direct drivers of rubber and coffee expansion, the underlying drivers were not identified (such as high commodity prices, strong market demand, unclear tenure rights, etc.), and strategies developed to address these. When the Government of Viet Nam Directive No. 1685 of 2011 directed Provinces to review and evaluate projects converting forest to rubber plantations, and district Departments of Agriculture and Rural Development (DARD) adjusted rubber plantation development plans, Provincial and district offices documented the scale of the overshoot (Dak Nong DARD, 2018; Lam Dong DARD, 2013). However, district DARDs were not given clear direction on how to respond to that besides adjusting spatial plans and cracking down on illegal logging and clearing (which has had mixed success, and thus the 2018 FLEGT VPA establishes a Timber Legality Assurance System).

Interventions identified as loosely targeting drivers in Table 4 include those that set broad goals that could be interpreted by decision-makers in driver sectors as guidance, but interviews suggest they were not taken on board by these sectors. These include Decision No. 886 of 2017, a Target Programme for Sustainable Forest Development, which sets goals (such as national forest cover at 42%, and forest area of 14.4 million ha), and indicates domestic investment for forest protection, including for control the conversion of forest land to other purposes (Government of Vietnam, 2017e). However, interviews suggest it is viewed as a programme and source of financing, not a law or legal directive.

As the coffee sector in the Central Highlands was not a focus for REDD+ efforts until more recently, particularly since the 2017 NRAP, it is presumed that REDD+ goals would have been tangential in the development of the Sustainable Coffee Plan to 2020 and Vision to 2030. The Sustainable Coffee Plan does seek to limit coffee planting area (stabilize coffee area at 600,000 ha), yet seeks increased trade and export values (Government of Viet Nam, 2016c). Similarly, the Ministry of Agriculture and Rural Development and World Bank designed the Viet Nam Sustainable Agriculture Transformation (VNSat) programme, investing US\$ 98.7 million in the coffee sector between 2015 and 2020, for improved farm agronomic practices on 69,000 ha and rejuvenation of aging coffee trees (World Bank, 2015a). Though it is the largest investment in the sector in this period, it does not incorporate drivers of deforestation and land degradation, to address future climate impacts, or to remediate soils after years of nutrient depletion and fertilizer use, and related livelihood/poverty issues in coffee production.

There has been reliance on voluntary certification in the coffee sector as a preferred option to achieve sustainability (such as via the Sustainable Coffee Plan to 2020 and Vision to 2030), however demand for certified coffee from the Central Highlands has decreased. This is due to the *Robusta*-oriented coffee marketplace valuing low prices over quality, trading is on very thin margins, and there is decreased interest in paying price premiums for certified products. Further, interviews suggest certification

standards were not seen by major buyers to address the pressing sustainability issues that are beyond the farm-unit (especially water scarcity and agrochemical use).

The rubber industry committed to not expand their area to avoid oversupply in response to the Decision of the Prime Minister 899/QĐ-TTg, 2013, although this was based on supply and price stabilization, not deforestation-free commitments.

2.4.2 Policies with interventions directed at underlying drivers

Again, one of the major underlying drivers affecting both rubber and coffee expansion was lack of ability by Central government to limit commodity areas, which related to the high market prices for commodities, and gaps in policies regarding forest conversion for plantations. The 2017 NRAP does not directly identify a policy direction on addressing underlying drivers, with the exception of two policies and measures to improve forest governance and livelihoods for people living near and in the forest, and strengthen law enforcement (Government of Vietnam, 2017a). However, these are not defined as being in relation to the direct drivers, but a logical connection could be made in the implementation stage, in relation to the second policy and measure of promoting sustainable and deforestation-free agriculture. Thus, a key finding in this research is the importance of defining this causal link between direct and underlying drivers, and the role it plays in designing policy solutions to drivers.

The strongest options appear to be those policies defining clear mechanisms to address underlying drivers such as loopholes in laws and illegal activity (e.g. Criminal Code of 2015, Law of Forestry of 2017 and the FLEGT VPA). Whereas others contain broad statements of interest to address tenure and livelihood needs via Provincial People's Committees allocating forest land to local communities, households and individuals (Decision 886 of 2017, Directive 13 of 2017, and the 2017 NRAP) and access to payments for ecosystem services for ethnic minorities (Decision 889 of 2013). Interviews indicate this has been challenging to follow through on.

The Planning Law holds potential as means to enable synchronization between national planning and regional planning, and introduced new requirements for integrated planning, which could address sectoral disconnects that existed under the previous law. It will be useful to see how improved integrated planning between sectors provides a means to address weak governance and high commodity prices (though both rubber and coffee prices are currently very low).

The only policy that draws distinctive connections between the direct and underlying drivers is Directive 13. This Directive is a call to the Communist Party to strengthen leadership in retaining natural forest, and control the socioeconomic development which negatively affects forest area and quality, especially natural forests and protection forests. The cross-cutting underlying driver of high poverty rates in the forest dwelling communities, lack of access to land and forests, and poor tenure rights is targeted in the direction given to complete the allocation of land and forests, providing land use rights to organizations, individuals, households and communities. Thus, Directive 13 is targeted at key actors (Communist Party Officials) at all levels. Yet the Directive does not go as far as defining which direct drivers are prioritized for intervention.

In some geographic areas the strongest underlying drivers that put pressures on farm soils and forests relate to poverty and finance (Thaái, 2018), which have not been strongly reflected in rubber and coffee sector policy-making. The finance mechanisms and gaps in smallholder access to finance demonstrate a few relevant aspects for affecting drivers: a) the banks' restrictions on lending due to the need to conform to Notice 191 has been effective, as it drew in actors (banks) that have a key role in financing sectors that have natively impacted forests; b) the gaps that exist relative to poor and marginalized farmers accessing finance, who are the most at-risk to further deforest, are not reached through these finance mechanisms. Further, the finance mechanisms they do access reinforce the underlying driver pressures. Besides district authorities arresting the poor for illegal logging, policy tools and mechanisms have yet to find a way to stop poor households from selling their farming lands and clearing new unregistered areas for cassava or coffee production.

2.4.3 Policies lacking provisions related to drivers

The 2012 NRAP omitted interventions aimed at the large drivers outside the forest sector and contained no mandate to agencies to evaluate and reconcile complex trade-offs between sectors, or a clear means to address underlying drivers. Fortunately, this was rectified with the 2017 NRAP, however many Provincial REDD+ Action Plans (PRAPs) were already completed by this time, especially in priority REDD+ areas. In the Central Highlands and other areas, these PRAPs were developed based on the 2012 NRAP and 2015 Guidelines for developing PRAPs issued by MARD (Government of Viet Nam, 2015c). Thus, the PRAPs lacked a focus on major agricultural driver commodities and related underlying drivers.

As the Forest Law could not contain provisions restricting agricultural expansion, agriculture sector laws would have been a more appropriate place to set such intentions. Yet, the Law on Crop Production, passed in 2018 does not contain mention of deforestation-free agricultural production, though it does contain language in Chapter 6 on adaptation to climate change and directs Provincial People's Committees to assess impacts of climate change and help guide solutions (Government of Vietnam, 2018b). While this emphasis on climate adaptation is positive, the scope would not be broad enough to capture REDD+ mitigation goals.

The Five-Year Socio-Economic Development Plan (2016-2020) sought increases in rubber and coffee production, yet also prioritizes forest protection and production, and does not identify how this is to be reconciled in the Central Highlands. The orientation of the SEDP in the Central Highlands is towards large-scale commodity agriculture, to rapidly develop export-oriented industrial plants (coffee, rubber, tea, cotton...) with the means of intensive cultivation, while also planting and protecting forests. Yet, the scale of demand-side pressures on rubber and coffee commodity production remains high, despite low commodity prices, with roughly \$1 billion in rubber exports, mostly to China (UN Comtrade, 2018), and coffee exports averaging US\$ 3.0 -3.5 billion annually, though this is falling, prompting farmers to switch to more valuable crops (Vietnam News, 2019).

The Criminal Code (2015), Planning Law (2018), and the FLEGT VPA do not contain provisions specifically targeted at rubber and coffee drivers of land conversion, though they all notably contain interventions

that address underlying drivers. The Criminal Code introduced criminal liability for companies and individuals in relation to forest management and the unlawful repurposing of land, and the penalties for all environmental crimes has increased.

2.4.4 Policies with objectives in conflict with REDD+

One year after the 2017 NRAP was approved, the government approved incentive policies for enterprises investing in agriculture and rural areas (Decree No. 57 of 2018) which provided preferential land prices for enterprises set by provincial/municipal People's Committees, rent exemptions and credit access and support (Government of Vietnam, 2018a). This provided a major source of financial support to driver sectors and activities, yet there were no sustainability or deforestation-free conditions defined as a pre-requisite for accessing finance, nor reference to Notice No. 191 of 2016.

2.4.5 Actors

Most policies listed in Table 3 identify roles for government actors, from national to provincial and district levels. The 2017 NRAP comprehensively details the responsibilities of actors. What is most notable in all the policies reviewed is the relative absence of clearly defining interventions aimed at demand-side actors, particularly those buyers and markets that are making sustainability commitments. This would have been possible with a broader framing of the underlying drivers and the actors associated those. For instance, the Chinese Chamber of Commerce of Metals, Minerals and Chemicals Importers and Exporters (CCC MC) adopted new voluntary guidelines in 2017 for natural rubber, which contains a deforestation-free principle and guidance related to upholding national laws and land use planning, and local customary laws and practices, free-prior informed consent (FPIC) and other sensitivities around land tenure (CCC MC, 2017). They are voluntary, it is not yet clear how these are affecting Chinese company operations, or their suppliers. Interviews suggest the Vietnamese government and rubber sector have not identified ways to mainstream these provisions in Vietnamese policy, to assist Chinese buyers in attaining compliance, and there is a lack of awareness of the CCC MC guidelines at the production level.

Further, though international tire manufacturers such as Michelin, Pirelli, Goodyear, Bridgestone and others have made zero deforestation commitments (Bridgestone, 2018; Pirelli, 2017; Michelin, 2016), it is still unclear how much of Viet Nam's export market seeks these standards, as these companies do not appear to have clear sourcing links to Viet Nam, yet some do source from China. Yet, pursuing these actors via the European Union-Viet Nam Free Trade Agreement (EVFTA), signed in 2018, which includes rubber and coffee, and thus key buyers could be brought to the table to forge solutions and leverage public and private action and investments in a coordinated fashion. Without a broader framing of the underlying drivers, opportunities to engage these actors and codify the marketplace deforestation-free commitments into national policy may not be as visible.

The largest group of actors involved in the rubber supply chain—smallholder producers—have not directly been targeted by policy interventions to date. While smallholders account for 88% of rubber production, smallholders capture the least benefit of all actors, accounting for only 10 % of total profits

[98]. Smallholders are often prone to price squeezing by traders, and with loose supply chain linkages and a lack of co-operation between actors [99], the quality of production and stability of livelihoods of farmers is negatively impacted. Policy interventions that sought to stabilize smallholder expansion into forests that addressed the underlying drivers pushing their behaviour could include investments to raise production quality, thus contributing livelihood co-benefits, while seeking to reduce their expansion.

Similarly in the coffee sector, marginalized and often ethnic minority farmers, lacking clear title to land, are pushed by underlying driver pressures to expand, yet as they are acting in response to these pressures, stopping their expansive activities pushes it elsewhere and/or misses the key driver. Cassava provides the clearest example of this, as expansion into forests is largely undetectable, yet results in large-scale deforestation and soil degradation over time, making way for perennial commodity crops. As a US\$1 billion export commodity, its scale is not to be underestimated. Yet, it is largely unregulated, and these actors cannot be reached through existing finance mechanisms, and are often the most poor and marginalized, lacking clear land title. In both commodity contexts, defining positive incentives and interventions clearly directed at smallholder farmers, who bear the greatest burden for production pressures, price squeezing, commodity price fluctuations, and climate risk, have remained elusive.

Policy design and formulation processes thus far have not included the large international roasters and traders buying coffee in the Central Highlands (including major international brands such as Nestlé, Lavazza, and Starbucks), with a view towards seeing how to transform some actors deforestation-free commitments into solutions on the ground.

Notably, the effect of implementing the natural forest moratorium (Notice 191) did bring in key actors, such as district and provincial level government, and banks, and their activities to advance compliance did affect underlying drivers (e.g. improved governance and reducing bank lending to farmers that cleared forest). This was not necessarily by design, but reflects commitment by the domestic banks to demonstrate compliance with Vietnamese law.

2.4.6 Scales

The policies reviewed here are all national-level commitments, and therefore not attuned to the regional differences in driver patterns, which are quite varied in Viet Nam. The Provincial-level REDD+ Action Plans that were developed in the Central Highlands were based on the 2012 NRAP, so similarly contained a focus on the forest sector, and largely omitted other drivers and underlying pressures. Viet Nam is currently planning activities to implement the 2017 NRAP, including seeking international financial support for integrated sustainable landscape management through a deforestation-free jurisdictional project in Lam Dong and Dak Nong Provinces.

As mentioned in the above section on actors, the international buyers and segments of commodity supply chains have not been drawn in. One limitation thus far to the commitment by these large international companies to invest in productivity of smallholder producers is the structure of the supply chain itself. Circular 08/2013/TT-BCT issued by the Ministry of Industry and Trade, mandates that foreign-owned companies are not permitted to source directly from farmers but must instead buy

through a registered local company (or cooperative). This has resulted in significant challenges to trace coffee beans to the farm level, and overall traceability in the coffee sector. It has also impeded efforts by international roasters and buyers to reach smallholder producers with investments or technical support for improved production practices. Local collectors or aggregators are the links between smallholders and international buyers/traders. Collectors and traders are largely unregistered, operate on narrow price margins, and are under pressure from high competition (Hurri and Quang, 2015).

2.4.7 Future driver pressures

Policy responses were designed in response to historical driver patterns. Yet, between the 2012 and 2017 NRAP, changes were already evident in the scope and scale of rubber and coffee drivers in the Central Highlands, mostly due to commodity prices. While important to chart the historical trajectory of drivers and underlying causes, the contemporary and future patterns are different, complex and interconnected. Coffee and rubber appear to be decreasing as a driver (source: district level interviews), while cassava and other crops are increasing (Vân et al. 2016).

An underlying driver that was not identified as a historical driver, but has increasingly been identified as problematic since the 2017 NRAP, is future climate change impacts. The Central Highlands are drier than other regions, thus risks to agriculture due to climate change are notable (Government of Vietnam, 2016b). Unsustainable farming practices risk future production, particularly in the winter months when rainfall is expected to decrease (ibid.) contributing to over exploitation of surface and ground water, with possible economic consequences, if not well managed. Droughts and floods had damaged key coffee growing regions in the Central Highlands in 2019 (Viet Nam News, 2019). Climate modelling suggests that by 2050, climate change could regularly delay the rains until June, which would require much more water use than current levels (Grosjean et al. 2016). Current reservoir capacity would likely not meet this need. Changing weather patterns will also shift the areas that are suitable for coffee production. Climate modelling also suggests *Robusta* production will expand into higher altitudes, where many remaining forests are, and the demand for area exceeds the supply (Killeen and Harper, 2016). This indicates that future adaptation aspects should be considered in assessing drivers.

2.4.8 Implications of findings to the global context

While there is great interest in finding forest and land use sector solutions to climate change under the Paris Agreement (Griscom et al. 2020; Kissinger et al. 2019), the nuances of how to achieve such solutions through policy requires troubleshooting at national levels. This paper provides a national-level example demonstrating the importance of defining the linkages between direct and underlying drivers at the national-level, and the implications for attuning policy responses. This is highly relevant for countries seeking forest and land use sector solutions in NDCs as part of Paris Agreement climate commitments.

Brazil's response to direct and underlying drivers in the early 2000's provides ex-post evidence of the value of drawing linkages between the two, and attuning policy responses accordingly. Steps taken in the 2000's to reverse perverse incentives that drove Amazon clearing had affect in addressing

underlying and direct drivers, while agricultural production increased (Macedo et al. 2012). Brazil held legal entities criminally liable for crimes against the environment (Government of Brazil, 1998), and linked the ability to access rural credit to the demonstration of legal compliance. In 2006, a voluntary ban on the commercialization of soy grown in the Amazon was set by private market players (since renewed), and the Bank of Brazil vetoed agricultural credit for soy farmers seeking to plant in newly cleared forest areas. This resulted in US \$1.4 billion not being loaned between 2008 through 2011 due to restrictions imposed by the resolution, and likely resulted in a 15 percent decrease in deforestation in the Amazon during the period (Assunção et al. 2013).

Indonesia has also pursued deforestation moratoria, making permanent the moratoria on new concessions in primary forests and peatlands for palm oil and timber plantations, which was first enacted in 2011 (Reuters, 2019). Yet Indonesia did not pursue the coordinated approach addressing underlying drivers that were identified in its REDD+ National Strategy of 2012, particularly in reviewing the incentives and disincentives for the private sector and regions. Fiscal policies and perverse incentives were identified as key underlying drivers of oil palm expansion in Indonesia, but these have not yet been addressed through policy reform (UNEP, 2016). Indonesia took strides to address illegality in the forest sector (and related conversion timber) by implementing a timber legality verification system affecting domestic and export markets. Improved forest governance and law enforcement was found to have made it harder for producers to expand production by clearing forests (Gaveau et al. 2019). However, Indonesia has recently removed these requirements, raising concerns that gains from improved timber legality verification may be lost (Maryudi et al. 2020). Private sector ‘deforestation-free’ sourcing commitments and voluntary certification commitments are notable and long-standing, and one study found areas certified under Roundtable for Sustainable Palm Oil (RSPO) reduced deforestation by 33 percent compared to areas not certified (Carlson et al. 2018). These private sector commitments have engaged key actors in the palm oil supply chain, from local to global scales.

The Indonesian and Brazilian contexts provide insight on how identification of the linkages between direct and underlying drivers influences assessment of policy responses. Mapping the conceptual linkages between direct and underlying drivers provides a means to explore the causal connections and reinforcing feedback loops that drive actors and behaviour. One of the most notable underlying drivers is increasing commodity prices driving plantation expansion, as evidenced in Indonesia (oil palm) (Gaveau et al. 2019), Cambodia (rubber) (Grogan et al. 2019), and the pressure of rubber and coffee expansion in Viet Nam. While notably challenging for national governments to define policy responses to these underlying drivers, reaching the key actors at the scales they operate at, Brazil’s commitments in the early 2000’s offers the most robust success story in this regard. This research explores the conceptual basis that can illuminate the context-specific underlying drivers which are dynamic, complex, with nonlinear and historically-specific characteristics. Though these country examples show what has been achieved (or not) to address the linkages between direct and underlying drivers through policy responses, the rate of agricultural commodity-driven deforestation has not decreased, and conversion of forest to other land uses continues at 10 million ha per year (though this rate of loss is lower than in the 1990’s [119, 120]).

2.5 Conclusions

In reviewing Viet Nam's policy responses to driver pressure, correlations between the direct drivers and related underlying drivers are unclear. This can be partly attributed to the fragmented and conflicting policy landscape that the NRAP needed to integrate into. The 2017 NRAP had to integrate into a pre-existing policy landscape, and yet even with fairly aligned policy vehicles such as the 2017 Forestry Law and Planning Law, the integration of REDD+ goals and mutual integration into these laws is not coherent. While this research did not elucidate insights as to why these disconnects occurred, it does draw out insights relevant to the importance of considering both the direct and underlying drivers (as per Figure 3), and how the policy formulation process does or does not bring that focus forward into defining interventions, which actors to target, and which scales to reach.

By considering the relationship between direct and underlying drivers, other options for addressing commodity pressure could have been more visible, such as considering export taxes on natural rubber, which would dampen international demand and provide government with revenue to improve smallholder yields and practices. Another option would have been to investigate how marketplace deforestation-free commitments could be codified in national law (demonstrating to international buyers making such commitments that sourcing from Viet Nam would fulfill their pledge), or bring these international buyers to the table to forge solutions, and leverage public and private action and investments in a more coordinated fashion.

There is debate about how effective policy can be in the face of strong commodity prices. As policy interventions on drivers often must be integrated into existing policy contexts, which is structurally challenging when the impetus often comes from a forest department, seeking to change an agriculture or industry mandate, with large revenue and foreign-exchange implications. In Viet Nam, area-based commodity targets were far exceeded when commodity prices were high, and local regulation and enforcement could not reign in expansion into forests. The focus on commodity areas limited the scope of problem identification and the consideration of key actors and scales for engagement in the policy design process. But it also raises questions about what could have been done differently (as the Brazil example in Section 1.4.8 illustrates), and whether existing policy tools hold the answers.

These research findings propose that the elements in Figure 3 could be useful in designing policy responses to drivers, and are relevant to countries pursuing forest and land use sector solutions under the Paris Agreement. Each context is unique, and the arrangement of direct and underlying drivers, commodity supply chains, land tenure, and other factors will differ. However, applying Figure 3 as a framework to guide policy design and decision-making can enable identifying the causal connections between direct and underlying drivers, including what future ones are expected. REDD+ in Viet Nam illustrates how important adequate identification of all relevant drivers (including outside the forest sector) was to the robust development of the 2017 NRAP, it is also relevant to note how quickly pressures from other crops like cassava have outpaced more established crops such as coffee. Brazil completed a wide underlying driver assessment scoping in the late 1990's and early 2000's, and the robust and interlinked policy responses Brazil pursued as a result illustrates the benefits that can be

achieved. Assessment of these aspects provide a basis for consideration of the types of incentives, disincentives and enabling measures capable of reaching the actors responsible for addressing the drivers, and what scale these may operate at (e.g. international, national and local). A view towards future driver pressures and exogenous pressures such as climate change provide a wider scope for considering interventions and possible implementation pathways. Economic and social ramifications are important to consider, particularly in relation to marginalized and tenure-insecure populations. Some of the strongest underlying drivers that put pressures on farms and forests in the Central Highlands relate to poor tenure rights, poverty and finance, and these have largely eluded focus of policy interventions.

Refer to Appendix II for Annex to Policy responses to direct and underlying drivers of deforestation: examining rubber and coffee in the Central Highlands of Vietnam on Policies and laws related to NRAP implementation- Long version

3. The Sustainable Development Goals and REDD+: Assessing Institutional Interactions and the Prospect of Synergies⁴

Abstract

This paper analyzes potential synergies between two recent sustainable development initiatives, namely the Sustainable Development Goals (SDGs) and Reducing Emissions from Deforestation and forest Degradation (REDD+), a climate mitigation mechanism negotiated under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). The paper elaborates a conceptual framework based on institutional interactions and distinguishes *core*, *complementary*, and *supplementary* synergies that may be realized between the SDGs and REDD+. Potential synergies are analyzed at the global level, as well as within two national-level contexts: Indonesia, with its long-standing REDD+ programme, and Myanmar, which is in the early stages of implementing REDD+. Both are now also engaging nationally with the SDG implementation process. Our research draws on literature review and document analysis, as well as direct observations of REDD+ negotiations at the global level, and semi-structured expert interviews with those involved with both REDD+ and SDG implementation in Indonesia and Myanmar. Our analysis reveals that there are currently significant opportunities to pursue synergies in the implementation of these international initiatives at the national level, although pro-active interaction management will be necessary, especially to achieve complementary and supplementary synergies.

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3.1 Introduction

The Sustainable Development Goals (SDGs), which came into effect in January 2016, are set to become the main global normative framework on environment and development until 2030. 17 SDGs are part of the United Nations 2030 Agenda for Sustainable Development (2030 Agenda). These are intended to guide the pursuit of prosperity and human well-being, while protecting the environment, for the next 15 years. The SDGs identify a range of economic, social and environmental goals that are intended to form the basis for sustainable development. Like the Millennium Development Goals (MDGs) before them, the SDGs may galvanize global awareness, public pressure, political accountability, and align development finance to measurable targets and indicators (Poku and Whitman 2011; Sachs 2012; Ivanova 2013; Griggs et al. 2014). Thus, they can function as a “report card” for countries to measure their sustainable development performance, now with greater attention to environmental issues than in the MDGs (Sachs 2012; Griggs et al. 2014).

Just before the SDGs came into effect, the Paris Agreement was adopted in December 2015, under the auspices of the United Nations Framework Convention on Climate Change (UNFCCC). The Agreement entered into force on November 4, 2016 and seeks to limit global temperature increases to 2 degrees Celsius above pre-industrial levels this century, with the aspiration to limit increases to 1.5 degrees Celsius. To reach these ambitious goals, appropriate financial flows, a new technology framework and an enhanced capacity building framework will be put in place, in order to support action by developing countries and the most vulnerable countries, in line with their own national objectives. The Agreement requires countries to submit plans for how they intend to achieve climate goals, based on their own national circumstances, in “nationally determined contributions” (NDCs). For many countries with significant greenhouse gas (GHG) emissions from forests and land use, NDCs contain forest sector GHG emission reduction goals, and these often contain intentions around forest management and woodfuel use, among others (UNFCCC (2015).

The global climate change mitigation mechanism of REDD+ (“Reducing emissions from deforestation and forest degradation in developing countries; and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries”) (UNFCCC 2010) is now prominently included in the Paris Agreement. REDD+ is a mechanism to provide readiness finance and results-based payments to developing countries to reduce their GHG emissions from forest loss. Negotiations over this mechanism within the UNFCCC culminated in the 2013 Warsaw Framework on REDD+, a package of decisions to help countries implement REDD+, including development of national strategies or action plans, as well as national forest monitoring systems, forest reference emission levels, measuring, reporting and verification (MRV) systems, social and environmental safeguards, and recognition of the need to address the drivers of deforestation and forest degradation in order to achieve emissions reductions. Further negotiations to agree on the implementation framework for REDD+ were completed in 2015 (UNFCCC 2015a).

Over the years, REDD+ has expanded substantively from being, originally, an international finance mechanism for avoided deforestation to recognizing that success in achieving REDD+ outcomes depends

on addressing the drivers of deforestation and forest degradation, which in many countries requires a shift in rural economic engines of growth (e.g., commercial agriculture, mining, infrastructure development) towards more low carbon pathways (Kissinger et al. 2012). Addressing drivers requires that countries seek national policy adjustments as well as “non-carbon benefits” while securing reduced GHG emissions from the forest sector (Visseren-Hamakers et al. 2012; Den Besten et al. 2014).

Governance for sustainable development has arguably entered an “era of synergies” (Visseren-Hamakers 2015), where the growing density and complexity of multilateral environmental agreements and other international institutions has resulted in increasing attention to how they influence one another and the governance architecture as a whole (Oberthür and Gehring 2006; Biermann et al. 2009; Zelli and van Asselt 2013). We contend that for both REDD+ and SDGs to achieve their intended outcomes, it is important to identify linkages, including trade-offs and synergies, at national and sub-national levels.

Our aim here is to analyze potential areas of interaction between REDD+ and the SDGs. We examine how these initiatives relate to one another at their norm-setting and rule-making stages and, given their objectives, what synergies are identifiable, and how these synergies can be pursued and enhanced. We acknowledge that there will be conflicts and trade-offs in national-level processes of implementing REDD+ and the SDGs, as both require adjustments in development pathways. However, our current analysis focuses specifically on analyzing areas of convergence and synergy. Our assessment is based on secondary literature, as well as direct observations of REDD+ negotiations at the UNFCCC (including on non-carbon benefits of REDD+), as well as primary document analysis of UNFCCC decisions on REDD+ and negotiation of the SDGs as part of the 2030 Agenda for Sustainable Development. The national-level illustrative case studies of Indonesia and Myanmar draw on primary documentation and extensive engagement (by one author) with a wide array of decision-makers and stakeholders in each country, including interviews, on SDGs, green economy pathways and REDD+ in these two countries ([references here to author generated in-country reports on these topics, *anonymized for now*]).

The article is structured as follows. Section 2 provides an overview of the institutional interaction literature, based upon which we then elaborate our own analytical framework to assess types of institutional interactions and the prospect for synergies therein. Section 3 explores the normative and institutional synergies between the SDGs and REDD+. Section 4 briefly considers such potential synergies and their realization in two national contexts: Indonesia and Myanmar. Section 5 analyzes the mechanisms of interaction, and options for interaction management as means to enhance synergies between REDD+ and SDGs. Finally, section 6 draws conclusions.

3.2 A framework for analyzing institutional synergies

It is by now a consensus that the environmental governance architecture is increasingly dense and complex (Oberthür and Gehring 2006; Biermann et al. 2009; Visseren-Hamakers 2015), including various public, hybrid (public-private) and private principles, norms, rules and decision-making mechanisms in place at multiple governance scales to steer human behavior (Krasner 1983; Young et al. 2008; Visseren-

Hamakers 2013). Complexity emerges because such institutions exert influence over one another, with consequences for governance outcomes (Oberthür and Stokke 2011). The strategic management of institutional interactions (or interplay) has thus also received growing attention from environmental governance scholars (see Young 1996; Raustiala and Victor 2004; Oberthür and Gehring 2006; Biermann et al. 2009; Zelli and van Asselt 2013; Gupta et al. 2015; Visseren-Hamakers 2015) and in policy circles (see UNEP 2006; Soria 2014).

Institutions may interact in different ways. A given institution might be *embedded* in a larger institutional framework of overarching principles and norms that covers many different issue-areas. It might alternatively be *nested*, in a hierarchical relationship, within a higher – and usually less specific – institution in the same issue-area. It may find itself *clustered* with others in an institutional “package”. It might *overlap* on a de facto basis with other institutions that target different issue-areas. Or it may operate in *parallel* with other institutions targeting the same issue-area that may have been created separately and have no formal relationship but still influence one another (Young 1996; Abbot and Snidal 2006; Oberthür and Gehring 2011, Zelli et al. 2013). Whichever the case, institutions influence the development or performance of other institutions at various stages of emergence and evolution. Such stages include: institutional *outputs* (rules or other formal signs of compliance), *outcomes* (changes in human activities), and *impacts* (tangible changes in environmental quality or other ultimate goals of an institution) (Underdal 2008; Oberthür and Gehring 2011).

There are different mechanisms through which such institutional interactions can occur. As a general rule, such interactions modify the perceptions, preferences and behaviors of key actors (Gehring and Oberthür 2009). First, there may be “cognitive interaction” when ideas or information from one institution filters into the process of another and influences its outputs. Second, normative or legal commitments to one institution may affect decision-making and output creation in another. Third, there might be interaction at the level of outcomes, when different institutions influence the behavior of the same actors. Fourth, there may be impact-level interactions or “functional linkages” (Young 2002), when the ultimate targets of the two institutions are related (e.g. a policy aimed at conserving bamboo forests may ultimately benefit panda conservation and, as such, interact at the impact level with policies aimed at the latter) (Oberthür and Gehring 2011).

That said, conceptualization with respect to the *quality* of these interactions remains relatively limited. Institutional interactions usually are broadly categorized as being synergistic (when they result in improvements in effectiveness, i.e. an institution’s ability to reach its objectives), neutral, or conflictive (or disruptive, i.e. when one institution hinders the effectiveness of another). We recognize, however, that institutions often have multiple objectives. These objectives may not all belong to an institution’s core mission – some may rather be regarded as potential “co-benefits”. The discussion on various non-carbon benefits from REDD+, for example, is a case in point. REDD+’s main objective is to reduce GHG emissions from the forest sector, and its results are to be measured, verified, reported and financed on the basis of tonnes of CO₂-equivalent per year. However, to succeed in reducing forest sector emissions, countries need to put in place and implement changes in current land-use patterns both within the forest sector (e.g. reductions in annual allowable cut, fuel switching away from fire wood) and outside

(e.g. relating to commercial agriculture and its expansion into forests). This requires coordination and agreement with sectors exerting pressure on forests, and requires evaluation and adoption of more sustainable land-use practices (Bastos Lima et al. 2017). Further, REDD+ has explicitly sought to generate other positive impacts such as biodiversity conservation, governance improvements, and socioeconomic benefits (UNFCCC 2010; 2015; see also Bastos Lima et al. 2014). Such objectives, in turn, imply the existence of a range of synergy types, each with different characteristics that influence how they may be reaped.

As such, we conceptualize three different types of institutional synergies here. We call *core synergies* those in the realm of two institutions' core objectives, here understood as the ones related to their main missions and on the basis of which they are most likely to be assessed (e.g. the Montreal Protocol and reduction in the production of substances that deplete the ozone layer). We posit that, given the centrality of such core synergies, institutional interactions have the potential to yield mutual gains. Moreover, given the functional linkages between their overlapping (or same) objectives, impact-level synergies are likely to spontaneously materialize. Still, risks exist, such as the eventual duplication of efforts, dilution of resources, or misalignment of policy instruments in case the two institutions are not streamlined during implementation (see Stead and Meijers 2009).

Complementary synergies refer to a situation where the pursuit of co-benefits foreseen by one institution helps achieve core objectives or co-benefits also sought by another institution. These synergies are limited to benefits that are intended by the institutions and, thus, regarded as a constituent part of them. They may be overlooked, however, given that they are not related to mandatory objectives, and thus require conscious pursuit and greater attention. In other words, complementary synergies are less likely to materialize spontaneously than core synergies. Additional policy-making may be required to pursue these, while not doing so may incur opportunity costs.

Supplementary synergies refer to interactions involving unforeseen co-benefits, which are not explicitly part of the institutional "package" – and thus cannot be demanded from it – but can still be regarded as positive if attained. For instance, REDD+ does not foresee – and is unlikely to be judged on the basis of – its benefits to formal education, yet it is conceivable that REDD+ implementation may create such benefits in specific contexts, and help to further implementation of SDGs targets on education. We posit that these synergies are less likely to be consciously pursued than the other two types noted above, and not pursuing them may create fewer opportunity costs. Still, they can be significant in certain contexts (e.g. following the example above, as in regions where improvements in education are urgently needed and any missed opportunity can be important).

Our primary hypothesis is that synergies will not necessarily occur on their own, but must be sought by countries in order to maximize the benefits, efficiencies and increased likelihood of success in implementing both REDD+ and SDGs. In addition, while it may be more logical to pursue core synergies, complementary synergies may also deliver significant benefits. Table 1 summarizes this typology of institutional synergies. While we focus on synergies here, we recognize that any discussion of synergies

must also recognize the existence of conflict and trade-offs, with conflicting sectoral goals making it challenging to pursue sustainable development.

Table 5: Typology of institutional synergies

		Institution 1		
		Core Objectives	Foreseen Co-benefits	Unforeseen Co-benefits
Institution 2	Core Objectives	Core Synergies	Synergies	Supplementary Synergies
	Foreseen Co-benefits	Complementary		
	Unforeseen Co-benefits			

Source: Developed by the authors.

The following sections apply this framework to the case of interactions between REDD+ and the SDGs. In doing so, we identify the core objectives and intended co-benefits of the two institutions, and analyze where and how synergies have emerged or may emerge. With this, we focus the analysis on core and complementary synergies.

3.3 REDD+ and the SDGs: objectives and prospects for synergies

A number of similarities make interactions between REDD+ and the SDGs likely. Despite having emerged from distinct institution-building processes, both initiatives aim, either as a whole (in the case of REDD+) or in part (in the case of the SDGs), at sustainable management of forests and mitigation of climate change impacts. Two SDGs are most compatible with REDD+ objectives of “reducing emissions from deforestation and forest degradation in developing countries, and the role of conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.” These include SDG 13, which calls for, “urgent action to combat climate change and its impacts” and SDG 15, which aims to, “Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss.”

Moreover, countries participating in REDD+ are developing forest “reference emissions levels”, which constitute the baseline level of emissions against which change can be measured. Countries will

measure forest cover change and changes in carbon stocks as part of their national forest monitoring and MRV systems, and will submit the information to the UNFCCC. The SDGs indicators have now been completed, and indicator 13.3.2 under SDG 13 will measure how countries are strengthening institutional, systemic and individual capacity-building to pursue climate adaptation, mitigation, technology transfer, and development actions. Two indicators for SDG 15 are relevant to our analysis as well: indicator 15.1.1 to measure forest area as a proportion of total land area, and indicator 15.2.1 to measure progress towards sustainable forest management (UN, 2016).

So far, work to refine the data compilation sources from national governments and international agencies indicate that the same source of information used to assess country progress on maintaining forest cover and carbon stocks will be used in assessing progress on SDG 15, namely the information provided by governments to the UN Food and Agriculture Organization's global forest resources assessment. This assessment includes annual average percent change in forest area, annual average percent change in stock of carbon in above-ground biomass, the share of forest area whose primary designated function is biodiversity conservation, the share of forest area under a forest management plan, and how much forest area is certified under an independent forest management certification scheme (UNSD, 2016)

Both REDD+ and the SDGs recognize that achieving their objectives will require transformational changes in natural resource management. The Cancún Agreements on REDD+ indicate that when developing REDD+ National Strategies or Action Plans, countries should address the drivers of deforestation and forest degradation, land tenure issues, forest governance issues, gender considerations, social and environmental safeguards, and ensure the full and effective participation of relevant stakeholders, including indigenous peoples and local communities (UNFCCC, 2010). Similarly, countries reporting on their SDGs performance are encouraged to report on how the three dimensions of sustainable development (economic, social and environmental) are being integrated, and how sustainable development policies are being designed and implemented to reflect such integration. Other principles of the 2030 Agenda are also encouraged to be mainstreamed in the implementation of SDGs, such as 'leaving no one behind' (UN, 2016b).

The combination of the three dimensions of sustainable development (economic, social and environmental) can indeed be considered transformational, and indications from the first country submissions on SDG implementation indicate that very few countries are able to address all three synergistically (including recognized global leaders, such as Finland and Germany). This indicates a gap in countries' abilities to tackle sectoral integration in their SDG implementation and reporting (UKSSD and Bond, 2016). This is a notable shift from the MDGs, the precursor to the SDGs. The SDGs embrace environmental sustainability concerns across all goals, whereas in the MDGs, these concerns constituted a separate, seemingly dissociated goal (ICSU/ICSS 2015). This demonstrates formal recognition within the SDGs of currently unsustainable activities across various economic sectors that need to change in light of environmental and social concerns (Young et al. 2014). Furthermore, the SDGs include some essentially transversal goals that deal with structural issues, such as addressing domestic and international inequalities (SDG 10) and the promotion of sustainable production and consumption while

promoting inclusive and sustainable economic growth (SDG 12) (ICSU/ICSS 2015; Lang and Lingnau 2015). Such a focus recognizes that economic, environmental and social sustainability are all interconnected, and crucial for sustainable development. Thus, the SDGs now explicitly call for transformation of the structures that lead to marginalization and environmental degradation (Gupta et al. 2014; Young et al. 2014).

In recognition of the transformational objectives of the SDGs and REDD+, both also call on implementing governments to pursue inclusive processes, involving stakeholders, civil society, the private sector, subnational authorities, local communities, and indigenous peoples. This call for inclusive processes is common to both, and provides a basis to pursue social and environmental safeguards as well.

