



The promises of land use cooperative initiatives

Analyzing the design and performance of cooperative
initiatives for sustainable land use

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Abstract

Addressing the land sector is key to help countries bridge the mitigation gap and advance the adaptation targets. Individual national governments' forest restoration commitments and businesses' zero deforestation pledges are slow to gain traction. Multi-stakeholders and cross-sectoral partnerships, identified by the literature as "international cooperative initiatives" may play a relevant role in raising the ambition of national governments' commitments and fostering cooperation between the public and private sectors. Drawing on the literature on the effectiveness of transnational climate partnerships and supply chain initiatives, this research explores the realm of cooperative initiatives tackling land use. The aim of this research is to examine whether the presence of certain characteristics in the initiatives' design influences their capacity of delivering on their desired goals, notably concerned with sustainable land use and forest management. For this purpose, a quantitative and qualitative analysis has been conducted to scrutinize and evaluate land use cooperative initiatives' design and output performance. The empirical findings demonstrate that the presence of a quantified and verifiable target, a monitoring arrangement, the definition of resources needed and a well-defined and ambitious approach exert a positive influence on their performance. The New York Declaration on Forest offers a concrete example of well-designed land use cooperative initiative with a promising performance. However, the research highlights that the spectrum of well-performing land use initiatives also includes "call to actions" (high-level pledges), a type of initiative that has often succeeded to accomplish its advocacy functions, though poorly designed. Yet, it seems clear that, if compared against the same ultimate goal (e.g. halting deforestation), pledges do not hold the same potential as initiatives with a more structured and verifiable approach.

Keywords: international cooperative initiatives | sustainable land use | deforestation | non-state actors

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List of abbreviations

FOF: Function-Output-Fit
NDC: Nationally Determined Contribution
NGO: Non-governmental organization
NSA: Non-state actor
NYDF: New York Declaration on Forests
VSS: Voluntary Sustainability Standards

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Introduction

1.1 BACKGROUND PROBLEM

“It’s mathematically impossible to meet the goals of the Paris Agreement without addressing the land sector” (Baldwin-Cantello, 2019). The last figures from the Global Forest Watch indicate that from 2001 to 2018, there was a total of 361Mha of tree cover loss globally, which is equivalent to 98.7Gt of CO₂ emissions (Global Forest Watch, 2019). Forest conversion significantly contributes to soil erosion, reduces water quality and supply and, most of all leads to biodiversity loss and increases in carbon emissions (Pacheco et al., 2017). Although the growth rates of both world population and global demand for agricultural commodities have shown a declining trend in the last years, the United Nations Food and Agriculture Organization (FAO) estimates that a 60% increase in global food production is required between now and 2050. Particularly, the demand for meat, vegetable oils, and sugar will still considerably increase (FAO, 2018b). As a consequence, commercial agriculture has been identified as the driver of at least two-thirds of tropical deforestation (Donofrio et al., 2017). In addition to the devastating loss of forests, the rapid expansion of these commodities into new areas is exacting a high human cost. The livelihoods of indigenous and forest-dependent people have been put at risk by the large-scale conversion of forest to intensive monoculture (Oxfam International, 2017).

Multilateral negotiations have failed to negotiate binding agreements on forests in the 1990s and they have only resulted in a number of general principles and criteria, including the UN Forest Principles or the UNFF’s Non-legally Binding Instrument (Ludwig, 2018). However, these principles have not led to the intended large-scale transition to sustainable forest governance, rather to a plethora of private and civil-society initiatives aimed to fill the gap left by the international community (Agrawal et al., 2008).

In 2015, the Paris Agreement dedicated Article 5 to encourage countries towards the sustainable management of forest and land use. As a result, national governments have recognized in their Nationally Determined Contributions (NDCs) the essential role that forest restoration play in climate mitigation and adaptation. Furthermore, in the past years, governments have pledged to halt deforestation and reverse land degradation under the Sustainable Development Goals and the Aichi Biodiversity targets. In parallel, an increasing number of companies have started to formulate voluntary commitments to reduce deforestation driven by agricultural commodity supply chains. Yet, despite what these trends may suggest, the totality of efforts to stop deforestation and restore degraded land has been slow to gain traction (NYDF Assessment Partners, 2019). The vast majority (80%) of countries included forestry, land use, and land-use change in their NDCs but they have failed to translate this ambition into measurable actions (IUCN & Climate Focus, 2018). At the same time, big corporations have produced “zero deforestation commitments” with substantial implementation gaps (Rothrock & Weatherer, 2019). Moreover, in

the formulation of such commitments, corporations and governments have acted in isolation, though sharing similar objectives (Miller et al., 2017).

Nevertheless, in the past few years, the emergence of multi-stakeholder collaborations to reduce deforestation has been accelerating. Companies, non-governmental organizations (NGOs), and governments have formed a variety of international partnerships to achieve their shared forest and climate goals. International and cross-sectoral partnerships like the Tropical Forest Alliance and the New York Declaration on Forest have been spurred by the necessity to coordinate the efforts from the public and private sectors to halt the alarming rates of deforestation. These multi-stakeholder partnerships are deemed to play a crucial role in accelerating action in sustainable land use and forest and in supporting the ambition of countries' NDCs (Ludwig, 2018).

1.2 KNOWLEDGE GAP

The academic debate has addressed the rise of transnational climate partnerships, known as “international cooperative initiatives”, by looking at different aspects. While part of the studies is focused on analyzing the political impact on national governments and on the intergovernmental processes (Chan & Pauw, 2014; Hale, 2016), other studies are concerned with the evaluation, both qualitative and quantitative, of the effectiveness of cooperative initiatives in bridging the “ambition gap” of countries' NDCs (Graichen et al., 2017; Michaelowa & Michaelowa, 2017; NewClimate Institute et al., 2019). This research positions itself within the branch of research that focuses on the evidence-based assessment of effectiveness (Blok et al., 2012; Chan et al., 2018; Hsu et al., 2016; Pattberg & Widerberg, 2016). Due to the lack of data on actual progress, part of the existing studies has opted for ex-ante evaluation of the potential impacts of cooperative initiatives. While these studies have highlighted the factors and criteria in the design of the initiatives that increase the implementation likelihood (Michaelowa & Michaelowa, 2017; Widerberg & Pattberg, 2015), a more recent project from Chan and colleagues (2018) has adopted an ex-post evaluation method that detects early signals of the initiatives' performance. However, there seems to be a knowledge gap with respect to evaluating the relationship between the design criteria derived from the ex-ante assessments and the ex-post empirical measurement of the initiatives' performance. This research aims to bridge this gap by providing evidence on the influence that design criteria might have on the performance of initiatives tackling land use.

In addition, the majority of studies on the effectiveness of cooperative initiatives have brought into focus initiatives with mitigation objectives, mainly stemming from the energy, transport or industry sectors (Blok et al., 2012; Hsu et al., 2016). Conversely, this research provides an appraisal of the effectiveness of cooperative initiatives concerned with a rarely assessed theme, i.e. land use, and that also includes adaptation objectives. Because of the selection of the land use theme and the assessment of the design and performance of the New York Declaration on Forest, this research finds its relevance also within the literature on the effectiveness of supply chain initiatives and their role in reducing deforestation (Lambin et al., 2018).

1.3 RESEARCH AIM AND QUESTIONS

The aim of this research is to contribute to the debate on international cooperative initiatives by giving empirical insights into land use cooperative initiatives and the features they should include in their design in order to increase their capacity of delivering on the desired goals, notably concerned with sustainable management of land use and forest. The capacity of producing the desired results is assessed by looking at the output performance of the initiatives, a method that measures the fitness between the functions and the outputs produced by the initiative to date. Therefore, this research hypothesizes that *if the design of a land use initiative presents certain features, such as the monitoring arrangements, specification of resources needed, a well-defined and ambitious approach and a quantified and verifiable target, the capacity of the initiative to deliver on the desired goals will be incremented.* The first contribution of this study is to develop a specific set of criteria to assess the design of land use cooperative initiatives. The second contribution is an empirical examination of the land use cooperatives initiatives in terms of general characteristics and output effectiveness.

The societal relevance of this research pertains to the necessity of ensuring that the existing and the future initiatives hold the indispensable requisites to effectively catalyze actions for forest and land use. Land interventions have interlinked implications for climate mitigation, adaptation, food security and biodiversity (Roe et al., 2019) and cooperative initiatives play a role in supporting these interventions by facilitating collaborations from different sectors.

The main research question that this study attempts to answer is:

To what extent the presence of specific design features affects the capacity of land use cooperative initiatives to deliver on the desired goals?

The knowledge to answer the research question has been yield by answering the following sub-questions:

- 1. What are the most important design features for an effective international cooperative initiative according to the transnational governance literature?*
- 2. What are the most important design characteristics for an effective initiative tackling land use according to the literature on supply chain initiatives?*
- 3. How does the literature assess the performance of cooperative initiatives?*
- 4. How do land use cooperative initiatives look like in terms of actor participation and implementation?*
- 5. How are land use cooperative initiatives performing over time?*
- 6. How does the design of land use cooperative initiatives look like in respect to the criteria derived from the literature?*
- 7. How does the New York Declaration on Forest meet the design criteria and what is its output performance?*

1.4 RESEARCH FRAMEWORK

The research framework (Figure 1) illustrates the steps unfolded to conduct this research.

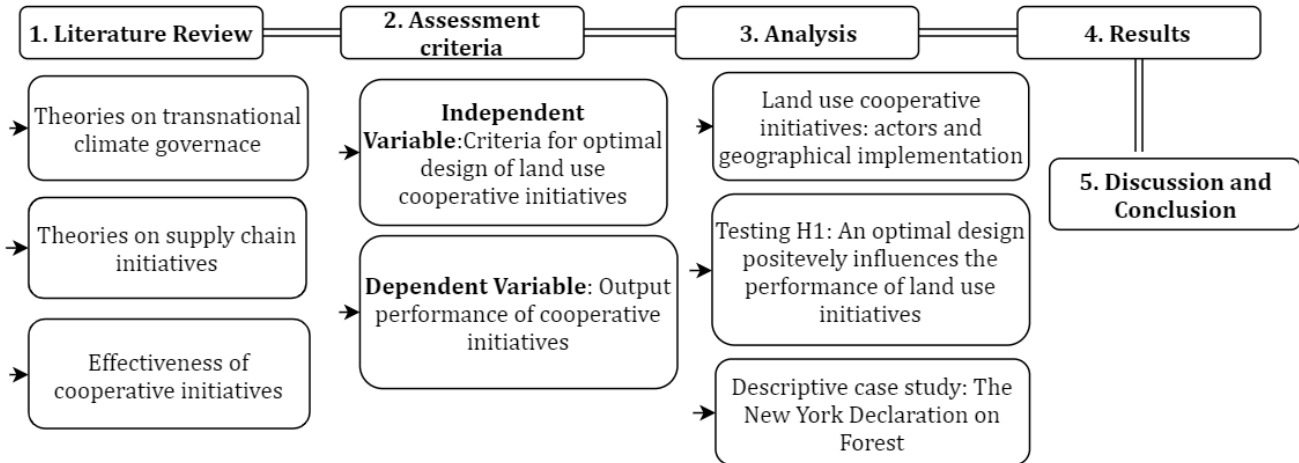


Figure 1: Research Framework

After the first phase of the literature review, the main assessment criteria have been formulated to analyze the independent variable – the presence of specific features in the design – and the dependent variable – the capacity of the initiative to deliver on its goals. The results of this research are produced by conducting an empirical analysis of land use cooperative initiatives and the relation between the two variables. Lastly, a descriptive case study is also presented. The case study allows for exploring the details of good design and how this might influence the performance of the initiative.

Chapter 1: Literature Review

The following chapter provides an overview of the main theoretical concepts reviewed to conduct the analysis. The first section describes the emergence of transnational climate partnerships and forms of private governance in the forest regime. Drawing on the literature on cooperative initiatives and supply chain initiatives, the research illustrates the criteria for the optimal design of land use cooperative initiatives. The dependent variable – the capacity of the land use initiative to realize the desired performance – finds its theoretical basis in the literature on output effectiveness.