There is no hierarchy between the 17 SDGs; all 17 goals are regarded as equal and an indivisible whole (UN General Assembly 2015). In the case of REDD+, however, there is a clear hierarchy between carbon and non-carbon objectives in the forest sector. Therefore, it is possible to distinguish core and complementary objectives in REDD+ policy, based on foreseen co-benefits. Table 2 below outlines the 17 SDGs, and related core and complementary REDD+ objectives.

Table 6: The SDGs and related REDD+ objectives

SDGs	REDD+ objectives (as embedded in specific UNFCCC decisions)	Synergies
1. End poverty in all forms everywhere	(REDD+ activities should) be implemented in the context of sustainable development and reducing poverty, while responding to climate change (1/CP.16, Appendix I, 1 (g))	Complementary
2. End hunger, achieve food security and improved nutrition and promote sustainable agriculture	(1/CP.16, Appendix I, 1 (g))	Complementary
3. Ensure healthy lives and promote well-being for all ages	–	
4. Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	–	
5. Achieve gender equality and empower all women and girls	Agrees that systems for providing information on how the safeguards referred to in appendix I to decision 1/CP.16 are addressed and respected should, taking into account national circumstances and respective capabilities, and recognizing national sovereignty	

	and legislation, and relevant international obligations and agreements, and respecting gender considerations... (12/CP.17, I, 2)	
6. Ensure availability and sustainable management of water and sanitation for all	Conservation of ecosystem services as part of guidance on safeguards (1/CP.16) – indirectly could help countries maintain watershed integrity.	Complementary, depending on role of watershed management
7. Ensure access to affordable, reliable, sustainable and modern energy for all	Encourages all parties to consider the entire sinks and reservoirs of greenhouse gas while developing the nationally appropriate mitigations actions ((1/CP.21). For countries with a significant contribution of forest degradation (and GHG emissions) from wood fuels, this should be considered.	Complementary, depending on role of fuelwood
8. Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	–	
9. Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	–	
10. Reduce inequality within and among countries	Urges developed country Parties, to support, through multilateral and bilateral channels, the development of REDD+ national strategies or action plans and implementation (1/CP.16)	Complementary
11. Make cities and human settlements inclusive, safe, resilient and sustainable	–	
12. Ensure sustainable consumption and production patterns	Reduce the human pressure on forests, including actions to address drivers of deforestation (1/CP.16)	Complementary
13. Take urgent action to combat climate change and its impacts	Reduction of emissions from deforestation and forest degradation; enhancement of forest carbon stocks (9/CP.19) Address the drivers of deforestation (15/CP.19)	Core

14. Conserve and sustainably use the oceans, seas and marine resources for sustainable development	–	
15. Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Reducing emissions from deforestation in developing countries: approaches to stimulate action (2/CP.13)	Core
16. Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Institutional building (National Forest Monitoring Systems, Safeguard Information Systems, etc.), with full and effective participation of all relevant stakeholders (1/CP.16; 11/CP.19)	Complementary
17. Strengthen the means of implementation and revitalize the global partnership for sustainable development	To provide finance and technology to developing countries to support emissions reductions (1/CP.16) Be supported by adequate and predictable financial and technology support, including support for capacity-building (1/CP.16, Appendix I, 1 (i))	Complementary

Source: compiled by authors.

It is important to note that both the REDD+ framework and the SDGs are not binding for countries, but they both create incentives to meet their objectives. REDD+ provides economic incentives (payments for results), while the SDGs reflect political commitment and normative obligations, as did the MDGs (Loewe 2012).

While REDD+ is to be implemented in developing countries, the SDGs are universal in coverage. Nevertheless, the 2030 Agenda for Sustainable Development, which launches the SDGs, *does* recognize the North-South gap, in reaffirming requests for finance, technology and capacity-building support to flow from North to South, i.e. from developed to developing countries (UN General Assembly 2015). The Agenda further specifies that efforts to achieve SDGs are not confined only “within our own countries”, but also “at the regional and global levels” (UN General Assembly 2015, paragraph 21). There is a clear understanding that some countries may not be able to do it alone, and the SDGs seek to diminish the inequalities between the rich and poor (SDG 8), and promote a partnership that brings together governments, civil society, the private sector, the United Nations system and other actors to realizing the Agenda (SDG 17). In short, this new universality expands worldwide normative requirements to pursue sustainable development hitherto placed only on developing countries in the earlier MDGs, and effectively demands that developed countries work *both* within their boundaries *and* assist developing

countries to achieve the SDGs. This obligation for developed countries to support developing countries is mirrored in the Paris Agreement and in REDD+.

In summary, core synergies are those that have clear overlap in goals, which is evident between REDD+ and SDG 13 (climate) and SDG 15 (sustainable use of terrestrial ecosystems and management of forests). Complementary synergies are those where pursuit of co-benefits foreseen by one institution helps achieve core objectives or co-benefits also sought by another. Thus, for example, water, poverty, and even responsible production and consumption SDGs can promote co-benefits in REDD+.

3.4 Realizing synergies at the national-level

We briefly explore potential for core and complementary synergies between REDD+ and SDGs in two countries, Indonesia and Myanmar, both of which are now implementing REDD+ at the national level and are signatories to the Paris Agreement, with submitted NDCs.

3.4.1 Indonesia

Indonesia's launched REDD+ with a Presidential commitment to the initiative in 2009. The country's REDD+ Readiness Plan was submitted in 2010 and the REDD+ National Strategy finalized in 2012. Norway made a critical US \$1 billion bilateral commitment to support Indonesia's REDD+ readiness activities and as a payment for emissions reduction results in 2010 (Royal Norwegian Embassy Jakarta, 2016). In September 2015, Indonesia submitted its Intended Nationally Determined Contribution (INDC) to the UNFCCC Conference of the Parties, reinforcing its 2009 commitment to a 26% emission reduction by 2020 and 29% emission reduction by 2030, based on a 2010 projected business as usual scenario (Indonesia, 2015).

Addressing forest sector emissions, including land and land-use change, peat and forest fires, which contribute 63% to the country's overall emissions (as per Indonesia's Second National Communication to the UNFCCC in 2010), will be crucial to meet its NDC targets. However, high incidences of peat fires and plans for increased palm oil production to meet recent biodiesel market expansion will jeopardize those goals, unless Indonesia can bring greater coherence to its land-use activities. Oil palm production is a major driver of deforestation in Indonesia. While a key driver, the oil palm sub-sector in Indonesia contributes 4.5% of GDP, and smallholders account for roughly half of production. Therefore, interventions to address GHG emission reductions must also consider livelihoods of smallholder producers (among others) (UN Environment, 2017a).

Drawing on Indonesia's experience and institutional arrangements for the MDGs, the country established a SDG Transition Secretariat in the Ministry of National Development Planning (Bappenas). Indonesia sorted the SDGs goals, targets and indicators into four pillars: social, economic, environment (including both Goal 13 and 15), and law and governance. Bappenas performed a mapping exercise to assess SDGs against the goals and targets of the medium-term development plan (RPJMN), identifying 108 out of 169 matches. Technical Guidelines for the SDG Action Plan have been completed, and it is expected that in 2017, Indonesia will complete a National SDG Roadmap and define national and sub-

national SDG actions (Indonesia, 2016). Based on interview results, the government sees the primary strength of the SDGs as providing a means to promote the interconnectedness between sectors, and to further refine how coordinated public sector interventions can better enable supportive private sector investment for positive SDG outcomes. Based on the authors' review of the processes evolving to implement REDD+ and SDGs, the National SDG Roadmap is the process that should define the specific alignment in core objectives, and it is expected that many complementary objectives between SDGs and the RPJMN will also be relevant in the land-use sectors.

3.4.2 Myanmar

Myanmar's INDC, submitted to the UNFCCC in 2015, reiterates Myanmar's 30-Year National Forestry Master Plan goals of achieving 30% of the land area being within the permanent forest estate, and 10% of the land area being within protected areas by the year 2030. The INDC also seeks to increase the number of energy-efficient cook stoves to reduce the amount of fuel wood used for cooking, through distribution of 260,000 cook stoves in the Dry Zone (Republic of the Union of Myanmar, 2015). The INDC commitment provides a key means to achieve REDD+ objectives, which Myanmar has articulated since first joining the UN-REDD Programme in 2011 (UN Environment, 2017b).

Myanmar's economy is largely based on agricultural production, which contributes about 30% of GDP and more than 60% of employment. Production and yields are low compared to other countries in the region, and Myanmar increasingly relies on foreign direct investment to help grow its economy after decades of military rule and isolation. Recognizing the importance of its forests, a temporary logging ban is in effect while the forest sector reforms. A National Land Use Policy, finalized in late 2015, provides a window of opportunity to provide greater certainty in tenure and land use, particularly for farmers and ethnic regions (containing the most intact forests), many of which are involved in peace negotiations with the government in order to reach a national ceasefire and cessation of conflict (UN Environment, 2017b).

Though Myanmar is still in the initial stages of its REDD+ Readiness activities and in considering how to integrate SDGs into national development planning, there are significant opportunities to pursue core synergies. This rests largely on the political momentum behind its transition towards democracy and the new national-level institutions that are emerging, which are far more compatible with both REDD+ and SDGs goals than previous institutions were.

3.5 Mechanisms of interaction and options to realize synergies

The SDGs, like the MDGs before them, are a *sui generis* institution. On the one hand, they constitute an overarching normative framework covering many issue-areas and are meant to orient sustainable development policy at national levels, and globally, for the next 15 years. Thereby, we argue here that REDD+ (being *nested* into the Paris Agreement) could potentially become *embedded* into the SDGs during the implementation phase, since REDD+ can help to realize specific SDGs. For example, countries can pursue SDG 13 in proposing and implementing forest-related climate actions under REDD+, as well as advance SDG 15 by participating in the UNFCCC process. As Young (1996) notes, such processes of

embeddedness are usually unintentional, but they can have important consequences. In this case, countries implementing REDD+ may choose to do so in ways that also help them further the implementation of various SDGs. But there is no specific mechanism or institutional linkage that would direct countries to pursue such coherence. Therefore, the risk is that REDD+ could stand in *parallel* to the ambitions of the SDGs in some contexts, if policymakers do not make the linkages explicit, based on their national circumstances and national-level implementation frameworks. Further, the SDGs have no hierarchy over more specific institutions such as REDD+ (therefore, REDD+ will only be nested within SDGs if countries chose to rely on REDD+ as, for example, a means of implementing certain SDGs). Indeed, the 2030 Sustainable Development Agenda explicitly recognizes the UNFCCC as being non-subordinate to the SDGs (UN General Assembly 2015).

Though those negotiating the SDGs regarded REDD+ primarily as a means of implementation, more precisely, as a source of financial support to pursue SDG targets related to forests and land use, and not necessarily as a source of ideas or information (Brack 2014),⁵ this may change as countries pursue implementation frameworks. Colombia, for example, has chosen to pursue ‘green growth’ as an overarching strategy in development of its National Development Plan, to be renewed in 2018, and thus places its commitment to forests and biodiversity as a core component of cross-sectoral strategies, such as transformation of rural areas (Colombia, 2014).

There remains considerable scope for behavioral (outcome) and impact-level interactions. The commitment to achieving SDG targets related to, for example, sustainable agriculture, poverty and inequality reduction, gender equity or energy access can substantively affect perceptions, preferences and policy choices in the context of REDD+ implementation. Likewise, the availability of REDD+ as a prompt means to undertake forest conservation strategies in an internationally accredited manner can influence how certain SDGs are pursued. While some synergies may materialize spontaneously at the level of impacts, there is much room for enhancing them through (behavioral or outcome-level) interaction management.

A first step in doing so is to identify the core synergies, in order to identify synergistic approaches to pursuing outcomes and impacts. For instance, Myanmar could position its REDD+ goals within a broader SDG framework, and thereby identify the core synergies to help meet SDGs 13 and 15, help supplement and support synergies in implementing SDG 17, and further identify complementary synergies to address the root causes of rural poverty, which are crucial for Myanmar’s engagement in the SDGs (Ei Ei Khin Aye, 2016). These complementary synergies could include efforts to fulfill SDG 1 on poverty, sub-goal SDG 1.4, which seeks to ensure that men and women, including the poor and vulnerable, have equal rights to economic resources, ownership and control over land and natural resources. Myanmar is seeking solutions to that issue in order to resolve the long-standing civil conflicts in ethnic regions, and held the historic Union Peace Conference – 21st Century Panglong Conference, with eighteen ethnic insurgent groups. If Myanmar can achieve national reconciliation and union peace, it will be poised to

⁵ Interviews with civil society observers at the Open Working-Group negotiations of the SDGs in 2014 and 2015.

settle long-standing disputes over land and natural resources, thereby directly addressing the poverty and isolation in these mostly forested regions (UN Environment, 2017b).

Such synergies may well be realized if human, financial and administrative resources are streamlined – or hindered if not. This does not necessarily require the concentration of responsibilities, but does imply that implementation efforts are coordinated and coherent, to avoid duplication of efforts, inefficient use of resources, or (domestic) normative ambiguity (Brown Weiss 1993; Alter and Meunier 2009; Oberthür and Stokke 2011). For instance, if the pursuit of SDG 15, with targets on forest conservation, sought an increase in carbon storage (such as through delineation of new national parks) without stakeholder engagement and/or commitment to the emerging REDD+ National Strategy, with MRV systems to monitor performance and impacts, there would be inherent risks. However, the REDD+ readiness efforts are creating the stakeholder engagement, vetting of implementation options, analytics for decision-support, and systems of information and monitoring that could implement SDG components relating to the forest and land-use sectors.

This points to the importance of *autonomous interaction management* in this context, i.e. interaction management at the implementation level, done autonomously by governments and/or non-state actors involved with the institution in question (Oberthür 2009). Alternative means of interaction management could, in principle, include the creation of an overarching institution, or adjustments made jointly or unilaterally at the international level (Oberthür and Gehring 2011). However, these modes of interaction management are less relevant in the case of the SDGs and REDD+. If the MDGs are a precedent to go by, it is instructive that they remained unchanged for 15 years, despite critiques (such as on the absence of a goal on improving energy access, which later led the UN to argue that energy access actually underscored all goals, see Kuik et al. 2011).

REDD+, too, seems unlikely to have its rules revised in the near future, before some implementation experience has been gathered. Finally, some have suggested the new UN High-Level Political Forum on Sustainable Development, successor of the UN Commission on Sustainable Development, could be an “orchestrator of orchestrators” and work to develop synergies between the SDGs and other international institutions or initiatives (Bernstein et al. 2014). However, even if this were to occur, countries would retain ample autonomy. Given their own national circumstances, and the spectrum of implementation options available, countries are best positioned to carry out autonomous interaction management at the national level.

At the same time, autonomous interaction management need not stem exclusively from national governments in charge of both REDD+ implementation and progress on the SDGs. Various other actors (e.g. subnational entities, civil society, donor countries, the private sector) may seek to help manage those interactions and generate synergies. As Sachs (2012) observes, private companies are responsible for key production processes that drive deforestation (notably agriculture), which may be altered even if those companies are not directly accountable for achieving the SDGs. The private sector also owns much technology and innovation capacity needed for sustainable development (Hajer et al. 2015), so their commitment to supporting SDGs and REDD+ goals and targets is important in sectors that drive

deforestation impacts. The scientific community, too, plays a significant role, particularly if governments increase their efforts to make data available and accessible (Lu et al. 2015).

As such, it is possible to understand interaction management not necessarily as an *ex-post* exercise, i.e. as a reactive process in the face of “treaty congestion” (Brown Weiss 1993). Rather, it may include the deliberate pursuit – indeed, the creation – of interactions for the sake of building synergies. In our case, while REDD+ may indeed provide a means to help achieve SDGs, the SDGs may in turn offer a politically powerful additional rationale for pursuing multiple objectives (namely the various non-carbon benefits) in REDD+ actions. This is where complementary and, eventually, supplementary synergies could be created. Since these involve non-essential – and yet achievable – additional benefits from REDD+, however, these synergies demand conscious pursuit and active policy-making for their promotion.

The role of monitoring and evaluation in interaction management is crucial in order for governments and stakeholders to establish baselines, monitor implementation, and correct course as necessary. Monitoring and evaluation was identified as an important, yet insufficiently developed process in Indonesia’s MDG implementation, and therefore a priority in the SDG process. Indications are that a SDGs database will be established in Bappenas to house data from various ministries, agencies and stakeholders (CSOs, private sector, etc.) to support the monitoring and analysis of progress and gaps. The utility of this could be enhanced if it incorporates and builds upon the One Map initiative, being carried out by the National Geospatial Agency, which seeks to harmonize spatial information across all key sectors and ministries on land use, land tenure and other spatial information. Information provided through One Map⁶ will be crucial for purposes of implementing and monitoring efforts to reduce GHG emissions from forests and peat lands, as well as associated rural and socio-economic interventions. Such information can be a crucial first step in interaction management and the pursuit of synergies.

We should also note here the potential trade-offs and risks of conflict between the SDGs themselves (e.g. economic growth and climate change mitigation; see Brack 2014), and between REDD+’s carbon focus and its co-benefit aspirations. Trade-offs also require policy choices (Vandemoortele 2009). A balancing of multiple objectives is needed in order to meet various SDG targets and for REDD+ actions to have broader sustainability impacts, not least because these objectives are highly interdependent. Carbon permanence and the long-term sustainability of REDD+ actions depend on minimizing the risks of reversals, which in turn requires addressing, among others, local socioeconomic needs (Jagger et al. 2014). Likewise, there is a clear interdependence between several SDGs (e.g. universal food security depends on ending poverty; the conservation of forest and other terrestrial ecosystems may depend on the adoption of sustainable agriculture, and so on; see ISCU/ICSS 2015). The creation of complementary and/or supplementary synergies, in turn, depends on understanding – and effectively managing – such various dimensions and their relationships.

3.6 Conclusions

⁶ Refer to: <http://www.bakosurtanal.go.id/>

This article has elaborated on the concept of institutional synergies and analyzed interactions between REDD+ (as recently included within the Paris Agreement) and the SDGs. The adoption of the SDGs as an overarching, multi-sectoral normative framework clearly adds further density to an increasingly complex global environmental and sustainability governance architecture, and we argue here that REDD+ can be regarded as embedded into this framework at the global level. However, if on the one hand, the increasing complexity creates challenges in the form of greater need for interplay management, on the other hand more opportunities emerge for pursuing synergies. We distinguished between three different synergy types – core, complementary and supplementary synergies – each with different characteristics that influence how they might be reaped.

Our findings suggest that interactions between REDD+ and the SDGs at the output level (that is, either in the form of cognitive interaction or interaction through commitment) are beginning to take shape in some countries, with Indonesia as an example. Both case studies provide more insight into how such output level interactions could be furthered, and how behavioral and impact-level interactions can be promoted. Our brief illustration of the evolving situation in Myanmar and Indonesia illustrates that REDD+ has the potential to become embedded in, but also to operate in parallel with, certain SDG targets. While REDD+ provides a viable, internationally accredited means of implementing certain SDG targets, the SDGs in turn offer a politically powerful additional rationale for expanding REDD+ actions beyond its core carbon-related objectives at national levels.

SDGs related to climate change mitigation (SDG 13) and forest conservation (SDG 15) relate intrinsically to central objectives of REDD+. These are *core* synergies that can materialize spontaneously at the level of impacts; yet, autonomous interaction management is important to streamline their implementation and reduce risks of duplication, inefficient use of resources, or normative dissonance at the domestic level. These synergies will not necessarily occur on their own, as we hypothesize, but countries can pursue such synergies in order to maximize the benefits, efficiencies and increased likelihood of success in implementing both REDD+ and SDGs. Furthermore, we find that complementary and supplementary synergies may also deliver significant benefits. Securing *complementary* and *supplementary* synergies requires active promotion of non-carbon benefits in REDD+ actions. Also, the goals of accountable and inclusive institutions at all levels (SDG 16), and strengthening the means of implementation and revitalization of global collaboration for sustainable development (SDG 17) are intentions that are highly synergistic with REDD+. Our analysis suggests that to pursue core, complementary and supplementary synergies in implementation of the SDGs and REDD+, there is a need for pro-active synergy building rather than reactive interaction management, as these institutions do not in and of themselves provide a roadmap on how to identify and pursue linkages (although reporting mechanisms are showing signs of guidance and alignment).

In summary, our framework distinguishing between core, complementary and supplementary synergies should help in differentiating areas where synergies are clearest, and those where pro-active interaction management will be necessary in order to achieve synergies. Our analysis has identifying potential synergies as a means to encourage countries to identify these early on in implementation processes for both SDGs and REDD+, based on national circumstances. In essence, both the SDGs and REDD+ aim for

sustainable development, and hence seek to redirect current unsustainable practices. Nurturing potential synergies is necessary in order for the SDGs and REDD+ to achieve their transformative potential.

4. Climate financing needs in the land sector under the Paris Agreement: an assessment of developing country perspectives⁷

Abstract

This paper explores the potential of climate finance to support developing country efforts to shift away from unsustainable land use patterns in the context of the 2015 Paris Climate Agreement. We pursue two research objectives here. Through a meta-analysis of 40 developing country Nationally Determined Contributions (NDCs), we provide, first, a comprehensive qualitative overview of developing country perspectives on climate financing needs for mitigation and adaptation activities in the land use, land-use change and forestry sectors (LULUCF). Second, we examine whether countries acknowledge a role for domestic financing and international and domestic fiscal policy reform within these NDCs, as a way to address drivers of land use conversion. We supplement our meta-analysis of NDCs with a brief assessment of climate financing in two forest-rich countries, Brazil and Indonesia. Our analysis of NDCs reveals that only 14 of the 40 countries provide clear cost estimates for proposed climate-related forest activities, with most activities being conditional on provision of international climate finance. While some discuss domestic sources, few note the need for (international or national) fiscal policy reform to counteract direct and underlying drivers of land use conversion. The challenges inherent in doing so are also highlighted in our discussion of Brazil and Indonesia. Our findings suggest that, while much attention is directed to inadequate quantities of international climate finance, a lack of fiscal reform remains a key hurdle to realizing transformative change in the land use sector.

⁷ This chapter has been published as: Kissinger, G., A. Gupta, I. Mulder, N. Unterstell, 2019. Climate financing needs in the land sector under the Paris Agreement: An assessment of developing country perspectives. *Land Use Policy*, Volume 83, April 2019, Pages 256-269.

4.1 Introduction

Climate finance is widely assumed to have an important role to play in helping to shift unsustainable land use patterns towards more climate-friendly outcomes. It is seen as crucial for countries seeking to meet their land sector goals as laid out in Nationally Determined Contributions (NDCs) under the Paris Agreement, agreed to by Parties to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in 2015.

In this paper, we explore developing country perspectives on their climate financing needs in realizing land-sector goals under the Paris Agreement. We have a two-fold objective in doing so: first, although there is widespread discussion in policy debates and scientific literature alike on (inadequate) quantities and sources of international climate finance, there is as yet no comprehensive assessment of how developing countries see the role of such financing in meeting their forest-sector NDCs goals. Second, there is little understanding of developing countries perspectives on the role of (international and domestic) fiscal policy reform in addressing drivers of unsustainable land use, and the lack of alignment between fiscal policies that might stimulate land conservation, versus sustainable land use initiatives supported by climate finance.

Through undertaking a meta-analysis of 40 developing country Nationally Determined Contributions (NDCs), our analysis aims, first, to provide a comprehensive qualitative overview of developing country perspectives on climate financing needs for mitigation and adaptation activities in the land use, land-use change and forestry sectors (LULUCF), as articulated in their NDCs. Second, we examine whether developing countries address the role for domestic and international fiscal policy reform in realizing their forest-sector climate goals within their NDCs. We supplement this meta-analysis of NDCs with a brief assessment of climate financing dynamics (international and domestic) and links to fiscal reform in two forest-rich countries, Brazil and Indonesia.

We proceed as follows: Section 2 advances an analytical focus and hypotheses for our assessment of developing country perspectives on forest-sector climate finance. We derive these hypotheses from a brief review of key scholarly debates and policy developments in the area of climate finance. We then outline in section 3 the methodology we employ for our meta-analysis, before undertaking our qualitative meta-assessment of climate finance needs as articulated in developing country NDCs in section 4. Section 5 discusses climate finance dynamics in the land use sector in Brazil and Indonesia. In concluding, we draw out implications of our findings for (the challenges inherent in) realizing the transformative potential of climate finance in furthering forest-sector climate goals in developing countries.

4.2 Climate finance: evolving trends and research gaps

Advanced economies have formally agreed to jointly mobilize US\$ 100 billion per year by 2020, from a variety of sources, for climate mitigation and adaptation priorities in all sectors. The literature on climate finance has focused much attention on the obligations of developed countries (whose growth

contributed overwhelmingly to climate change) to provide necessary finance to developing countries who now suffer a disproportionate burden of the consequences. Climate finance is intended to be *new* and *additional* (UNFCCC, 1992), to official development assistance (ODA), which was first intended to be 0.7% of a developed country's gross national income (UN General Assembly, 1970). Though most developed countries contribute less than that (OECD, 2018) there has been concern raised by developing countries that ODA and climate finance should not be confounded (Nakhouda and Norman, 2014). However, an estimated 80% of the fast start financing reported by countries to the UNFCCC for period of 2010-2012 was from ODA (Kharas, 2016).

Drawing upon ODA was found to be more politically feasible for developed countries, who could delay divisive inter-agency debates in redirecting or increasing domestic expenditure to meet growing global commitments (Pickering et al. 2013). These existing aid commitments flow through a largely decentralized system dominated by a large number of bilateral aid agencies and a series of multilateral funds (UNFCCC Standing Committee on Climate Finance, 2016; OECD, 2015). Recognizing this, Multilateral Development Banks pledged in 2015 to foster wider adoption of mitigation and adaptation climate finance tracking principles, and develop joint principles for measuring the quantities of public and private finance they leverage in the future (AfDB et al. 2015). The OECD has called for increased clarity on how the international community counts both public and private financial flows towards the \$100 billion commitment, and how to track these flows (Clapp et al. 2012).

Roberts and Weikmans (2017) raise concern that the lack of a functional definition and accounting system for climate finance and lack of modalities to account for climate finance impedes the effective functioning of the bottom-up approach that now prevails under the UNFCCC. As an example of this disconnect, the Government of India (2015) criticized the OECD and CPI (2015) estimate of \$61.8 billion in climate finance flowing to developing countries in 2014. The Government of India found that after weeding out pledges from actual flows, and applying more stringent accounting and tagging to identify 'new and additional' funds, only USD 2.2 billion should be considered as cross-border flows from 17 special climate funds. Clearly there is a need for developed countries to meet their obligations for new and additional climate finance and improve finance accounting and tracking. The UNFCCC (2016) Biennial Reports track climate finance, with the most recent one documenting US \$26.6 billion in climate-specific finance in 2014 across all sectors, from developed to developing countries, most of which was channelled through bilateral, regional and other channels. Multilateral climate funds accounted for another US \$2.5 billion in 2014, while climate finance from multilateral development banks was US \$16.6 billion in 2014 (accounts for funds coming from developed countries, and considering the mobilization effect) (*ibid*).⁸

Less is known about developing country demand for climate finance. One review of 160 NDCs in 2016 identified that if the current mitigation commitments of developing country Parties be used as benchmark, the total amount of financial demand for both mitigation and adaptation needs of developing countries would reach US\$474 billion in the year 2030 (Zhang and Pan, 2016). Further, very

⁸ Also refer to the Climate Funds Update website: <https://climatefundsupdate.org/>

little exists in the literature to help developing countries assess options to harmonize disparate sources of international climate funds (e.g. bilateral, multi-lateral, and private sector) with domestic sources (e.g. national budget allocations, mobilized domestic private sector). A clear knowledge gap that our research seeks to fill, therefore, is to analyze developing country perspectives, if any, as expressed in NDCs, on strategic use of domestic finance sources (including reforming fiscal incentives that may currently undercut climate goals), encouraging coherence in climate financing at the national level, and strategies to combine multiple climate finance sources and aligned policies and measures to enable climate mitigation and adaptation outcomes.

The UNFCCC (2016) identified that most climate finance in the aggregate is mobilized and deployed domestically, both in developed and developing countries. In the limited number of developing countries for which information on domestic public climate finance was available, the data suggested that domestic public finance significantly exceeds the inflows of international public climate finance from bilateral and multilateral sources (*ibid.*).⁹ Ha et al (2016) similarly identify the rise of climate finance within and among developing countries ('South-South Climate Finance') as an opportunity to help unlock much needed additional climate finance, including through multilateral development banks. They suggested that these sources be better tracked by the UNFCCC to more effectively align it with 'traditional' climate finance that flows from developed to developing countries. Hannam et al (2015) reinforce this point, based on their identification of substantial financial and technological support provided by Chinese firms to developing countries, often with policy backing from China's state banks and particularly for investments in power generation, which is not recognized by the UNFCCC. However, recent publications (UNFCCC 2016) reveal an awareness of this issue, with findings suggesting that South-South cooperation is significant in this area— in the range USD 5.9–9.1 billion in 2013 and USD 7.2–11.7 billion in 2014.

However, discussions about quantities and flows of climate finance miss other key aspects that are equally crucial to achieving climate goals. In 2008, the UNFCCC framed a more holistic approach to climate finance (UNFCCC 2008), though the strategies have not been greatly expanded upon in the literature over the last ten years. The three strategies identified were: a) shift investments and financial flows to more climate-friendly and climate-resilient alternatives; b) scale-up international private and public investments and financial flows; and c) optimize the allocation of the funds available. The report identified four broad means to be considered in this context: private finance, public finance, national policies, and UNFCCC-related initiatives.

Most notably, the report identified the potential of national policies to send the right signals, in both developed and developing countries. The key message was that if markets failed to attract private investors into lower-carbon, more climate-proof alternatives, then government policies or incentives were necessary, which could occur through regulations and standards, taxes and charges to make

⁹ For more information on types of climate finance, such as international and national climate finance, public vs. private, grants vs. loans, and results-based finance, see Climate Policy Initiative: <http://www.climatefinancelandscape.org/>

polluters pay, and subsidies and incentives to pay the innovator. Multilateral climate funds have struggled to bring climate finance into the mainstream of economic and development decision-making, however, and the capacity of countries to formulate creative and transformational ideas about how to maximise the impact of available finance has varied greatly (Nakhooda and Norman, 2014). Nakhooda and Norman (2014) provide a rare perspective on the effectiveness of multilateral climate finance, based on findings from the first global ranking of recipients of multilateral climate finance. In addition to focusing on sources and flows of climate financing, other emerging insights emphasize that national-level systems for policy, planning and budgeting can be just as important (Rai et al. 2015). Our analysis responds to these claims in the literature by assessing developing country perspectives on such options, as expressed in NDCs.

In undertaking the meta-analysis of NDCs, we draw on our brief overview of key debates above to derive and assess two hypotheses: first, the supply of international climate finance will be insufficient to meet the (expressed) demand from developing countries, as discerned from NDCs; and second, in the absence of strategic use of domestic financing and reform of fiscal incentives that undercut climate goals in conjunction with international climate finance, countries will not achieve their land use and forestry sector NDC goals under the Paris Agreement.

These hypotheses are derived from findings in the literature that (a) current trends indicate that international climate finance will fall far short of developing country needs; and (b) in some countries, even if international climate finance for mitigation and adaptation were to be delivered at the scale necessary to achieve targets, the quantities of public and private finance supporting unsustainable activities in the land sector will greatly dilute the effectiveness of such finance. In other words, climate finance is only effective if it helps to redirect and scale up public (and private) finance flowing to climate-friendly land use, yet the prospects of realizing this are highly uncertain.¹⁰

4.3 Methodology

In addressing our two-fold research objective, we undertook, first, a literature review of secondary and primary literature on mitigation and adaptation climate finance¹¹ for land use and the forest sector focused on key decision-processes at national and international-levels (including the UNFCCC, Green Climate Fund, and multi-lateral and bi-lateral levels). Country NDCs were then reviewed to identify national-level decisions or intentions with regard to forest and land-use sector financing. NDC selection was based on two criteria: first, a country has submitted a NDC to the UNFCCC Interim NDC Registry by April 2017, and second, it includes within its NDC efforts to reduce emissions from deforestation and

¹⁰ Although unlocking and (re)directing *private* finance towards sustainable land use is key to achieving the Paris climate agreement, it is beyond the scope of this paper to assess means by which to promote and leverage private finance. This is a key topic for future research.

¹¹ The UNFCCC defines climate finance as, “refer(ring) to local, national or transnational financing—drawn from public, private and alternative sources of financing—that seeks to support mitigation and adaptation actions that will address climate change.”

forest degradation via support from the UN-REDD Programme and/or World Bank Forest Carbon Partnership Facility (FCPF).¹² Based on these two selection criteria, 40 countries were identified and their NDCs reviewed to determine: (a) mitigation and adaptation goals and objectives for LULUCF; (b) how land use goals were seen to relate to overall mitigation and adaptation goals; and (c) the degree to which GHG emissions reduction goals (across all sectors in most cases) were conditional on international assistance versus achievable with domestic resources (i.e. unconditional). Country plans for LULUCF financing were further evaluated based on the following questions:

- a) If a significant portion of national emissions come from the forestry and land use sector, do countries identify interventions to reduce emissions?
- b) If forestry and land use sector interventions are identified, to what extent do countries identify estimates of costs of implementation?
- c) To what extent do countries consider reform of fiscal policies¹³ (such as subsidies) as part of the financing strategy?
- d) Do countries identify finance innovations to achieve NDC goals (such as details on aligned private sector investment, creation of new sources of domestic finance, or other measures such as climate expenditure review for clearer budgetary tracking)?
- e) Are there other findings of note relevant to finance in the country NDCs?

The research design is limited to the review of NDCs, and therefore does not more broadly assess the quantity of or effectiveness of developing country use of existing climate finance in the land use sectors. Bilateral agreements and progress towards reaching goals in Letters of Intent between the Government of Norway and the two case study countries of Brazil and Indonesia were reviewed. However, other bilateral agreements were not reviewed, such as between Government of Norway and Guyana and the Central African Forest Initiative, nor were project documents such as readiness proposals and country progress reports of multilateral aid and multi-donor funds reviewed, such as the World Bank's Bio Carbon Fund and the Forest Carbon Partnership Facility, the Forest Investment Program, and the UN-REDD Programme. This is an area for further research in the future.

Methodologies relied upon in the assessment of climate finance dynamics in the land sector in two leading REDD+ countries, Brazil and Indonesia, included review of secondary and primary literature

¹² REDD+ refers to efforts to reduce emissions from deforestation and forest degradation, and foster conservation, sustainable management of forests, and enhancement of forest carbon stocks in developing countries.

¹³ Our definition of fiscal policies starts with Friedman and Heller's (1969) definition: "The use of changes in the level of taxes and expenditures (either transfer payments or other budget expenditures) to serve national economic goals." Our definition is further expanded to include subsidies, direct and indirect financial transfers, regulation, lack of intervention, and market price support, as per WTO, FAO and Global Subsidies Initiative definitions, detailed in Kissinger et al (2015).

(including government publications) on this topic to discern Brazil and Indonesia's land use emission reduction programmes, and how achievements and financing were correlated.

Key questions guiding the assessment in the case studies included:

- a) how existing public policies and expenditures and investment were altered to reduce pressure on forests in order to further climate goals;
- (b) what the role was of domestic and international finance in achieving forest sector climate objectives; and
- (c) how linkages between policies and investment decisions influenced policy and land use outcomes.

Annex 1 contains a list of all the 40 countries reviewed and a concise overview of relevant information reported in NDCs. We turn next to our meta-analysis of developing country perspectives on climate finance needs, as expressed in these NDCs.

4.4 Land use and climate finance in developing country NDCs: a meta-analysis

In this section, we organize the findings of our meta-analysis of 40 NDCs according to three components: first, section 3.1 discusses the scope and nature of forest and land-use goals included in national mitigation and adaptation ambition, as expressed in developing country NDCs. Section 3.2 discusses the extent to which cost estimates to realize these goals are included. Section 3.3 then discusses whether NDCs outline strategies to address domestic financing or fiscal policy reform, including policies and financing that works at cross-purposes to emission reduction and adaptation goals. Section 3.4 discusses finance innovations mentioned in the NDCs to achieve forestry and land use sector emission reductions, and finally, section 3.5 lists other aspects of land use sector finance mentioned in country NDCs.

4.4.1 Inclusion of forestry and land use in national mitigation and adaptation ambition

Of the forty countries participating in either the UN-REDD Programme or World Bank FCPF that have submitted NDCs to the UNFCCC, all include land use mitigation and adaptation priorities or actions in the agriculture and forestry sectors. This is logical given the importance of the land use sectors in all of these countries. However, 8 of the 40 countries reviewed chose not to include LULUCF in their NDC mitigation targets due to a lack of reliable data or confidence in LULUCF emissions estimates (including Bangladesh, Cameroon, Côte d'Ivoire, Honduras, Mongolia and Papua New Guinea). Chile separated LULUCF from its NDC mitigation 'intensity target' due to high annual variability in sequestration levels. However, all of these 8 countries identify priority mitigation and adaptation actions in the land use sectors. Fiji's NDC focuses on the energy sector but notes that the mitigation potential from the forestry sector (via Fiji's REDD+ activities) must be accounted for and defines mitigation activities in the energy sector that are relevant to the forest sector, including reducing biomass/wood for cooking in rural areas and power co-generation in the wood and sugar industries.

Countries reviewed tend to identify the share of LULUCF or Agriculture, Forestry and other Land Use (AFOLU)¹⁴ in their national emissions profile (see Table 1). For most countries, a high share of land use emissions indicates the relative proportion of their mitigation effort.

Table 7: Percentage of LULUCF emissions¹ compared to total emissions among countries reviewed

Burkina Faso	Will be 87.4% of emissions in 2030
Central African Republic	89.46% of total, though development patterns indicates energy and agriculture will increase their share of emissions in the future, and due to increased rainfall due to climate change, the sequestration capacity of the forests will increase
Ethiopia	88% in 2010 (includes agriculture with 51% and forest sector with 37%)
Gabon	63% (in 2000)
Indonesia	Share of LULUCF (including peat fires) has dropped from 63% of emissions in 2010 to 47.8% by 2016, while energy has grown and now accounts for 35% of emissions
Kenya	75% (including agriculture)
Perú	Roughly 50%
Uganda	Largest mitigation potential
Zambia	Roughly 75%

Source: Country NDCs.

¹ Percentage figures represent % of emissions under the business as usual scenario. If no year is given, the percentage figure refers to the present time (or the base year determined by the country).