2.1 TRANSNATIONAL CLIMATE GOVERNANCE

Global environmental challenges - deforestation, climate change, biodiversity loss, and natural disasters - have been gradually characterized by transnational non-state based forms of governance (Abbott, 2012; Pattberg, 2010). Many scholars have recognized a fragmentation and decentralization of climate governance by observing that responsibilities such as adopting rules and funding public goods are shared among multiple actors that operate at different scales (Abbott, 2012; Biermann et al., 2019; Zelli & Asselt, 2013). Transnational governance consists of transnational actors operating in a political sphere in which public and private actors interact across national borders and political jurisdictions (Andonova et al., 2009).

The factor that contributes to making the governance “transnational” is the emergence of non-state actors (NSA). Specifically, NSAs comprise a broad range of non-governmental actors, including firms, investors, civil society organizations, experts, indigenous people and other social groups (Orsini, 2013). In this study, the definition of NSAs also comprises sub-national actors (e.g. cities, local governments) in order to fit alongside the concept of “non-party stakeholders” employed by the United Nations Framework Convention on Climate Change (UNFCCC).

The twenty-first session of the Conference of Parties in Paris (COP21) generated new impulses for the evolving polycentric and multilevel institutional framework of global climate governance (Chan et al., 2015; Oberthür, 2016). The Paris Agreement has led to a system that institutionalized the so-called “hybrid multilateralism”, referring to the policy architecture that combines voluntary climate pledges by states - Nationally Determined Contributions (NDCs) - with the involvement of NSAs as actors monitoring and supporting the implementation of the states’ NDCs (Bäckstrand et al., 2017; Dryzek, 2017; Hale & Roger, 2014). Hence, the Paris Agreement recognizes the NDCs submitted by states as the backbone of mitigation and adaptation commitments, but it also acknowledges that NSAs are indispensable in the pursuit of such contributions as implementers, expert, and watchdogs (UNFCCC, Decision 1/CP21).

Being NSAs formally and informally woven into the intergovernmental processes like the Paris Agreement, it is often argued that NSA contributions serve the fundamental role of supporting states closing the emission gap (Blok et al., 2012; van Asselt, 2016; Widerberg & Pattberg, 2015). This is intended as the gap between current emission trends and what is

necessary to put the world on a path that would limit the global temperature increase to 1.5 °C above pre-industrial levels (Blok et al., 2012; IPCC, 2018). However, there are also contrasting opinions that express doubts regarding the potential of NSA actions. The study of Michaelowa and Michaelowa (2017) demonstrates that transnational climate governance initiatives have the potential to support the implementation of existing national policy, but they cannot be expected to make up for the lack of country-level mitigation ambition in the UNFCCC process. Chan et al (2019) draw the attention to governance risks related to the necessity of having an enabling environment or the possibility of the production of politically contentious outcomes.

Efforts by NSAs to close the widening emission gap are represented by the insurgence of international cooperative initiatives (Widerberg & Pattberg, 2015). Cooperative initiatives are understood as governance arrangements, also acknowledged by the UNFCCC, aiming at tackling, inspire and organize broad-based climate action. Researchers have identified cooperative initiatives in different ways, for instance as transnational multi-stakeholder partnerships (Pattberg & Widerberg, 2016) or transnational public-private partnerships (Bäckstrand et al., 2017). In this research, cooperative initiatives refer to those initiatives that typically take the form of transboundary multi-stakeholder and in some cases, multi-sectoral, arrangements aimed at addressing climate change (ClimateSouth, 2018). Accordingly, actors in these multi-stakeholder partnerships include regional and local governments, companies, financial institutions, NGOs and individuals operating in different countries. International organizations and national governments have also joined the efforts (Chan et al., 2016).

The emergence of transnational multi-stakeholder partnerships can be traced back to the 1992 Earth Summit, where Agenda21 called for a “Global Partnerships for sustainable development” with the mission of stimulating partnerships between public, private and community sectors to boost implementation (Pattberg & Widerberg, 2016). Partnerships have since proliferated in a variety of issue areas, ranging from international development (Reed & Reed, 2009) and forestry (Pattberg, 2005) to biodiversity (Appelstrand et al., 2010) and climate change (Bäckstrand, 2008).

2.2 NSA IN THE FOREST REGIME

In the realm of forest governance, partnerships between businesses, civil society, and governments have been created in an attempt to reduce the environmental and social impacts of global supply chains on deforestation (Kalfagianni, 2015; Thorlakson et al., 2018). The production of agricultural commodities is often tied to substantial social and environmental harm (Lambin & Thorlakson, 2018) and, in fact, commodity-driven deforestation is associated with more than a quarter of global tree cover loss between 2001 and 2015 (Curtis et al., 2018). The Food and Agriculture Organizations of United Nations (FAO) defines deforestation as “the conversion of forested areas to non-forest land use such as arable land, urban use, logged area or wasteland”. As a consequence, land use change can be identified as the primary cause of deforestation (FAO, 2007).

Many scholars agree that the forest regime is characterized by the emergence of innovative forms of forest governance, focused on decentralization, market-related tools and participatory approaches (Giessen, 2013; Orsini, 2013; Secco et al., 2014). The forest sector has therefore experienced the emergence of forms of private governance, which Pattberg (2007, p. 52) defines as “a form of socio-political steering, in which private actors are directly involved in regulating – in the form of standards or more general normative guidance – the behavior of a distinct group of transnational actors, including business”.