The forest sector mitigation and adaptation priorities, targets and activities are identified and detailed for all countries, except Argentina. Argentina does mention the forest sector, however, in both the adaptation and mitigation section, so while details are not clear in the NDC, these might well be defined within subsequent submissions.

4.4.2 Cost estimates of forestry and land use interventions

Despite the clarity expressed by 39 of 40 countries regarding the targets and activities planned for the forestry sector, only 14 provide clear cost estimates (see Table 2). **Mitigation cost estimates for the 14 countries total US\$ 20.6 billion, while the adaptation cost estimates total US\$ 10.5 billion.** The timelines for these investment needs for most countries is either from roughly the present to 2030 or 2020-2030. However, Panama's investment need is defined for up to 2050. Those countries that identify an overall NDC finance requirement, but do not specify forest sector activities and costs specifically, are omitted from Table 2. While Burkina Faso's cost estimates indicated a scaling range for mitigation and adaptation between 2020 and increasing to 2030, we chose to evenly distribute the estimate between

¹⁴ AFOLU category was adopted in the 2006 Intergovernmental Panel on Climate Change (IPCC) Guidelines for National Greenhouse Gas Inventories as an accounting method to combine two previously distinct sectors: LULUCF and Agriculture.

mitigation and adaptation for illustrative purposes. These cost estimates are thus indicative of the scale of financing, investment, technology and capacity building that countries with forestry sector mitigation and adaptation priorities will require. Agriculture sector estimates were not included in this analysis. However, for Côte D'Ivoire, some agriculture sector costs are reflected in their forest sector estimates.

Table 8: Forest sector mitigation and adaptation finance needs (of those that reported finance estimates in their NDC)

Country	Forest sector mitigation cost estimates (US\$ million)	Forest sector adaptation estimates (US\$ million)
Bangladesh		\$2500
Belize	\$2.5	\$2.6
Burkina Faso	\$3950	\$3950
Cameroon	\$388	\$150
Central African Republic	\$80	\$113
Chad	\$1736	
Cote d'Ivoire	\$2.5	\$29.1
Ghana	\$5003	\$1279
Guyana		\$1600
Lao PDR	\$180	\$40.5
Mongolia		\$31
Morocco	\$7040	\$833.3
Panama	\$2225	
Uganda	\$36	
Total (US\$):	\$20,643	\$10,528.5

Note: Timescales for finance are usually from 2015 to 2030 or 2020 to 2030.

While it would be useful to assess the extent of mitigation ambition dependent on international finance (i.e. conditional ambition), versus that which is to be supported through domestic finance sources (unconditional), this level of detail is not yet available in the NDC of the majority of countries reviewed. Most countries express their national-level emission reduction goals across all sectors, such as reduction of overall emissions by a certain percentage, as compared to business as usual, and then note the conditional and unconditional finance required to meet the goal. Twenty one of the 40 countries reviewed provide details on the conditional versus unconditional components. Ghana provides a useful example of detailing specific policy and emission reduction actions by sector, with sub-activities and investment needs identified, along with indication of the status (conditional or unconditional). Despite the lack of specific details, **the large majority of both adaptation and mitigation actions identified by countries in the forestry sector and all other sectors rely on international climate finance** (see Annex 1 for a summary of country indication of ambition).

4.4.3 Strategies to address finance that works at cross-purposes to climate goals

None of the countries reviewed mention fiscal policy reform of existing finance flows to agricultural commodity production or other publicly supported programmes that affect the drivers of land use conversion. None of the countries articulate the possibility of reviewing existing fiscal incentives that may work against NDC goals. Costa Rica mentions interest in developing market incentives and commercialization of agricultural products with a smaller carbon footprint, and although these are not explicitly linked to maintaining forest cover (such as a commitment to deforestation-free agricultural commodity production), Costa Rica has created a Joint Commission for agriculture and forestry to coordinate inter-sectorial implementation. Côte d'Ivoire mentions the need to review the low carbon orientation of future plans in the land use sectors, in the section on cost estimates for NDC interventions, which may indicate finance and fiscal incentives should be included, but this is not explicitly stated. Another three countries identify fiscal policy reform in the energy sector, but only one may have implications for the land use sector. Ethiopia removed fossil fuel subsidies, to promote clean and renewable energy, yet 76.7% of the population currently lacks access to modern energy sources, relying on wood fuel. Ethiopia indicates that rural energy access is a priority but does not define how rescinded fossil fuel subsidies are being used to support activities. Morocco seeks to substantially reduce public fossil fuel subsidies, and while this may have no effect on land use emissions, it does indicate willingness to review public spending and support programmes. Malaysia introduced three significant fiscal tools in its Tenth Malaysia Plan (2011-2015) to promote sustainable growth and GHG reduction, but these were not in the land use sectors.

4.4.4 Finance innovations to achieve forestry and land use sector emission reductions

The climate finance literature notes a range of finance innovations already in use by countries to address climate change finance needs, ranging from new sources of domestic finance (e.g. carbon taxes, payments for ecosystem services), leveraging compatible investments (e.g. private sector investment and public-private partnerships), to clearer budgetary tracking (e.g. climate expenditure review and budget coding) to determine the quantity of public expenditure supporting climate goals, and in some cases to also check effectiveness in expenditure. The inclusion of finance innovations in NDC financing strategies is an indication of how interested countries are in achieving emission reduction outcomes, and country capacity to undertake interventions.

Seven of the 40 countries identify the potential for new sources of domestic budget finance for climate in their NDCs. Cameroon does not specify where this will come from but does intend to increase budgetary funding related to climate, either via direct budgetary expenditure or other funds from the State budget. Chad established a Special Fund for the Environment in 2013, in order to mobilise its own resources through the establishment of specific taxes. Both Mexico and Chile passed carbon tax laws in 2014. Chile's Law 20.780, came into effect January 2017, taxing carbon at US\$5/tCO₂. Mexico's law taxes carbon up to US \$3.50 tCO₂, which could generate roughly US\$ 870 million yearly (Carl and Fedor, 2016). Costa Rica's National Forestry Financing Fund's (FONAFIFO) Payments for Environmental Services currently maintains one million ha of forest cover outside protected areas (26% of the country). As noted in its NDC, since 2007, Costa Rica has sought to compensate its emissions through offsetting by the forest sector, seeking to achieve Carbon Neutrality by 2021 with total net emissions comparable to

total emissions in 2005. Paraguay's NDC indicates interest to increase national revenues from the sale of environmental services, perhaps similar to Costa Rica's programme, while Côte d'Ivoire's NDC seeks a payment for environmental service programme to assist small rural producers to adopt sustainable production practices. Côte d'Ivoire notes interest to explore generating a price signal on the social cost of carbon through a carbon tax or market, thereby internalising these externalities.

Climate-related public expenditure review allows countries to identify what public spending supports unconditional climate goals, across multiple ministries, and climate budget tagging enables tracking of climate-related expenditures in national budget systems. Climate public expenditure review can be a useful tool to scrutinize current spending and incentives that work against climate objectives, if it is designed to do so (UNDP, 2015). Seven of the 40 countries reviewed identify interventions in this area, including Bangladesh, Chile, Côte d'Ivoire, Guatemala, Honduras, Nepal and Sri Lanka. Bangladesh plans to develop and integrate a Climate Fiscal Framework in the national planning and budgeting process. In 2018, Chile will report a cross-sectional National Finance Strategy for Climate Change, identifying the structure of financial flows according to their origin, differentiating between national versus international and public versus private spending, and eventually according to its performance, allowing to track expenditure against both conditional and unconditional NDC targets. Côte d'Ivoire will track income and expenses on climate in the national budget. Nepal is pursuing climate budget coding in its fiscal planning and budgeting processes. Nepal's Climate Change Policy mandates over 80% of the total climate finance be directed to grassroots level activities. Sri Lanka seeks a methodology at the national level to identify financing needs for each sector and the divisions of relative contribution at the national level. Vanuatu's Climate Public Expenditure and Institutional Review identified donor assistance for adaptation to be below that of its Pacific island neighbours.

Mainstreaming NDC climate objectives into existing development plans or low-carbon development plans is often assumed, in the secondary and primary literature, to be an important means of achieving intended outcomes (UNDP-UNEP, 2011). Five countries define mainstreaming climate into national development plans as the means to direct domestic (unconditional) finance, such as Bangladesh, El Salvador, Paraguay, Côte d'Ivoire, and Indonesia. Other countries define their domestic contributions occurring through low-carbon growth strategies such as Ethiopia, Nepal, and Rwanda. Guyana has funded REDD+ activities in the Low Carbon Development Strategy through the national budget or through the bi-laterally-supported Guyana REDD+ Investment Fund, earned under the Guyana Norway Agreement. Some countries identify their unconditional finance commitments as being the domestic resources intended to carry out national climate change policies, as is the case with Uganda, Kenya and Gabon. Uganda expects that 30% of the cost to implement their National Climate Change Policy will come from domestic sources.

Only 3 countries out of 40 define expected contributions and investments from the private sector that are, or could be, related to the forest sector. Burkina Faso anticipates almost 50% of the financing for the NDC should come from the private sector, on condition that the commercial banks are made aware, but does not specify further detail. Côte d'Ivoire will seek to work with domestic banks, and strengthen financial markets for NDC-aligned activities, and attract foreign direct investment (which Viet Nam also

seeks, but is clear that international cooperation will be necessary to facilitate it). Morocco calls for action by its financial sector, which has the ability to influence investment flows and also international finance actors. Ghana identifies a large unconditional adaptation priority for the forest sector (US\$ 767 million) for the utilization of forest resources for sustainable energy use and biodiversity businesses, though the emphasis is on governance reform, and it is unclear what the expected investment from the private sector would be. Perú identifies one key cross-cutting goal for adaptation is to evaluate innovative mechanisms to encourage private investment that increase the resilience of vulnerable systems, but notes that this is conditional on international climate finance. Eight countries mention interest to engage the private sector but provide no further detail on key sectors.

4.4.5 Other insights related to land use sector finance in the NDCs

Many countries stress that developed countries, which are historically the largest GHG emitters, must contribute financially, and with technology and capacity-building, to address the impacts of climate change, based on the principle of common but differentiated responsibilities of each country within a global climate agreement.

Most indications of sources of international climate finance are the Green Climate Fund, other sources of funding such as the Adaptation Fund, Least Developed Country Fund (LDCF), multi-lateral and bi-lateral assistance. Peru's NDC makes clear that the conditional portion of its mitigation ambition that is reliant on international financing is necessary, but also cautions that commitments that might result in public debt are not suitable.

It is also striking that thirty-two countries mention interest to participate in an international market mechanism and other existing sources of investment, such as the Clean Development Mechanism and other mechanisms under the UNFCCC, except Bolivia, Chad and Malaysia. Most countries express interest in international guidance on market governance, oversight and clear accounting rules. Though El Salvador does not specifically indicate disinterest to participate in market mechanisms under the UNFCCC, the country indicates strong interest in technology transfer, for example, through the Climate Technology Centre and Network. Guatemala and Nepal's NDC is silent on participating in a market mechanism under the UNFCCC, although Nepal indicates a goal to create a domestic market. Peru notes interest in participation in international market mechanisms. Gabon indicates it has established a market mechanism under its Law on the Orientation of Sustainable Development. Indonesia indicates it is ready for REDD+ results-based payments.

Though most countries identify participation in international market mechanisms as a means to achieve their NDC goals, selling emission reduction credits would likely only occur *ex post* (after emission reductions), hence the viability of this as a source of funds to pay for measures to achieve emission reductions is questionable. However, a number of countries reviewed appear to identify the sales of emission reductions as a means to pay for the measures to achieve the emission reductions.

Before synthesizing and discussing the implications of these findings in the discussion and conclusion section, we briefly review below evolving experiences in Brazil and Indonesia with regard to land sector goals and climate financing.

4.5 Brazil and Indonesia: land use and climate financing

This section discusses experiences with climate financing to promote sustainable land use practices in Brazil and Indonesia, and the role for domestic sources and fiscal reform herein.

4.5.1 Brazil

Until the mid-1990's, forests were viewed as an obstacle to Brazil's development. National development policies and incentives had sought to develop the forest frontier and integrate the remote Amazon into the national economy for many decades (Government of Brazil, 1974). Brazil's Constitution of 1988 provided strong incentives for smallholders and large-holders to clear land, simply to solidify land claims by demonstrating 'productive use of land.' Credit and tax incentives for activities responsible for clearing forests were enabled through development plans. Charcoal production and iron extraction, mutually dependent on each other, had a substantial impact on the Amazon in these early phases of forest clearance. The access to and extraction of iron ore, later transformed into pig iron, was heavily subsidized by the governments Fundo de Investimentos da Amazônia (FINAM) (Hecht, 1985; Aldrich, 2013).

Brazil faced strong internal civil society and international pressure to control Amazon deforestation. The Pilot Program to Conserve the Brazilian Rainforest (PPG-7) was endorsed, beginning Brazil's interventions to address deforestation, while Brazil hosted the United Nation's Conference on Environment and Development in Rio de Janeiro in 1992. Besides the PPG-7, Brazil established the Action Plan to Prevent and Control Deforestation in the Amazon (PPCDAM) in 2004 and of the Cerrado in 2010, to control illegal activities, and identify solutions for regulation and monitoring. Brazil's Forest Code (in existence since 1965, but most recently revised in 2012) established reserves and permanent protection areas, and required a minimum level of forest cover on each parcel.

Brazil recognized that the complexity of the problem required a mix of changes in incentives, disincentives and enabling conditions through policy reform to reshape forest use (Duchelle et al. 2014). The country took steps in the 2000's to reverse perverse incentives that drove Amazon clearing. Brazil's Environmental Crimes Act of 1998 described crimes against the environment, including deforestation, and held that a legal entity found in violation could be held criminally liable (Government of Brazil, 1998). Brazil also linked the ability to access rural credit to demonstration of legal compliance with environmental legislation. The ability to demonstrate compliance improved with satellite imagery and monitoring, better enforcement, and later, creation of the Cadastro Ambiental Rural, a nation-wide electronic land registration system. In 2006, a voluntary ban on the commercialization of soy grown in the Amazon was set by private market players (to expire in 2013 but since renewed), and the Bank of Brazil agreed to veto of agricultural credit for soy farmers who want to plant in newly cleared forest. The Amazon Fund, which is managed by the Brazilian Development Bank, was created in 2008 to channel

donations to address deforestation and sustainable use of the forest. Norway's contribution to Brazil's Amazon Fund has since totaled US\$ 1.09 billion to date (Amazon Fund, 2017). Also in 2008, the Brazilian National Monetary Council resolved that the granting of rural credit in the Amazon Biome must be based upon proof of compliance with legal and environmental regulations (Brazil Central Bank, 2008). This resulted in US \$1.4 billion not being loaned between 2008 through 2011 due to restrictions imposed by the resolution, and one analysis estimates this may have resulted in a 15 per cent decrease in deforestation in the Amazon during the period (Assunção et al. 2013). A decree was passed to evaluate municipalities on environmental compliance, with producers in blacklisted municipalities being denied access to agricultural credit and subjected to product supply embargoes, until the municipality has registered 80 per cent of its properties in the Cadastro Ambiental Rural and lowered deforestation rates (Duchelle et al. 2014).

In 2011, Brazil also adopted a Low Emissions Agriculture Plan and a Credit Program (known as "ABC Program and Plan" for its acronym in Portuguese language), which since then has provided rural credit through official public banks, like Banco do Brasil, for activities that help farmers to adapt to climate change and to reduce emissions from soil use and land use change. The ABC has enabled farmers to directly participate in emissions reduction activities. It has also encouraged a public perception that there is no need to clear forested lands for agricultural production since productivity gains can outpace the expansion of farming lands (Newton et al. 2016).

These policy and fiscal reform changes were adopted, and deforestation rates shifted, long before international climate finance was brought to the table. This indicates Brazil's strong domestic commitments to address deforestation challenges. Norway's historic US\$1 billion commitment was pledged in 2008, four years after Brazil's highest deforestation rates, which dropped by half between 2004 and 2008. Deforestation rates in the Amazon region reached a high point in 2004, and then decreased significantly every year after that, stabilizing around 6000 km²/yr by 2010 (Aguilar et al. 2016). Between 2004 and 2010, Brazil managed to reduce deforestation by 75%, which translates to about 84,400 km² of forest saved and 3.2 billion tons of carbon dioxide kept out of the atmosphere. Norway's support endorsed the Brazilian government's ongoing efforts to reduce deforestation in a way that improved the domestic legitimacy of these policies (CGD, 2014). Norway made its first payment (US\$110 million) towards the US\$1 billion pledge in 2010. In 2015, Brazil's NDC pledged to eliminate illegal deforestation by 2030.

While deforestation rates dropped dramatically after 2004, Brazil's agricultural production increased. Brazil's grain production increased 99% between 1996 and 2010 (Government of Brazil IPEADATA) and soybean production increased 196% between 1990 and 2008 (Zanon and Saes 2010).

Less attention has been paid to mechanisms for attracting investors into the Amazon region to sustainably develop its forests, fisheries, and agricultural potential. Efforts made by sub-national governments in the Amazon are important to recognize, as the state governments of Acre, Amazonas, Amapá, Pará and Mato Grosso have partnered with investors and other sub-national jurisdictions with

the aim of securing new financing to sustainably develop their forest-based economy (Burkhart, McGrath-Horn & Unterstell, 2016).

Brazil's experience illustrates how the veto of agricultural credit for soy farmers in newly cleared forest and the National Monetary Council's strict stipulations on granting rural credit in the Amazon shifted deforestation patterns long before international climate finance was brought to the table. This highlights the role fiscal policy and reform can play, along with increased law enforcement. Challenges remain, however, in reversing economic pressures on Brazil's forests. Government agricultural production subsidies for beef and soy still vastly exceed investments in forest protection. Only a small percentage of all rural development spending is dedicated to low emissions agricultural techniques (i.e. integration of forests, agriculture and cattle ranching activities at farm-level) through the ABC, in comparison to the total rural credit available.

Subsidies to activities driving forest loss were US\$14 billion yearly based on annual averages up to 2012, while investments in forest protection were US\$580 million yearly between 2006 and 2014 (McFarland et al. 2015). A recent increase in deforestation of 13.7% between July 2017 and July 2018 (Government of Brazil INPE, 2018) and President Jair Bolsonaro's decision to shift authority on determining federal protected status for Amazon lands from the Ministry of Indigenous Affairs to the Ministry of Agriculture, Livestock, and Supply (Reuters, 2019) signal the Brazilian government's change in commitment to the Amazon. Norway has voiced concern about revision of the environmental licensing criteria, roll back of protection of significant areas in the Amazon, and increasing deforestation rates, putting at risk the agreement between the two countries for REDD+ results-based payments (Government of Norway, 2017).

4.5.2 Indonesia

Under the Soeharto regime in Indonesia between 1966 and 1998, the consolidation of forest resources for the state, granting of concessions, and use of forest resources to raise foreign exchange and revenue drove forest exploitation (Gunawan, 2004). Indonesia recognized the impact forest and peat land loss had on national GHG emissions, culminating in commitment to pursue REDD+ in 2009. Indonesia's REDD+ Readiness Plan was submitted in 2010 and its REDD+ National Strategy was finalized in 2012. Indonesia's Presidential Instruction No. 10 of 2011 established a two-year moratorium on issuing new licenses and concessions in primary forests and peatlands, which has been renewed since, although the moratorium's effectiveness in limiting oil palm expansion into carbon-rich forests and peatlands is debated (Margono et al. 2014; USDA, 2013).

Norway made a critical US \$1 billion bilateral commitment to support Indonesia's efforts to reduce GHG emissions from deforestation and degradation of forests and peat in 2010 (Government of the Kingdom of Norway and Government of the Republic of Indonesia, 2010). Indonesia's NDC pledges an unconditional emissions reduction target of 29% and a conditional emissions reduction target up to 41% of the business as usual scenario by 2030. While Indonesia's land use change and peat and forest fires contributed 63% of emissions in 2010, a 2016 review found land use change and forestry, including peat

fires, amounted to 47.8% of emissions and energy contributed 34.9% (Indonesia, 2016). With the development of Indonesia's economy, energy sector emissions have increased, and thus LULUCF emissions are a smaller portion of national emissions. The NDC notes that 60% of the conditional emission reduction is in the area of forestry and peat fire emissions and requires international support.

The main driver of deforestation and peat degradation has been oil palm expansion. Indonesia produces 60% of the global supply of palm oil and has also prioritized palm oil as a key commodity to support a national biofuel plan. The National Medium Term Development Plan (RPJMN) of 2015-2019 seeks national economic growth acceleration through increased production of value added products, and competitiveness of agricultural commodities, including oil palm. The RPJMN also identifies forestry/peatlands and agriculture as two of the five sectors that are key to meeting Indonesia's GHG emission reduction target, as they contribute to the majority of Indonesia's overall GHG emissions (Indonesia, 2015a).

Yet, a significant amount of Indonesia's agricultural subsidies promote palm oil production. The amount (roughly US\$27 billion per year) dwarfs the amount of REDD+ finance (roughly US\$660 million per year) galvanized to counteract these pressures (McFarland, et al., 2015). Indonesia's REDD+ National Strategy of 2012 actually identified the need to address perverse incentives and promote a shift in commodity production, including better alignment of incentive systems to support REDD+ outcomes (Indonesian REDD+ Task Force, 2012).

Activities to address these subsidies have not yet been engaged by government, despite very important regulatory steps being taken. In April 2016, President Joko Widodo announced a moratorium on the issuance of new permits for oil palm plantations and mining operations, urging producers to improve yields and practices on existing plantations (Cabinet Secretary of the Republic of Indonesia, 2016). This commitment followed Presidential Instruction No. 8 of 2015 postponing issuance of new permits and tighter governance of primary forests and peatlands (Government of Indonesia, 2015b). In 2016, the President also announced creation of the Peatland Restoration Agency (BRG) to restore 2.5 million hectares of peatlands in seven Provinces by 2020. As over half of restoration priority areas are on company concessions, the private sector must play a key role in funding and implementing restoration, while development partners have also made significant commitments for financing (Government of Indonesia, 2017).

These new regulations came after significant public risk and loss. The peat fires of 2015 were devastating, with 19 deaths reported, 550,000 people were hospitalized with acute respiratory infections, and at least 43 million people were affected by haze impacts in Southeast Asia. Greenhouse gas emissions increased dramatically from the 2.6 million hectares burned. The World Bank estimated the peat fires cost Indonesia's economy US\$16.1 billion (IDR 221 trillion), based on impacts on agriculture, forestry, trade, tourism and transportation (World Bank, 2015b).

Indonesia's NDC identifies that it will allocate a total of US\$ 55 billion in domestic public funding across all sectors for the period of 2015-2019 for climate-related expenditure, and will carry a strong domestic

commitment through to the 2020-2030 timeframe. However, Indonesia has not yet prioritized the fiscal policy reforms that it could put in place to rectify public incentives that are currently misdirected.

4.6 Discussion

As we outlined in Section 3, our meta-analysis results reveal that only 14 countries (out of 40 reviewed) outline mitigation and adaptation financing needs, which amounts to US\$ 31.2 billion just for their forestry and land use sectors (for the period through 2030 or from 2020-2030, depending on the country). Burkina Faso, Ghana and Morocco account for 77% of the mitigation costs, and Bangladesh, Burkina Faso and Guyana account for 76% of adaptation costs identified by the 14 countries. This provides a strong indication that once other countries have costed their NDCs, the demand for (public and private) finance to support NDC implementation is **likely to be orders of magnitude larger** than the availability or supply of funds from bilateral and multilateral sources of climate funding. This validates the first hypothesis that international climate finance will fall far short of expressed developing country needs. Other countries must still define NDC financing needs, and a significant number plan to do so in the coming year or two. This is a clear call for developed countries (Annex 1 countries under the Convention) to fulfill intended pledges and commitments, and to increase the quantity of international support to achieve Paris Agreement goals.

The large majority of forestry and land use sector adaptation and mitigation actions identified by countries in their NDCs are noted to be conditional on international climate finance, suggesting that ambition is largely dependent upon external sources of funding. However, it is unclear whether mitigation and adaptation goals can be met simply by delivering the quantity of international climate finance requested, without considering the role of public (and private) finance that currently supports unsustainable land-use activities in conflict with climate goals. This is directly relevant to testing the second hypothesis that climate finance alone cannot compete with public and private finance supporting unsustainable activities.

The Brazilian and Indonesian case studies provide insights into how domestic fiscal policies and goals can be reformed and brought into greater alignment with climate objectives, thereby increasing the impact of both domestic and international climate finance. Both countries have also negotiated bilateral agreements with Norway for results-based financing, which means that their forest sector emission reduction efforts are being positively rewarded.

Findings from the NDC review also indicate that none of the countries reviewed mention fiscal policy reform of existing finance flows to agricultural commodity production or other publicly supported programmes that affect the direct and underlying drivers of land use conversion. Costa Rica and Côte d'Ivoire indicate reviewing financial aspects of related programmes, which could lead them in the direction of reviewing and amending or defining new fiscal incentives, but this is not explicit. One possible explanation for the lack of information on these issues across NDCs is an assumption on the part of countries that the NDC outlines an international commitment rather than presenting a detailed implementation strategy. Another could be that countries differ in the quantities of direct or indirect

subsidies going to activities promoting land use conversion, with more subsidized producers in countries such as Indonesia, Colombia, Costa Rica, and Mexico, as per OECD (2017) data.

The Brazilian and Indonesian cases also demonstrate that even if international climate finance for mitigation and adaptation were delivered at the scale necessary to achieve targets, the quantity of public and private finance supporting unsustainable activities dilutes the effectiveness of climate finance, thus supporting the second hypothesis. In the case of Brazil, action taken in the mid-2000s to correct this imbalance had a significant effect (though this trend has reversed as Brazil's deforestation rates have recently increased). Both Brazil and Indonesia demonstrate that countries have a range of options to explore when considering how to influence existing finance flows (domestic or private) to support climate objectives. They also document the challenges inherent in adapting these to local circumstances and responding to specific pressures or opportunities.

Innovations in finance to achieve NDC goals exist but are not widely represented in NDCs. While 7 of the 40 countries identify new sources of domestic budget finance for climate in their NDCs, such as carbon taxes or payments for environmental services, they are in the minority. While developing country governments seek to promote economic growth and job creation, while also finding solutions to reduce GHG emissions and adapt to climate change, consideration can also be given to the role that public funding – including through fiscal policies – can play in making this possible.

Both the Brazil and Indonesia examples provide a basis for considering how fiscal reform options can be pursued by countries in defining NDC finance strategies (see Figure 1). First, it is helpful to identify what incentives or subsidies already exist that undermine low carbon or climate resilient land use. Answering this question requires insights on what activities are driving high-emission activities, or those that weaken climate resilience. An example is Brazil's identification of agricultural credit accessed by soy farmers expanding into the Amazon forest. Depending on the causes of land use change or sectoral emissions, these may be in the forest sector or outside of it, and the scope must be wide enough to capture all relevant ones.

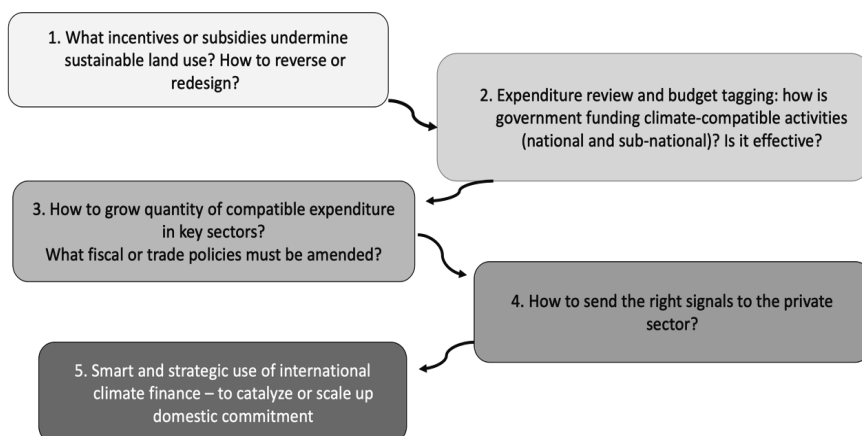
Only 7 of the 40 countries reviewed identify other measures such as climate expenditure review and budget coding for clearer budgetary tracking as priorities. All of these finance innovations hold potential for countries to allocate domestic resources (and leverage private sector financing) towards achieving climate objectives, and monitoring performance. This requires identifying the extent to which domestic public spending does or could in future support climate goals, across multiple ministries, yet this is challenging to implement. While expenditure review and budget tagging can help to identify how a government is funding climate-compatible activities, improving tracking, and assessing whether expenditure is effective in meeting policy objectives, this remains more a theoretical possibility still. Depending on how it is utilized, climate budget tagging can also increase accountability and transparency.

It also reveals challenges inherent in calls to assess the climate-compatibility of development finance flows. The OECD (2016) identifies that substantial potential exists to further mainstream climate change

considerations into development finance portfolios, which would provide scope for activities to be made low-emission and/or climate-resilient. Yet this requires considering how to increase the quantity of compatible expenditure in key sectors and for aligned activities. Innovative revenue sources can include carbon taxes or even working with banks (public and private) and lenders to identify sources of climate-aligned investment, yet the political challenges are significant. Trade tariffs can also be reviewed to identify new sources of funding (such as Argentina's soybean export tax).

Given the quantities of amount of private sector finance currently flowing to high-emission land uses, decision-makers are faced with the challenge of how to send the right signals to the private sector (Government of Norway, 2015; Government of the Netherlands, 2015). However, the review of NDCs indicates that this is not yet a priority for most countries, as only 3 out of the 40 countries mention private sector actors in the land use sector, and details are scarce. Findings from the Indonesia case suggest that fiscal policy reforms could send stronger signals to the palm oil sector, if these were to be adopted. This would require redirecting the current focus on subsidized inputs and providing smallholders with land tenure clarification. For larger concession holders, limiting access to credit subsidies and government guarantees through state banks and tax concessions would become necessary (UN Environment, 2017a).

Figure 4: Options to align finance and incentives to promote forest and land use climate goals



4.7 Conclusions

Based on our NDC meta-analysis, we find that very few countries at present have estimated the costs associated with realizing forest and land use sector climate goals. However, for those countries that have provided estimates of the scale of funding needed, it is clear that demand for international climate finance is likely to substantially exceed supply. The dependence on international climate finance leaves NDC ambitions in the forest and land use sector in a precarious position, unless more diversified options are pursued to reach climate goals. Brazil and Indonesia provide examples of how forest-rich countries have struggled to use policy and investment options to align finance and incentives to promote forest and land use climate goals. These experiences reveal the challenges inherent in aligning domestic fiscal policies and other economic and regulatory incentives, as well as private sector investment, with international climate finance objectives. Our analysis thus highlights this as a central dilemma facing developing countries in achieving their conditional and unconditional climate goals.

5. Policy integration as a means to address policy fragmentation: Assessing the role of Vietnam's national REDD+ action plan in the Central Highlands¹⁵

Abstract

The Vietnamese National REDD + Action Plan (NRAP) seeks to reduce emissions from forest clearing and land use, especially from the main drivers of coffee and rubber commodity expansion. Achieving the NRAP goals, however, means negotiating a complex and fragmented forest policy arena, with conflicting sector goals, dis- connects between global and local ambition and action, and imbalanced power dynamics between actors. We map the fragmentation of this policy arena and explore the extent to which the NRAP is able to integrate policy responses to drivers to achieve emissions reductions. We examine what the NRAP sought to integrate, what was not taken into account, what is integrated at which scale, and which actors are part of integration (or not) across the policy process components. We conclude that if policy integration does not affect a 'whole of government' shift in priorities or change in mandate among driver sectors, fragmented policy arenas will persist and forest- based climate mitigation objectives will not be achieved.

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5.1 Introduction

Forests and natural resources are subject to increasing market and commodity pressures while demands on forests for their environmental services, such as climate regulation and fresh water, are increasing (FAO and UNEP, 2020). Recognizing the role of forests in meeting multiple human needs, developed and developing countries agreed in 2013 to a phased approach for reducing emissions from deforestation and forest degradation (REDD+). Under REDD + countries also agreed to assess both the direct and indirect drivers of deforestation and forest degradation (UNFCCC, 2013) that would in turn directly shape National REDD + Strategies or Action Plans (UNFCCC, 2010; 2013).

The focus of REDD + on direct and indirect drivers of deforestation and forest degradation means that any National REDD + Strategy has to take into account a highly complex set of policy domains. In Vietnam direct drivers of deforestation or forest degradation include any number of human activities or immediate actions that directly impact forests and land (Geist and Lambin, 2002), including logging, agricultural expansion, or infrastructure and road development. In some regions of the country, such as the Central Highlands, forest cover decreased by 20 % between 1976–2015 (IPSARD, 2015; General Statistics Office, 2017) driven in large part by coffee and rubber, which have expanded by 29 % and 198 % respectively over the same time period. Underlying drivers of such deforestation, in contrast, are less well defined, combining complex interactions between social, economic, political, cultural and technological processes that are often distant from their area of impact (Pham et al. 2019; Skutsch and Turnhout 2020; Wong et al. 2020). In the case of Vietnam these include demand for agricultural crops and high value plantations, high poverty rates, expansion of economic growth, weak policy implementation, lack of tenure access to land and forests, poor agronomic practices, climate change (McNally et al., 2016; Eckstein et al., 2018; Do 2015), and pressure to increase commodity exports. The more diffuse nature of these underlying drivers means that while central to reducing pressures on forests they are often harder to identify and quantify (Geist and Lambin, 2002; Kissinger et al., 2012).

The process of defining and quantifying both direct and indirect drivers of deforestation and forest degradation within a National REDD + Strategy exposes the fragmentation of forest-related policy spread across the diverse policy domains of agriculture, energy, water, climate and rural development (Hogl et al., 2016). This fragmentation is characterised by incoherent or conflicting sector goals, disconnects between global and local ambition and action and imbalanced power dynamics between actors (Hogl et al., 2016); Winkel and Sotirov 2015). It also may be affected by the multi-level nature of regulation and the devolution of rule-making authority to private initiatives like forest certification (Clapp and Scott, 2018). The challenge for developing an National REDD + Strategy is therefore not only to define and quantify drivers of deforestation and forest degradation, and associated policy responses, but also understand and overcome policy fragmentation. In the case of Vietnam, this challenge of addressing policy fragmentation was taken up directly in the National REDD + Action Plan (NRAP) with the government's recognition of conflicting goals between sectors, at various scales and their effect on reducing high rates of deforestation and unsustainable land use.

The success of the NRAP is consequently dependent on the degree to which the negative implications of policy fragmentation can be addressed through policy integration (Cejudo and Michel, 2017; Di Gregorio et al. 2017; Winkel and Sotirov 2015). The degree of such integration depends in large part on the role of national governments as policy integrators, using their authority to mobilise sub-national governments and non-state actors to align policy goals, ambitions and power dynamics (Setzer and Nachmany, 2018). In this paper we ask how and to what extent climate change and land use policy integration has enabled Vietnam to tackle the direct and indirect drivers of deforestation in the Central Highlands that affect forest-based climate mitigation objectives. The experience of the Vietnam government in their NRAP process therefore contributes to a more precise understanding of policy integration as a means of achieving climate action in complex national policy arenas with apparent high degrees of fragmentation.

The following sections further elaborates on policy fragmentation and integration as well as the methods used to investigate policy fragmentation of forestry policy and its integration through the NRAP process in Vietnam. We then map the degree of policy fragmentation before examining the degree of policy integration fostered through the NRAP. We conclude by discussing the ways in which policy integration contributes on policy outcomes as claimed in the wider literature.

5.2 Policy integration as a response to fragmentation

Fragmented policy arenas are characterised by dispersed and multi-level governance; where global principles and agreements are translated to national and sub-national policy and regulation, and between the public and private sectors (Ostrom, 2010; Van Asselt and Zelli, 2014; Jordan et al., 2018). It is also evident in contexts where the environmental outcomes of climate action, such as reduced and avoided deforestation, are dependent on the integration of highly divergent and often competing social, political and economic drivers.

The translation of global agreements into national policy leads to fragmentation as goals and objectives are divided horizontally between ministries and vertically between levels of government (Zürn and Faude, 2013); United Nations, 2018). The degree of fragmentation is often increased where these goals are aligned to separate policy domains or sectors. For example, the translation of climate change emission reductions into problems of energy, agriculture and forestry planning across associated Ministries and line departments. Policy responses also drive fragmentation when problems and solutions are divided and repackaged to fit the expertise and mandate of different parts of and levels of government (Howlett et al., 2015).

The strategies adopted by policy makers to overcome their negative consequences of fragmented policy arenas is subject to considerable debate. Van Asselt and Zelli (2014) assert that policy complexity and fragmentation is a given and question whether any strategy of policy integration can be 'effective' (see also Cejudo and Michel, 2017; Howlett et al., 2017; (Rayner and Howlett, 2009). In contrast, Cejudo and Michel (2017) argue that policy integration requires pursuing policies and governance under a new logic that subordinates previous or competing objectives to the resolution of the overarching problem. This, they argue, involves the emergence of new policy process often under the oversight or coordination of a

decision-making body or process with authority over the components of this new strategy. Others still argue that, while not avoiding competition among sectors (Hogl et al., 2016), environmental policy integration can determine the relative weight (or 'principled priority') of environmental objectives in relation to sectoral policy objectives (Jordan and Lenschow, 2010). The goal of integration is then the identification of multi-dimensional policy portfolios which evolve over time, containing vertical (between different levels of goals, policies and levels of government) and horizontal (between different types of instruments, policies or governments) elements in the formulation of policy responses (Howlett et al., 2015). This means that different degrees of integration can emerge that reflect negotiation over which policy goals, actors and processes are made more coherent and/or more effectively coordinated.

5.3 Methods

We build on the debates described above by assessing the degree to which different elements in the NRAP can be considered a multi-dimensional policy portfolio addressing direct and underlying drivers of deforestation and forest degradation. We ask which elements of this portfolio are integrated, and with what effects, in the cases of coffee and rubber expansion? In answering this question we specify the extent the NRAP is able to integrate policy responses to drivers to achieve emissions reductions, by exploring (1) what it sought to integrate, (2) what was not taken into account, (3) what is integrated at which scale, and (4) which actors are part of integration (or not). We also seek clarity on whether policy integration has potential to affect direct and underlying drivers of deforestation as a multi-dimensional policy portfolio. Our analysis is divided into three interrelated steps.

First, we examine the individual components of policy separately; namely, policy objectives/goals, policy actors, policy structures and procedures, and policy instruments (Briassoulis, 2011). Policy objectives and goals are the outcomes that policy-makers wish to achieve, including agenda-setting. Policy actors are those influencing or influenced by the policy activities. Policy structures and procedures include the institutional arrangements, networks and patterns of interactions (Provan and Kenis, 2008), and the procedures by which the policy is to be pursued. Policy instruments are the tools applied to implement the policy.

Second, we consider the processes (e.g. inter-agency coordination, mainstreaming) and outputs (e.g. objectives, strategies, actions) of the integration process (Nilsson and Persson, 2003). We stop short, however, of assessing the outcomes of integration – i.e. whether behaviour changed in response. Tosun and Lang (2017) identify that evaluations of integration tend to focus more on procedural rather than substantive aspects of integration in policy-making. This has implications for the performance of integration, and relates to our interest to assess whether integration is instrumental in achieving better emission reduction outcomes.

Third, we analyse how integration is affected by the dispersion of goals, competencies and authority across multiple levels and scales of governance (Hooghe and Marks, 2001). Here we examine the extent to which different policy components are integrated in and across different levels and scales of governance (Candel and Biesbroek, 2016). Such policy integration is issue-, policy-, time- and context-

specific, and the intensity of relationships and degree of influence varies depending not only on prevailing power relations, but also formal versus informal networks, institutional factors, and other aspects (Korhonen-Kurki et al., 2013). This is important when considering how a global climate commitment, framed in the NRAP, is nested into (1) national and sub-national actions, (2) pre-existing and/or new policy instruments, and (3) across a suite of actors and scales.

Literature on policy fragmentation and integration was reviewed based on keyword searches, seeking articles within the past ten years, or those highly referenced. The search terms included keywords related to policy and institutional fragmentation, fragmented government action, environmental policy integration, policy integration, climate policy integration, cross-sectoral coordination, policy coordination, poly-centric governance, multi-level governance, climate change, land use, forest policy, sustainable forest management, REDD + . The 45 articles identified were then reviewed in detail.

Literature on drivers of deforestation and forest degradation in Vietnam's Central Highlands and related laws/policies, government programmes, peer-reviewed literature were reviewed, resulting in 76 documents reviewed in detail. Key word searches were conducted, however, most of the literature was identified through the lead authors' previous work in Vietnam, and recommendations made by expert interviewees, including sector plans, key policies and laws, and private sector documents (thus not discoverable in (academic) databases). The policy documents utilized to assess policy integration were reviewed to assess the intention and extent of policy integration as a means to implement REDD + . Vietnamese policy and related documents were translated with Google translate and then checked or further translated by Vietnamese-English translators.

A series of interviews conducted in May and October 2018 with: (1) government officials at central, provincial and district levels; (2) inter-national agribusinesses sourcing in Vietnam to traders and smallholder producers; (3) research organizations; (4) farmer organizations, (5) banks and lenders, and (6) bi-lateral assistance agencies, embassies, and development assistance organizations. Interviewees were identified based on consultations with multi-lateral development partners, civil society organization input, and open calls for participation by staff from the Ministry of Agriculture and Rural Development at Central and Provincial levels, and staff from the Department of Agriculture and Rural Development at the district level (see Table 1). To respect the anonymity of interviewees, they were codified according to type of organization, and interviews are cited based on this codification.

Table 9: Summary of interviews

Organization	Criteria for selection	Number interviewed
National government (MARD - VN Forest, Agriculture Department, VNFF, IPSARD, VCCB, MPI, CEMA, MOIT Export Department)	Deputy Director level or higher within MARD and other ministries related to forest protection, agricultural commodity production, commerce and trade, planning; Heads of departments within ministries, and other key roles (e.g. liaison between ministries, or policy lead)	16

Policy integration as a means to address policy fragmentation

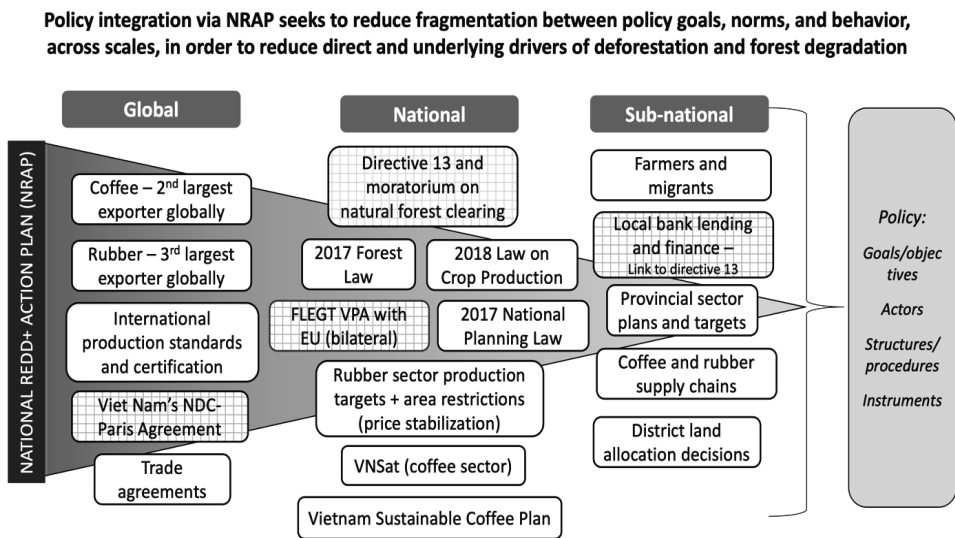
Provincial government - Lam Dong and Dak Nong	Deputy Director level or higher in DARD and related Departments, heads of departments and sub-departments. Representatives of Provincial People's Committees.	
Lam Dong (Provincial People's Committee, DARD Agriculture Department, Forest Protection Management Board, Planning and Finance, Provincial Forest Fund)		9
Dak Nong (DARD Agriculture Department, Forest Protection Department, Environmental Protection, Ethnic Minority Steering Group)		8
District government - Lac Duong, Di Linh, Dak Song, Dak R'Lap, Dak Glong)	Heads of Agriculture and Forest Protection Departments, other related departments, District level People's Committee	
District level People's Committee, Agriculture Department, Department of Forest Protection, Ethnic Minority Department, Department of Natural Resources and Environment)		16
Banks and lenders (VBSP, Agribank, BIDV)	Deputy Director level or higher of National banks lending in the Central Highlands, agricultural development banks	3
Industry		
Rubber sector	Deputy Director level or higher within Vietnam rubber companies	2
Coffee - International roasters and Vietnamese coffee companies producing and sourcing in Central Highlands, traders	All the key companies, with emphasis on those with a major stake (particularly large traders and Vietnamese and international roasters)	8
Smallholder producers - cooperatives and farm-level associations	Lead representatives of cooperatives, identified with the assistance of district DARD officers and commodity producers operating in districts and provinces	5
Forest companies, forest associations and cooperatives	Lead representatives of companies or cooperatives with operations in key districts	4
National-level CSOs working in Central Highlands	Programme officer and Deputy Director levels	3
Bi-lateral assistance agencies, embassies, research and development assistance organizations	Programme staff identified based on active or recently completed programmes supporting the government of Vietnam	5
Total:		79

Interviews were conducted in person by the first author in Hanoi, Ho Chi Minh City, Da Lat in Lam Dong Province, Gia Nghia in Dak Nong Province, and two districts in each of the provinces. Interviewees were asked (1) questions on their operating context in relation to REDD+ (policies influencing behaviour, constraints, opportunities); (2) questions related to fragmentation such as what has been done in the past to affect driver pressures (what worked, what did not), what coordination exists (or not); and (3) questions related to policy integration which were tailored to their remit and role in REDD + and affecting drivers. The categories of the analytical framework outlined above was operationalised to analyse the interview material.

5.4 Mapping policy fragmentation

To achieve deforestation-free agriculture the Vietnamese NRAP has to negotiate a matrix of existing and emerging goals and objectives, actors, policymaking structures and processes, and policy instruments, engaged at various scales. The following map examines the degree of fragmentation within this multi-dimensional policy portfolio (Fig. 4).

Figure 5: Mapping fragmentation



5.4.1 Policy objectives/goals

Vietnam’s national and sector climate commitments are reflected in its Nationally Determined Contribution to Paris Climate Agreement, as submitted to UNFCCC in October 2015. This commitment, which includes increasing forest cover from less than 40 % in 2010 to 45 % by 2030, is in line with the goals of the REDD + NRAP. Vietnam has increased its national forest cover since 1990, mainly with plantations and rubber plantations (Do 2015) and some natural forest, expanding from 9.4 million ha in 1990 to 14.8 million ha by 2015 (FAO, 2015). However, the quality of the forest has decreased, and mature natural forests decreased 13.5 % between 1995 and 2010 (MARD 2016).

Vietnam began REDD + readiness activities in 2009 and completed its first NRAP in 2012. Policy objectives to address drivers outside the forest sector in this first NRAP were lacking, along with any mandate to implementing Ministries to evaluate and reconcile trade-offs between any conflicting goals, based on the authors assessment of policy documents and affirmed by interviews. This indicates that the

narrow scope of REDD + pre-2017 excluded sectors driving deforestation such as agriculture. In contrast the 2017 NRAP (Decision No. 419/QĐ-TTg of Prime Minister) clearly identified policies and measures intended to address the drivers of deforestation, especially those attributed to the expansion of rubber and coffee production, through the goal of 'deforestation-free agriculture (Government of Vietnam, 2017a)'.

The increased ambition of the 2017 NRAP meant that the policy arenas it sought to address were far more fragmented and conflicting than in the 2012 NRAP by virtue of focusing on underlying drivers. For instance, the NRAP specifically recognised that, as the 2nd largest coffee exporter globally (behind Brazil), the expansion of smallholder coffee production was driven by global market demand. It also recognised that government policy at national, provincial and district levels sought to promote both coffee and rubber production and export, through sectoral laws, land allocation, access to finance and other means. However, the only attempt to address expanded production was through the 2017 Forestry Law (Government of Vietnam, 2017b), which mentions conversion and repurposing forest land, but provides no decision-criteria to guide decisions on the conversion and repurposing of forest land. The Forestry Law also does not include specific REDD + objectives, despite being finalised at the same time as the NRAP. Furthermore, the Law mandates forestry operations must comply with international agreements related to which Vietnam is a signatory (e.g. UNFCCC, Convention on Biological Diversity and so on), but does not provide guidance on how they should do so (Government of Vietnam, 2017b).

Other legislation also remains unaligned with the NRAP. For example, the 2018 Law on Crop Production (Law No. 31/2018/QH14) does not mention deforestation-free agriculture or the REDD + goals. Similarly the 2017 Planning Law, covering a ten-year planning period from 2021 to 2030, (with a vision to 2051) enables spatial and sector planning at Provincial and National levels (Government of Vietnam, 2017d). However, it does not provide clarity on how national target programmes, such as REDD+, relates to other policy goals related to poverty or sector growth plans. While the Planning Law does enable implementation of some NRAP activities, such as defining spatial distribution and targets for agricultural and forest land use, and defining areas prohibited from exploitation, there are significant disconnects in terms of implementation.

Finally, other policies and programmes aimed at increasing the sustainability of the Central Highlands coffee sector have made no explicit reference to the NRAP goals. For example, neither the World Bank funded Vietnam Sustainable Agriculture Transformation (VNSat) programme from 2015 and 2020 aimed at improving agronomic and management practices, rejuvenate aging coffee trees and develop effective monitoring systems (World Bank, 2015a), nor Vietnam's Sustainable Coffee Plan to 2020 and Vision to 2030, makes explicit reference to the NRAP or define how stabilizing plantation area (which could result in deforestation-free coffee production) will be achieved. The only policy document that is aligned with the REDD + goals outlined in the NRAP is the Voluntary Partnership Agreement signed in 2018 under the EU Action Plan for Forest Law Enforcement, Governance and Trade (FLEGT) (Government of Vietnam and European Union, 2018).

5.4.2 Policy actors

The revised 2017 NRAP identifies government policy actors, and details the roles and responsibilities of these actors. However, the focus of the NRAP remains largely on the Vietnamese state and excludes major international commodity buyers for coffee and rubber as well as local supply chains down to the district level.

The silence about these value chain actors is notable given the sustainability commitments of large international buyers of both commodities in Europe and Asia (Centre for the Promotion of Imports, 2019; Michelin Tire Company, 2016). For example, large international roasters and traders buying coffee in the Central Highlands, including Nestlé, Jacobs Douwe Egberts and Lavazza, were not targeted by the NRAP process despite their key role in shaping coffee market demand. In addition, the contributions that corporate-led solutions could provide, e.g. through their promotion of sustainability solutions such as deforestation-free purchasing, are dependent on the Vietnamese state given the legal constraints on foreign-owned companies sourcing directly from farmers (Government of Vietnam, 2013). This has limited their ability to develop traceable value chains to the farm level which is a key prerequisite for voluntary certification and to demonstrate deforestation-free purchasing (Interview, Industry sector).

At more local scales, the small holders upon whom both the coffee and rubber sectors depend have also not been incorporated into deforestation-related policy interventions to date (Interview, Smallholder producer 2 and research organization 2). While smallholders account for 88 % of production and is comprised of 600,000 households, smallholders capture the least benefit of all actors, and their share in profits is marginal (Nguyen Thi Thuy Hanh, 2018). Furthermore, the lack of co-operation between the supply chain actors and these small-holders has undermined the effectiveness of the commitments made by both domestic and international buyers (Interview, Industry sector 7).

5.4.3 Policy structures and procedures

The 2012 NRAP set a clear objective for coordinating policy structures and procedures across policy domains and sectors. The plan highlighted the need to “Develop [a] mechanism to facilitate the coordination among state administrative agencies at all levels which are involved in REDD+, especially between agriculture and rural development and natural resource and environment departments in the development and implementation of REDD+” (Government of Vietnam, 2012, p. 7. Despite recognising this need, however, no clear policy goals and objectives defining a new mandate of relevant agencies within the government were subsequently developed. Administratively, REDD + was promoted from the Forest Department, without coordination with other Departments within MARD from the national to district level levels (Interview, development assistance organization 1). This resulted in significant fragmentation of policy implementation over the years, observable through the failure to implement spatial planning for different commodities aimed at reducing forest encroachment and deforestation.

5.4.4 Policy instruments

The Forest Law defined policy instruments, including decisions and circulars, aimed at reforming land allocation. However, some of these decisions created rather than reduced policy fragmentation. For example, a decision approving the conversion of natural forest on plots of land less than 200 ha was authorised as a provincial level decision with no central level input or monitoring. This decision removed national oversight further fragmenting how authorization is implemented at the national level (To Xuan and Tran Huu, 2014). As a result of these and similar misalignments between the national and provincial policy implementation, wood product exports continued to increase by 10.2 % between 2016–2017 (Customs News, 2018); though some of this increase is attributed to increased imports and manufacturing of wood products in Vietnam, which is destined for export (To Xuan et al., 2016).

Also apparent is that Ministerial Directives seeking to limit the expansion of land allocated to agricultural commodities were not able to counter the high commodity prices in export markets driving this expansion. To illustrate, recognizing that high prices for rubber were causing rapid encroachment onto forest land, the government released Decision No. 750/QĐ-TTg in 2009 limiting the area under production to 800,000 ha by 2020. By 2015, however, the total area of rubber cultivation was 981,000 ha (Government of Vietnam, 2015b). Respondents from MARD and Provincial DARDs agreed that the failure of Decision No. 750/QĐ-TTg was due to the combined effect of poor coordination between the national and provincial levels leading to the authorization of expanded rubber production and private speculation on rubber prices (Interview, National government 14 and Provincial government 7). A subsequent Directive in 2011 (No. 1685 / CT-TTg of 2011) called for the evaluation of land conversion of forest land. The review found that the area planted fell far short of the goals identified in the original investment certificates, indicating some actors cleared land and sold the trees (e.g. conversion timber), but never followed through on establishing plantations (Dak Nong DARD, 2018; Lam Dong DARD, 2013). Following these findings the government released a final Directive in 2016 (No. 191/TB-VPCP) committing to halt the expansion of rubber plantations altogether.

The mitigation of deforestation caused by the expansion of coffee cultivation also relied on area-based targets in the 1990s. As seen with rubber, however, these targets failed, with a 77 % increase between 1995 and 2000 (USAID LEAF, 2013). The government subsequently promoted the use of international certifications to address the impact of coffee on deforestation. For example, the Sustainable Coffee Plan to 2020 and Vision to 2030 aims to have 80 % of coffee production by area to comply with certification standards such as UTZ, 4C Rainforest Alliance, and VietGAP (Government of Vietnam, 2014). However, respondents from the government and private sector estimate that this figure has fallen to approximately 20 % due in large part to international buyers not being willing to pay the price premium for certified coffee (Interviews, research organization 3, industry 6 and smallholder association 2). Furthermore, certification standards were not seen to address the pressing sustainability issues that are beyond the farm-unit, including water scarcity and agrochemical (pesticide and fertiliser) use (Ho et al., 2018; Byraredy et al., 2019).

5.5 Assessment of integration

The NRAP aimed to promote integration through policy responses that addressed the drivers. This section explores ‘what is integrated into what, and with what effects,’ through individual components of the policy arena—goals and objectives, actors, policymaking structures and processes, and policy instruments, engaged at various scales. In doing so we consider the degree to which policy integration activities promotes or hinders the goals of reducing emissions from deforestation and forest degradation.

5.5.1 Policy objectives/goals

Despite the high degree of fragmentation outlined above, the 2017 NRAP makes policy integration a key goal. The NRAP explicitly recognises the need to ensure consistency in state steering, management and coordination by a range of policy domains that “contribute to the implementation of sustainable forest development” (Government of Vietnam, 2017a, p. 2. These domains are also impressively diverse including national strategies responding to climate change, green growth, sustainable development, environmental security and poverty reduction. The NRAP also outlines key action points which reinforce the ambition for integration, such as reviewing and adjusting the land use plans to secure 16.24 million hectares of forest land by 2020, promote sustainable and deforestation-free agriculture and aquaculture, improve forest governance and livelihoods for people living near and in the forest and strengthen law enforcement.

These ambitions for policy integration were not, however, translated into an explicit plan identifying which goals, instruments and procedures would be actually be integrated. Instead these decisions were left to the discretion of ministries during implementation. For example, the Ministry of Planning and Investment is instructed in the NRAP to, “mainstream REDD + into relevant national target programmes” (Government of Vietnam, 2017a, p. 10, but the NRAP does not provide guidance for overriding sector targets or reconcile conflicting mandates with other ministries. It instead generally advises the government to “review, amend, supplement and improve legal documents on land, forestry, finance, environment protection, safeguards of REDD + implementation and other relevant legal documents in accordance to Vietnam’s law and international regulations and practice” (Ibid., p. 5.)

Such guidance is complicated by the range and degree of fragmentation between existing policies and directives, such as the Rubber Development Strategy, Vietnam Sustainable Agriculture Transformation (VNSat) programme for the coffee sector, Sustainable Coffee Plan to 2020 and Vision to 2030, as outlined above. The NRAP does stipulate how these policies and directives should be rewritten to be compliant with REDD + objectives. It instead advises the Prime Minister to “assign specific duties, direct and enhance the coordination among the Ministries and promote the role of socio-political associations” (ibid., p. 9 in achieving policy integration.

5.5.2 Policy actors

Though a large number of actors and scales have so far been omitted from policy processes, the 2017 NRAP promotes the participation of political, social and professional organizations, mass organizations, non-governmental organizations and business entities "subject to their functions, tasks and capabilities" (Government of Vietnam, 2017a, p. 12). Most attention in practice, however, has gone to those organizations able to support and mobilise local communities and monitoring and assessing the implementation of REDD+ (Government of Vietnam, 2017a).

The role of private sector has been relatively limited to funding commodities forums to facilitate dialogue and transition towards more sustainable (deforestation-free) production. However, exactly how these private actors are encouraged to change behavior and investments, thus integrating the NRAP into their business plans, has not been stipulated. Nevertheless, there do appear to opportunities for more coherent integration of these private actors. For example, the Chinese Chamber of Commerce of Metals, Minerals and Chemicals Importers and Exporters (CCC MC) developed voluntary guidelines for natural rubber in 2017 that are substantively aligned with the goals of REDD+ - setting goals for conserving biodiversity and fulfilling Zero Deforestation principle (China Chamber of Commerce of Metals, Minerals and Chemicals Importers and Exporters, 2017 CCC MC, 2017). In practice, however, there is little information on how Chinese companies are implementing these provisions (Interviews, Industry 1 and research organization 3), nor is there discussion within the Vietnamese government or rubber sector on how to integrate or mainstream these provisions in Vietnamese policy (Interview, National government 16). More speculatively, there also appear to be opportunities to link public commitments to zero deforestation by other major tire manufacturers (Bridgestone Group, 2018; Pirelli, 2017; Michelin Tire Company, 2016) that are not yet sourcing from Vietnam directly, but instead from other markets like China that import from Vietnam.

5.5.3 Policy structures and procedures

The 2017 NRAP directs MARD to coordinate with the Ministry of Natural Resources and Environment (MONRE) and other relevant Ministries once per year. Such an exchange holds the potential to translate into better integration between policy objectives of these Ministries. However, guidance of the NRAP remains procedural in scope; limited to a review of budget allocation and integration of implementation plans of the National Target Programme on Climate Change (and other programmes) related to REDD+ (Government of Vietnam, 2017a).

In practice the substantive integration of REDD + into the land use plans of different sectors is dependent on the hierarchical planning structure of the Vietnamese government. At the national level, each sector submits a land-use plan to MONRE, which then elaborates both the national master land-use plan and 5-year land-use plan. Land-use planning is based primarily on existing land use, the demand for land from the different sectors, and new priorities under Socio Economic Development Plans. However, this process provides little opportunity, due to limited analysis and budget (Government of Vietnam, 2017c), to examine trade-offs and compromise across sectors, which is critical for delivery of REDD + and cross-sectoral integration.

The NRAP does, nevertheless, promote a coordination mechanism by giving a mandate to multiple government ministries and departments to evaluate and reconcile complex trade-offs between sectors affecting deforestation. However, the 2017 Planning Law has precedence over the 2017 NRAP. This means that the delegation of tasks in the 2017 NRAP to MONRE to “lead on land-use planning and land management, including the forest land, and on integrating REDD + into land-use planning practice at all levels” (Government of Vietnam, 2017a, p. 10) are in practice taken up by the Ministry of Justice and Ministry of Planning and Investment (MPI) under the Planning Law (Government of Vietnam, 2018c). Similarly, the NRAP tasked MPI with “allocating resources for the Programme according to the approved plans” (p. 10). But in practice MPI holds a lead role in issuing guidelines on procedures and methods of planning for integrated land use planning, also in response to climate change and ecosystem services. This, according to an MPI official affords MPI a key integrating role within the government (pers. comm.).

The NRAP also directs the Provincial People's Committees to “Develop provincial REDD + Action Plans to implement the National REDD + Action Programme locally” (Government of Vietnam, 2017a, p. 12). However, the scope of integration intended through this locally coordinated action is limited, as it relates only to the provincial Forest Protection and Forest Development Plans. The NRAP does not encourage integration of forest protection and development into the plans of the sectors driving deforestation, such as rubber and coffee.

5.5.4 Policy instruments

The 2017 NRAP promoted deforestation-free agriculture, but did not specify the instruments to achieve that goal; though it is broadly understood that previous policies seeking to restrict agricultural commodity expansion based on area-based targets have failed (Interviews, National government 3, 10 and district government 5, 9, 12). Despite this, however, the Vietnamese government has developed a series of decisions and circulars that do support a degree of integration between policy instruments.

The Communist Party's Directive 13 released in 2017 (Central Committee of the Communist Party of Vietnam, 2017) was the first Party directive aimed at strengthening leadership in forest management, protection and development. Directive 13 seeks to retain natural forest, emphasizing the coordination and accountability of related ministries, and international cooperation, as a means to achieve such leadership. The Directive does not mention REDD + explicitly. However, it is implicitly aligned or integrated with the goals of REDD + and the goals and objectives of the NRAP.

Directive 13 builds directly on Prime Minister's Notice 191, passed in 2016, which placed a moratorium on any new clearing of natural forest. Notice 191 is also not mentioned in the NRAP. However, respondents from provincial government and the private sector argued it as the most effective policy directive on forests in the Central Highlands because it has been integrated into land allocation decisions at district and provincial levels, and into due diligence practices of the Vietnam Bank for Social Policies (VBSP), Vietnam Bank for Agriculture and Rural Development (VBARD), and the Bank for Investment and Development of Vietnam (BIDV) all of which screen for the risk of deforestation in loans to both the

rubber and coffee sectors. Loan officers at the commune or district level monitor the farmers, and if evidence of deforestation is found, loans will not be extended, and previous loans will be recalled (Interviews, Bank and lender 1&2). This is visible in both the coffee and rubber sectors, and beyond bank lending, there is indication it is influencing Provincial decisions on land allocation.

5.6 Discussion and conclusion

Our results show that neither the 2012 or 2017 NRAP managed to integrate policy related to the direct and underlying drivers of deforestation and forest degradation such that a new mandate or logic emerged that either subordinated previous and/or competing objectives (following Cejudo and Michel 2017). As our analysis of the coffee and rubber sectors demonstrate, achieving integration to the level aimed for by the NRAP requires the policies of numerous government and sector priorities be completely revised (as indicated by the blue text boxes in Fig. 1). The 2017 revisions to the NRAP did attempt to incorporate policy from key sectors driving deforestation and open up the possibility for defining pathways for policy integration that appear essential for achieving REDD + outcomes. However, because the NRAP was not given a 'whole-of-government' mandate, it was not effective in integrating its objectives into the targets and goals for the agricultural sector and the 2017 Planning Law - two key areas of planning and regulation. As a result the NRAP had no clear means to reform existing policies and programmes in a way that could reach and affect the policy goals, actors and structures of sectors like coffee and rubber that underly many of the drivers of deforestation and forest degradation.

These results also highlight the challenge of integrating a global governance instrument like REDD + or Vietnam's forest sector component of its Nationally Determined Contribution to Paris Climate Agreement into national and sub-national policy. Despite being designed to ensure greater consistency in how the state steers, manages and coordinates activities across multiple sectors, the NRAP has no mandate to override or influence policy goals and objectives that are not directly related to the forestry sector. This means that key actors, especially those outside government and in sectors contributing to the underlying drivers of deforestation remain largely unaffected by REDD + . As a result, the policies and procedures affecting the conduct of these actors remain highly fragmented between sectors and across multiple levels of government. Our analysis across these multiple levels of government reveals four ongoing 'fragmentations' that would need to be overcome for NRAP to affect integrative change.

First, for the NRAP to foster integration, both vertically between different levels of levels of government, and horizontally between sectors and types of instruments (see Howlett et al., 2015), it would have to directly insert itself into the 'coordinating' administrative and legislative functions of the state (cf. Kim Dung et al., 2017). In the case of the centralised, 'mono-organisational Vietnamese state (Thayer 1995), this equates to the Ministry of Planning and Investment and the Planning Law of 2017. This appears to be one of the only ways in which the NRAP could gain the mandate required to influence the work plans of different parts of Vietnamese state responsible for sectors driving, both directly and indirectly, deforestation and forest degradation.

Second, to foster integration the mandate of the NRAP would have to extend to the revision of both agricultural commodity development strategies (such as those for rubber and coffee) and the centrally coordinated 5-year Socio-Economic Development Plan. Doing so would further enable the NRAP to adopt an integrated whole-of-government approach that would make the revision of other sector mandates to, for instance, block their expansion into natural forest areas, and ensure that such goals could be carried through the policy process by influencing diverse actors with clear structures and procedures. As outlined above, the Vietnamese moratorium on natural forest clearing (Prime Minister's Notice 191 of 2016) provides a precedent for such an approach, having achieved a high degree of integration of (1) land allocation decisions at district and provincial levels, and (2) aligning these decisions to the lending practices of state owned banks. However, Notice 191 never sought to coordinate or integrate with other sectors.

Third, a multi-level whole-of government mandate to NRAP would also enable it to reshape priorities of other sectors. Currently the NRAPs mandate is more akin to environmental policy integration, seeking 'principled priority' in relation to sectoral policy objectives (Jordan and Lenschow, 2010). Our analysis illustrates how the NRAP was unable to exert any such principled priority, which is heavily restricted in its ability to place demands on the objectives and goals of other sectors like rubber and coffee - let alone define policy instruments in those sectors that can reach the key actors and scales necessary. It remains unclear whether such a whole-of-government mandate could have an influence on strong market pressure from those sectors driving forest conversion – as evident by the inability of pre-existing policy tools to affect commodity-area overshoots.

Finally, as the NRAP was not able to bring about a new mandate or logic across the fragmented policy landscape in which it sought influence, directly influencing agricultural sector targets and programmes, the 'integration' sought may be better characterised as 'pragmatic coordination' (Hogl et al., 2016). That is, it was aimed at making incremental linkages between existing policies, actors and instruments rather than seeking to change political will (see Kellow 2012). While the effectiveness of coordination (as opposed to integration) can be questioned in terms of whether it exerts enough influence on competing or conflicting mandates, it does draw attention to the practical challenges of what needs to be coordinated and towards what end. Following McElwee (2016), this raises questions about the very real limitations of affecting policy objectives and goals, and the subsequent phases in the policy process, when the emphasis is on the administration of planning and budgetary processes, rather than social and environmental outcomes.

Overcoming fragmentation in highly complex environmental problems is often framed as an intuitively 'right' thing to aim for. But in practice it remains highly challenging. This is precisely the case in the context of REDD+, where the degree of integration needed to cover the full range of both direct and underlying drivers is deemed necessary but remains an overwhelming task. We conclude that integrative multi-level and cross sectoral approaches for addressing these drivers can be at least partially addressed if the scope of policy goals and objectives are ambitious and well defined from the outset (see also (Hogl et al., 2016); Park and Youn, 2017). However, we argue that this can only be achieved if greater attention is given to clarifying which actors, policymaking structures and processes,

and policy instruments can in fact be integrated with what, at what level and over which time line. Having said that, policy integration needs more than effective public administration. It also requires integration to affect the wider political economy of international timber and agricultural trade and investment that ultimately drive deforestation and affect domestic resistance to change away from the current business as usual in Vietnam's land sector (building on Clapp and Scott, 2018). In short, policy integration may not be able to halt deforestation if there is no political will to engage the interests driving the underlying drivers across sectors and levels of governance.

6. Discussion and conclusions

6.1 Introduction

Environmental challenges such as deforestation and forest degradation have increasingly become a key focus of multi-lateral policy, including the UNFCCC, as ambitions grow to coordinate or align national level responses to climate change. This thesis explored various dimensions of national-level policy responses to forest loss and degradation to derive empirical insights into how global policy mechanisms such as REDD+ enable effective policy responses to the drivers of deforestation and degradation. Taken together, the results and debates presented in the preceding chapters address the overarching question of this thesis: *In what ways do global environmental policy agendas such as REDD+ affect addressing the underlying drivers of environmental degradation when confronted with fragmented cross-sectoral and multi-level policy processes at the national level?*

This thesis asserts that problem identification (e.g., clearly defining the direct and underlying drivers of unsustainable land use) is crucial for identifying and realizing impactful policy solutions. The REDD+ regime under the UNFCCC defines the problem at a global scale—framing deforestation and forest degradation as contributing to global climate change—but relies on countries to interpret problems at national scales. International guidance from UNFCCC decisions, the IPCC, and international organizations assist countries in not only in defining the problem of deforestation and forest degradation as they relate to climate change but also in translating global policy goals into national policy contexts. The previous chapters explored a range of cases of how doing so was accomplished in Vietnam, Brazil and Indonesia. In doing so, the chapters explored how international policy instruments aimed at addressing the drivers of deforestation and forest degradation are translated into national and sub-national policy design, shape the institutional interaction between international regimes and international and domestic finance, and enable policy integration to overcome fragmented policy arenas.

In this final chapter, the two sub-questions introduced in Chapter 1 are revisited:

1. To what extent do national-level REDD+ policy responses identify or conceptualize the problem of the direct and underlying drivers of deforestation?
2. In what ways do national-level REDD+ policy responses seeking to affect driver pressures help overcome cross-sectoral and multi-level governance challenges in the fragmented policy arena?

By answering these questions, wider reflections are provided on how global environmental policy agendas such as REDD+ help to address the underlying drivers of environmental degradation when confronted with fragmented cross-sectoral and multi-level policy processes at the national level.

This chapter is structured as follows. First, a brief synthesis of the key findings of each of the four preceding chapters is presented (Section 6.2) before describing how, taken together, these findings answer the two central research questions of this thesis (Section 6.3). This is followed by reflections on theoretical contributions (Section 6.4) and methodological choices (Section 6.5). The chapter concludes by outlining a future research agenda and recommendations (Section 6.6).

6.2 Summary of the key findings of empirical chapters

Before exploring the answers to the research questions, the following provides a brief summary of the main findings in each of the individual four preceding chapters.

Chapter two applied a case study method to unpack insights into the degree to which Vietnam identified or conceptualized direct and underlying drivers, and the linkages between them in Vietnam's implementation of the national REDD+ action plan (NRAP) in the Central Highlands of Vietnam. The chapter mapped the conceptual linkages between direct and underlying drivers to then explore the causal connections between them. In doing so, the chapter further developed the methodology of Kissinger (2012) to provide a meta-analysis of Vietnam's national REDD+ action plan process to determine to what degree policy responses considered the drivers. The framework also provided a lens to assess to what degree underlying drivers were identified, if interlinkages between the direct and underlying drivers were made clear, and how policy interventions reached key actors responsible for driver activity and at what scales. The key finding of this analysis is the extent of the fragmented policy arena that REDD+ confronts in Vietnam and the effect of this fragmentation on the efforts by both the government and the private sector to identify and create coherent responses to the drivers of deforestation and forest degradation.

Chapter three then analysed potential areas of interaction between REDD+ and the SDGs, examining how they relate to one another at both the norm-setting and rule-making stages, what synergies between sectors and policy regimes are identifiable, and how these synergies can be enhanced. The findings indicate a high potential for conflicts and trade-offs in national-level processes when implementing REDD+ and the SDGs at the national level. More specifically, however, the results also show that while REDD+ under the UNFCCC includes direction for countries to address drivers, the SDGs do not explicitly direct countries to address problems that work against meeting the SDGs. The SDGs remain aspirational, meaning that there remains a high degree of interpretation at the national level.

Chapter four explored the potential of climate finance to support developing countries' efforts to shift away from unsustainable land use patterns in the context of the 2015 Paris Climate Agreement. A meta-analysis of 40 developing countries' nationally determined contributions (NDCs) to the Paris Agreement was completed, assessing their land use, land use change and forestry (LULUCF) sector components, and this meta-analysis was supplemented with case studies on climate financing in two forest-rich and early-mover REDD+ countries, Brazil and Indonesia. A key finding of the analysis in the chapter is that none of the countries analysed seek to reverse the public financial incentives going to driver sectors, which would be a crucial step in addressing the underlying drivers of land use change.

Finally, Chapter five explored policy integration as a means to address policy fragmentation (e.g., conflicting sectoral goals, disconnects between global and local ambitions and actions) in the implementation of Vietnam’s national REDD + action plan (NRAP) in the Central Highlands. The chapter mapped the degree of fragmentation within this multi-dimensional and multi-level policy portfolio, in all stages of the policy process—from goals and objectives, to actors, policy making structures and processes, and policy instruments—at various scales. The chapter showed the implications of REDD+ not revising competing sector plans to address drivers, with the consequence of contributing to rather than ameliorating the fragmented policy arena in Vietnam.

Collectively, the results of the chapters underline the importance of exploring direct and indirect driver identification in the process of translating international policy, such as REDD+, into national strategies. By exploring the institutional interactions between international regimes and national-level policy integration, the chapters provide different insights into the effect of international policies on overcoming fragmentation, diverse ambitions to define and address problems, cross-sectoral trade-offs and multi-level governance in national policy when addressing complex environmental challenges such as deforestation and forest degradation (see Figure 6). The following elaborates on these findings by answering the two key sub-questions of the thesis.

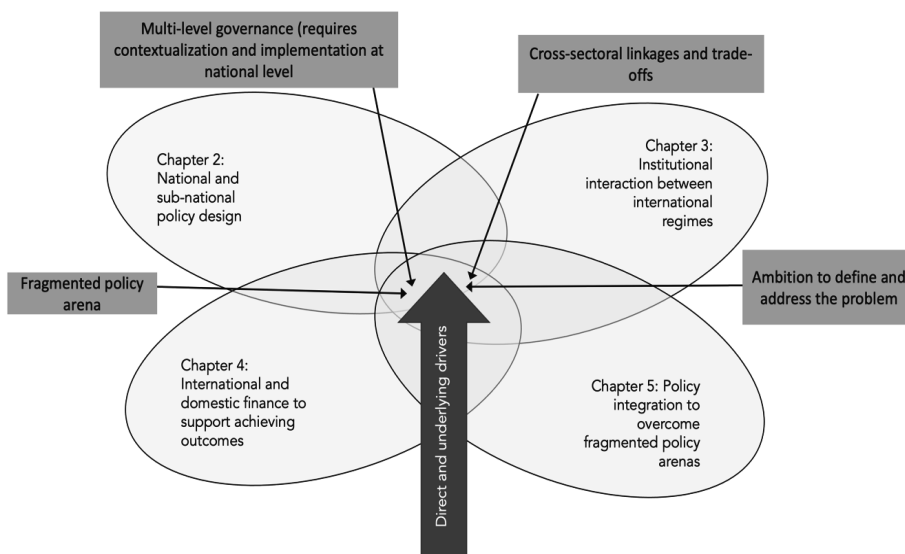


Figure 6: Summary of the research: Drivers (the problem) in relation to other factors in the fragmented national-level policy arena

6.3 Answering the Research Questions

6.3.1 National REDD+ policy responses and the conceptualization of the problem of direct and underlying drivers

Chapters two, four and five provide empirical insights to answer the first research question, namely, 'to what extent do national-level REDD+ policy responses identify or conceptualize the problem of direct and underlying drivers?' In short, the research findings document that countries have been slow to identify direct drivers (Chapter two) and largely miss underlying drivers (Chapters two, four and five). As outlined below, the lack of adequate problem identification has at least six repercussions for the articulation of national-level policy responses.

First, the case of REDD+ in Vietnam highlights the challenge that national-level policy-makers face in identifying the problems that lead to forest degradation and deforestation. Problem identification has been variously shown to begin with the very awareness of a 'problem', which in turn leads to the convergence of various streams of awareness and the creation of a 'window of opportunity' (Kingdon, 1995) for action. However, the case of Vietnam shows that the problems that are identified directly determine the scope of the 'window of opportunity'. As outlined in Chapter two, the selection of problems was limited in the 2012 NRAP to the forest sector, rather than direct drivers from outside the forestry sector, such as coffee and rubber expansion, and underlying causal drivers, such as high commodity prices. The only policy direction given from the central government to provincial and district governments was to limit the coffee and rubber areas through spatial planning, which indicates some awareness of drivers outside the forestry sector, but this awareness was not a part of the 2012 NRAP (although it was included in the 2018 NRAP). This finding points to the challenges of conceptualizing and defining the scope of the problem itself. Without a broader framing of all relevant drivers, and the underlying drivers, the limited scope restricted the range of options that were identified as potential solutions to the problem. Thus, the Vietnam example affirms the notion that addressing only one aspect of the problem may be inadequate to affect the scope of the problem.