Civil society and businesses are claiming central positions as new rule-making authorities and standard-setting bodies at the global level. As a result, many Voluntary Sustainability Standards (VSS) have emerged to address the wide variety of issues entrenched in the supply chains: environmental degradation, poor working conditions, and impoverishment of smallholder producers (Bitzer, 2012). Representative examples of VSS in the context of forestry are the multi-stakeholder certification schemes and standards developed by the Roundtable on Sustainable Palm Oil, NGO certifications such as FairTrade of Rainforest Alliance and company-led standards (e.g. Unilever Sustainable Agriculture Code). An increasing number of studies have started to refer to these forest-related private governance practices as voluntary supply chain initiatives. The main objective of these initiatives is to provide standards regulating the production processes of agricultural commodities (Meijer, 2014). In this research, supply chain initiatives refer to forms of hybrid governance that involve multiple actors including national and subnational governments, business and civil society (Ludwig, 2018). According to the literature, these initiatives can take the form of self-organized voluntary commitments adopted by companies or multi-stakeholder partnerships aimed at improving the production practices at the different levels of the value chain (Lambin et al., 2018).

2.3 THE DESIGN OF LAND USE COOPERATIVE INITIATIVES

Contributing to the achievement of mitigation and adaptation goals requires NSAs to undertake concrete actions that can effectively raise the ambition of national commitments. Activities like providing finance, technology development, capacity building are expected to play a fundamental role (Bäckstrand et al., 2017). Whereas NSA actions can help states gain the technology, expertise, and confidence to formulate and implement more ambitious contributions, the indirect impact of such activities is even larger. These contributions may deliver policy innovation and showcase best practices transnationally (Chan et al., 2015).

Michaelowa & Michaelowa (2017) argue that an optimal institutional design can be considered as a minimum requirement for the cooperative initiative towards the later successful achievement of the established goal. In line with this perspective, this research emphasizes that a convincing design characterized by some specific criteria represents the initial and necessary (but not sufficient) prerequisite to achieving the desired mitigation or adaptation goal.

The literature on cooperative initiatives define some basic criteria that should be met when formulating the institutional design of climate initiatives: (1) the definition of a

mitigation/adaptation target, (2) definition of resources, (3) the definition and use of monitoring, reporting and verification systems and (4) ambition. The explanation of these criteria has been integrated with the literature that provides conditions for the effectiveness of supply chain initiatives. The table below (Table 1) illustrates the resulting comprehensive set of criteria adapted to assess the design of land use cooperative initiatives.

Key criteria	Potential positive effects	Land use context	Sources
EXPLICIT AND TIME-BOUND TARGET	<ul style="list-style-type: none"> • Verification • Stabilizing and reassuring 	<ul style="list-style-type: none"> • Strict definitions (e.g. gross or net deforestation, cut-off dates, etc.) • Implementation deadlines 	Galvanizing the Groundswell of Climate Action, 2015; Garrett et al., 2019; Keohane & Victor, 2011; Lambin et al., 2018; Meijer, 2014; Michaelowa & Michaelowa, 2017; Widerberg & Pattberg, 2015
CLEAR DEFINITION OF RESOURCES NEEDED	<ul style="list-style-type: none"> • Securing the support to certain activities 	<ul style="list-style-type: none"> • Arrangements for contributions from different actors 	Michaelowa & Michaelowa, 2017; Widerberg & Pattberg, 2015; Lambin et al., 2018
MONITORING ARRANGEMENTS	<ul style="list-style-type: none"> • Raising transparency and accountability 	<ul style="list-style-type: none"> • Transparent system of compliance monitoring 	Bäckstrand, 2012; Galvanizing the Groundswell of Climate Action, 2015; Michaelowa & Michaelowa, 2017; Pattberg & Widerberg, 2016; Garrett et al., 2019; Lambin et al., 2018; Meijer, 2014; Carodenuto, 2019; Ferroni & Castle, 2011

AMBITION	<ul style="list-style-type: none"> • Possibility to scale up (resources and partners) 	<ul style="list-style-type: none"> • Detailed guidance on implementation activities • Engagement with smallholder producers and local communities 	Galvanizing the Groundswell of Climate Action, 2015; Garrett et al., 2019; Lambin et al., 2018; Lambin & Meyfroidt, 2011; Pattberg & Widerberg, 2016; Rietberg & Slingerland, 2016; Widerberg & Pattberg, 2015
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Table 1: Criteria for the optimal design of land use cooperative initiatives

Arguably, the effectiveness of a cooperative initiative is inherently dependent on the precision of the target-setting. Pattberg & Widerberg (2016) state that when rules and targets are vague, this might hamper the compliance and monitoring of the initiative. In fact, a commitment that does not allow for a clear verification, no matter how ambitious it is, it may not register concrete effects (Michaelowa & Michaelowa, 2017). More importantly, precise rules and goals also have a stabilizing and reassuring effect on governments and firms to invest resources when trying to achieve the goals of the partnership (Keohane & Victor, 2011). In this respect, precision is attained when a commitment is specific, meaning that it should enunciate explicit targets, detailing what needs to be done and by whom (Galvanizing the Groundswell of Climate Action, 2015). Explicit target also implies the definition of a baseline to distinguish the effect of the activity from business as usual (Michaelowa & Michaelowa, 2017). Similarly, the literature on supply chains stresses the importance of the strictness of the target (Lambin et al., 2018; Meijer, 2014). Especially when land use initiatives are aimed to reduce deforestation, it is fundamental that the commitment starts from a strict and clear definition of what is intended for deforestation, as there are differences between zero “gross” and zero “net” deforestation (Lambin et al., 2018). The former prohibits all types of deforestation, while the latter allows for clearing of forest can be compensated by (Garrett et al., 2019; Lambin et al., 2018). Furthermore, an effective commitment is the one that publicly specifies time-bound, quantitative and geographically-specific targets that can be objectively achieved and verified. Specifically, the determination of a cut-off date, the date after which lands cannot have been forested to qualify for conversion. Moreover, implementation deadlines are also to be considered necessary preconditions for effective implementation (Garrett et al., 2019; Lambin et al., 2018; Thorlakson et al., 2018).

Strictly related to the target criterion is the definition of monitoring arrangements. Robust and open monitoring and verification system is necessary in order to foster the transparency and accountability of the initiative (Pattberg & Widerberg, 2016). Targets should be defined in a way that allows for quantitative and qualitative tracking for instance by arranging publicly disclosed reporting activities or third-party’s evaluations (Bäckstrand, 2012). Analogously, one of the fundamental requirements for effective supply chain initiatives is certainly the monitoring arrangement. To assure implementation, it is crucial to structure a transparent system of compliance monitoring and verification with clear details for compliance and sanctions (Garrett et

al., 2019; Lambin et al., 2018; Meijer, 2014). Additionally, initiatives should specify the resources, especially financial, human and technical they have allocated and will need to secure and attain their goals (Widerberg & Pattberg, 2015). In the context of supply chain initiatives, authors have emphasized that arrangements to coordinate the interactions between private and public sectors are necessary to determine the resources and contributions needed for the implementation and to generate incentives (Carodenuto, 2019; Ferroni & Castle, 2011; Lambin et al., 2018).

The last important feature is ambition. Cooperative initiatives should take the form of a commitment that represents a significant deviation from business as usual and it should be additional to previous commitments, for example by including new partners and or scaled-up resources (Galvanizing the Groundswell of Climate Action, 2015). In the realm of land use-related initiatives, ambition is strictly related to attainability. Hence, an ambitious supply chain initiative is capable of triggering an implementation process by providing detailed guidance on the specific activities that will translate the pledge into action (Lambin et al., 2018). Additionally, the possibility of a scale-up for supply chain initiatives cannot refrain from managing potential unintended consequences on smallholders (Lambin et al., 2018; Lambin & Meyfroidt, 2011). Consequently, a supply chain initiative drives ambition when it is capable to generate change from upstream – at the procurement level – by limiting the negative cascade effects that may redound upon smallholder producers (Lambin et al., 2018). For instance, the most acknowledged negative consequence caused by the adoption of certification schemes is the marginalization of smallholder producers and indigenous people, who remain excluded because of the high costs of compliance (Lambin et al., 2018; Rietberg & Slingerland, 2016).

It is important to note that these basic criteria have a substantial complementarity. Moreover, there can be additional and more detailed criteria that would define an effective design for land use cooperative initiatives. This analysis has selected the ones that are deemed as fundamental pillars for a convincing design and that are suitable for further development. Therefore, this study argues that if the design of the cooperative initiatives is developed by following these basic conditions, it is more likely to achieve effectiveness, in terms of both direct (e.g. reduction in emissions, improvement of environmental and social conditions of a specific issue) and indirect impact (e.g. change in policy process).

2.4 OUTPUT PERFORMANCE

The hypothesis tested in this research specifies that if a land use cooperative initiative meets all the basic criteria in its institutional design (see Table 1), as recommended by the literature, the capacity of delivering on the desired goals will be incremented. The capacity of delivering is assessed in terms of output performance, a method that measures the degree of fitness between the outputs produced by the initiatives to date and its functions (Chan et al., 2018). Therefore, this study analyzes the effectiveness of cooperative initiatives at the level of outputs, thereby considering the outputs as the preconditions for achieving other forms of effectiveness, such as behavioral and environmental impact.

As Underdal (2002) explains, when evaluating the effectiveness of cooperative arrangements, it is fundamental to make a distinction between output, outcome, and impact. The output identifies the rules and norms of the arrangement, the outcome refers to the changes in human behavior and the impact indicates the changes materializing in the environment.

There have been several attempts to assess the effectiveness of cooperative initiatives (Chan et al., 2018; Hsu et al., 2016; Michaelowa & Michaelowa, 2017; Widerberg & Pattberg, 2015). As the majority of scholars have already stated, assessing the impact of such cooperative initiatives is not an easy task: it is very hard to measure the direct impact of transnational cooperative initiatives, especially when it comes to measuring the actual GHG emissions reductions directly attributable to the initiatives (Chan et al., 2018; Michaelowa & Michaelowa, 2017; Widerberg & Pattberg, 2015).

Consequently, most of the studies focus on the potential effectiveness of such activities, for instance by focusing on their design (Michaelowa & Michaelowa, 2017) or output performance (Chan et al., 2018) or potential in reduction of GHG emissions (Hsu et al., 2016).

Chapter 2: Methodology

This chapter elaborates on the methodologies used to conduct this research. After a general overview of the methodological approach, the chapter describes the methods for data collection and data analysis for both the quantitative and the qualitative analysis.

3.1 OVERVIEW OF THE METHODS

To answer the research question - *to what extent the presence of specific design features affects the capacity of land use cooperative initiatives to deliver on the desired goals?* - this research has adopted both quantitative and qualitative methods. Specifically, the former can be divided into two parts: the first is a quantitative analysis illustrating the main characteristics of international cooperative initiatives under the theme of “Land use”. The aim of this part is first, to provide a broad overview of this category of initiatives (actors, the geography of implementation). The second part empirically analyzes the design of the initiatives (independent variable), the output performance (dependent variable) and the relation between the two variables. Given the considerable amount of existing cooperative initiatives, the statistical description has been considered as the most suitable method to provide this type of general information.

The qualitative analysis has been conducted with the method of a descriptive case study. The objective of the case study is to explore in detail the design, functions, and outputs of one specific land use initiatives chosen from the database, namely the New York Declaration on Forests.

3.2 QUANTITATIVE ANALYSIS

This section describes how the quantitative data has been collected and the indicators that have been selected to operationalize the variables.

3.2.1 Data collection

The data on international cooperative initiatives were extracted from the ClimateSouth database containing one hundred ninety cooperative initiatives. Thirty-four initiatives were selected by thematic areas (see Table 5 in the Appendix), specifically the ones concerning land use, including agriculture- and forestry-related activities. Although these initiatives operate in different fields, namely capacity building, education, policy coordination, all the initiatives have as ultimate goal the promotion of sustainable land use.

The ClimateSouth database gathers several types of data, but this research has used only the following categories: actors participating, the geography of implementation, functions, and outputs. By using this data, the analysis generates other data on output performance.

The data regarding land use cooperative initiatives cover a span of approximately seven years, from 2013 until June 2019 and they are classified according to the seven thematic areas of

the Marrakesh Partnership for Global Climate Action (e.g. industry, oceans and coastal zone, water, etc.). All the information regarding these categories of data has been collected through the initiatives' official websites, UNFCCC websites and other secondary sources explicitly mentioning the initiatives. Specifically, the materials consulted were reports of the initiatives, official statements or climate initiatives databases such as NAZCA or Climate Initiative Platform.