Second, the results show how in other countries, the identification of linkages between direct and underlying drivers can allow for a broader scope of problem definition. As shown in Chapter 4, Brazil's experience provides a robust example of how a wide scope of problem identification and a strong articulation of the interactions between direct and underlying drivers informed robust policy responses. Although the largest direct driver of forest loss in the Amazon between 1990 and 2004 was cattle-ranching (particularly as increased soy production in the Cerrado displaced cattle ranchers into the forest frontier),¹⁶ Brazil's Plan for the Prevention and Control of Deforestation in the Legal Amazon broadened the scope of problem identification to include a range of direct and underlying drivers. These actions included critically evaluating national development policies and incentives (and even the 1988 Constitution) that had sought to develop the forest frontier and integrate the remote Amazon into the national economy for many decades (Government of Brazil, 1974). This evaluation allowed Brazil to identify the underlying drivers of large credit and tax incentives for clearing forests that were enabled through development plans, which benefitted cattle and soy producers, enticing them to clear land. The

¹⁶ Other drivers included soy production, road development, mineral extraction, illegal logging, and land speculation.

underlying drivers of international market pressure (particularly from China for soy, and from Russia for beef) resulted in strong demand-side pressures, and had clear impacts on direct drivers. Although Brazil's producers opposed measures that would shift market demand and profits, Brazil's concerted attention to addressing the underlying drivers had a considerable effect, and the governance of the land use sectors improved (Duchelle et al., 2014; Assunção et al., 2013).

Among REDD+ countries, the example of Brazil is unique because it embarked on its deforestation reduction programme almost a decade before the emergence of REDD+ under the UNFCCC. For many REDD+ countries, it was the motivation of an international instrument agreed upon by developed and developing countries under the framework of the UNFCCC that led to national-level assessments of the drivers of deforestation and forest degradation, as per the norms of the international regime (e.g., UNFCCC decisions, World Bank and UN-REDD Programme readiness support to countries). In this context, one key motivation for countries to identify and address drivers was doing what was necessary to obtain international financial assistance. Such assistance was found to be a strong motivation for the majority of REDD+ countries. Chapter 4's meta-analysis of 40 REDD+ countries found that the vast majority of forestry and land use sector adaptation and mitigation actions in countries' NDCs are conditional on the receipt of international climate finance, suggesting that ambition is largely dependent upon external sources of funding, and not domestic will to address drivers. Brazil's success in addressing drivers before the advent of REDD+ demonstrates the effectiveness of domestic action and strong political will to address problems.

Third, the results presented in the preceding chapters show that the way a problem is defined is inherently part of a persuasive process, which affects the choice of solutions, and is informed by social, political, and ideological structures that come into play (Peters et al. 2018; Birkland, 2007). For instance, the results of Chapter four demonstrate how REDD+ enabled countries to frame the problem of deforestation and forest degradation in terms of an opportunity to capture revenue from international forest carbon markets. In the late 2000s and early 2010s, there was a common perception that carbon markets could address the high opportunity costs of forest conservation (Gregerson et al. 2010) and thus overcome prevalent weak governance and law enforcement, which are ubiquitous underlying drivers. In these formative stages of REDD+, the focus was less on seeking answers to why deforestation pressures exist (e.g., problem identification) and was more on a new innovative solution that captured the interest of governments and the private sector—voluntary and compliance carbon markets willing to pay millions of US\$ to keep forests standing. Thus, the focus on a preferred solution diverted attention from the identification of the complexity of the problem at the national- and sub-national levels. In Vietnam (Chapter 2), this narrow focus on forest carbon finance (and associated measurement, reporting and verification of forest-based emission reductions) also limited Vietnam's consideration of nationally-and sub-nationally relevant goals and variables, such as those in other sectors driving forest clearing, for example, coffee and rubber.

Fourth, the findings indicate that the robustness of problem identification, as well as the identification of causal linkages forged between direct and underlying drivers, has a stronger impact on policy outcomes than pursuing REDD+ policies that lack these elements. This finding is exemplified in Brazil's

wide underlying driver assessment scoping in the late 1990s and early 2000s, which resulted in robust and interlinked policy responses dramatically reducing deforestation rates after 2004 (Chapter 4). Ironically, Vietnam's moratorium on natural forest clearing (Prime Minister's Notice 191 of 2016) had a similar impact with regard to defining a clear policy linkage between lenders and financiers (underlying driver) and reducing pressure on forests by farmers wanting to take advantage of higher commodity prices for rubber and coffee. However, Notice 191 was neither defined nor mentioned in the NRAP, which raises questions as to how integrated the NRAP was in the national policy arena. Nevertheless, Notice 191's influence on policy outcomes is noted (and its impact on addressing policy fragmentation is reflected upon in the next section). This research finding raises the question of whether a global governance and finance instrument is necessary (in these two contexts, it was not), and whether there are other factors that may have more influence on policy outcomes, such as strong political will, and a whole-of-government approach (in the case of Brazil – Chapter 4) or at least cross-sectoral coherence and commitment to the policy outcomes (in the case of Vietnam – Chapters 2 and 5). These questions fall beyond of the scope of this thesis but could be topics for future research.

Fifth, the findings show that without a 'whole-of-government' policy that can link problem definition to multiple sectors, international policies such as REDD+ may remain limited. As shown in various chapters, a range of policy interventions has been applied by national governments to address drivers, ranging from sustainable forest management and stemming illegal logging to agricultural intensification and improved livestock/rangeland management (Salvini et al., 2014; Kissinger et al., 2012). However, what also emerges is that there is limited scope for NRAP processes to address many of these issues underlying forest degradation and deforestation because of the rigidity of pre-existing national and sub-national policies. For instance, the Vietnamese NRAP in 2018 contained policy interventions that sought to promote sustainable and deforestation-free agriculture, but it did not alter or embed its objectives into the Crop Production Law, new Planning Law, or the Forest Law, all of which were passed by the National Assembly around the time of the revised NRAP. Further, highlighting this point, Chapter 5 elaborated on the fragmented policy arena that the NRAP sought to influence, enabling a deeper investigation into how the NRAP overrides, influences, or does not affect policy goals and objectives outside the forestry sector, which was crucial to affecting drivers. As also argued in Chapter 5, overcoming such fragmentation requires, a whole-of-government approach that can enable the embedding of REDD+ ambitions across a range of policies and legislation that reflects the multiple sectors and multiple drivers of forest degradation and deforestation at play.

Sixth, the results show how some of the strongest underlying drivers of forest clearing and degradation relate to poor tenure rights and poverty; however, these drivers have largely eluded the focus of policy interventions (see Chapters 2 and 4). This finding raises questions as to why this is the case, particularly when REDD+ is one of many policy mechanisms seeking to address these underlying drivers. In the context of the SDGs and REDD+ (Chapter 3) there are highly aligned targets such as SDG goal #1 which seeks to end poverty in all forms everywhere, and the UNFCCC Cancun decision which affirmed that REDD+ activities should be implemented in the context of sustainable development and poverty reduction. Chapter 3 surmised that the synergies between global instruments need to be effectively

managed at the national level to realize complementary and/or supplementary synergies. However, for many countries, including Indonesia and Myanmar, this occurred through national development planning processes, which sector plans often feed into. Therefore, synergies are managed not by the sector departments themselves but by ministries of planning, finance and investment and, based on these country examples, are likely beyond the technical and political scope of the sector departments. This finding raises the concern that though there may be multiple mechanisms with aligned goals of addressing key underlying drivers such as poverty, the capacity and means for 'connecting the dots' may be beyond reach in many national policy contexts.

In summary, the empirical findings from the chapters indicate that addressing drivers, particularly the underlying drivers of environmental degradation, is important. The results also indicate that unless these drivers are prioritized for REDD+ policy interventions, the emission reductions and REDD+ results will elude governments. Additionally, the findings indicate that the extent to which national-level REDD+ policy responses identify or conceptualize the problem of direct and underlying drivers has direct implications for the scope and breadth of policy design.

6.3.2 Overcoming cross-sectoral and multi-level governance challenges in addressing drivers

All of the empirical chapters provide insights to answer the second research question addressing the ways in which national-level REDD+ policy responses seeking to affect driver pressures help overcome the challenges of fragmented cross-sectoral and multi-level governance.

The results first show the preceding chapters together demonstrate how the link between multi-level governance layers and the fragmented sectoral policy arena and the efficacy of states in affecting direct and underlying drivers is complex to map (as shown in Chapter 5). Indeed, the challenge is indeed so large that detailed mapping is generally not pursued by REDD+ countries and development partners (based on my experience working with the UN-REDD Programme and World Bank). This means, that the degree of vertical fragmentation between different levels of levels of government, and the horizontal fragmentation between sectors and types of instruments, is rarely identified, understood or acted upon (as per Howlett et al., 2015). Nevertheless, as illustrated across the chapters, countries are confronted by this fragmentation as they engage in developing their NRAPs. Vietnam, for instance, increased its ambition to address key underlying drivers from the first to the second NRAP. However, in doing so, policy-makers became more aware that the policy arenas that needed to be addressed were far more fragmented and even conflicting. Furthermore, they were confronted with the challenge of policy responses not being calibrated to address the increased complexity, the strong political economy behind state support for expanding agricultural commodities, and the pernicious problems of poverty, landlessness, and tenure insecurity.

The results also show, however, that the complexity of addressing direct and underlying drivers in a multi-level and fragmented setting is not impossible. As shown in Chapter 4, Brazil and Indonesia were

able to coordinate cross-sectoral and multi-level challenges to address both the direct and underlying drivers of forest degradation and deforestation. Both countries imposed moratoria on forest clearing, were effective in enforcement, and reformed fiscal policies to sanction destructive land use activities. In the Brazilian context, policy coordination to address driver pressures through the implementation of the PPCDAM occurred long before REDD+ was framed as a global priority.

These empirical observations point to three generalized ways in which national-level REDD+ policy responses can overcome the challenges of fragmented cross-sectoral and multi-level governance.

First, policy integration within the national government is needed to overcome fragmentation and incoherence between sectors and across scales. As shown throughout the preceding chapters, the lack of integration at the national level to both identify and reform sectoral targets that are at odds with REDD+ (e.g., the expansion of cash crops such as coffee and rubber) undermines any opportunity to address the direct and underlying drivers of forest degradation and deforestation. The results also show how coordination beyond the state is also centrally important. The lack of private sector inclusion shown across the majority of countries reviewed (see Chapter 4) sits in stark contrast to the high levels of interest among international commodity buyers to reach 'net zero deforestation' targets. Bringing in the private sector to the REDD+ strategy is therefore an underdeveloped approach. Again, in the examples of Brazil, Indonesia and Vietnam, public sector actions that influenced private sector access to finance based on performance standards/restrictions were effective. Following Lambin et al. (2014), aligning private and public actions influences policy effectiveness.

Second, the integration of global-level policy depends on institutional interactions not only at the national and sub-national levels, but also across sectoral policy domains. The (potential) benefits of such integration were observed through attempts to integrate REDD+ or a forest sector component of an NDC into national and sub-national policy (Chapter 5), and the interaction between REDD+ and the SDGs at the norm-setting and rule-making stages (Chapter 3). The SDGs present a combination of the three dimensions of sustainable development (economic, social, and environmental) and indications from the first country submissions on SDG implementation were that very few countries were able to address all three synergistically (UKSSD and Bond 2016). The findings indicate that such synergies will not occur on their own – they require active management to overcome typically siloed processes of definition and implementation (Chapter 3). To illustrate, in both the SDG and NDC contexts, policy integration and coordination are taken up in later stages by national planning agencies or technical bodies serving cross-ministerial committees, which are more likely to advance their sectoral interests than to challenge other ministries to revise their targets. As sectoral disconnects persist (illustrated in Figure 1 as sectoral silos at the national and sub-national levels), it is relevant to question the utility of coordination without stronger whole-of-government approaches that can drive changes in sectoral targets and goals.

Third, underlying the previous two general observations, the results show the persistent challenge of adequate problem definition in the identification of direct and underlying drivers. This is the case, once

again shown in the previous chapters, in the implementation of SDGs, NDCs and their related financing. Both the SDG and NDC mechanisms draw from various sector inputs, leaving the problem identification of direct and underlying drivers to be defined by the sectoral line ministries, thus maintaining cross-sectoral disconnects (recalling that none of the 40 countries' NDCs reviewed indicate a willingness to address perverse financial incentives from other sectors in national budgets that affect the drivers of land use change). Thus, there appears to be a greater chance of tackling integrative multi-level and cross-sectoral approaches to address drivers if the scope of problem identification (e.g., drivers) and the related policy goals and objectives are ambitious and well defined from the outset (as per Hogl et al., 2016; Park and Youn, 2017; Chapter 5). Even then, the research findings affirm Head's (2008) observation that multi-level/cross-sectoral problems are wicked and are a) actually a series of linked problems, none of which can be resolved in isolation, b) the short-term and long-term calculations of impacts, costs, and benefits of interventions are highly variable, and c) the impacts are simultaneously global, national, regional and local. These points imply that a wicked problem framing applied to REDD+ can yield theoretical insights, as explored further below.

6.4 Governing drivers: Conceptual and methodological reflections

As discussed above, the research findings based on case studies and a meta-analysis of 40 countries, indicate that countries have been slow to identify the direct drivers and largely miss the underlying drivers of deforestation and forest degradation. This lack of adequate problem identification, including both the types and scope of direct and underlying drivers, is shown to have significant repercussions for the articulation of national-level policy responses. Furthermore, the research findings indicate that REDD+ policies and strategies are largely unable to overcome cross-sectoral and multi-level governance challenges in their efforts to address the direct and underlying drivers of deforestation.

These empirical findings provide a basis upon which to reflect on the wider conceptual implications of this research for an improved understanding of how the governance of drivers can be better understood. Returning to the literature review in Section 1.3 of this thesis, the following reflects on how global instruments aimed at governing direct and underlying drivers can be rethought. The primary conclusion derived from the literature review was the rather stark omission of direct and underlying drivers as a core subject of observation and reflection in the majority of the governance literature.

This thesis asserts that more attention is needed on direct and underlying drivers and how global environmental policy agendas and instruments (such as REDD+) can affect them when confronted with the fragmented (cross-sectoral and multi-level) policy processes at national levels. This thesis posits that an overemphasis on process, relationships and contextual elements hides from view the complexities and dimensions of defining direct and underlying drivers that in turn affect the identification of possible policy solutions.

REDD+ is not a unique and distinct global environmental agenda, and it could be argued that the majority of global environmental agendas are indeed similar, in that they seek to solve multi-level and multi-sectoral problems that stress the resilience of ecosystems. Thus, placing direct and underlying

drivers in the spotlight, as the initial analytical basis for defining policy solutions, is highly pertinent to many other global environmental agendas and their operationalization through national policy. The identification of drivers influences the assessment of the range of actors that need to be reached, and at what levels, what policy instruments will affect drivers, what cross-sectoral conflicts exist, and the policy and/or financial incentives needed to influence behaviour, as this thesis has demonstrated. With these issues in mind, the following reflects on four propositions that combine empirical and theoretical reflections to characterize the ways in which fragmented (cross-sectoral, multi-level scale) national policy arenas can accommodate international environmental governance instruments such as REDD+.

6.4.1 Proposition 1: *REDD+, as a global governance and finance instrument to combat deforestation and forest degradation, is dependent on the operationalization of national-level policy responses*

Defining 'the problem' at global levels is a technical and political exercise in agenda-setting, often institutionalized through UN processes and through efforts by countries, civil society, research organizations and multi-lateral institutions to elevate a collective agenda. National governments take on this global aspiration for various reasons, such as to join so-called 'coalitions of the willing', respond to the urging of development partners, and to access international finance. However, to fundamentally address different drivers of deforestation and forest degradation, instruments such as REDD+ require national-level policy responses to be successfully operationalized.

National-level policy responses to global problems infers cross-scale networks that can enable the coordination, nesting and embeddedness of global agendas in national governance arrangements (Weber and Khademan, 2008). Networked governance theories assess the structure of the relationships, and the implications for behaviour and performance. Participants in the network bring different experiences and expertise not only to the network but also to the interpretation of the problem and what to do about it (*ibid.*). Collaborative capacity-builders are identified as key actors that link and integrate information and competencies. In the context of global environmental agreements, such actors are often development partners such as UN agencies and the World Bank, or civil society organizations and think tanks. Do these collaborative capacity-builders enhance the capacity of national-level governance to implement global environmental agendas, or do they lead to a weakened position for the nation state? How does it change and reorganize the role of the nation state (as per Bache and Flinders, 2003)? The multi-level governance literature has generally assumed that there is some authority held at the global level, not just intergovernmental coordination, and that there is an interplay within the multi-level system that demonstrates a division of labour across the levels (Zürn, 2012). However, how these institutional and agency dimensions networked across governance levels relate to addressing global environmental problems is not central to this literature. The implications of this limitation are that this places more emphasis on accommodation and consensus (Peters and Pierre, 2004), with less emphasis on driving towards distinct legal frameworks to address problems. A recent assessment of national environmental legal frameworks indicated a 38-fold increase in national-level environmental laws enacted since 1972; however, the implementation and enforcement of these laws

fall far short (UNEP 2019). This finding affirms that REDD+ is not the only global environmental agenda failing to be effectively operationalized at the national level.

The clarity in problem definition as a basis to define national policy implementation, was a key factor of success in the Montreal Protocol, although these lessons have not been introduced into REDD+. The 1987 Montreal Protocol is arguably one of the most successful environmental global agreements. The driver was easily defined—chlorofluorocarbons causing an ozone hole—and the link between driver identification and national-level policy solutions was clearly defined by the need to control the supply of dangerous ozone-depleting substances (ODSs) (van der Tak, 1991). Although the driver manifested differently in the 197 countries that ratified the protocol, each country had phase-out scenarios, and by 2009, governments had phased out the consumption of 98% of the chemicals that they agreed to in the Protocol. Some attribute success to the manageable number of sources of ozone-depleting substances, whereas others highlight the actions of industry to produce practicable and profitable alternatives to these substances (Solomon, Alcamo and Ravishankara, 2020). Driver identification (problem definition) in the context of addressing forest clearing and land use change at the national level is far more complex than identifying and substituting ODSs. However, the national-level implementation of the Montreal Protocol affirms the importance of addressing the direct and underlying drivers of the problem for effective implementation.

6.4.2 Proposition 2: Fragmented national level policy arenas undermine the extent to which governments can design policy to address direct and underlying drivers

In fragmented policy arenas the institutional interaction between related and overlapping policy domains and instruments (e.g. REDD+, NDCs, SDGs) at the national level has implications for the policy processes and modalities that governments pursue to commit to and implement them. Cause–effect relationships and causal mechanisms for institutional interaction have been explored in the literature (Gehring and Oberthür, 2009), and while this literature has explored the role of information in causal interaction, it concerns itself more with the *process* than with the *content* of new knowledge. The disconnects between the *content* of REDD+, NDCs and SDGs explored in the chapters illustrate how difficult it is to find alignment between them, let alone define policy solutions for multiple related and overlapping policy domains and instruments.

While a call for more applied research that considers the degree to which issue complexity may determine or shape institutional arrangements (as per Stephenson, 2013) is necessary, such research leaves aside the rigorous evaluation of the problems that multi-level governance seeks to solve. This literature does not provide insight into how the network or levels prioritize problems and how ‘collaborative capacity-builders’ effectively overcome sectoral siloes. Furthermore, it does not address the wider political economy of extractive or degrading environmental practices in sectors which drive both government revenue and strong vested interests, nor does it address the complex web of interconnected issues such as poverty and land tenure, for instance.

The transnational governance literature suggests that participation in behavioural change is motivated by incentives and diffusion processes that create and spread normative and market-based pressures (Andonova et al., 2017), but similarly, it lacks a focus on problem conceptualizations in the network and how such conceptualizations relate to the solutions sought. The vast majority of transnational climate governance networks appear to be created for purposes of networking (Michaelowa and Michaelowa, 2017), but the role of analytics in problem framing (e.g. what problem the collective action needs to solve) is not emphasized in this literature.

The findings of this thesis support claims that the networking and orchestration literature does not necessarily overcome fragmentation and enable greater clarity in problem identification and the design of targeted policy responses. As argued by Michaelowa and Michaelowa (2017), who evaluated 109 transnational governance network initiatives against criteria related to climate mitigation targets, incentives, baselines, and MRV, there appears to be overall weak performance in meeting the criteria. Their findings affirm the notion that networking and orchestration have not proven themselves to be an adequate proxy for regulatory governance, which affirms the role of national governments in both regulating and incentivizing behaviour change and begs a follow-on question: are national governments up to the task of finding coherence in fragmented, multi-level governance, with high cross-sectoral conflict?

6.4.3 Proposition 3: Fragmented and conflicting sectoral mandates undermine cross-sectoral alignment

Cross-sectoral coordination and collaboration seeks to link efforts to realize common environmental ambitions (Bryson et al., 2015). However, for cross-sectoral coordination and collaboration to have effect, sectoral divisions and entrenched positions must be overcome (Neely et al. 2017; Hogl et al., 2016; Kellow, 2012). The cross-sectoral collaboration literature generally assumes that collaboration will have positive implications for affecting policy outcomes. However, how progress is measured, and what evidence is evaluated matter.

One pan-tropical literature review of landscape approaches found that 75% lacked comparable, scientifically reliable data on environmental and social outcomes, although the vast majority lauded the coordination as ‘successful’ based on the self-reporting of anecdotal evidence (Reed et al. 2017). Coordination and collaboration may appear to bring disparate governance levels and stakeholders together, but the emphasis on the performance of the process aspects, rather than on performance in addressing the problem, risks overstating the benefits. In Brazil, Indonesia and Vietnam, impactful changes in stemming deforestation came from the successful implementation of logging moratoria. In all cases, it could be argued that improved coordination in the fragmented policy arena was secondary or unrelated to the policy outcomes. Here again, it is useful to reflect on how drivers are addressed in these domains and processes, and to what degree the interplay, coordination and interaction between sectors or domains influence or affects the drivers.

‘Integration’ is distinguished from ‘coordination,’ and the implications for policy and actions to address direct and underlying drivers help illuminate this distinction. Environmental policy integration determines the relative weight (or ‘principled priority’) of environmental objectives in relation to other sectoral policy objectives (Jordan and Lenschow, 2010). Cejudo and Michel (2017) argued that policy integration requires pursuing policies and governance under a new logic that subordinates previous or competing objectives to bring about a new mandate or logic across the fragmented policy landscape. Chapter 5 illustrated how Vietnam’s NRAP was unable to exert any principled priority over competing sectors such as agriculture, let alone define policy instruments and interventions in those sectors that would reach the key actors at necessary scales to bring REDD+ objectives into agricultural practices. This governance failure is not unique to Vietnam (UN Environment, 2017; Korhonen-Kurki et al. 2016; Seymour and Busch, 2016).

The literature on integration suffers from a focus on process and procedure rather than on policy effectiveness aspects of integration in policy-making (Tosun and Lang, 2017). This lack of focus on effectiveness has implications for the performance of integration, and it relates to this thesis’ interest in assessing whether integration is instrumental in achieving better policy outcomes for global environmental agendas. Evidence from the land sector, biodiversity and fisheries indicates that problem-oriented approaches such as conservation compliance penalties, subsidy reform, and trade measures and environmental regulation are effective when the intention is strategic action to address drivers, and sectoral coordination/integration process and relationship aspects are secondary and viewed only in relation to their affect on the problem (Ogg, 2020; OECD, 2017).

Building on these observations, coordination and integration, which stem from a concerted effort to focus on problem-solving, yields results that are different from those of pursuing coordination and integration from a *process* perspective. However, many governance literature domains reviewed lack the theoretical basis to substantiate this observation. Transformative governance investigates the networks, collaboration, and institutional and organizational shifts (Korhonen-Kurki et al. 2018; Wiczeorek, 2018; Termeer et al. 2017; Chaffin et al. 2016), and the role of agency, and conflicting interests, unequal power positions, and how that relates to forging solutions. However, problem framing is left aside. Chaffin et al (2016) indicated that a future aspiration is to answer the following questions: “What mechanisms for transformation exist under current law and policy, and are they realistic given entrenched power relations, social structures, politics, and economies” (p. 416)? This thesis posits that such an inquiry will yield different insights depending on whether the direct and underlying drivers of the problems in each context are fundamentally considered or not. Furthermore, as Chapters 2-5 illustrate, if institutional mechanisms and relationships are explored, but the fundamental problems that must be resolved are secondary, it is hard to see how transformative governance inquiries will provide insights that unlock solutions to the problems.

Recognizing the fragmented policy area at the national level, public–private hybrid arrangements and private/non-state actor led governance have increasingly been explored in the governance literature, as a means of transcending the multiple levels and ultimately reaching the private sector actors and demand-side pressures that are at the root of many natural resource governance problems. However,

these mechanisms appear to be unfit for the purpose of affecting underlying drivers, and many are also voluntary. Although it is arguably the role of states to correct market failures, public-private-hybrid approaches theorize that institutional entrepreneurship *around* the market helps address problems (Bartley, 2007), thus creating a new form of functional legitimacy (Bernstein and Cashore, 2007).

Who participates and who decides in such contexts has implications for problem definition and the agreed-upon solutions (Grabs, Auld, Cashore, 2020). In the context of private transnational regulatory organizations, Abbott et al. (2016) contend that their activities primarily respond to private actors' priorities, address private (business-set) targets, bypass governments, and may promote weak rules, engage in efforts to reinforce oligopoly and monopoly, and attempt to pre-empt public regulation. In short, such organizations are primarily accountable to their members and those who voluntarily support them, not to society as a whole (*ibid.*). One example is soy certification standards, pursued as a solution to deforestation, but criticized for being unfit to address poverty and the equitable distribution of land, which are at the heart of the problem in the landscapes reviewed (Elgert, 2012). In other words, these mechanisms will fail to address the complexity of the problems (e.g., underlying drivers) and are likely to not have the desired transformative impact.

In the case of private/non-state actor-led governance, the bypassing of weak government institutions raises the question of whether cutting government out is an appropriate solution when, in fact, it is likely to entrench or further enable key underlying drivers, such as corruption, weak law enforcement, and poor governance. States and international organizations have a role to play in safeguarding public interests by addressing power imbalances (Abbott and Snidal, 2009), which has implications for the effectiveness and durability of solutions. The case studies in this thesis from Vietnam, Brazil and Indonesia all consistently demonstrate that the power of global supply chains impacts national (and sub-national) governance in a manner that causes domestic policy to be weak or inert in the face of demand-side pressure. However, Brazil's experience in slowing Amazonian deforestation (Chapter 4) illustrates how the voluntary ban by the private sector on the commercialization of soy grown in the Amazon would not have had the impact it did were it not for the strict multi-level environmental legal enforcement and compliance, the veto of agricultural credit for soy farmers in newly cleared forest, and the National Monetary Council's strict stipulations on granting rural credit in the Amazon. This orchestrated and sequenced set of interventions, led by the national government, positively impacted direct and underlying drivers, and consequently, deforestation rates dropped. In contrast, while the Forest Stewardship Council has successfully facilitated private transnational regulatory standards for forestry, it has nevertheless failed to transform commercial forestry practices or stem the tide of tropical deforestation (Moog et al. 2015). This thesis posits that public-private hybrid mechanisms have not proven their efficacy in meeting the demands of addressing direct and underlying drivers in fragmented policy arenas.

6.4.4 Proposition 4: The multi-level character of direct and underlying drivers has consequences for the design of national-level policy responses, to effectively reach actors contributing to these drivers

The chapters explored the implications of the multi-level (international, national, sub-national, local) character of direct and underlying drivers, and what consequences this has for national-level policy to reach and influence these drivers. This thesis explored empirical contexts in which polycentricity was evident, such as Vietnam's forest and agriculture sectors, in which an abundant range of actors made autonomous decisions, many of which were related in overlapping, interlinked and conflicting ways. The polycentric governance literature has focused largely on the cooperative processes related to decision-making and relationships within the polycentric systems (Carlisle and Gruby 2017; McGinnis and Ostrom, 2011). The emphasis on processes, relationships and contextual elements hides from view the complexities of the problem itself. Were polycentricity to focus more explicitly on how cooperation and relationships relate to 'the problem,' various dimensions of agency, power relations, and the benefits (or failures) of cross-scale and sectoral linkages would then be assessed in relation to solving the problem.

As evidenced in the preceding chapters, problem conceptualization and framing at the national level, with a view towards how national policy tools can influence drivers, are a complex multi-level policy challenge. They can certainly be considered a wicked problem. As elucidated in the case of Vietnam (Chapters 2 and 5), without adequate problem diagnostics in this wicked context, the REDD+ response was to apply pre-existing national-level policy tools such as spatial planning limitations to affect commodity area overshoots. This response proved to be grossly insufficient to influence strong market pressure from the sectors driving forest conversion. This finding has implications for problem diagnostics, policy design and also instrument/tool considerations, as the current set of tools that many governments apply at national levels (e.g., moratoria, annual harvest rates, etc.) target direct drivers, and the underlying drivers are mostly missed (e.g. demand-side measures, fiscal policy reform, tenure reform, etc.). How do the nexus literature and the wicked problem literature inform this dilemma?

The nexus literature and wicked problem literature are the only literatures reviewed that define problem-solving as a core approach or objective. However, both of these literatures conceptualize 'the problem' from a different angle than the drivers framing. The nexus literature approaches the problem from the nexus interconnections between policy domains and sectors, while the wicked problem literature focuses on characteristics related to the complexity of the problem. Food–water–energy nexus framing may not be suitable to solve illegal logging, for instance, as identifying synergies and trade-offs in the search for policy coherence between sectors may have little to no bearing on the problem of illegal logging. Similarly, the wicked problem framing does not necessarily direct policy-makers as to where to start and end with problem diagnostics and the associated policy design. The wicked problem framing elucidates the complexities of interconnected problems and points towards what the implications are for governance. Framing the problem(s) can be highly contested (Head, 2018; Peters et al. 2018; Birkland, 2007), raising concerns about how to measure the adequacy of problem framing and diagnostic exercises (as per McGinnis and Ostrom, 2014), and what impact that has on policy effectiveness (Howlett et al. 2015).

From a wicked problem perspective, the intentional focus on drivers and underlying drivers may be criticized as being too linear and deductive. However, this issue does not need to be a limitation of the driver approach if the investigation maintains wide scoping and problem identification and is iterative

over time to respond to new information (perhaps best exemplified in Brazil's wide scope and iterative assessment of Amazonian deforestation).

In conclusion, as explored in Section 1.3 of this thesis and summarized in Table 1, significant domains of the governance literature lack a core focus on the problem itself. This thesis seeks to inform that research gap by exploring the policy implications that this lack has for addressing the direct and underlying drivers of environmental degradation. This thesis asserts that the lack of conceptualization of the problem has large ramifications for considering how a global environmental policy agenda affects the underlying drivers of environmental degradation, when confronted with the fragmented (cross-sectoral and multi-level) policy processes at national levels.

6.5. Recommendations and future research

Following from the preceding section on the theoretical implications of the research findings, this thesis recommends that a renewed focus on the problem (here, the direct and underlying drivers of unsustainable land use) be elevated in the governance literature. Some governance literature domains reviewed are more suitable than others to incorporate this consideration. As mentioned above, the nexus literature and the wicked problem literature define problem-solving as a core approach or objective. However, both literatures conceptualize 'the problem' from a different angle than the drivers framing. As the nexus literature approaches the problem from the nexus interconnections between policy domains and sectors, and the wicked problem literature focuses on characteristics related to the complexity of the problem, these orientations preclude a clear orientation towards drivers.

The theoretical implications of the key propositions outlined above provide a basis for considering practical implications of relevance to addressing drivers through the national-level implementation of global environmental agendas. From a pragmatic perspective, there appears to be utility in proposing a redefined conceptualization of the drivers of land use change and the policy response framework, based on the research findings. Figure 7 below conceptualizes key concepts from the empirical chapters, the theoretical reflection and the governance literature reviewed, to propose problem identification (drivers) and contextualization at the national scale as a means of designing policy responses in the context of global environmental policy agendas fitting into national contexts.

The first proposition that REDD+ is a global instrument that requires national-level policy responses to be operationalized is the starting point for considering what the implications are for solving global environmental challenges. The theoretical reflection explored a range of bodies of literature that view the connection from the global to national levels through polycentricity, institutional interaction, and networked governance, among to others, finding a shortcoming in the conceptualization of how contextual, institutional and agency dimensions relate to problem identification. Although often relying on 'collaborative capacity-builders' (as per Stephenson, 2013), such as the World Bank or UN agencies, the facilitation of a global environmental agenda to the national level is found to largely rely on negotiation, coordination between different institutional levels and actors, accommodation, and consensus. The original problem definition is at the global scale as a problem of global significance, and

is defined in international agreements (e.g., UNFCCC, CBD, etc.). The motivations of national-level actors may not be to solve the problem at the national scale but, rather, to access international finance, join international coalitions, or pursue other reasons tangential to problem-solving. The clarity in driver identification in the Montreal Protocol (and the weakness in tackling the underlying drivers, which still persists today, 30 years later) is a pertinent point of reflection highlighting the importance of clarity on problem definition at the global and national levels and how this clarity relates to policy responses. Thus, Figure 7 positions the problem diagnostics and scope of problem identification as the first step in a series of linked steps towards articulating policy solutions to the problem. This step is also consistent with the Warsaw Framework for REDD+ (UNFCCC, 2013), which directed countries to start with the identification of direct and underlying drivers in national REDD+ strategy development.

The contextualization of the problem in the national context may follow various pathways. There is a distinction between those that are depoliticized and those that are politicized, and in all case study contexts in the empirical chapters, there was a mix of both. Depoliticized problem definition relies on spatial, economic and sociological assessment, among others, depending on the problem. Problem identification can also be politicized, subjecting problem diagnostics to cross-sectoral bias and conflict, fragmentation, power dynamics, targeting 'scapegoats' such as poor indigenous farmers rather than elite land speculators, and even such factors such as corruption. This politicization reoccurs throughout the policy process. This process leads to an articulation of the response to the problem (step 2 in the figure), informed by political, technical, cultural, institutional, capacity, power dynamics and other factors. Again, the empirical chapters highlight how rarely the identification of direct and underlying drivers occurred in a robust manner. In particular, the underlying drivers often eluded policy-makers in problem identification and in defining responses to the problem. Thus, the problem definition phases hold great potential to veer towards subjective and political interests, which has large implications for policy design.

The fourth proposition, that the multi-level character of direct and underlying drivers has consequences for designing policy responses, is identified in the empirical chapters as crucially important for policy design, and this point was often largely missed in national REDD+ policy design and the selection of policy instruments (and the associated financing). As step 3 in Figure 7 conveys, this step includes a wide assessment of factors that are determined based on the direct and underlying drivers identified. This means that the emphasis of the assessment of policy design and instrument selection is from the vantage point of problem-solving, *not* process aspects. This vantage point includes: a) assessing the degree of fragmentation in relation to drivers, particularly between and across sectors; b) the political will to address multiple dimensions of the drivers problem; c) awareness of exogenous pressures and the likelihood of policy responses affecting them; d) what vested interests benefit from the drivers and are opposed to change; e) what perverse financial incentives exist that promote drivers and how to remedy them (especially given vested interests); f) a realistic assessment of what impact the national government can have to reach key actors involved in the drivers; g) and how to embed/nest/mainstream the policy interventions to affect drivers in already existing mechanisms.

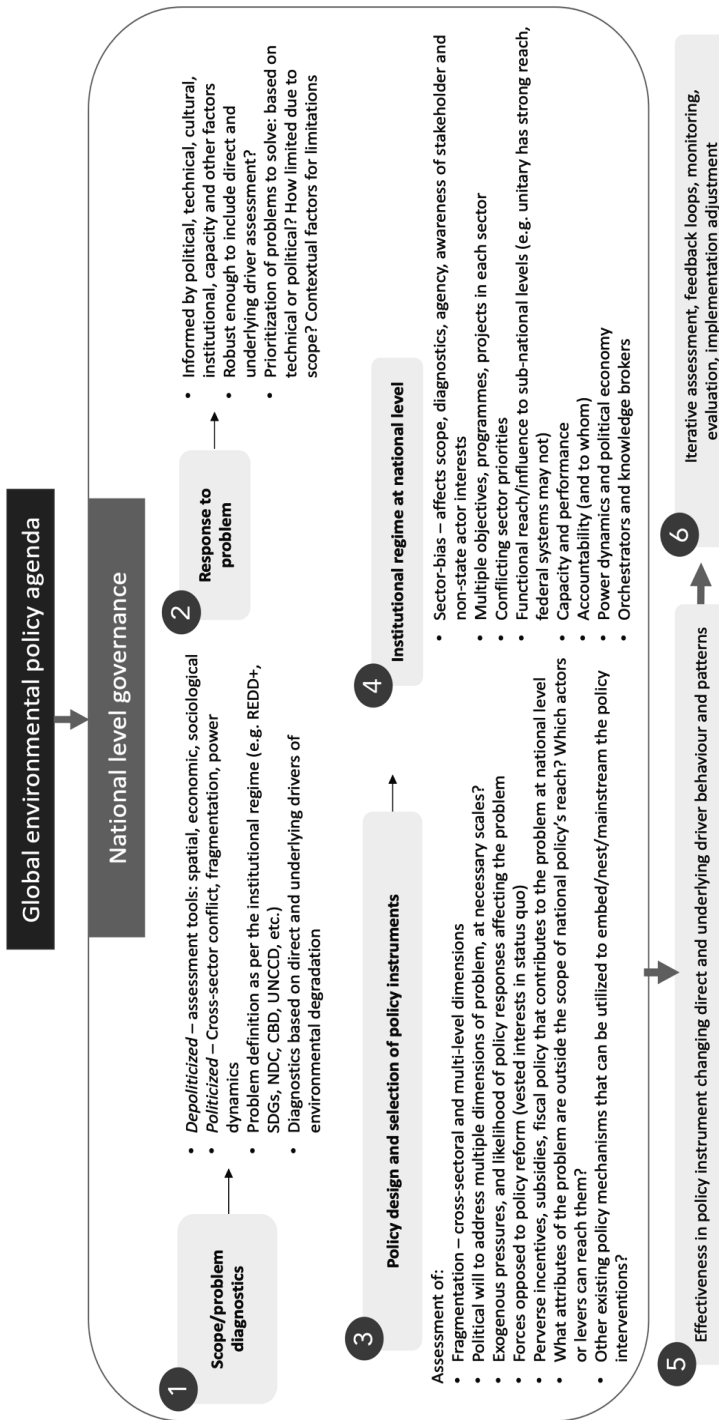


Figure 7: Problem contextualization at the national scale as a means of designing policy responses

Identifying what is within reach of national-level policy-making, versus what is beyond reach and requiring different levers to reach actors are crucial.