3.2.2 General data on land use cooperative initiatives

For the first introductory quantitative part, the data regarding participants, lead actors, funders and geography of implementation of land use cooperative initiatives have been analyzed. With regards to actors, the analysis has distinguished eight categories: national governments, subnational governments, businesses, international organizations, domestic NGOs, international NGOs, education, and others. A more detailed description of the actor type is contained in Table 6 in the Appendix. In the analysis, every actor is associated with a geographical location, which corresponds to the headquarters in the case of business, NGOs, educations, and others. The location of international organizations has been identified as "international". The countries explicitly stated by the initiatives for the implementation have been used to determine the planned geography of implementation of the initiatives, whereas the actual implementation has been determined by looking at the locations where the outputs were produced. The countries are clustered into regions, according to the WorldBank's scheme (Worldbank, 2019).

3.2.3 Operationalization of the design criteria

To analyze the design of the cooperative land use initiatives, the key criteria stemming from the literature review have been operationalized in a set of questions (see Table 2). These questions have a steering function and they have been used to determine whether the initiatives meet the criteria. All the questions have been answered with "Yes" or "No" and in the case of criteria defined by two questions, the criterion is considered accomplished when both questions have been answered positively. The answers to these questions have been traced primarily in the initiatives' official websites, but also in other sources as illustrated in the table below.

KEY CRITERIA	Questions	Research Material
Explicit Target	Does the initiative have a quantified (also geographically) target? Does the initiative have a time-bound implementation plan?	
Resources	Does the initiative clearly specify the resources needed to achieve the target? Does the initiative outline the needed contributions from public and private actors?	Initiatives' official websites and online material, NAZCA, Climate Initiatives Platform, other sources (NGOs, international organizations) mentioning the initiatives
Monitoring	Does the initiative have an arrangement for monitoring system?	
Ambition	Does the initiative have a well-defined approach that allows for the possibility of scaling up (resources and partners)? Does the initiative promote engagement with smallholder producers?	

Table 2: Operationalization of criteria for the optimal design for cooperative initiatives

A target is considered explicit when the initiative explicitly states its mitigation or adaption goal by providing a quantified target (e.g. certain amount of tons of CO₂, hectares of the areas restored or partnerships created, communities protected). Furthermore, it has been assessed whether the initiative has an implementation plan that is time-bound defined by implementation deadlines.

In terms of resources, it has been verified whether the initiative explicitly mentions what types of resources are needed to achieve the target, that is, for instance, funds, technological innovations, policy development, education or training. Furthermore, the initiative meets the criterion if it clearly states in its objective that it wants to facilitate cooperation and engagements between public and private actors and it describes the different actors' contributions to the implementation of the activities.

For the criterion "Monitoring", it has been assessed whether the initiative has an arrangement for monitoring (e.g. annual report, online monitoring platform), also from a third party.

Lastly, it has been assessed whether the "What we do" section of the initiative explains in detail the activities that will be carried out to achieve the goal. In addition, it has been assessed whether the approach allows for institutional openness, meaning the initiative is open to new partners (and resources). The "Ambition" criterion is not met by those initiatives that only state their functions, without providing further details on how they are planning to implement the described approach. Together with a well-define approach, an initiative has been considered

ambitious whenever it recognizes the importance of stimulating the engagement with smallholders, by expressing intent to provide them with technical assistance and/or involve them in decision-making processes.

3.2.4 Operationalization of output performance

The output performance has been assessed through the Function-Output Fit (FOF) methodology. This method has been deemed suitable for the evaluation of the capacity of a cooperative initiative to deliver on the desired goals because it allows detecting the actual outputs produced by the initiative and to determine whether they are line with their self-stated objectives.

The FOF methodology has been initially adopted for partnerships for sustainable development (Pattberg et al., 2012) and later adapted to be applied to cooperative initiatives (Chan et al., 2018). This methodology consists in assigning a FOF score to each initiative which indicates the degree of consistency between the outputs produced so far by the initiative and the stated functions. To obtain a FOF score, it was necessary to identify the functions and the outputs of the initiatives which were chosen among an explicit and well-defined range of governance functions and output categories (see Table 7 and 8 in the Appendix). Subsequently, the match between outputs and functions is determined by following a pre-established theoretical linking between outputs and functions, as shown in Table 3 (The complete list is presented in Table 9 in the Appendix).

Function categories	Examples of fitting outputs	
Knowledge production	Publication of reports (policy, research, data gathering for implementation)	Database and systematically retrievable information
Knowledge dissemination	Publication arguing in favor of the action's cause (e.g. campaign material, newsletter)	Organization and participation in different types of events: science-to-science, policy-policy, popular events
Technical implementation and 'on the ground' action	Construction or improvement of new or existing physical facilities	Construction or improvement of new and existing physical facilities as well as the application
Institutional capacity building (governments and formal institutions)	Institutions or new partnerships brokered or set up by the initiative	New or enhanced policy tool
Norm and standard-setting	Publication setting out policy and/or procedural standards	

Campaigning	Publication arguing in favor of the action's cause (e.g. campaign material, newsletter)	Active and operational websites and social media accounts
Lobbying	Provision of professional advice relating to climate	Participation in a popular event
Participatory management	New partners involved in the initiatives	Publication pertaining transparency and accountability towards its partners
Training and non-state and subnational capacity building	Publications aimed at training, including best practices manuals and instruction materials	Organization of popular events
Funding	Funding raised for new and existing projects	Funding distributed for new and existing projects
Product development	Marketable or marketed new or enhanced products and services with benefits for climate	
Policy planning	Publication by the initiative arguing for specific policies (national, regional, transnational) with policymaker to regulate and or manage climate	New or enhanced policy tool

Table 3: Function categories and fitting outputs

The function is considered accomplished if at least one of the matching output has been registered. Each initiative gets assigned a FOF score which indicates its performance in a specific year. The FOF scores have been calculated for each initiative from 2013 until 2019. The value of the FOF score ranges from 0 to 1 and the analysis has classified the values in “low” (FOF < 0.25), “medium-low” (0.25 ≤ FOF < 0.5), “medium-high” (0.5 ≤ FOF < 0.75), “high” (0.75 ≤ FOF) and “null” (FOF = 0).

3.3 QUALITATIVE ANALYSIS

The second part of the analysis presents a descriptive single case study. A qualitative analysis has been conducted to assess the design and the output performance of a specific land use cooperative initiative: The New York Declaration on Forest. The method of the descriptive case study allows for an in-depth analysis of how and why the initiative meets the design criteria and for a detailed description of the initiative's output performance.

3.3.1 Case study selection

The reasons justifying the selection of the New York Declaration on Forest are dual. First, the emergence of the initiative in 2014 has represented an unprecedented declaration in scope.

The initiative has convened multiple actors operating in different sectors and with different agendas, to formulate a common pledge to halt and reduce deforestation. Because of its diverse and broad participation, the New York Declaration on Forest provides an accurate representative example of international land use cooperative initiative. Second, the New York Declaration on Forest represents a typical example of a well-designed initiative with a good output performance. Therefore, the selection of this initiative is deemed to give maximal information about the specific features and characteristics of the design criteria, functions, and outputs related to a land use cooperative initiative.

3.3.2 Data collection and analysis

The data for the case study has been collected through a systematic review of secondary sources. A method of data triangulation has been used to collect information from different sources and in different years. Specifically, the data disclosed by the initiative on its website has been examined against and complemented with the data published from international NGOs and research institutes (e.g. Climate Focus, Forest Trend, Chatham House, etc.) that monitor the progress of the initiative. The available information regarding the New York Declaration on Forest has been analyzed and interpreted with respect to the design features – highlighted by the literature review – and functions and outputs. To identify the presence of the design features, the questions displayed in Table 2 have been answered and translated into qualitative findings. The qualitative information regarding the output performance has been obtained by detecting the functions and the fitting outputs according to Table 3.

3.4 LIMITATIONS TO THE DATA COLLECTION

The major limitation of the data collection has been acknowledged in the fact that the information regarding the initiatives ‘outputs was not confirmed by the initiative itself. The collection of these data only relied on the availability of information online. Additionally, some information regarding the countries of implementation, years and location of the outputs were missing. Another limitation is recognized in the identification process of the functions and outputs related to the initiatives, which highly relied on subjective interpretation, as the initiative does not state its functions in the same terms as this analysis. Furthermore, the data regarding the year 2019 is partial, as the data collection has gathered information until June 2019.

Chapter 3: Analysis

The first section of this chapter is dedicated to the illustration of land use and deforestation-related cooperative initiatives. It provides a descriptive analysis of the main characteristics of these initiatives, in terms of actor participation, funding actors, countries of implementation. Subsequently, this section will display the main findings regarding the output performance, the design of land use cooperative initiatives and the relation between them. The chapter is concluded with the descriptive case study on the New York Declaration on Forest

4.1 LAND USE COOPERATIVE INITIATIVES

The selected thirty-four cooperative initiatives present a starting year between 2008 and 2018 and most of them were launched during different Global Climate Action processes, such as the 2014 United Nations Climate Summit, Lima-Paris Action Agenda, One Planet Summit, Global Climate Action Summit 2018. The ultimate objective of this set of initiatives is to preserve forest ecosystems and the services that they provide us while enhancing food production.

If “Land use” can be considered as the overarching theme, these initiatives present both mitigation and adaptation objectives and they provide solutions to be applied in the field of agriculture and forestry. In terms of activities, the initiatives range from policy planning and partnership development to knowledge dissemination and capacity building. An elevated number of initiatives take the form of training programs for farmers, funding systems for supporting sustainable practices like climate-smart agriculture, platforms to enhance stakeholder engagement or policy coordination, whereas others emerge as “call to action” where the endorses are asked to sign a declaration.

4.1.1 Geographical implementation

Regarding the geographical implementation, Figure 2 displays a comparison between the regions where the implementation of initiatives was planned and the regions where the outputs of the initiatives have been actually registered. Taking into account that one initiative can be implemented in different countries, the majority of land use solutions are planned to be implemented in sub-Saharan and Latin American countries. Conversely, the implementation of land use initiatives is scarce in Southern and South-East Asia. This is in contrast with the alarming rate in deforestation registered in Malaysia and Indonesia (CIFOR, 2019), and the findings of a recent report of the Food and Agriculture Organization, highlighting that adverse impacts will be largely concentrated in India and South-East Asia (FAO, 2018a). Moreover, the graphs show that even if a higher number of initiatives planned to develop their solutions in sub-Saharan and Latin American countries, the actual implementation of the activities is still lagging behind.