The institutional regime at the national level (step 4 in Figure 7) is where the second and third propositions are tested, namely, through the fragmented and conflicting sectoral mandates that challenge cross-sectoral alignment and the fact that the national-level policy arena contains a range of domestic and international commitments, which have implications for policy design. In contexts where national policy responses inherently cross-cut multiple sectors and levels, maintaining the clarity of the global environmental target is challenged and/or diffused. Conceptualizations of these challenges that primarily focus on the *process* elements rather than the *content* of the problems fall short of problem-solving. Rather, process-oriented approaches to assessing the institutional and policy arena characteristics are concerned with improved coordination, integration, institutional linkages, and other process mechanisms. However, this thesis proposes that assessment of the institutional regime at the national level, with the intent of finding solutions to clear problems, will yield a different result from that of a process-oriented approach.

Thus, step 4 in Figure 7 unpacks a range of factors observed to have an impact on the efficacy of addressing drivers. These factors include sectoral bias, which affects the scope, diagnostics, agency of actors and even awareness of aligned or opposing views. Sectors already have pre-existing priorities and legal frameworks into which the new priority must fit, and the introduction of a new priority may not find footing. The type of governance structure (e.g., unitary, republic, federal) matters, which has implications for functionally reaching sub-national levels and influencing them. A well-intentioned national government may have limitations in influencing drivers if the jurisdiction with authority to regulate driver activity is at provincial or sub-national levels. Accountability and power dynamics have a role, as does the political economy, as per Fritz et al. (2014). The role of orchestrators and knowledge brokers through this process influences framing, agency, capacity, sovereignty and other aspects.

All of the factors outlined in steps 1-4 in Figure 7 have a direct bearing on the effectiveness of the policy instrument ultimately affecting and changing the direct and underlying drivers. Furthermore, the factors will change over time. Policy-makers will need to renew and adapt the assessments iteratively, monitoring effectiveness, and adjusting approaches (step 6). In conclusion, a future research agenda is to explore the implications of direct and underlying driver identification (problem definition) in framing policy design options at the national levels and to explore how research can enable better decision-making.

References

- Abbott, K. (2018). Orchestration: Strategic Ordering in Polycentric Governance. In A. Jordan, D. Huitema, H. Van Asselt, & J. Forster (Eds.), *Governing Climate Change: Polycentricity in Action?* (pp. 188-209). Cambridge: Cambridge University Press. doi:10.1017/9781108284646.012
- Abbott, K., Green, J., Keohane, R. (2016). Organizational Ecology and Institutional Change in Global Governance. *International Organization* 70, 247–277.
<https://doi.org/10.1017/S0020818315000338>
- Abbott, K., and Snidal, D. (2009). The governance triangle: Regulatory standards institutions and the shadow of the state. In *The Politics of Global Regulation* (pp. 44-88). Princeton University Press.
- Abbott, K., & Snidal, D. (2006). Nesting, overlap and parallelism: Governance schemes for international production standards. Memo for Alter-Meunier, Princeton Nesting Conference, February 2006.
<http://www.princeton.edu/~smeunier/Abbott%20Snidal%20memo.pdf>. Accessed August 24, 2015.
- Aguiar, A. P. D., Vieira, I. C. G., Assis, T. O., Dalla-Nora, E. L., Toledo, P. M., Oliveira Santos-Junior, R. A., Batistella, M., Coelho, A. S., Savaget, E. K., Aragão, L. E. O. C., Nobre, C. A. and Ometto, J. P. H. (2016), Land use change emission scenarios: anticipating a forest transition process in the Brazilian Amazon. *Glob Change Biol*, 22: 1821–1840.
- African Development Bank (AfDB), Asian Development Bank (AsDB), European Bank for Reconstruction and Development (EBRD), European Investment Bank (EIB), InterAmerican Development Bank Group (IDBG), and the World Bank Group (WBG), and the International Monetary Fund (IMF) (2015). *From Billions to Trillions: MDB Contributions to Financing for Development. Idea to action joint vision booklet*.
- Aldrich, S, R. Walker, C. Simmons, M. Caldas, S. Perz (2012). Contentious Land Change in the Amazon's Arc of Deforestation. *Annals of the Association of American Geographers*, 102:1, 103-128
- Al-Saidi, M. and N.A. Elagib (2017). Towards understanding the integrative approach of the water, energy and food nexus. *Science of The Total Environment*. Vol. 574, 1 January 2017, Pages 1131-1139
- Alford, J. and B. Head (2017). Wicked and less wicked problems: A typology and a contingency framework. *Policy and Society* 36(3):397-413 DOI: 10.1080/14494035.2017.1361634
- Alstone, P., Gershenson, D., & Kammen, D.M. (2015). Decentralized energy systems for clean electricity access. *Nature Climate Change*, 5, 305-314.
- Alter, K. J., & Meunier, S. (2009). The politics of international regime complexity. *Perspectives on Politics*, 7(1), 13–24.
- Amazon Fund (2017). Donations. Summary on website, available at:
http://www.amazonfund.gov.br/FundoAmazonia/fam/site_en/Esquerdo/doacoes/
- Andonova, L., T. Hale, C. Roger (2017). National Policy and Transnational Governance of Climate Change: Substitutes or Complements? *International Studies Quarterly*: 61, 253–268.
- Angelsen, A. and T. Rudell (2013). Designing and Implementing Effective REDD + Policies: A Forest

- Transition Approach. Review of Environmental Economics and Policy, volume 7, issue 1, winter 2013, pp. 91–113 doi:10.1093/reep/res022
- Assunção, J., C. Gandour, R. Rocha, R. Rocha (2013). Does Credit Affect Deforestation? Evidence from a Rural Credit Policy in the Brazilian Amazon. Climate Policy Initiative. Rio de Janeiro.
- Atmadja, S., Martius, C., Leonard, S. and Sanz Sanchez, MJ (2021). Transformational change to reduce deforestation and climate change impacts - A review of definitions, concepts and drivers in scientific and grey literature. Rome, FAO.
- Bartley, T. (2007). Institutional emergence in an era of globalization: The rise of transnational private regulation of labor and environmental conditions. *American Journal of Sociology* 113, 297–351. <https://doi.org/10.1086/518871>
- Bastos Lima, M.G., Braña-Varela, J., Gupta, A., Visseren-Hamakers, I., Huynh, T.B., Kleymann, H., Van Dexter, K., & Belecky, M. (2014). Promoting Non-carbon Benefits in REDD+ Actions. WWF-WUR brief n.1.
- Bastos Lima, M.G, Visseren-Hamakers, I.J., Braña-Varela, J., Gupta, A. (2017). A reality check on the landscape approach to REDD+: Lessons from Latin America. *Forest Policy and Economics* 78: 10-20.
- Bernstein, S., Gupta, J., Andresen, S., Haas, P.M., Kanie, N., Kok, M., Levy, M.A., & Stevens, C. (2014). Coherent Governance, the UN and the SDGs. Post-2015/UNU-IAS Policy Brief 4.
- Bernstein, S. And B. Cashore (2012). Complex global governance and domestic policies: four pathways of influence. *International Affairs*, Volume 88, Issue 3, May 2012, Pages 585–604, <https://doi.org/10.1111/j.1468-2346.2012.01090.x>
- Biermann, F., Pattberg, P., Van Asselt, H., & Zelli, F. (2009). The fragmentation of global governance architectures: A framework for analysis. *Global Environmental Politics*, 9(4), 14–40.
- Birkland, T. (2007). Agenda setting in public policy. Chapter in: *Handbook of public policy analysis: theory, politics, and methods*, edited by F Fischer, G Miller, M Sidney. Taylor and Francis.
- Bos, A., V. De Sy, A. Duchelle, S. Atmadja, S. de Bruin, S. Wunder, M. Herold (2020). Integrated assessment of deforestation drivers and their alignment with subnational climate change mitigation efforts. *Environmental Science & Policy*, Volume 114; 352-365, <https://doi.org/10.1016/j.envsci.2020.08.002>.
- Brack, D. (2014). Sustainable Development Goals and forests: A summary of UN Open Working Group debates and country reflections. London: International Institute for Environment and Development (IIED).
- Braña-Varela, J., D. Lee (2016). Early Reflections on the Implications of the Paris Agreement for REDD+. Meridian Institute. Discussion Paper.
- Brazil Central Bank (2008). Resolution No 3545, Amending MCR 2-1 to establish requirement of documentation proving environmental compliance and other constraints, for purposes of agricultural financing in the Amazon Biome.
- Briassoulis, H. (2011). Governing desertification in Mediterranean Europe: the challenge of environmental policy integration in multi-level governance contexts. *Land Degrad. Dev.* 22, 313–325.

- Bridgestone Group (2018). Global sustainable procurement policy. Available at: https://www.bridgestone.com/responsibilities/procurement/pdf/Policy_English.pdf
- Brockhaus, M., M. Korhonen-Kurki, J. Sehring, M. Di Gregorio, S. Assembe-Mvondo, A. Babon, ... M. Zida (2017). REDD+, transformational change and the promise of performance-based payments: A qualitative comparative analysis. *Climate Policy*, 17(8), 708–730. doi: 10.1080/14693062.2016.1169392
- Brown Weiss, E. (1993). International Environmental Law: Contemporary Issues and the Emergence of a New World Order. *Georgetown Law Journal*, 81(3), 675-710.
- Bryson, J.M., Crosby, B.C. and Stone, M.M. (2015), Designing and Implementing Cross-Sector Collaborations: Needed and Challenging. *Public Admin Rev*, 75: 647-663. <https://doi-org.ezproxy.library.wur.nl/10.1111/puar.12432>
- Byrareddy, V., Kouadio, L., Mushtaq, S., Stone, R. (2019). Sustainable production of robusta coffee under a changing climate: a 10-year monitoring of fertilizer management in coffee farms in Vietnam and Indonesia. *Agronomy* 9, 499.
- Busch, J., K. Ferretti-Gallon (2017). What Drives Deforestation and What Stops It? A Meta-Analysis, *Review of Environmental Economics and Policy*, Volume 11, Issue 1, Winter 2017, Pages 3–23.
- Cabinet Secretary of the Republic of Indonesia (2016). President Joko Widodo Prepares Moratorium on Palm Oil Plantation and Mining Activities. Press release. Downloaded from website on 5 April 2017: <http://setkab.go.id/en/president-joko-widodo-prepares-moratorium-on-palm-oil-plantation-and-mining-activities/>
- Cadman, T., T. Maraseni, H. OkMa, F/ Lopez-Casero (2017). Five years of REDD+ governance: The use of market mechanisms as a response to anthropogenic climate change. *Forest Policy and Economics*, 79, 8–16. doi: 10.1016/j.forpol.2016.03.008
- Candel, J., Biesbroek, R. (2016). Toward a processual understanding of policy integration. *Policy Sci.* 49 (2016), 211–231.
- Carl, J., D. Fedor (2016). Tracking global carbon revenues: A survey of carbon taxes versus cap-and-trade in the real world. *Energy Policy*. Vol. 96, September 2016.
- Carlisle, K., R.L. Gruby (2017). Polycentric Systems of Governance: A Theoretical Model for the Commons. *Policy Studies Journal* 00 (00). <https://doi.org/10.1111/psj.12212>.
- Carlson, K. M., Heilmayr, R., Gibbs, H. K., Noojipady, P., Burns, D. N., Morton, D. C., et al. (2018). Effect of oil palm sustainability certification on deforestation and fire in Indonesia. *Proceedings of the National Academy of Sciences*, 115(1), 121–126.
- Cejudo, G., Michel, C. (2017). Addressing fragmented government action: coordination, coherence, and integration. *Policy Sci.* 50 (2017), 745–767.
- Central Committee of the Communist Party of Viet Nam (2017). “Directive Of The Secretariat On Enhancing Party’s Leadership in Forest Management, Protection and Development.” Directive No. 13-CT/TW. Hanoi.
- Centre for the Promotion of Imports (CPI), 2019. “Exporting Sustainable Coffee to Europe.” Netherlands Enterprise Agency. Website. Available at: <https://www.cbi.eu/market->

- information/coffee/sustainable-coffee.
- Chaffin, B., A. S. Garmestani, L. H. Gunderson, M. Harm Benson, D. Angeler, C. Arnold, B. Cosens, R. K. Craig, J. B. Ruhl, C. R. Allen (2016). Transformative Environmental Governance. *Annual Review of Environment and Resources*; 41:1, 399-423.
- China Chamber of Commerce of Metals, Minerals & Chemicals Importers and Exporters (2017). Guidance for sustainable natural rubber. Available at: <http://en.cccmc.org.cn/news/ccmcinformation/72549.htm>
- Clapp, C. J. Ellis, J. Benn, J. Corfee-Morlot (2012). Tracking climate finance: What and how? *OECD COM/ENV/EPOC/IEA/SLT(2012)1*
- Clapp, J., Scott, C. (2018). The global environmental politics of food. *Global Environ. Pol.* 18 (2), 1–11.
- Cochard, R., Ngo, D.T., Waeber, P.O. and Kull, C.A. (2017). Extent and causes of forest cover changes in Vietnam's provinces 1993–2013: a review and analysis of official data. *Environmental reviews*, 25(2), pp.199-217.
- Colombia (2014). National Development Plan 2014-2018/ Plan Nacional de Desarrollo 2014-2018. Bogotá.
- Crippa, M., E. Solazzo, D. Guizzardi, et al. (2021). Food systems are responsible for a third of global anthropogenic GHG emissions. *Nat. Food* 2, 198–209. doi: 10.1038/s43016-021-00225-9
- Cunningham, P., Edler, J., Flanagan, K., & Laredo, P. (2013). Innovation Policy Mix and Interaction: A Review. NESTA Working Paper 13/20.
- Curtis, P, C Slay, N Harris, A Tyukavina, M Hansen, (2018). Classifying drivers of global forest loss. *Science* 361, 1108–1111 (2018) 14 September 2018.
- Customs News (2018). Forest Product Exports Hit US \$ 8 Billion for the First Time. <https://customsnews.vn/forest-product-exports-hit-us-8-billion-for-the-first-time-5895.ht> ml.
- Dak Nong DARD (2018). Report on the 10-year review of the 7th Central Committee Resolution X.
- Dang Nguyen Anh (2015). Population characteristics and migrants in the Central Highlands. *Vietnam Academy of Social Sciences, Vietnam Journal of Science and Technology*, No. 8, 2015.
- De Sy, V. et al. (2019). Tropical deforestation drivers and associated carbon emission factors derived from remote sensing data. *Environ. Res. Lett.* 14, 094022. doi: 10.1088/1748- 9326/ab3dc6
- Death, C., & Gabay, C. (2015). Doing biopolitics differently? Radical potential in the post-2015 MDG and SDG debates. *Globalizations*, 12(4), 597-612.
- Den Besten, J.W., Arts, B., & Verkooijen, P. (2014). The Evolution of REDD+: An Analysis of Discursive-Institutional Dynamics. *Environmental Science & Policy*, 35, 40-48.
- Denzin, N.K. (2015). Triangulation. In *The Blackwell Encyclopedia of Sociology*, G. Ritzer (Ed.). <https://doi.org/10.1002/9781405165518.wbeost050.pub2>
- Di Gregorio, M., Nurrochmat, D.R., Paavola, J., Sari, I.M., Fatorelli, L., Pramova, E., Locatelli, B., Brockhaus, M., Kusumadewi, S.D. (2017). Climate policy integration in the land use sector: mitigation, adaptation and sustainable development linkages. *Environ. Sci. Pol.* 67 (January (1)), 35–43.

- Do, A.T. (2015). Drivers of Forest Change in the Greater Mekong Sub-Region - Vietnam Country Report. USAID.
- Duchelle, A. E. et al. (2014). Linking Forest Tenure Reform, Environmental Compliance, and Incentives: Lessons from REDD+ Initiatives in the Brazilian Amazon, World Development.
- Dummett, C., A. Blundell, K. Canby, M. Wolosin, E. Bodnar (2021) "Illicit harvest, complicit goods: The state of illegal deforestation for agriculture." Forest Trends. https://www.forest-trends.org/wp-content/uploads/2021/05/Illicit-Harvest-Complicit-Goods_rev.pdf
- Eckstein, D., Künzel, V., Schäfer, L. (2018). Global Climate Risk Index 2018. Germanwatch.
- Ei Ei Khin Aye (2016). Statement by Ms. Ei Ei Khin Aye, Ambassador/Deputy Permanent Representative of the Republic of the Union of Myanmar to the United Nations in New York at the Ministerial Meeting of the High-Level Political Forum on Sustainable Development.
- Elgert, L. (2012). Certified Discourse? The Politics of Developing Soy Certification Standards. *Geoforum* 43 (2): 295–304. <https://doi.org/10.1016/j.geoforum.2011.08.008>.
- FAO (2015). Global Forest Resources Assessment 2015: Vietnam Country Report. Available at: <http://www.fao.org/3/a-az373e.pdf>
- FAO (2014). The Water-Energy-Food Nexus: A new approach in support of food security and sustainable agriculture. FAO, Rome.
- FAO and UNEP (2020). The State of the World's Forests 2020. Forests, biodiversity and people. Rome. <https://doi.org/10.4060/ca8642en>
- Ferrer Velasco R, Köthke M, Lippe M, Günter S (2020) Scale and context dependency of deforestation drivers: Insights from spatial econometrics in the tropics. *PLoS ONE* 15(1): e0226830. <https://doi.org/10.1371/journal.pone.0226830>
- Financial Times (2018). 'Vietnam's coffee growers face profit squeeze from bumper crop'. 21st August 2018.
- Forest Stewardship Council (2015). Forest Stewardship Council disassociates from the Viet Nam Rubber Group. Press release: <https://ic.fsc.org/en/news-updates/fsc-press-releases/id/1288>
- Frechette, A., M de Bresser, R Hofstede (2014). External Evaluation of the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries (the UN-REDD Programme), Volume I – Final Report.
- Friedman, M., W. Heller (1969). Monetary Vs. Fiscal Policy. Norton.
- Fritz, V., B. Levy, R. Ort (2014). Problem- Driven Political Economy Analysis: The World Bank's Experience. Directions in Development. Washington, DC: World Bank. doi:10.1596/978-1-4648-0121-1.
- Fujisaki, T.; Hyakumura, K.; Scheyvens, H.; Cadman, T. (2016). Does REDD+ Ensure Sectoral Coordination and Stakeholder Participation? A Comparative Analysis of REDD+ National Governance Structures in Countries of Asia-Pacific Region. *Forests*, 7, 195. <https://doi.org/10.3390/f7090195>.
- Fürst, C., S. Luque, D. Geneletti (2017) Nexus thinking –how ecosystem services can contribute to enhancing the cross-scale and cross-sectoral coherence between land use, spatial planning and

- policy-making, *International Journal of Biodiversity Science, Ecosystem Services & Management*, 13:1, 412-421, DOI: 10.1080/21513732.2017.1396257
- Gaveau, D., B. Locatelli, M.A Salim, H. Yaen, P. Pacheco, D. Sheil (2019). Rise and fall of forest loss and industrial plantations in Borneo (2000-2017). *Conservation Letters*, 12(3), e12622. <http://doi.wiley.com/10.1111/conl.12622>.
- Gehring, T., & Oberthür, S. (2009). The causal mechanisms of interaction between international institutions. *European Journal of International Relations*, 15(1), 125-156.
- Geist H., Lambin E. (2002). Proximate causes and underlying driving forces of tropical deforestation. *BioScience* 52: 143–150.
- General Statistics Office of Viet Nam (2018). Statistical Data, Agriculture, Forestry and Fisheries. Accessed on 20 July 2018 at <https://www.gso.gov.vn/>
- General Statistics Office of Vietnam (2017). Statistics for Agriculture, Forestry and Fishing. Available at: https://www.gso.gov.vn/default_en.aspx?tabid=778
- Giessen, L., S. Burns, M. A. K. Sahide, A. Wibowo (2016). From governance to government: The strengthened role of state bureaucracies in forest and agricultural certification, *Policy and Society*, <https://doi.org/10.1016/j.polsoc.2016.02.001>.
- Givens, J., J. Padowski, C. Guzman, K. Malek, R. Witinok-Huber, B. Cosens, M. Briscoe, J. Boll, J. Adam, (2018). Incorporating Social System Dynamics in the Columbia River Basin: Food-Energy-Water Resilience and Sustainability Modeling in the Yakima River Basin. *Front. Environ. Sci.*; <https://doi.org/10.3389/fenvs.2018.00104>
- Global Environmental Facility (2018). GEF-7 Replenishment Programming Directions. Fourth Meeting for the Seventh Replenishment of the GEF Trust Fund. GEF/R.7/19, April 25, 2018.
- Government of Argentina (2016). Nationally Determined Contribution. Draft as ratified on 21 September 2016.
- Government of Bangladesh (2015). Intended Nationally Determined Contribution. Ministry of Environment and Forests (MOEF). Submitted as NDC on 21/09/2016.
- Government of Belize (2016). Nationally Determined Contribution under the United Nations Framework Convention on Climate Change. Submitted as NDC on 20/04/2016.
- Government of Bolivia (2016). Intended Nationally Determined Contribution. Submitted to UNFCCC as NDC on 21/05/2016.
- Government of Brazil (2016). Intended Nationally Determined Contribution. Federative Republic of Brazil submission to UNFCCC 21/09/2016.
- Government of Brazil (1974). II Plano Nacional de Desenvolvimento (PND II) (1975 -1979).
- Government of Brazil (1998). Environmental Crimes Act; Law 9605 of 1998. Available at: www.planalto.gov.br/ccivil_03/leis/l9605.htm
- Government of Brazil. IPEADATA macroeconomic database. (Available from <http://www.ipeadata.gov.br/Default.aspx>)
- Government of Brazil National Institute of Space Research (INPE) (2018). Project for Monitoring

- Deforestation in the Legal Amazon by Satellite (Prodes). Available at:
<http://terrabrasilis.info/composer/PRODES>
- Government of Burkina Faso (2015). Intended Nationally Determined Contribution. Submitted as NDC on 11/11/2016.
- Government of Cambodia (2017). Intended Nationally Determined Contribution. Submitted 06/02/2017.
- Government of Cameroon (2016). Intended Nationally Determined Contribution. Submitted 29/07/2016.
- Government of Central African Republic (2015). Intended Nationally Determined Contribution. Submitted 11/10/2016.
- Government of Chad (2015). Intended Nationally Determined Contribution. Submitted as NDC on 12/01/2017.
- Government of Chile (2015). Intended Nationally Determined Contribution. Submitted as NDC on 10/02/2017.
- Government of Costa Rica (2015). Intended Nationally Determined Contribution. Submitted as NDC on 13/10/2016.
- Government of Cote d'Ivoire (2015). Intended Nationally Determined Contribution. Submitted as NDC on 25/10/2016.
- Government of El Salvador (2015). Intended Nationally Determined Contribution. Submitted as NDC on 27/03/2017.
- Government of Ethiopia (2015). Intended Nationally Determined Contribution. Submitted as NDC on 09/03/2017.
- Government of Fiji (2015). Intended Nationally Determined Contribution. Submitted as NDC on 22/04/2016.
- Government of Gabon (2015). Intended Nationally Determined Contribution. Submitted as NDC on 02/11/2016.
- Government of Ghana (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Guatemala (2015). Intended Nationally Determined Contribution. Submitted as NDC on 25/01/2017.
- Government of Guyana (2015). Intended Nationally Determined Contribution. Submitted as NDC on 20/05/2016.
- Government of Honduras (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of India (2015). Climate Change Finance, Analysis of a Recent OECD Report: Some Credible Facts Needed. Climate Change Finance Unit, Department of Economic Affairs, Ministry of Finance.
- Government of Indonesia (2017). Annual Report of the Peatland Restoration Agency/ Laporan Tahunan 2016: Mengawali Restorasi Gambut Indonesia.

References

- Government of Indonesia (2016). First Nationally Determined Contribution of the Republic of Indonesia.
- Government of Indonesia (2015a). 2015-2019 National Medium-Term Development Plan (Rencana Pembangunan Jangka Menengah Nasional (RPJMN)).
- Government of Indonesia (2015b). Presidential Instruction No. 8 of 2015 Concerning postponement of new permit and improvement of management of primary natural forest and peatland.
- Government of Kenya (2015). Intended Nationally Determined Contribution. Submitted as NDC on 28/12/2016.
- Government of the Kingdom of Norway and the Government of the Republic of Indonesia (2010). Letter of Intent on Cooperation on reducing greenhouse gas emissions from deforestation and forest degradation.
- Government of Lao PDR (2015). Intended Nationally Determined Contribution. Submitted as NDC on 07/09/2016.
- Government of Madagascar (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Malaysia (2015). Intended Nationally Determined Contribution. Submitted as NDC on 16/01/2016.
- Government of Mexico (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Mongolia (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Morocco (2016). Nationally Determined Contribution. 19/09/2016.
- Government of Nepal (2016). Nationally Determined Contribution. 05/10/2016.
- Government of Netherlands (2015). Climate and development cooperation. Ministry of Foreign Affairs. <https://www.government.nl/topics/development-cooperation/climate-and-development-cooperation>
- Government of Norway (2017). Letter from Royal Norwegian Ministry of Climate and Environment Minister Vidar Helgesen to Brazil Ministry of Environment Minister José Sarney Filho. June 2017.
- Government of Norway (2015). Germany, Norway and the United Kingdom pledge \$5 billion to support forests as an essential climate solution. Media release, available at: <https://www.regjeringen.no/no/aktuelt/regnskog-gnu/id2464937/>
- Government of Pakistan (2016). Intended Nationally Determined Contribution. Submitted as NDC on 10/11/2016.
- Government of Panama (2016). Nationally Determined Contribution. 28/04/2016.
- Government of Paraguay (2016). Nationally Determined Contribution. 14/10/2016.
- Government of Perú (2015). Intended Nationally Determined Contribution. Submitted as NDC on 25/07/2016.
- Government of Papua New Guinea (2015). Intended Nationally Determined Contribution. Submitted as

- NDC on 24/03/2016.
- Government of Rwanda (2015). Intended Nationally Determined Contribution. Submitted as NDC on 06/10/2016.
- Government of Sri Lanka (2016). Nationally Determined Contribution. Submitted on 06/11/2016.
- Government of Uganda (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Vanuatu (2015). Intended Nationally Determined Contribution. Submitted as NDC on 21/09/2016.
- Government of Vietnam (2018a). Decree No.: 57/2018/ND-CP dated April 17, 2018 of the Government on incentive policies for enterprises investing in agriculture and rural development sector. Ministry of Planning and Investment.
- Government of Vietnam (2018b). Law on Crop Production.
- Government of Vietnam, (2018c). Brief on Implementation of the Planning Law. Ministry of Justice. Dated: 06/02/2018.
- Government of Vietnam and European Union (2018) Voluntary Partnership Agreement between the European Union and the Socialist Republic of Vietnam on Forest Law Enforcement, Governance and Trade.
- Government of Vietnam (2017a). Decision No. 419/QĐ- TTg (2017) on the Reduction of Green-house Gas Emissions through the reduction of Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks (2017 National REDD+ Action Programme)
- Government of Vietnam (2017b). Law on Forestry, No.16/2017/QH14.
- Government of Vietnam (2017c). NRAP Mid-Term Investment Plan (NRIP) 2017-2020. Annexes.
- Government of Vietnam (2017d). Law on Planning, No.21/2017/QH14.
- Government of Vietnam (2017e). Decision 886/QĐ-TTg. Decision on approving the Target Programme for Sustainable Forest Development for the 2016-2020 Period.
- Government of Viet Nam (2016b). Climate change and sea level rise scenarios for Viet Nam. Ministry of Natural Resources and Environment.
- Government of Viet Nam (2016c). Sustainable Coffee Plan to 2020 and Vision to 2030
- Government of Viet Nam (2015a). Intended Nationally Determined Contribution. Submitted as NDC on 03/11/2016.
- Government of Viet Nam (2015b). Decision No. 750/QĐ-TTg of the Prime Minister on rubber development to 2015 and vision to 2020.
- Government of Viet Nam (2015c). Decision, No. 5414/QĐ-BNN-TCLN Dated 25 December 2015 on Approval of the Guidelines on Development of Provincial Action Plans on Reducing Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Forest Management, and Conservation and Enhancement of Forest Carbon Stocks (REDD+); MARD: Hanoi,

- Vietnam, 2015.
- Government of Vietnam (2014). Decision 3417 / QD-BNN-TT, 2014 Approving the Scheme on Sustainable Coffee Industry Development by 2020. Promulgated by Minister of Agriculture and Rural Development.
- Government of Vietnam (2013). Circular 08/2013/TT-BCT, Issued by the Ministry of Industry and Trade.
- Government of Vietnam (2012). Decision No.: 799/QD-TTg of the Prime Minister On Approval of the National Action Program on Reduction of Green-House Gas Emissions Through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks 2011 – 2020.
- Government of Zambia (2015). Intended Nationally Determined Contribution. Submitted as NDC on 09/12/2016.
- Grabs, J., Auld, G. and Cashore, B. (2021), Private regulation, public policy, and the perils of adverse ontological selection. *Regulation & Governance*, 15: 1183-1208.
<https://doi.org/10.1111/rego.12354>
- Gragg, R.S., A Aavudai, M. Jiru, K. Usher (2018). A Conceptualization of the Urban Food-Energy-Water Nexus Sustainability Paradigm: Modeling From Theory to Practice. *Frontiers in Environmental Science*. DOI=10.3389/fenvs.2018.00133
- Green Climate Fund (2017a). Resources Mobilized. Summary of pledges to date on website, accessed 31 March 2017: <http://www.greenclimate.fund/partners/contributors/resources-mobilized>.
- Green Climate Fund (2017b). Status of the Initial Resource Mobilization process. 4-6 April 2017 Board meeting note, GCF/B.16/Inf.10, 14 March 2017.
- Green Climate Fund (2014). Initial Results Management Framework of the Fund. GCF/B.07/04, 7 May 2014.
- Griggs, D., Stafford Smith, M., Rockström, J., Ohman, M.C., Gaffney, O., Glaser, G., Kanie, N., Noble, I., Steffen, W., & Shyamsundar, P. (2014). An integrated framework for sustainable development goals. *Ecology and Society*, 19(4), 49.
- Griscom, BW et al. (2020) National mitigation potential from natural climate solutions in the tropics. *Phil. Trans. R. Soc. B* 375: 20190126. <http://dx.doi.org/10.1098/rstb.2019.0126>
- Grogan, K., Pflugmacher, D., Hostert, P. et al. (2019). Unravelling the link between global rubber price and tropical deforestation in Cambodia. *Nature Plants* 5, 47–53. <https://doi.org/10.1038/s41477-018-0325-4>
- Grosjean G, Monteils F., Hamilton S.D., Blaustein-Rejto D., Gatto M., Talsma T., Bourgoin C., Sebastian, L.S., Catacutan D., Mulia R., Bui Y., Tran D.N., Nguyen K.G., Pham M.T., Lan L.N., Läderach P. (2016). Increasing Resilience to Droughts in Vietnam; The Role of Forests, Agroforests and Climate Smart Agriculture. CCAFS- CIAT-UN-REDD Position Paper n. 1, Hanoi, Vietnam.
- Gunawan, I.K. (2004). The politics of the Indonesian Rainforest: A rise of forest conflicts in East Kalimantan during Indonesia's early stage of democratisation.
- Gunningham, N. & Sinclair, D. (1999). Regulatory Pluralism: Designing Policy Mixes for Environmental Protection. *Law & Policy* 21(1), 49-76.

- Gupta, A., Pistorius, T., & Vijge, M. (2015). Managing fragmentation in global environmental governance: the REDD+ Partnership as bridge organization. *International Environmental Agreements*, DOI 10.1007/s10784-015-9274-9.
- Gupta, J., Scholtens, J., Perch, L., , I. Dankelman, J. Seager, F. Sándor, M. Stanley-Jones, I. Kempf (2020). Re-imagining the driver–pressure–state–impact–response framework from an equity and inclusive development perspective. *Sustain Sci* 15, 503–520 (2020). <https://doi.org/10.1007/s11625-019-00708-6>
- Gupta, J., Baud, I., Bekkers, R., Bernstein, S., Boas, I., Cornelissen, V., Iguchi, M., Kanie, N., Kim, R.E., Bastos Lima, M., Obani, P., Schoof, P., Stevens, C., & van Zoomeren, D. (2014). Sustainable Development Goals and Inclusive Development. Post-2015/UNU-IAS Policy Brief 5.
- Gusti, M., Forsell, N., Havlik, P., Khaborov, N., Kraxner, F., M. Obersteiner (2019). The sensitivity of the costs of reducing emissions from deforestation and degradation (REDD) to future socioeconomic drivers and its implications for mitigation policy design. *Mitig Adapt Strateg Glob Change* 24, 1123–1141 <https://doi.org/10.1007/s11027-018-9817-9>
- Ha, D.T. and Shively, G. (2008). Coffee boom, coffee bust and smallholder response in Vietnam’s central highlands. *Review of Development Economics*, 12(2), pp.312-326.
- Ha, S., T. Hale, P. Ogden (2016). Climate Finance in and between Developing Countries: An Emerging Opportunity to Build On. *Global Policy* (2016) 7:1 doi: 10.1111/1758-5899.12293
- Hajer, M., Nilsson, M., Raworth, K., Bekker, P., Berkhout, F., de Boer, Y., Rockstrom, J., Ludwig, K., & Kok, M. (2015). Beyond Cockpit-ism: Four Insights to Enhance the Transformative Potential of the Sustainable Development Goals. *Sustainability*, 7, 1651-1660.
- Hale, T., C. Roger. (2014) Orchestration and Transnational Climate Governance. *Review of International Organizations* 9(1):59–82.
- Hanh, Nguyen Thi Thuy (2018). Solutions to improve the value added of the rubber value chain in the Central highlands of Vietnam. *Australasian Agribusiness Perspec.* 21 (6), 2018 ISSN: 1442-6951.
- Hannam, P., Z. Liao, S. Davis, M. Oppenheimer (2015). Developing country finance in a post-2020 global climate agreement. *Nature Climate Change*.
- Harrison, H., Birks, M., Franklin, R., & Mills, J. (2017). Case Study Research: Foundations and Methodological Orientations. *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research*, 18(1). <https://doi.org/10.17169/fqs-18.1.2655>
- Head, B. (2018). Forty years of wicked problems literature: forging closer links to policy studies. *Policy and Society*, DOI: 10.1080/14494035.2018.1488797
- Head, B. W. and J. Alford (2015). ‘Wicked Problems: Implications for Public Policy and Management’, *Administration & Society*, 47(6), pp. 711–739. doi: 10.1177/0095399713481601.
- Hecht, S (1985). Environment, development and politics: Capital accumulation and the livestock sector in eastern Amazonia. *World Development*. Volume 13, Issue 6.
- Hein, J. A. Guarin, E. Frommé, P. Pauw, 2018. Deforestation and the Paris climate agreement: An assessment of REDD+ in the national climate action plans. *Forest Policy and Economics*; Vol 90,p. 7-11. <https://doi.org/10.1016/j.forpol.2018.01.005>.

- Ho, T.Q., Hoang, V.N., Wilson, C., Nguyen, T.T. (2018). Eco-efficiency analysis of sustainability-certified coffee production in Vietnam. *J. Cleaner Prod.* 183, 251–260.
- Hoang, N.T. and K. Kanemoto (2021). 'Mapping the deforestation footprint of nations reveals growing threat to tropical forests', *Nature Ecology & Evolution*, 1-9, available: <http://dx.doi.org/10.1038/s41559-021-01417-z>.
- Hoff, H. (2011). Understanding the Nexus. Background Paper for the Bonn2011 Conference: The Water, Energy and Food Security Nexus. Stockholm Environment Institute, Stockholm.
- Hogl, Karl, Kleinschmit, Daniela, Rayner, Jeremy (2016). Achieving policy integration across fragmented policy domains: Forests, agriculture, climate and energy. *Environment and Planning C: Government and Policy* 34.
- Hooghe, L. and G. Marks (2001). *Multi-Level Governance and European Integration*. Lanham, MD: Rowman & Littlefield.
- Houghton, R.A. (2012). Carbon emissions and the drivers of deforestation and forest degradation in the tropics. *Current Opinion in Environmental Sustainability*, 4(6), 597-603.
- Howlett, M., How, Y.P., del Río, P. (2015). The parameters of policy portfolios: verticality and horizontality in design spaces and their consequences for policy mix formulation. *Environ. Planning C: Govern.Pol.* 33 (5), 1233–1245.
- Howlett, M., M Ramesh, X Wu (2015). Understanding the persistence of policy failures: The role of politics, governance and uncertainty. *Public Policy and Administration* 2015, Vol. 30(3–4) 209–220.
- Howlett, M., Vince, J., del Río, P. (2017). Policy integration and multi-level governance: dealing with the vertical dimension of policy mix designs. *Politics Gov.* 5 (2), 69–78.
- Hurri, S., N Nguyen Quang (2015). Rural Finance of Coffee Smallholders in Vietnam - Case Study in Dak Nong Province. IFAD Field Report.
- Huỳnh Anh Chi Thái (2018). *Livelihood pathways of indigenous people in Vietnam's Central Highlands: Exploring land-use change*. Springer.
- ICSU/ISSC (2015). *Review of the Sustainable Development Goals: The Science Perspective*. Paris: International Council for Science (ICSU).
- Index Mundi (2019). *Commodity Prices: Rubber*. Downloaded on 4 December 2019. <https://www.indexmundi.com/commodities/?commodity=rubber&months=120>
- Indochina Research and Consulting JSC (IRC) (2018). Research analysis of coffee value chain of Vietnam. Report to Sustainable Agriculture Conversion Project in Vietnam (VNSAT).
- Indonesia (2016). *Technical Guidelines for Action Plan for Sustainable Development: Zero Draft*. Ministry of National Development Planning (Bappenas).
- Indonesia (2015). *Intended Nationally Determined Contribution*. Submitted to the United Nations Framework Convention on Climate Change. 24 September, 2015.
- Indonesian REDD+ Task Force (2012). *REDD+ National Strategy*. Jakarta.
- Intergovernmental Panel on Climate Change (2022). Chapter 7: Agriculture, Forestry and Other Land Uses (AFOLU). WG III; Intergovernmental Panel on Climate Change Sixth Assessment Report.

- IPSARD (2015). Action plan integrating REDD+ into rubber development. UN-REDD Vietnam, Hanoi.
- Ivanova, M. (2013). The Contested Legacy of Rio+20. *Global Environmental Politics*, 13(4), 1-11.
- Jagger, P., Brockhaus, M., Duchelle, A.E., Gebara, M.F., Lawlor, K., Resosudarmo, I.A.P., & Sunderlin, W.P. (2014). Multi-Level Policy Dialogues, Processes, and Actions: Challenges and Opportunities for National REDD+ Safeguards Measurement, Reporting, and Verification (MRV). *Forests*, 5, 2136-2162.
- Jia, G., E. Shevliakova, P. Artaxo, N. De Noblet-Ducoudré, R. Houghton, J. House, K. Kitajima, C. Lennard, A. Popp, A. Sirin, R. Sukumar, L. Verchot (2019): Land-climate interactions. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems [P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D.C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi, J. Malley, (eds.)].
- Jordan, A., D. Huitema, J. Schoenefeld, H. van Asselt, J. Forster (2018). Governing Climate Change Polycentrically: Setting the Scene. In A. Jordan, D. Huitema, H. Van Asselt, & J. Forster (Eds.), *Governing Climate Change: Polycentricity in Action?* (pp. 3-26). Cambridge: Cambridge University Press. doi:10.1017/9781108284646.002.
- Jordan, A., R. Wurzel, A. Zito (2013). Still the century of 'new' environmental policy instruments? Exploring patterns of innovation and continuity. *Environmental Politics*, 22:1, 155-173, DOI: 10.1080/09644016.2013.755839.
- Jordan, A., Lenschow, A. (2010). Environmental policy integration: a State of the art review. *Environ. Policy Gov.* 20, 147–158.
- Jordan, A., Huitema, D., Van Asselt, H., Forster, J. (Eds.) (2018). *Governing Climate Change: Polycentricity in Action?*. Cambridge University Press, Cambridge.
- Kaimowitz, D., A. Angelsen (1998). *Economic Models of Tropical Deforestation: a Review*. Center for International Forestry Research (CIFOR).
- Kellow, A. (2012). Multi-level and multi-arena governance: the limits of integration and the possibilities of Forum shopping. *Int. Environ. Agreements* 12, 327–342.
- Kharas, H. (2016). Aid and climate finance. Briefing note. Brookings Institution.
- Khuc, Q.V., B.Q. Tran, P. Meyfroidt, M. Paschke (2018). Drivers of deforestation and forest degradation in Vietnam: An exploratory analysis at the national level. *Forest Policy and Economics*, Elsevier, vol. 90(C), pages 128-141.
- Killeen, T., G. Harper (2016). *Coffee in the Twenty First Century: Will Climate Change and Increased Demand Lead to New Deforestation?* Conservation International.
- Kim Dung, N., Bush, S.R., Mol, A.P.J. (2017). The Vietnamese legal and policy framework for co-management in special-use forests. *Forests* 8 (7), 262.
- Kissinger, G., A. Gupta, I. Mulder, N. Unterstell (2019). Climate financing needs in the land sector under the Paris Agreement: An assessment of developing country perspectives. *Land Use Policy*, 83, 256–269. <https://doi.org/10.1016/j.landusepol.2019.02.007>

- Kissinger, G., M.D. Almeida, J. Coello (2015). Fiscal incentives for agricultural commodity production: Options to forge compatibility with REDD+. UN-REDD Programme Policy Brief #7.
- Kissinger, G., M. Herold, V. De Sy. (2012). Drivers of Deforestation and Forest Degradation: A Synthesis Report for REDD+ Policymakers. Lexeme Consulting, Vancouver Canada.
- Korhonen-Kurki, K., M. Brockhaus, J. Sehring, M. di Gregorio, S. Assembe-Mvondo, A. Babon, M. Bekele, V. Benn, M. Fernanda Gebara, H. W. Kambire, F. Kengoum, C. Maharani, M. Menton, M. Moeliono, R. Ochieng, N. Sharma Paudel, T.T. Pham, G. P. Dkamela, A. Siteo (2018). What drives policy change for REDD+? A qualitative comparative analysis of the interplay between institutional and policy arena factors, *Climate Policy*, DOI: 10.1080/14693062.2018.1507897
- Korhonen-Kurki, K., Brockhaus, M., Bushley, B., Babon, A., Gebara, M.F., Kengoum, F., Pham, T.T., Rantala, S., Moeliono, M., Dwisatrio, B. and Maharani, C. (2016). Coordination and cross-sectoral integration in REDD+: experiences from seven countries. *Climate and Development*, 8(5), pp.458-471.
- Korhonen-Kurki, K., Brockhaus, M., Duchelle, A.E., Atmadja, S., Thu Thuy, P., Schofield, L. (2013). Multiple levels and multiple challenges for measurement, reporting and verification of REDD+. *Int. J. Commons* 7 (2), 344–366.
- Krasner, S.D. (1982). Structural causes and regime consequences: regimes as intervening variables. *International Organization*, 36(2), 185-205.
- Kuik, O., Bastos Lima, M.G & Gupta, J. (2011). "Energy Security in a Developing World. *Wiley Interdisciplinary Reviews: Climate Change*, 2(4), 627-634.
- Lambin E., P. Meyfroidt, X. Rueda, A. Blackman, J. Börner, P. Cerutti, T. Dietsch, L. Jungmann, P. Lamarque, J. Lister, N. Walker, S. Wunder (2014). Effectiveness and synergies of policy instruments for land use governance in tropical regions. *Global Environmental Change*, 28(1): 129–140.
- Lam Dong DARD (2013). Report: Approving the results of reviewing and adjusting the planning on development of rubber plantation in Lam Dong province. Submitted to Lam Dong People's Committee in response to Document No. 5102 / UBND-LN dated 29/8/2013.
- Lang, V.F. & Lingnau, H. (2015). Defining and Measuring Poverty and Inequality Post-2015. *Journal of International Development*, 27, 399-414.
- Lister, J. (2011). Corporate social responsibility and the state: international approaches to forest co-regulation. UBC Press.
- Liu, J., Hull, V., Godfray, H.C.J. et al. (2018). Nexus approaches to global sustainable development. *Nature Sustainability* 1, 466–476. <https://doi.org/10.1038/s41893-018-0135-8>.
- Loewe, M. (2012). Post 2015: How to Reconcile the Millennium Development Goals (MDGs) and the Sustainable Development Goals (SDGs)? German Development Institute (DIE) Briefing Paper 18/2012.
- Lu, Y., Nakisenovic, N., Visbeck, M., & Stevance, A.S. (2015). Five priorities for the UN Sustainable Development Goals. *Nature*, 520, 432-433.
- Macedo, M., R. DeFries, D. Morton, C. Stickler, G. Galford, Y. Shimabukuro (2012). Decoupling of deforestation and soy production in the southern Amazon during the late 2000s. *Proc Natl Acad Sci*

- U S A. 2012;109(4):1341-1346. doi:10.1073/pnas.1111374109
- MARD (2018). Modified Submission of Reference Level for REDD+ Results Based Implementation in Vietnam. Available online: http://redd.unfccc.int/files/vietnam_frl_modified__submission_final_for_posting.pdf (accessed on 5 June 2018)
- MARD (2017). Các tỉnh Tây Nguyên cần ngăn chặn tình trạng phát triển cây sắn ồ ạt. The Central Highlands provinces should prevent the development of mass cassava. Retrieved on July 30, 2018 at <https://www.mard.gov.vn/Pages/cac-tinh-tay-nguyen-can-ngan-chan-tinh-trang-phat-trien-cay-san-o-at.aspx>
- MARD (2016a). Decision No. 3158/BNN-TCLN dated 27 July 2016 of the Ministry of Agriculture and Rural Development.
- MARD (2016b). Modified Submission of Reference Level for REDD+ Results Based Implementation in Vietnam. http://redd.unfccc.int/files/vietnam_frl_modified__submission_final_for_posting.pdf
- MARD (2015). Decision No. 5414/QĐ-BNN-TCLN dated 25 December 2015 on Approval of the Guidelines on Development of Provincial Action Plans on Reducing Greenhouse Gas Emissions Through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Forest Management, and Conservation and Enhancement of Forest Carbon Stocks (REDD+).
- Margono, B.A., P. Potapov, S. Turubanova, F. Stolle, M. Hansen (2014). Primary forest cover loss in Indonesia over 2000–2012. *Nature Climate Change* 4, 730–735.
- Marsh, A. (2007). Diversification by smallholder farmers: Viet Nam Robusta Coffee. Food and Agriculture Organization of the United Nations. Agricultural Management, Marketing and Finance Service, Rome.
- Maryudi, A., H. Kartodihardjo, H. Putro (2020). Review of Ministry of Trade Regulation No. 15/2020: Safeguarding Indonesia's forest product exports. Policy Brief, Faculty of Forestry, University of Gadjah Mada <http://sebijak.fkt.ugm.ac.id/wp-content/uploads/sites/959/2020/04/Policy-Brief-Safeguarding-Indonesia%E2%80%99s-Forest-Product-Exports-English.pdf>
- McElwee, P. (2016). *Forest Are Gold: Trees, People, and Environmental Rule in Vietnam*. University of Washington Press, Washington DC.
- McGinnis, M. D., and E. Ostrom (2014). Social-ecological system framework: initial changes and continuing challenges. *Ecology and Society* 19(2): 30.
- McFarland, W., S. Whitley, G. Kissinger (2015). Subsidies to key commodities driving forest loss: Implications for private climate finance. Overseas Development Institute, London.
- McNally, R., Vu Tan Phuong, Nguyen The Chien, Pham Xuan Phuong, Nguyen Viet Dung (2016). Issues and Options: Support for the revision of the Vietnams National REDD+ Action Programme (NRP) 2016-2020, Hanoi.
- Merriam, S. B. (2009). *Qualitative Case Study Research Qualitative research: a guide to design and implementation*. San Francisco, CA: Jossey-Bass.
- Meyfroidt P., and E. Lambin (2008a). Forest transition in Vietnam and its environmental impacts. *Global Change Biology* (2008) 14, 1319–1336, doi: 10.1111/j.1365-2486.2008.01575.x

- Meyfroidt P., and E. Lambin (2008b). The causes of the reforestation in Vietnam. *Land Use Policy* 25 (2008) 182–197.
- Meyfroidt, P., P. Vu Tan, A. Hoang Viet (2013). Trajectories of deforestation, coffee expansion and displacement of shifting cultivation in the Central Highlands of Vietnam. *Global Environmental Change* 23 (2013) 1187–1198.
- Michaelowa, K, A. Michaelowa (2017). Transnational Climate Governance Initiatives: Designed for Effective Climate Change Mitigation?, *International Interactions*, 43:1, 129-155, DOI: 10.1080/03050629.2017.1256110
- Michelin Tire Company (2016). Sustainable natural rubber policy. Available at: https://michelinmedia.com/site/user/files/1/SUSTAINABLE-NATURAL-RUBBER-POLICY_VD.pdf
- Ministry of Planning and Investment (2017). Public Private Partnerships and Poverty Reduction and Sustainable Development in Ethnic Minorities: Guidelines and Policies of the Government of Vietnam.
- Mitchell, A. (2018). A Review of Mixed Methods, Pragmatism and Abduction Techniques. *The Electronic Journal of Business Research Methods*, 16(3), pp. 103-116.
- Mitchell, R.B. (2008). Evaluating the performance of environmental institutions: What to evaluate and how to evaluate it? In O.R. Young, L.A. King, & H. Schroeder (Eds) *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (pp. 79-114). Cambridge, MA: MIT Press.
- Moog, S., A. Spicer, S. Böhm (2015). “The Politics of Multi-Stakeholder Initiatives: The Crisis of the Forest Stewardship Council.” *Journal of Business Ethics* 128 (3): 469–93. <https://doi.org/10.1007/s10551-013-2033-3>.
- Mpandeli, S., L. Nhamo, S. Hlahla, D. Naidoo, S. Liphadzi, A. Thembinkosi Modi, T. Mabhaudhi (2020). Migration Under Climate Change in Southern Africa: A Nexus Planning Perspective. *Sustainability* 12 (11): 4722–22. <https://doi.org/10.3390/su12114722>.
- Nakhooda, S. and M. Norman (2014). Climate Finance: Is it making a difference? A review of the effectiveness of Multilateral Climate Funds. Overseas Development Institute.
- Nepstad, D., Irawan, S., Bezerra, T., Boyd, W., Stickler, C., Shimada, J., Carvalho, O., MacIntyre, K., Dohong, A., Alencar, A., Azevedo, A., Tepper, D., & Lowert, S. (2013). More Food, More Forests, Fewer Emissions, Better Livelihoods: Linking REDD+, Sustainable Supply Chains and Domestic Policy in Brazil, Indonesia and Colombia. *Carbon Management*, 4(6), 639-658.
- Neely, C., M. Bourne, S. Chesterman, I. Kouplevatskaya-Buttoud, D. Bojic, D. Vallée (2017). Implementing 2030 Agenda for Food and Agriculture: Accelerating Impact through Cross-Sectoral Coordination at the Country Level. FAO and World Agroforestry Centre.
- Newton, P., A.E.A Gomez, S. Jung, T. Kelly, T. de Araújo Mendes, L. Vang Rasmussen, J.C. dos Reise, R. de Aragão Ribeiro Rodrigues, R Tipper, D van der Horst, C Watkins (2016). Overcoming barriers to low carbon agriculture and forest restoration in Brazil: The Rural Sustentável project. *World Development Perspectives*, Volume 4, December 2016.
- Nguyễn Hải Vân, Nguyễn Xuân Lãm, Nguyễn Việt Dũng và Hà Công Liêm (2016). Sẵn lên, rừng xuống: Nghiên cứu trường hợp ở Việt Nam/Cassava up, forest down: Case study in Viet Nam. PanNature.

- Hà Nội, Việt Nam.
- Nguyen Thi Thuy Hanh (2018). Solutions to improve the value added of the rubber value chain in the Central Highlands of Vietnam. *Australasian Agribusiness Perspectives* 2018, Volume 21, Paper 6, ISSN: 1442-6951.
- Nhamo, L., T. Mabhaudhi, S. Mpandeli, C. Dickens, C. Nhemachena, A. Senzanje, D. Naidoo, S. Liphadzi, A.T. Modi (2020), An integrative analytical model for the water-energy-food nexus: South Africa case study. *Environ. Sci. Policy*, 109 pp. 15-24
- Nilsson, M. D Griggs, M Visbeck (2016). Policy: Map the interactions between Sustainable Development Goals. *Nature News*, Springer.
- Nilsson, M., Persson, A. (2003). Framework for analyzing environmental policy integration. *J. Environ. Policy Plan.* 5, 333–359.
- Nyström, M., Jouffray, J.B., Norström, A.V., Crona, B., Sjøgaard Jørgensen, P., Carpenter, S.R., Bodin, Ö., Galaz, V., Folke, C. (2019). 'Anatomy and resilience of the global production ecosystem', *Nature*, 575(7781), 98-108, available: <http://dx.doi.org/10.1038/s41586-019-1712-3>.
- Oberthür, S. (2009). Interplay management: Enhancing environmental policy integration among international institutions. *International Environmental Agreements*, 9, 371–391.
- Oberthür, S. & Gehring, T. (Eds) (2006). *Institutional interaction in global environmental governance: Synergy and conflict among international and EU Policies*. Cambridge, MA: MIT Press.
- Oberthür, S. & Gehring, T. (2011). Institutional Interaction: Ten Years of Scholarly Development. In S. Oberthür & O.S. Stokke (Eds) *Managing institutional complexity: Regime interplay and global environmental change* (pp. 25-58). Cambridge, MA: MIT Press.
- Oberthür, O. & Stokke, O.S. (2011). Conclusions: Decentralized interplay management in an evolving interinstitutional order. In S. Oberthür & O.S. Stokke (Eds) *Managing institutional complexity: Regime interplay and global environmental change* (pp. 313-342). Cambridge, MA: MIT Press.
- OECD (2017). The Political Economy of Biodiversity Policy Reform. <https://doi.org/10.1787/9789264269545-en>
- Ogg, C. (2020). Transforming Farm-Program Incentives to Preserve Tropical Forests. *Conservation Biology* 34 (3): 762–65. <https://doi.org/10.1111/cobi.13393>.
- Olsson, P., V. Galaz, and W. J. Boonstra (2014). Sustainability transformations: a resilience perspective. *Ecology and Society* 19(4): 1. <http://dx.doi.org/10.5751/ES-06799-190401>
- Organisation for Economic Cooperation and Development (2017). *Agricultural Policy Monitoring and Evaluation* 2017.
- Organisation for Economic Cooperation and Development (2016). 2020 projections of Climate Finance towards the USD 100 billion goal: Technical Note, OECD Publishing.
- Organisation for Economic Cooperation and Development (2015). Climate finance in 2013-14 and the USD 100 billion goal. Report by the Organisation for Economic Co-operation and Development (OECD) in collaboration with Climate Policy Initiative (CPI).
- Ostrom, E. (2010). Polycentric systems for coping with collective action and global environmental

- change. *Global Environ. Change* 20 (4), 550–557.
- Pandey, S.S., Cockfield, G., & Maraseni, T.N. (2014). Dynamics of carbon and biodiversity under REDD+ regime: A case from Nepal. *Environmental Science & Policy*, 38, 372–381.
- Park, M.S., Youn, Y.C. (2017). Reforestation policy integration by the multiple sectors toward forest transition in the Republic of Korea. *For Policy Econ.* 76, 45–55.
- Patton, M. (2002) *Qualitative Research and Evaluation Methods*, 3rd edn. Thousand Oaks, CA: Sage.
- Pendrill, F.; T. Gardner, P. Meyfroidt, J Adams, T. Azevedo, M. Bastos Lima, M. Baumann, P.G. Curtis, V. De Sy, R. Garrett, J. Godar, E. Dow Goldman, M. Hansen, R. Heilmayr, M. Herold, T. Kuemmerle, M.J. Lathuillière, V. Ribeiro, A. Tyukavina, M. Weisse, C. West (2022) Disentangling the numbers behind agriculture-driven tropical deforestation. *Science*. 377(6611). <https://doi.org/10.1126/science.abm9267>
- Peters, B., G Capano, M Howlett, I Mukherjee, M Chou, P Ravinet (2018). *Designing for Policy Effectiveness: Defining and Understanding a Concept (Elements in Public Policy)*. Cambridge: Cambridge University Press. doi:10.1017/9781108555081
- Peters and Pierre (2004). Multi-level Governance and Democracy: A Faustian Bargain? In 'Multi-level Governance. Oxford. DOI:10.1093/0199259259.003.0005
- Pham, T.T., Hoang, T.L., Nguyen, D.T., Dao, T.L.C., Ngo, H.C., Pham, V.H. (2019). The Context of REDD+ in Vietnam: Drivers, Agents and Institutions. CIFOR.
- Pham, T.T., Moeliono, M., Nguyen, T.H., Nguyen, H.T., Vu, T.H. (2012). The context of REDD+ in Vietnam: Drivers, agents and institutions. Occasional Paper 75. CIFOR, Bogor, Indonesia.
- Pickering, J., J. Skovgaard, S. Kim, J.T. Roberts, D. Rossati, M. Stadelmann, and H. Reich (2013). Acting on Climate Finance Pledges: Inter-Agency Dynamics and Relationships with Aid in Contributor States. CCEP Working Paper 1306, October 2013. Crawford School of Public Policy, The Australian National University.
- Pirelli (2017). Pirelli Sustainable Natural Rubber Policy. https://s3.eu-west-1.amazonaws.com/psi-dotcom-prd/corporate/2164_English_Version.pdf
- Poku, N.K., & Whitman, J. (2011). The Millennium Development Goals and development after 2015. *Third World Quarterly*, 32(1), 181–198.
- Provan, K.G., Kenis, P. (2008). Modes of network governance: structure, management, and effectiveness. *J. Public Adm. Res. Theory* 18 (2), 229–252.
- Rai, N., S. Acharya, R. Bhusal, R. Chettri, M. Shamshudoha, M.E. Kallore, N. Kaur, S. Neupane, L. Tesfaye (2015). Political economy of international climate finance: Navigating decisions in PPCR and SREP. IIED Working Paper. IIED, London.
- Rasul, G., N. Neupane, A. Hussain, B. Pasakhala (2021). Beyond hydropower: towards an integrated solution for water, energy and food security in South Asia, *International Journal of Water Resources Development*, 37:3, 466–490, DOI: 10.1080/07900627.2019.1579705
- Raustiala, K., & Victor, D. G. (2004). The regime complex for plant genetic resources. *International Organization*, 58(2), 277–309.

- Rayner, J., M. Howlett (2009). Introduction: Understanding integrated policy strategies and their evolution. *Policy and Society* 28:2. <https://doi.org/10.1016/j.polsoc.2009.05.001>.
- Republic of the Union of Myanmar (2015). Myanmar's Intended Nationally Determined Contribution (INDC). 25 August 2015.
- Reed, J. J van Vianen, J Barlow, T Sunderland (2017). Have integrated landscape approaches reconciled societal and environmental issues in the tropics? *Land Use Policy*, Volume 63, April 2017, Pages 481-492.
- Reuters (2019). Indonesia president makes moratorium on forest clearance permanent. August 8. 2019. Available at: <https://www.reuters.com/article/us-indonesia-environment-forest-idUSKCN1UY14P>.
- Reuters (2018). Brazil farm lobby wins as Bolsonaro grabs control over indigenous lands. 2 January 2019. Available at: <https://af.reuters.com/article/worldNews/idAFKCN1OW0S8>
- Roberts, J. T., R. Weikmans, R. (2017). Postface: fragmentation, failing trust and enduring tensions over what counts as climate finance. *International Environmental Agreements: Politics, Law and Economics*, DOI: 10.1007/s10784-016-9347-4.
- Royal Norwegian Embassy Jakarta (2016). Bilateral REDD+ Cooperation. Embassy website, available at: http://www.norway.or.id/Norway_in_Indonesia/Environment/Bilateral-REDD-cooperation/
- Sachs, J.D. (2012). From Millennium Development Goals to Sustainable Development Goals. *Lancet*, 379, 2206-2211.
- Sassen, M., Sheil, D., & Giller, K.E. (2015). Fuelwood collection and its impacts on a protected tropical mountain forest in Uganda. *Forest Ecology and Management*, 354, 56-67.
- Schmidt, J. and N. Matthews (2018). "From State to System: Financialization and the Water-Energy-Food-Climate Nexus." *Geoforum* 91: 151–59. <https://doi.org/10.1016/j.geoforum.2018.03.001>.
- Selin, H. (2016). Climate Finance and Developing Countries: The Need for Regime Development. Global Economic Governance Initiative. Working paper 009, 10/2016.
- Setzer, J., Nachmany, M. (2018). National governance: the State's role in steering polycentric action. *Governing Climate Change: Polycentricity in Action?* Cambridge University Press.
- Sexsmith, K., & McMichael, P. (2015). Formulating the SDGs: Reproducing or reimagining state-centered development? *Globalizations*, 12(4), 581-596.
- Seymour, F., and Busch, J. (2016). Why forests? Why Now? The science, economics, and politics of tropical forests and climate change. Washington, DC: Center for Global Development.
- Skutsch, M., Turnhout, E., 2020. REDD+: If communities are the solution, what is the problem? *World Develop.* 130 (June (2020)), 104942.
- Solomon, S., J. Alcamo, A.R. Ravishankara (2020). Unfinished business after five decades of ozone-layer science and policy. *Nat Commun* 11, 4272. <https://doi.org/10.1038/s41467-020-18052-0>
- Soria, E.M. (2014). Policy coherence for sustainable development in the post-2015 framework. Paris: OECD.
- Stead, D., & Meijers, E. (2009). Spatial Planning and Policy Integration: Concepts, Facilitators and Inhibitors. *Planning Theory & Practice*, 10(3), 317-332.

- Stephenson, P. (2013). Twenty years of multi-level governance: 'Where Does It Come From? What Is It? Where Is It Going?', *Journal of European Public Policy*, 20:6, 817-837, DOI: 10.1080/13501763.2013.781818
- Sukhdev, P., Prabhu, R., Kumar, P., Bassi, A., Patwa-Shah, W., Enters, T., Labbate, G., and Greenwalt, J. (2011). REDD+ and a Green Economy: Opportunities for a mutually supportive relationship. UN-REDD Programme Policy Brief 1.
- Taherzadeh, O. and D. Caro (2019). "Drivers of Water and Land Use Embodied in International Soybean Trade." *Journal of Cleaner Production* 223: 83–93. <https://doi.org/10.1016/j.jclepro.2019.03.068>.
- Termeer, C., A. Dewulf, G.R. Biesbroek (2017). Transformational change: governance interventions for climate change adaptation from a continuous change perspective, *Journal of Environmental Planning and Management*, 60:4, 558-576, DOI: 10.1080/09640568.2016.1168288
- Thayer, C.A. (1995). "Mono-Organizational Socialism and the State." *Vietnam's Rural Transformation*: 39-64.
- To Xuan, Phuc, Quyen, Nguyen Ton, Hanh, Huynh Van, Huy, Tran Le, Cam, Cao Thi (2016). Vietnam's Imports of Cambodian Logs and Sawntwood from Natural Forests: 2013-2015. *Forest Trends*.
- To Xuan Phuc and Tran Huu Nghi (2014). Rubber Expansion and Forest Protection in Vietnam. *Tropenbos International Viet Nam and Forest Trends*. Hue, Viet Nam.
- Tosun, J., Lang, A. (2017). Policy integration: mapping the different concepts. *Policy Stud.* 38 (6), 553–570.
- UKSSD and Bond (2016). Progressing national SDGs implementation: Experiences and recommendations from 2016.
- Underdal, A. (2008). Determining the causal significance of institutions: Accomplishments and challenges. In O.R. Young, L.A. King, & H. Schroeder (Eds) *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (pp. 49-78). Cambridge, MA: MIT Press.
- United Nations (2016). Report of the Inter-Agency and Expert Group on Sustainable Development Goal Indicators (E/CN.3/2016/2/Rev.1), Annex IV.
- United Nations (2016b). Proposal for voluntary common reporting guidelines for Voluntary National Reviews at the HLPF as presented in the annex of the Secretary-General's report on critical milestones towards coherent, efficient and inclusive follow-up and review at the global level.
- UN Comtrade (2018). UN Comtrade database. Accessed on 5 July 2018 at <https://comtrade.un.org/data>
- UN Environment (2017a). Fiscal incentives for Indonesian Palm Oil Production: Pathways for alignment with green growth.
- UN Environment (2017b). Drivers of deforestation and forest degradation in Myanmar. *Forthcoming*. UN-REDD Programme and Myanmar Ministry of Natural Resources and Environmental Conservation.
- United Nations Environment Program (2016). Fiscal incentives for Indonesian palm oil production: Pathways for alignment with green growth. United Nations Environment Program.
- UNEP (2019). Environmental Rule of Law: First Global Report. Nairobi, Kenya.

- UNEP (2014). Building Natural Capital: How Can REDD+ Support a Green Economy. Report of the International Resource Panel. United Nations Environment Programme (UNEP), Nairobi.
- UNEP (2009). Climate and trade policies in a post-2012 world. Nairobi: United Nations Environment Programme.
- UN General Assembly (2015). Transforming our world: The 2030 agenda for sustainable development. New York: United Nations General Assembly.
- UN General Assembly (1970). International Development Strategy for the Second United Nations Development Decade. Resolution 2626 (XXV), paragraph 43, November 19, 1970.
- UN Development Programme (2015). Methodological Guidebook: Climate Public Expenditure and Institutional Review (CPEIR). Governance of Climate Change Finance.
- UN Development Programme and UN Environment (2011). Mainstreaming Climate Change Adaptation into Development Planning: A Guide for Practitioners. UNDP-UNEP Poverty-Environment Initiative (PEI).
- UNFCCC (2017). NDC Interim Registry. Available at <http://www4.unfccc.int/ndcregistry/Pages/All.aspx>
- UNFCCC Standing Committee on Finance (2016). 2016 Biennial assessment and overview of climate finance flows report. UNFCCC, Bonn, Germany.
- UNFCCC (2015a). Report of the Conference of the Parties on its twenty first session, held in Paris from 30 November to 11 December 2015. FCCC/CP/2015/L.9/Rev.1
- UNFCCC (2015b). Draft decision -/CP.21, Methodological issues related to non-carbon benefits resulting from the implementation of the activities referred to in decision 1/CP.16, paragraph 70. FCCC/SBSTA/2015/L.5/Add.3.
- UNFCCC (2013). Report of the Conference of the Parties on its nineteenth session, held in Warsaw from 11 to 23 November 2013. FCCC/CP/2013/10.
- UNFCCC (2010). Report of the Conference of the Parties on its sixteenth session, held in Cancun from 29 November to 10 December 2010. FCCC/CP/2010/7/Add.1.
- UNFCCC Secretariat (2008). Investment and financial flows to address climate change: an update. FCCC/TP/2008/7
- United Nations (2018). Working Together: Integration, Institutions and the Sustainable Development Goals. World Public Sector Report 2018. Division for Public Administration and Development Management, Department of Economic and Social Affairs, (DPADM), New York.
- UN-REDD Programme (2018). 10 Years: UN-REDD Programme. Available at: <https://www.10year.un-redd.org/>
- UNSD (2016). Work Plans for Tier III Indicators (as of 11 November 2016) Compiled by UNSD through an online questionnaire sent to international and regional entities responsible for global data compilation. Available at: <http://unstats.un.org/sdgs/files/meetings/iaeg-sdgs-meeting-04/Tier%20III%20Work%20Plans%2011.11.2016.pdf>
- USAID Lowering Emissions in Asia's Forests (2013). Land use, forest cover change and historical GHG emissions from 1990 to 2010: Lam Dong province, Viet Nam. Hanoi, Viet Nam.

- USDA (2013). INDONESIA: Palm Oil Expansion Unaffected by Forest Moratorium. Commodity Intelligence Report, 26 June 2013.
- USDA Foreign Agricultural Service (2017). Vietnam Coffee Annual Report 2017.
- Van Asselt, H., Zelli, F. (2014). Connect the dots: managing the fragmentation of global climate governance. *Environ. Econ. Policy. Stud.* 16, 137–15.
- van der Tak, H. (1991). Policies and Measures to Implement the Montreal Protocol. World Bank; Environment Working Paper No. 48. Available at: <https://documents1.worldbank.org/curated/en/967241493255754703/pdf/Policies-and-measures-to-implement-the-Montreal-Protocol.pdf>
- Vandemoortele, J. (2009). The MDG conundrum: meeting the targets without missing the point. *Development Policy Review*, 27(9), 355-371.
- Viet Nam Customs (2017). Customs Trade Statistics. Available at: <https://www.customs.gov.vn/Lists/EnglishStatistics/Default.aspx?language=en-US&Group=Customs%20Trade%20Statistics>.
- Viet Nam News (2019). Coffee price crisis hits Vietnamese export value. 16 December 2019. Available at: <https://vietnamnews.vn/economy/569894/coffee-price-crisis-hits-vietnamese-export-value.html>
- Vifell, A.C., & Soneryd, L. (2012). Organizing matters: How ‘the social dimension’ gets lost in sustainability projects. *Sustainable Development*, 20, 18-27.
- Visseren-Hamakers, I.J. (2013). Partnerships and sustainable development: The lessons learned from international biodiversity governance. *Environmental Policy and Governance*, 23, 145-160.
- Visseren-Hamakers, I.J. (2015). Integrative environmental governance: enhancing governance in the era of synergies. *Current Opinion in Environmental Sustainability*, 14, 136-143.
- Visseren-Hamakers, I.J., McDermott, C., Vijge, M., & Cashore, B. (2012). Trade-offs, Co-benefits and Safeguards: Current debates on the breadth of REDD+. *Current Opinion in Environmental Sustainability*, 4(6), 646-653.
- Vo, Q. and T.C. Le (1994). Conservation of forest resources and the greater biodiversity of Vietnam. *Asian Journal of Environmental Management*, 2(2), 55-59.
- Weatherley-Singh, J. & Gupta, A. (2015). Drivers of deforestation and REDD+ benefit-sharing: A meta-analysis of the (missing) link. *Environmental Science & Policy*, 54, 97-105.
- Weber, E., A. M. Khademian (2008). Wicked Problems, Knowledge Challenges, and Collaborative Capacity Builders in Network Settings. *Public Administration Review*, Vol. 68, No. 2, pp. 334-349.
- Weimer, D. and A Vining (2011). *Policy analysis: Concepts and practice* (5th ed.). Upper Saddle River, NJ: Pearson Prentice Hall.
- Weisse, M. and R. Petersen (2015). Brazil and Indonesia Struggling to Reduce Deforestation. Commentary; World Resources Institute. Available at: <https://www.wri.org/insights/brazil-and-indonesia-struggling-reduce-deforestation>
- Wieczorek, A. (2018). Sustainability transitions in developing countries: Major insights and their implications for research and policy. *Environmental Science and Policy* 84 (2018) 204–216.

- Wilting, H.C., Schipper, A.M., Bakkenes, M., Meijer, J.R. and Huijbregts, M.A.J. (2017). Quantifying biodiversity losses due to human consumption: A global-scale footprint analysis', *Environmental Science and Technology*, 51(6), 3298-3306, available: <http://dx.doi.org/10.1021/ACS.EST.6B05296>.
- Winkel, G., Sotirov, M. (2015). Whose integration is this? European forest policy between the gospel of coordination, institutional competition, and a new spirit of integration. *Environ. Planning C: Pol. Space*.
- Wong, G.Y., Moeliono, M., Bong, I.W., Pham, T.T., Sahide, M.A., Naito, D., Brockhaus, M. (2020). Social forestry in Southeast Asia: evolving interests, discourses and the many notions of equity. *Geoforum* 117, 246–258.
- World Bank (2018). 10 Years: Marking 10 years of action for forests and climate. World Bank, Washington, DC.
- World Bank (2015a). Project Appraisal Document: Vietnam Sustainable Agriculture Transformation Project. Report No: PAD1168.
- World Bank (2015b). Indonesia Economic Quarterly: Reforming amid uncertainty. December, 2015.
- World Bank (2011). Economics of Adaptation to Climate Change: Country Case Studies. Available at: <http://www.worldbank.org/en/news/feature/2011/06/06/economics-adaptation-climate-change-country-case-studies>
- Yin, R. (2017). Case Study Research and Applications: Design and Methods. SAGE Publications.
- Young, O. R. (1996). Institutional linkages in international society: Polar perspectives. *Global Governance*, 2(1), 1–24.
- Young, O.R. (2002). The institutional dimensions of environmental change: Fit, interplay, and scale. Cambridge, MA: MIT Press.
- Young, O.R. (2008). Institutions and environmental research. The scientific legacy of a decade of IDGEC research. In O.R. Young, L.A. King, & H. Schroeder (Eds) *Institutions and Environmental Change: Principal Findings, Applications, and Research Frontiers* (pp. 3-46). Cambridge, MA: MIT Press.
- Young, O.R., Underdal, A., Kanie, N., Andresen, S., Bernstein, S., Biermann, F., Gupta, J., Haas, P.M., Iguchi, M., Kok, M., Levy, M., Nilsson, M., Pintér, L., & Stevens, C. (2014). Earth system challenges and a multi-layered approach for the Sustainable Development Goals. Post-2015/UNU-IAS Policy Brief 1
- Zanon R, M Saes (2010). Soybean Production in Brazil: Main Determinants of Property Sizes. *Proceedings in Food System Dynamics* 2010.
- Zelli, F., Gupta, A., & Van Asselt, H. (2013). Institutional interactions at the cross-roads of trade and environment: the dominance of liberal environmentalism? *Global Governance*, 19(1), 105-118.
- Zelli, F., & Van Asselt, H. (2013). Introduction: The institutional fragmentation of global environmental governance: Causes, consequences, and responses. *Global Environmental Politics*, 13(3), 1-13.
- Zhang, W., X. Pan (2016). Study on the demand of climate finance for developing countries based on submitted INDC. *Advances in Climate Change Research*. Volume 7, Issues 1–2, March–June 2016, Pages 99-104.

References

Zürn, M., B. Faude (2013). On Fragmentation, Differentiation, and Coordination. *Global Environmental Politics* 13:3 (August 2013). [https://doi.org/ 10.1162/GLEP_a_00186](https://doi.org/10.1162/GLEP_a_00186).

Appendices

Appendix I – Annex to Policy responses to direct and underlying drivers of deforestation: examining rubber and coffee in the Central Highlands of Vietnam on Policies and laws related to NRAP implementation- Long version

Policy	Interventions directed at direct drivers	Interventions directed at underlying drivers
General and forest sector		
Law on Forestry—No. 16/2017/QH14 (November 2017, came into force January 2019)	<ul style="list-style-type: none"> Management direction for reserve, protection, and production forests Defines power and roles for repurposing forests (to other uses) Defines mechanisms and processes to tackle illegal logging and trade and improve forest governance. Requires follow-on regulations needed to implement the timber legality assurance system. 	<p>Centralizes decision making in natural forest conversion, seeking to close loopholes</p> <p>Intended to address weaknesses in forest governance</p>
Voluntary Partnership Agreement between Viet Nam and European Union (Signed 2018, came into force June 2019)		<ul style="list-style-type: none"> Article 6: Enterprises with agricultural projects eligible for investment incentives on leased land are entitled to preferential land prices set by provincial/municipal People's Committees. Regulations and land rent to be stabilized for 5 yrs, rent exemptions for first 11-15 years. Article 8: Credit access and support
Incentive policies for enterprises investing in agriculture and rural areas—Decree No. 57/2018/ND-CP dated April 17th, 2018		<ul style="list-style-type: none"> Seeks to enable synchronization between national planning and regional planning, and reform administrative procedures. Sets requirements for integrated planning. Seeks to overcome sectoral disconnects, though too early to evaluate whether implementation is achieving this objective
Planning Law—Law No. 21/2017/QH14 (Effective January 1, 2019)		

<p>Criminal code—Law No. 100/2015/QH13 (June 2017, came into effect January 1, 2018)</p>		<ul style="list-style-type: none"> Article 2 introduces criminal liability for legal entities and persons Article 229: Offences against regulations on land management (unlawful repurposing of land, including forest land) Article 233: Offences against regulations on forest management Article 243: Forest destruction allows for commercial legal entities to be subject to prosecution Penalties for all environmental crimes increased Requests Provincial People's Committees speed up forest allocation and lease to organizations, local communities, households and individuals
<p>Decision No. 886/QĐ-TTg, (approved in June 2107) — Target Program for Sustainable Forest Development for the 2016-2020 Period</p>	<ul style="list-style-type: none"> National forest cover goal of 42%, and forest area of 14.4 million ha 15% of degraded forest ecosystem area is restored and preserved Review and adjust the land use master plan- target of 16.24 million hectares of forest land by 2020, increase forest cover to 45% of national territory Promote sustainable and deforestation-free agriculture and aquaculture 	<ul style="list-style-type: none"> Improve forest governance and livelihoods, strengthen law enforcement Coordination and accountability of related ministries with leader's roles clarified
<p>Decision No. 419/QĐ-TTg of Prime Minister (5 April 2017)—on the Reduction of Green-house Gas Emissions through the reduction of Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks (2017 National REDD+ Action Programme)</p>	<ul style="list-style-type: none"> Direction to Communist Party to strengthen leadership in forest management, protection and development with the major focus on retaining natural forest Request to control socioeconomic development planning and projects negatively affecting forest's area and quality, especially natural forest and protection forest Forest coverage by 2020 will be 42% For Central Highlands, large-scale commodity agriculture, rapidly develop export-oriented industrial plants (coffee, rubber, tea, cotton...) with the means 	<ul style="list-style-type: none"> Complete allocation of land and forests, and the certification of forest land use right to organizations, individuals, households and communities
<p>Directive 13-CT/TW dated January 12, 2017 -- Enhancing Party's leadership in forest management, protection and development</p>		
<p>The Five-Year Socio-Economic Development Plan (2016-2020) —Resolution No. Resolution No. 142/2016/QH13</p>		

	of intensive cultivation, breeding large cattle, planting and protecting forests (p. 90)	
Prime Minister's Notice No. 191/TB-VPCP dated 22/7/2016—Conclusion of the Prime Minister at the Conference on Sustainable Forest Restoration Solutions in the Central Highlands (2016–2020).	<ul style="list-style-type: none"> • Affirms and builds on Conclusion No. 97-KL/TW dated 9/5/2014 of the Political Bureau on natural forest logging ban or 'closing natural forest.' • Conserve existing natural forests of 2.25 Mha and no conversion allowed • No conversion of poor natural forests to industrial crops such as rubber, coffee etc. • Does not mention deforestation-free agriculture or REDD+ goals 	
Law on Crop Production—Law No. 31/2018/QH14		
Viet Nam's Nationally Determined Contribution to Paris Climate Agreement (NDC), submitted to UNFCCC in October 2015	<ul style="list-style-type: none"> • Increase forest cover to 45% by 2030 (from under 40% in 2010). • Requires further domestic policy for implementation. 	
Prime Minister's Decision No. 799/QĐ-TTg dated 27 June 2012 on Approval of the National Program on Reduction of Greenhouse Gas Emissions through Efforts to Reduce Deforestation and Forest Degradation, Sustainable Management of Forest Resources, and Conservation and Enhancement of Forest Carbon Stocks, 2011–2020 (2012 National REDD+ Action Programme)	<ul style="list-style-type: none"> • An evaluation at end of the 1st phase of its implementation (2011–2015) determined the NRAP direction should be revised for Phase II, and scope of driver assessment to be broadened 	
Decree 99 of 2010 on Policy on Payment for Forest Environmental Services (PFES)		<ul style="list-style-type: none"> • Directs revenue from environmental service users to environmental service providers such as forest owners and households, to incentivize their role to maintain forest cover. Lacks a results-based performance measure for receiving funds
Sector-specific: Rubber		
Directive No. 1685 / CT-TTg of 2011—Strengthening forest protection, preventing forest	<ul style="list-style-type: none"> • Resulted in mandate from Provincial People's Committee to review and evaluate projects converting forest to rubber plantations, and district 	<ul style="list-style-type: none"> • Lam Dong DARD review in response to this Directive reduced planned rubber area • Lam Dong DARD also identified significant areas planted fall far short of the goals identified in the

destruction, and countering attacks of forest protection staff	Departments of Agriculture and Rural Development to adjust rubber plantation development plans	original investment certificates, which provides a basis to propose they revert back to forest.
Decision of the Prime Minister 899/QĐ-TTg, 2013 –Agricultural restructuring towards raising added values and sustainable development	<ul style="list-style-type: none"> • Increase rubber tree area to 800,000 hectares in the South East and Central Highlands (Tay Nguyen) 	<ul style="list-style-type: none"> • Promote economic value from forests, while maintaining environmental services and access to PES for ethnic minorities
Sector-specific: Coffee		
Viet Nam Sustainable Agriculture Transformation (VNSat) programme	<ul style="list-style-type: none"> • Invests US\$ 98.7 million in the coffee sector between 2015 and 2020 • Improved farm agronomic and management practices on 69,000 ha with 62,500 coffee growers in 12 districts • Rejuvenate aging coffee trees and develop monitoring systems • Stabilize coffee area at 600,000 hectares, with 80% of area under improved management practices (via certification standards such as UTZ, 4C Rainforest Alliance, and VietGAP) 	
Sustainable Coffee Plan to 2020 and Vision to 2030	Stabilize the coffee area at 500,000 hectares (primarily in Central Highlands, but includes others as well)	<ul style="list-style-type: none"> • Promote economic value from forests, while maintaining environmental services and access to PES for ethnic minorities
Decision of the Prime Minister 899/QĐ-TTg, 2013 –Agricultural restructuring towards raising added values and sustainable development		

Appendix II – Annex 1 of Climate financing needs in the land sector under the Paris Agreement: an assessment of developing country perspectives

Country	Finance for land use sector PAMs identified?	Domestic portion*	Int'l portion**	Is overall GHG emissions reduction ambition dependent on international climate finance?
Argentina	No	Not mentioned	Not mentioned	Total reduction of 37% from BAU by 2030, of which 19% of goal is conditional, and 18% is unconditional.
Bangladesh	Adaptation: US\$40 billion from 2015 to 2030. Ecosystem based adaptation (incl. forestry co-management) to cost US\$2.5 billion between 2015-2030.	Will develop and integrate the Climate Fiscal Framework (CFF) in the national planning and budgeting process, complete more costing for NDC implementation roadmap (relates to implementing BCCSAP, NAP Roadmap and the 7th Five Year Plan).	TBD	Yes, 15% of the 20% reduction from BAU by 2030 goals for power, transport, and industry sectors is conditional.
Belize	Forest sector activities defined under 'Integrating Climate Change in Revised National Plan.' USD \$5,158,000. Agriculture activities defined in the National Agriculture Sector Adaptation Strategy: US \$15,960,000	Identifies that enabling actions through existing policies, laws and projects, staff time and integration of development and climate change activities are unconditional.	Identifies that activities listed in the NDC are conditional upon external (financial) support.	Yes, reducing deforestation and sustainable forest management depends on level of financial support, whereas fuel wood goal success depends more on the technology (could also relate to financial support).

Bolivia	No	Domestic activities identified, such as increase of forest cover by 1.5 million ha, improved environmental function on 29 million ha, implement integrated and sustainable community management on 13.8 ha, but no corresponding budget	Goals requiring international cooperation (by 2030): Community forest management increase sevenfold; timber and non-timber production to increase by 40%; double food production from the integrated management of forest and agricultural systems; reforestation of 6 million hectares by 2030.	Yes, as per goals in previous cell.
Brazil				Implementation of NDC is not contingent upon international support, yet it welcomes support from developed countries with a view to generate global benefits. Forest sector: implementation of REDD+ activities and the permanence of results achieved require the provision, on a continuous basis, of adequate and predictable results-based payments in accordance with the relevant COP decisions.'

Burkina Faso	Yes	Not identified. Already seeking to fund Strategic Framework for Investment in Sustainable Land Management (SFI-SLM), with a budget of 869 billion CFA francs for five years. Adaptation measures can build on that.	Agric and water mgmt sector: US\$385 million in 2020, rising to US\$1.15 billion by 2030. Forestry and land use change sector: \$345 million in 2020, rising to \$903 million by 2030. Subtotal for AFOLU sectors: \$954 million in 2020, and \$2.7 billion in 2030. Bilateral, multilateral and GCF will be key sources.	Yes. 1) Unconditional scenario: GHG emissions reductions of 7,808 Gg per year in 2030, i.e. 6% when compared to BAU, for US \$1.25 billion. Includes mitigation: REDD + /FIP, NAMA initiative and potential CDM projects in the growth sectors such as mining. 2) Conditional scenario reduces GHG emission by an additional 5%, for an additional \$756 million. 3) Third scenario leans heavily on adaptation measures, reducing GHGs by 36.95% from BAU, for US\$5.8 billion.	40% of total climate related investment
Cambodia		Will identify domestic sources as part of updating Climate Change Financing Framework to reflect NDC. In 2012, expenditure on climate related policies and actions was 6.5% of public expenditure, or 1.31% of national GDP	US\$1.28 billion for mitigation and adaptation in all sectors, but anticipate int'l portion is 40% of total climate related investment. REDD+ investment already being made.		

Cameroon	PNIA costs to implement: US \$ 25 billion) over the period 2014-2020. Forest and wildlife strategy (2013-2017) is estimated at US \$ 388 million (some from REDD+?). Adaptation: agric is \$385 million (21% of budget), forestry is 150 million (8%) of budget for 2016-2020.	NAP identifies need to evaluate the costs, financing, and concrete measures, new incentives created to adaptation resilience (Strategic focus #3). Will increase budgetary funding - either of direct budgetary expenditure or other funds from the State budget.	Not clear %, but likely the majority.	CPDN seeks 32% reduction from BAU in 2035, most of which will need to come from int'l donors and multi-laterals. Cameroon will increase its budgetary funding for actions of this CPDN that fall within the competence of the State and that international assistance could not be financed.
Central African Republic	Mitigation: US \$2.248 billion (2015-2030) Adaptation: US \$1.554 billion (2015-2030). Based on detailed budget, forest sector activities identified and costed total US\$80,000,000 for mitigation activities and US\$118,000,000 for adaptation.	10% is envisaged as domestic contribution. Awareness programme for the cessation of slash-and-burn agriculture (US\$2.5 million) and National programme for reforestation and rehabilitation of post-exploitation areas (US\$ 20.75 million) are unconditional.	Mitigation: US \$2.022 billion is conditional (89%). Adaptation: US \$1.441 is conditional (93% of budget). Programme for the advanced conversion of wood, cookstoves and biofuels programme requires int'l support	Yes, 89% of mitigation and 93% of adaptation costs are dependent on int'l finance
Chad	Yes, both conditional and unconditional.	US \$ 523 million for mitigation; US \$2.79 billion for adaptation. Established a Special Fund for the Environment (FSE) in 2013, in order to mobilise its own resources through the establishment of specific taxes.	US \$ 6.540 billion out of US\$7.063 billion for mitigation; US\$11.380 out of US\$14.170 billion for adaptation	Unconditional emission reduction of 18.2%, and 71% conditional, of the country's emissions compared to the reference scenario by 2030. Total implementation cost of the NDC: 21.233 billion USD, of which 17.920 will be used to achieve the conditional objectives

Chile	Will be identified in 2018.	Chile passed a tax law in 2014: US\$5 /tCO ₂ (Law 20.780, came into effect Jan 2017). In 2018, Chile will report a cross-sectional National Finance Strategy for Climate Change, and intends to identify structure the financial flows according to their origin, differentiating between national vs. international and public vs. private spending; and eventually, according to its performance.	Not yet identified	Not yet clear, and Chile has already taken solid steps on its own.
Costa Rica	Not yet	Defining National Adaptation Plan in 2018, will do costing then.	Not yet identified	Costa Rica proposed since 2007 to compensate its emissions through the removal or offsetting by the forest sector. The goal proposed is to achieve Carbon Neutrality by 2021 with total net emissions comparable to total emissions in 2005.
Cote d'Ivoire	The overall cost of the 2010-2015 NIP is estimated at CFAF 2,040 billion (US\$3.2 billion)(expect same for PNIA 2016-2020). The low carbon orientation of future plans should be distilled on all components, and National Agricultural Investment Plans (NIPs) with strategies to limit deforestation (REDD + process). US\$29.1 million for forest sector adaptation activities.	Will play its part in financing the actions that fall within the state budget. Can take the form of direct fiscal spending channeled through specific funds including funded from the state budget. Identifies need to track income and expenses on climate in the national budget. Expected to begin integrating activities into National Development Plan (PND) 2016-2020	Not clearly defined in this draft, but would likely occur after defining operational plans as part of integrating into National Development Plan (2016-2020). Will seek support from donors and TFP (grants, loans and technical assistance) for the financing and access sovereign loans from Development Finance Institutions (DFIs)	28% reduction in low-carbon scenario emissions compared to a baseline scenario (BAU) represents a significant effort for a country with a world-wide 148th (2014, PPP) GDP per capita.

El Salvador	Financing for key agriculture, forestry and "Landscapes sustainable and resilient to climate change" effort are outside the scope of national finances.	Will consider how to support activities with national finances, but do not quantify amount. Will look into resource management modalities such as Debt Swaps for Adaptation to Climate Change to support national priorities.	Largest portion must come from int'l community. Amount not quantified.	NDC emphasizes that ability to reach ambitions will depend on how the developed country Parties commit financial resources and transfer of technology. Parties must also take fully into account that economic and social development and the eradication of poverty are the first and overriding priorities of developing countries.
Ethiopia	As cornerstone of NDC is the CRGE Strategy, overall financing needs have been identified (are not listed in NDC)	Ethiopia has already removed fossil fuel subsidies, to promote clean and renewable energy, yet 76.7% of the population currently lacks access to modern energy sources, relying on wood fuel (rural energy access a priority).	Appears most funding will need to come from bilateral and multilateral channels. Climate Resilient Green Economy Facility (CRGE Facility) has been set up as a mechanism to mobilize finance from various sources.	Ethiopia has an overall goal of 64% reduction from the BAU scenario in 2030 + adaptation, and does not differentiate levels of ambition based on % of int'l support (likely due to its heavy reliance on the int'l community to help achieve its national goals).
Fiji		10% of the 30% emission reduction target is unconditional (achieved with domestic resources).	20% of the 30% emission reduction target is conditional (US\$500 million from int'l sources). Looking to improve access to global financing facilities such as GCF.	From the 30% emission reduction target, 10% will be achieved through the implementation of the Green Growth Framework, utilizing resources available in country (unconditional) whereas the remaining target can only be met with the availability of external funding amounting to US\$500 million (conditional).

Gabon	As most land use sector interventions have been implemented as regulatory steps, finance needs are directed more to the energy and other sectors that can contribute to sustainable development.	Already have committed funds from the state budget to achieve 2002 and 2012 reforms on land use change though more may be necessary (and not identified in NDC).	Amount not specified, but likely a high % of the cost, and intention is for GCF funds	65% reduction between 2010-2025, compared to the trend (BAU) scenario. Gabon's commitments relate exclusively to its GHG emissions, excluding carbon storage by biomass (which is significant).
Ghana	For forest and agriculture sector activities, a total of USD 9.47 billion is required.	Overall, USD 6.3 billion of USD 22.6 billion (27.9% of total needed) - \$2.02 billion for mitigation and \$4.21 for adaptation. In agric and forest sectors, unconditional contribution is US\$4.25 billion.	Overall, USD 16.3 billion of USD 22.6 billion (72.1% of total needed). In agric and forest sectors, conditional contribution sought is US\$ 5.17 billion.	Unconditional emission reduction of 15% + an additional 30% with conditional support, to reach a 45% reduction from BAU expected by 2030. Adaptation is largest finance need.
Guatemala	National Action Plan for Climate Mitigation and Adaptation identifies institutional strategic plans for reducing vulnerability, adaptation and mitigation to climate change linked to national planning and the budget of the Nation.	Amount not specified. National Fund for Climate Change (FONCC) is key for the implementation of the law (Article 24), National Conservation Fund (FONACON) and the National Fund for Disaster Reduction. Also PINFOR, debt for nature swap with US, etc. All can funnel domestic and int'l funds for climate, but must go through Budget of Income and Expenditures of the State.	Amount not specified, but calls upon int'l community to support climate goals, under common but differentiated responsibility.	Yes, unconditional is 11.2% of GHG emission reduction from BAU by 2030. Conditional is 22.6% emission reduction from BAU by 2030.

Guyana	Costs TBD. Progress since 2008 has been via Low Carbon Development Strategy (LCDS), mostly financed by Guyana REDD+ Investment Fund (GRIF) resources earned under the Guyana Norway Agreement (GNA).	There are REDD+ and FLEGT activities that are funded through national budget or already supported through bi-lateral agreement (GNA).	Based on Proposed REL for REDD+, Guyana can continue to avoid emissions in the amount of 48.7 MtCO ₂ e annually if adequate incentives are provided. Conditional US\$ 1.6 billion for adaptation activities and to implement Climate Resilience Strategy and Action Plan (CRSAP).	Yes, as per previous column + focus on 100% renewable energy by 2025.
Honduras	Not yet, but Investment Plan to be completed, based on prioritized actions in a range of planning areas. Expenditure review on climate.	Afforestation / reforestation of 1 million ha of forest Before 2030. NAMA on efficient stoves. Reduce firewood consumption by 39% among households.	Not yet determined, but Investment Plan to be completed. Expenditure review on climate.	Yes, 15% emissions reduced from the BAU scenario by 2030 is dependent on Int'l climate finance.
Indonesia	Not explicit, but clearly already using domestic finance, and clearly stating additional conditional need.	Will allocate USD 55.01 billion for the period of 2015 to 2019. Will continue to set aside significant national funding for the implementation of mitigation and adaptation actions for the period of 2020-2030	60% of the conditional emission reduction is in the area of forestry and peat fire emissions (energy is much less, at 36%), and requires int'l support. Indonesia is 'ready for results-based payments,' and REDD+ should be able to support the achievement of Indonesia's emission reduction target in the forestry sector.	2010 pledge: 26% emissions reduced (41% with international support) against the BAU scenario by 2020. NDC pledge: unconditional reduction target of 29% and conditional reduction target up to 41 % of the business as usual scenario by 2030.

Kenya	No details, just the overall US\$40 billion by 2030 figure.	Will have domestic contribution, but portion of the US\$40 billion to 2030, is not clear. Overall goal is NCCAP and low carbon, resilient development in Vision 2030 - national priorities, but mitigation potential is dependent on support.	USD \$40 billion for mitigation and adaptation up to 2030, but details, and domestic portion of that not clear.	30% emission reduction by 2030 relative to the BAU scenario, mainstreaming climate change adaptation into the Medium Term Plans (MTPs). Mitigation potential dependent on support (as is adaptation). Kenya Climate Fund to be a financing mechanism for priority climate change actions.
Lao PDR	Yes, forest mitigation: USD180 million (assuming cost for forest management is approximately 10.84 US\$/ha), excluding costs for plantations. ADAPTATION: Agriculture: US\$ 709 million (2007-2030). Forest and land use change: US\$ 40.5 million (until 2020).	NSCC is climate strategy. Allocating USD 12 million annually for disaster emergency response plans, so Lao taking steps even without int'l assistance.	Reforestation and forest maintenance, REDD+ and FLEGT, are a major challenge to finance domestically, and require int'l support.	Mitigation and adaptation policies and actions is US\$ 1.4 billion and US\$ 0.97 billion. Lao PDR supporting activities with USD \$12 million annually. Gap must come from int'l finance. Investment needs to be further refined.
Madagascar	Yes.	In last five years, losses and damages from floods and cyclone events US\$ 470-940 million/year. No estimates of adaptation costs yet. Will contribute 4% of NDC costs from domestic sources. Will create a national financial mechanism for climate finance	Adaptation cost: US\$ 28.7 billion. Mitigation: US\$6.3 billion. Technology, research, capacity-building is US\$6.9 billion. Total for NDC: US\$42 billion, 96% of which must come from int'l finance, multilateral and bilateral sources.	14% emission reduction compared to BAU by 2030, + additional increase of 32% of the absorptions of the LULUCF sector.

Malaysia	Not in NDC	Bio-diesel B7 Programme- 7% palm biodiesel, the rest fossil fuel. During the Tenth Malaysia Plan, Malaysia spent RM51 billion (US\$ 11.4 billion) to enhance resilience against climate change. 35% of the 45% intensity goal is unconditional.	10% of the overall goal of reducing GHG emissions intensity of GDP by 45% by 2030 (relative to the emissions intensity of GDP in 2005) is conditional.	Reduce GHG emissions intensity of GDP by 45% by 2030 relative to the emissions intensity of GDP in 2005; unconditional is 35% and 10% is conditional upon receipt of climate finance, technology transfer and capacity building from developed countries
Mexico	Not in NDC	25% of GHGs and Short Lived Climate Pollutants emissions (below BAU) for the year 2030 (implies a reduction of 22% of GHG and a reduction of 51% of Black Carbon). Instituted a carbon tax in 2014.	With int'l assistance, can bring 25% goal up to 40%; meaning GHG reductions of 36%, and Black Carbon reductions of 70% in 2030. Technology transfer and finance key to achieve actions in ecosystem-based adaptation, social sector, and strategic infrastructure and productive systems	Goal is 50% of emissions reduced from 2000 levels by 2050 (mandated by LGCC). NDC: 25% of emissions reductions unconditional, while 40% emission reduction goal is conditional.
Mongolia	Mitigation TBD. Adaptation: US\$ 31 million	Further refinement of domestic resource allocations TBD	80% of adaptation needs, likely a large portion of mitigation needs.	14% emission reduction from BAU by 2030, excluding LULUCF, amounting to US\$ 3.5 billion. Adaptation: Up to 80% of the US\$3.4 billion (between 2021-2030) expected to be financed from international sources and donor institutions

Morocco	Adaptation: minimum US\$ 2.5 billion for the most vulnerable sectors: water, forestry and agriculture, reaching US \$35 billion between 2020-2030. Forestry mitigation: Roughly 11-12% of US\$ 50 billion. Conditional: US\$4.87 billion. Unconditional: US\$ 2.17 billion.	Unconditional reduction target of 17 % below BAU levels by 2030, taking into account 4% reductions in AFOLU. US\$26 billion unconditional	Roughly half (US\$24 billion) of mitigation goal conditional on int'l support.	42 % below BAU levels by 2030. Cost: USD 50 billion, of which USD 24 billion would be conditional on international support made available through new climate finance mechanisms, including the GCF.
Nepal	No amount specified.	Pursuing climate budget code in its fiscal planning and budgeting processes. The Climate Change Policy mandates over 80% of the total climate finance to grassroots level activities.	To achieve all goals, and reduce dependence on biomass, while achieving 80% electrification by 2050, and reducing fossil fuel dependence by 50%, Nepal requires international grant support from bilateral, multilateral and other sources.	Yes, int'l finance crucial for Nepal to take these steps.
Pakistan	Total cost identified, but not broken down.	Federal climate-related expenditure was 5.8 and 7.6 % of the total expenditures in 2015 federal budget (mostly energy and transport).	Adaptation: US\$ 7 to US\$ 14 billion/annum.	Up to 20% emission reduction from BAU in 2030, cost is US\$ 40 billion. Mitigation potential can only be realized through international support (grants, technical assistance, technology development and transfer and capacity building)

Panama	Require US\$ 2.225 billion for LULUCF interventions, 10% of which is unconditional and the remainder to reach 80% sequestration increase by 2050 is conditional on international finance.	Donated US\$ 1 million to GCF, and will provide US\$ 250,000 for the operation of ICIREDD, which will be responsible for implementing innovative market mechanisms to facilitate reduction international issues. Already have US\$ 20 million for Alianza por el Millón reforestry activities.	Conditional: increase absorption capacity of LULUCF sector by 80% with int'l assistance. Adaptation also requires int'l assistance.	Part of Panama's commitment is to shorten the navigation distance of 5% of world trade, thereby emissions of the int'l maritime sector. LULUCF: Increase absorption capacity of LULUCF sector by 10% from baseline, by 2050 (unconditional) and up to 80% from baseline with international support. Energy: By 2050, 30% of the installed capacity of the power matrix must come from other types of renewable energy sources.
Paraguay	National Forestry and Reforestation Plan seeks a certification scheme. Funding to the National Development Bank of US \$ 40 million for the forestry plantations for energy and timber, thus placing less pressure on native forests	Not clearly identified, but presumably the US\$ 40 million to the National Development Bank for the forestry plantations for energy and timber is considered as such.	Though no financing amount is identified, NDC makes clear that key sources should be Green Climate Fund, Adaptation Fund, mechanisms for market and non-market, GEF, etc. Also seeks increase in national revenues from the sale of environmental services (credit for carbon sinks)	20% emission reductions from BAU by 2030; half of which is a unilateral target, and the other half is a conditional target.
Perú		20% reduction (out of 30%) will be implemented through domestic investment and expenses, from public and private resources	10% reduction (out of 30%) based on international financing (but not commitments that might result in public debt). REDD+ finance crucial.	30% emission reduction from BAU (from 2010) by 2030. 20% reduction will be implemented through domestic investment and expenses, from public and private resources (non-conditional proposal), and the remaining 10% based on international financing (conditional proposal).

Papua New Guinea	No	Little domestic funding is available, but will be provided where possible.	REDD+ finance crucial, as PNGs focus for mitigation is LULUCF. For 100% renewable energy goal, must work with PNG Power to finalize a plan. Also, adaptation is a priority, and PNG will need financial support, capacity building and technical support.	100% renewable energy by 2030, contingent on funding being made available. Primary mitigation effort through reduced emissions from LULUCF. Effort contingent on external, adequate and predictable funding. In addition it is likely that in the near term GHG emissions will need to rise with economic growth to enable severe developmental problems to be resolved.
Rwanda	Only for agric, as part of costing of implementing the Green Growth and Climate Resilience strategy	Already supporting infrastructure and social services contributing to low carbon growth and resilience to climate change	Full implementation of NDC will require predictable, sustainable and reliable support in the form of finance, capacity building and technology transfer.	Costing of implementing the green growth and climate resilience strategy indicated that Rwanda will need US\$ 24.15 Billion for water resource management, agriculture and energy up to 2030. Costing of the remaining sectors still to TBD
Sri Lanka	Financing TBD once detailed NDC plan done.	Seek a methodology at national level to identify financing needs for each sector and the divisions of contribution at the national budgetary level, and the evaluation of the feasibility and availability of international funding.	Ambition will be higher based on international support. Enhanced finance for adaptation and low carbon development necessary to achieve conditional targets.	Reduce the GHG emissions against BAU scenario by 20% in the energy sector (4% unconditionally and 16% conditionally) and by 10% in other sectors (transport, industry, forests and waste) by 3% unconditionally and 7% conditionally by 2030.

Uganda	Adaptation: US\$ 2.4 billion over the next 15 years. Mitigation: total costs TBD; renewable energy installations est. US\$ 5.4 billion over the next 10 years, forest sector (in NCCP) costed at US\$ 36 million.	30% of implementing National Climate Change Policy to come from domestic sources over next 15 years.	70% of implementation costs for National Climate Change Strategy to come from int'l sources - both climate finance instruments and international market mechanisms	22% reduction of national GHGs in 2030 compared to BAU. LULUCF included.
Vanuatu			Electricity and energy goals costed. Adaptation: US\$9.5million per year, largely from int'l donors.	Seek close to 100% renewable energy in the electricity sector by 2030, and energy sector emission reduction of 30% by 2030.
Viet Nam	No cost estimates	Unconditional goal is 8% emission reduction by 2030 compared to BAU. Adaptation: Viet Nam to finance 1/3 of requirement with domestic support.	Conditional goal is emissions reduced by 25% with international support. Adaptation: 2/3 of requirement to come from int'l sources.	Yes, as per goals in previous cell.
Zambia	Goals/actions, but no costing	US \$15 billion out of US\$ 50 billion to be mobilized from domestic sources.	US \$35 billion out of US\$ 50 billion to be mobilized from external sources.	Reduce emissions by 25% by 2030, against 2010 levels, or by 47% with international support. US\$ 50 billion by the year 2030 - USD 35 billion from external sources, \$15 billion will be mobilized from domestic sources.

* Refers to domestic portion of overall climate change financing identified, unless specific land use and forestry sector details were included in the NDC.

** Refers to international portion of overall climate change financing identified, unless specific land use and forestry sector details were included in the NDC.

Summary

The clearing of forests, mainly for agricultural production, has received more focussed attention in recent years as countries negotiate the terms of a global climate agreement and identify sustainable development goals. Recognizing the importance of governance and policy to influence deforestation and degradation risks, many developing countries have pursued policy approaches and positive incentives to reduce emissions from deforestation and forest degradation (REDD+), which are also reflected in many land use sector pledges to the United Nations Framework Convention on Climate Change (UNFCCC) and its 2015 Paris Climate Agreement.

Direct drivers of deforestation and forest degradation are human activities or immediate actions that directly impact forests and land, such as logging, agricultural expansion, or infrastructure and road development. These are visible to the eye, but the underlying causes that motivated them are harder to detect. Working behind the direct drivers of forest loss or degradation are underlying drivers, which are complex interactions of fundamental social, economic, political, cultural and technological processes that influence direct drivers, and are often distant from their area of impact.

While there is a growing body of social science literature on the causes of deforestation and forest degradation, there has been less assessment of what enables effective national policy responses to address drivers and influence transformational change in the REDD+ policy domain. The overarching question this thesis explores is: In what ways do global environmental policy agendas such as REDD+ help to address underlying drivers of environmental degradation, when confronted with fragmented cross-sectoral and multi-level policy processes at the national level?

The overarching question is addressed via two main cross-cutting research questions that the chapters in this thesis explore:

1. To what extent do national-level REDD+ policy responses identify or conceptualize the problem of direct and underlying drivers of deforestation?
2. In what ways do national-level REDD+ policy responses seeking to affect driver pressures help overcome cross-sectoral and multi-level governance challenges in the fragmented policy arena?

Both questions seek to draw out a new understanding of the challenge that addressing drivers poses, in relation to the modalities and methods countries pursue to implement REDD+, and what the implications are for national implementation of global environmental agreements more generally.

The conceptual lens applied views REDD+ as a global governance instrument interacting with national and sub-national levels that in turn steer the multiple sectors that shape the underlying drivers of deforestation.

This thesis draws upon a comparative case study approach across multiple key REDD+ countries, to infer explanations of the empirical phenomenon observed, and as a basis for theoretical abstraction and ultimately generalization. It begins with an exploration of the recent literature on global and national deforestation-related governance pathways, to consider whether and how they seek to address fragmented national-level policy problems and policy arenas, and frame direct and underlying drivers (or not). A key finding of this literature review is the observed absence of conceptualization of drivers as a subject of assessment or as core objective in the environmental governance concepts reviewed.

With this research gap as a point of departure, the second chapter of this thesis answers research question #1, applying a case study method to analyse the specific national level context of Vietnam. The chapter examines identified or conceptualized direct and underlying drivers, and the linkages between them, in Vietnam's implementation of the National REDD+ Action Plan (NRAP) in the Central Highlands of Vietnam. Mapping the conceptual linkages between direct and underlying drivers provides a means to explore the causal connections and feedback loops that drive actors and behaviour fueling deforestation and degradation. This chapter contributes to answering the overarching research question, by illustrating the degree to which the global environmental agenda (via REDD+) was confounded when confronted with a highly fragmented national-level policy arena.

Chapter three analyzes potential areas of interaction between REDD+ and the Sustainable Development Goals (SDGs), to address research question #2 and the overarching research question. The chapter examines how the SDGs and REDD+ relate to one another at their norm-setting and rule-making stages, what synergies between sectors and policy regimes are identifiable, and how these synergies can be pursued and enhanced. The paper elaborates a conceptual framework based on institutional interactions and distinguishes core, complementary, and supplementary synergies that may be realized between the SDGs and REDD+. Key findings indicate that the SDGs as an overarching, multi-sectoral normative framework adds to the fragmented policy arena at national levels, as explored in two country case studies (Brazil and Indonesia). The findings indicate there are conflicts and trade-offs in national-level processes of implementing REDD+ and the SDGs, as both require adjustments in development pathways. This notwithstanding, the chapter also identifies areas of convergence and synergy between these policy goals.

Chapter four explores the potential of climate finance to support developing country efforts to shift away from unsustainable land use patterns in the context of the 2015 Paris Climate Agreement, providing insights to answering research question #1 and the overarching research question. A meta-analysis of 40 developing country Nationally Determined Contributions (NDCs) to the Paris Agreement provides a qualitative overview of developing country perspectives on climate financing needs for mitigation and adaptation activities in the land use sectors, including addressing deforestation and forest degradation. Findings indicated that none of the countries seek to reverse the public financial incentives going to driver sectors, which would be a crucial step in addressing underlying drivers of land use conversion. The meta-analysis of NDCs is supplemented with a brief assessment of climate financing in two forest-rich and early-mover REDD+ countries, Brazil and Indonesia, illustrating how these two countries did address direct and underlying drivers, particularly financial incentives, and how those

policy reforms interact with the global environmental agenda of REDD+, thus providing insight to answering the overarching research question.

Chapter five explores policy integration as a means to address policy fragmentation (e.g. conflicting sector goals, disconnects between global and local ambition and action) in the implementation of Vietnam's National REDD + Action Plan (NRAP) in the Central Highlands. With the primary drivers of coffee and rubber commodity expansion, the NRAP can only achieve policy goals of reduced emissions from forest clearing by influencing the mandates and funded programmes in these sectors. The chapter maps the degree of fragmentation within this multi-dimensional and multi-level policy portfolio, in all stages of the policy process—from goals and objectives, to actors, policymaking structures and processes, and policy instruments, at various scales. Key findings show that neither the 2012 or revised 2017 NRAP managed to integrate policy related to the direct and underlying drivers of forest loss such that a new mandate or logic emerged to address the fragmented policy arena. The findings also illustrate how the revised 2017 NRAP had no means to reform existing policies and programmes in driver sectors. The chapter reveals four ongoing 'fragmentations' that would need to be overcome for NRAP to affect integrative change.

The final chapter synthesizes research findings and draws out broader conclusions. The case studies illustrate how countries have been slow to identify direct drivers and largely miss underlying drivers. This lack of adequate problem identification is shown to have significant repercussions for articulation of national-level policy responses. Further, the research findings indicate that REDD+ policies and strategies are largely unable to overcome cross-sectoral and multi-level governance challenges in their efforts to address direct and underlying drivers of deforestation.

The empirical findings provide a basis upon which to reflect on the theoretical implications of these findings. Various domains of governance literature reviewed earlier are briefly revisited, including: polycentric governance, multi-level and networked governance, institutional interaction and interplay management, environmental policy integration, policy fragmentation and orchestration, cross-sectoral coordination, public private hybrid, integrative environmental governance, transnational climate governance initiatives, and transformative governance, where process is central but where direct and particularly underlying drivers of environmental harm may be missed as a priority. Only the nexus and wicked problem literature define problem framing as core to addressing drivers. Yet, both of these conceptualize 'the problem' from a different angle than the drivers framing. The nexus approaches the problem from nexus interconnections between policy domains and sectors, while the wicked problem literature focusses on characteristics related to the complexity of the problem. This has implications for their utility in contexts of nesting a global objective (such as addressing deforestation, biodiversity loss, climate change, fisheries depletion, and so on) into national levels, and down to the ground level, for measurable impacts

This thesis recommends that a renewed focus on direct and underlying drivers of unsustainable land use be elevated in the governance literature. The chapter concludes with a proposed framework on problem contextualization at national scales as a means of designing policy responses.

About the author

Gabrielle Kissinger is Principal of Lexeme Consulting, based in Vancouver, Canada. She works at the intersection between science and environmental policy— offering multi-disciplinary solutions based on sound science, economics and political viability. Consulting services focus primarily on global land-use and climate change, finance, REDD+, agriculture, and business solutions to sustainability. Services include strategies for linking science into policy and decision-making, convening and negotiation, government affairs, research and due diligence. She has worked for 30 years at the interface between government policy and land use pressures, finding solutions at local, sub-regional, national and international scales.

Early in her career she worked to advance legislation and fiscal appropriations on land conservation and clean air and water as an environmental lobbyist in the US Congress, and in state-level legislatures, particularly the State of Maine. She was instrumental in developing the Appalachian Mountain Club's Maine Woods Initiative, creating landscape scale conservation and community economic development on over 40,500 ha (100,000 ha), providing for ecological reserve protection, Forest Stewardship Council-certified forestry operations, and new backcountry recreational access. Then, in the early 2000's she worked to legislate protection of 3.1 million hectares of British Columbia coastal temperate rainforest in Western Canada, and legal codes to implement ecosystem-based management to change logging practices in areas remaining in timber production in the 8.5 million hectare region.

A particular focus of her research, consulting and policy analysis in the last twelve years has been framing the need for national governments and REDD+ processes to address the drivers of deforestation and degradation, through published papers, partnerships and strategic advisories. Efforts helped leverage a decision by Parties to the United Nations Framework Convention on Climate Change, adopted at COP 19 in Poland, on drivers. She worked as a Senior Policy and Investment Expert with the UN-REDD Programme, working with member governments on formation of REDD+ policies and measures to affect driver pressure on forests, as well as methods to cultivate private sector support for PAMs and investment in REDD+ compatible activities. Priority countries included Indonesia, Myanmar and Zambia. She has worked in Brazil, Indonesia, Vanuatu, Vietnam, Bhutan, Myanmar (Burma), Papua New Guinea, Kenya, Zambia and Peru. She was lead author of sub-section CCP7.6 (and contributing author on the remainder of the chapter) on Governance of Tropical Forests for Resilience and Adaptation to Climate Change in the IPCC Working Group 2, 6th Assessment Report.

She holds an M.A. in natural resources management and environmental policy from Tufts University, and B.A.'s in philosophy and political science from University of California, Santa Barbara. She regularly contributes peer review for a range of journals, including *Global Environmental Change*, *Nature*, *Conservation Letters*, *Land Use Policy*, *Forests* and others. She lives in Vancouver, Canada.

List of publications by the author

Peer-reviewed publications

- **Kissinger, G.;** M. Brockhaus, S.R. Bush (2020). Policy integration as a means to address policy fragmentation: Assessing the role of Vietnam's National REDD+ Action Plan in the Central Highlands. *Environmental Science and Policy*. (Chapter 5 in this thesis).
- **Kissinger, G.,** A. Gupta, I. Mulder, N. Unterstell, 2019. Climate financing needs in the land sector under the Paris Agreement: An assessment of developing country perspectives. *Land Use Policy*, Volume 83, April 2019, Pages 256-269. (Chapter 4 in this thesis).
- Bastos-Lima, M., **G Kissinger,** I Visseren-Hamakers, J Braña-Varela, A Gupta, 2017. The Sustainable Development Goals and REDD+: assessing institutional interactions and the pursuit of synergies. *International Environmental Agreements*. (Chapter 3 in this thesis).
- **Kissinger, G.,** 2020. Policy Responses to Direct and Underlying Drivers of Deforestation: Examining Rubber and Coffee in the Central Highlands of Vietnam. *Forests* 2020, 11, 733.. (Chapter 2 in this thesis).

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