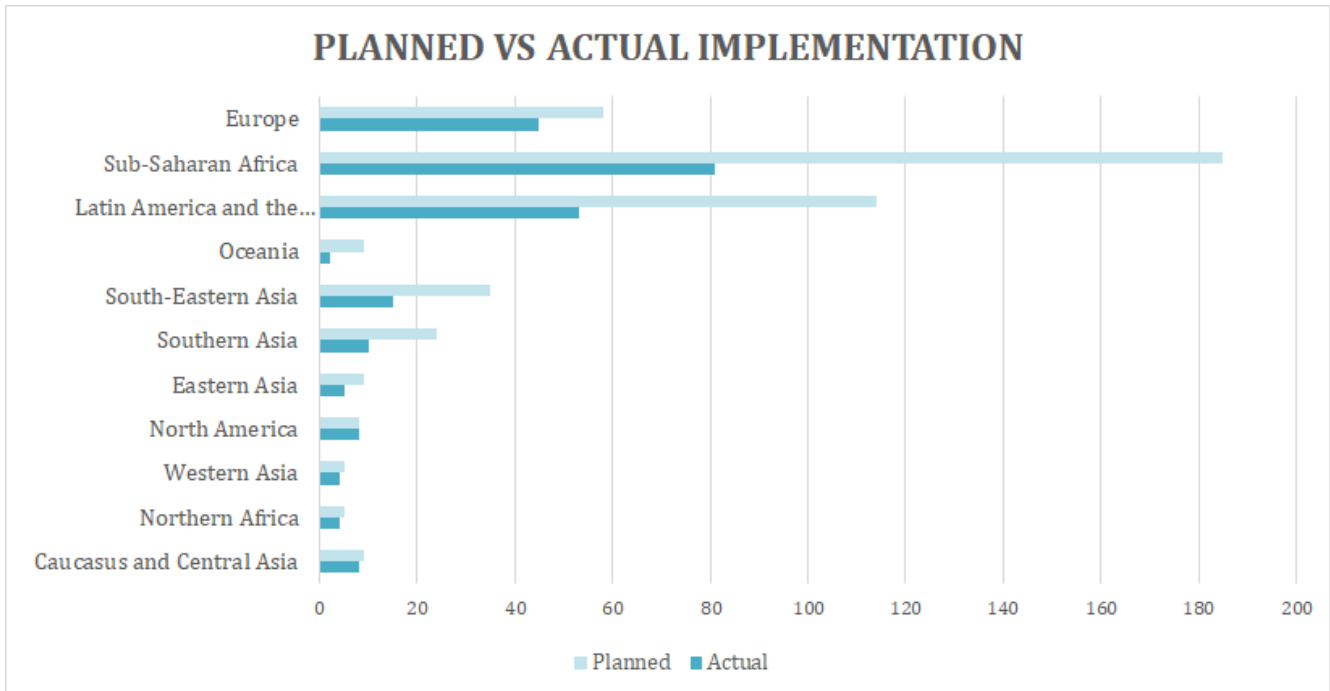


Figure 2: Planned vs actual implementation

4.1.2 Actor participation

The analysis of actor participation indicates how land use cooperative initiatives engage around the world. Figure 3 illustrates the totality of actors participating in land use initiatives, divided by category (national governments, international organizations, domestic NGOs, etc.) and by region. First of all, the mix of actors represented in the figure highlights an important characteristic of cooperative initiatives: the interplay between public and private actors.

Although the participation is very skewed towards actors based in western countries (Europe and North America), there is a significant portion of participation coming from the sub-Saharan countries. By looking at Figure 4, it is possible to determine who are the lead actors of land use initiatives and their location. International organizations are clearly playing the role of orchestrators (20%), followed by European education institutions (16%). It is evident that the majority of initiatives are rarely led by actors coming from the countries where the implementation is planned. Unbalances between Northern and Southern countries are particularly perceptible in the funding members (Figure 5). European national governments are the main funders of land use initiatives (41%).

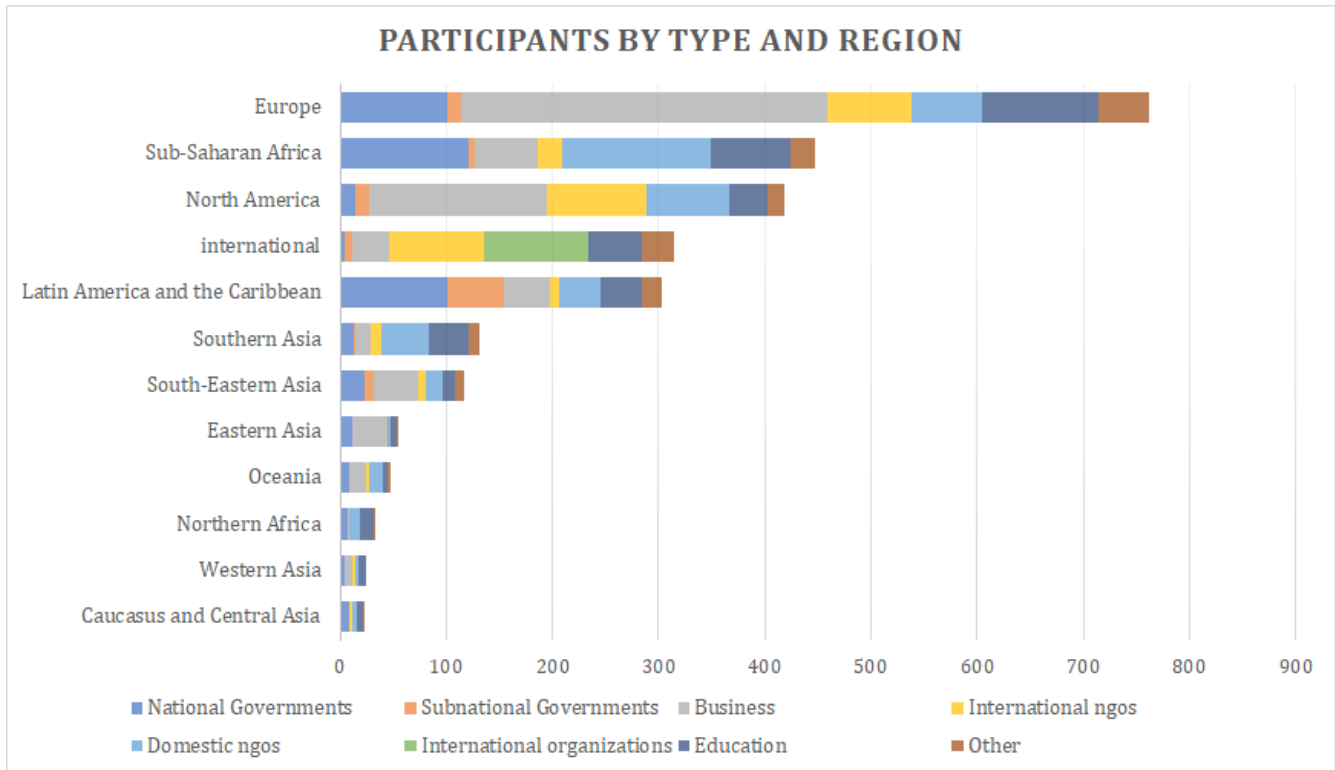


Figure 3: Actors participating in land use cooperative initiatives

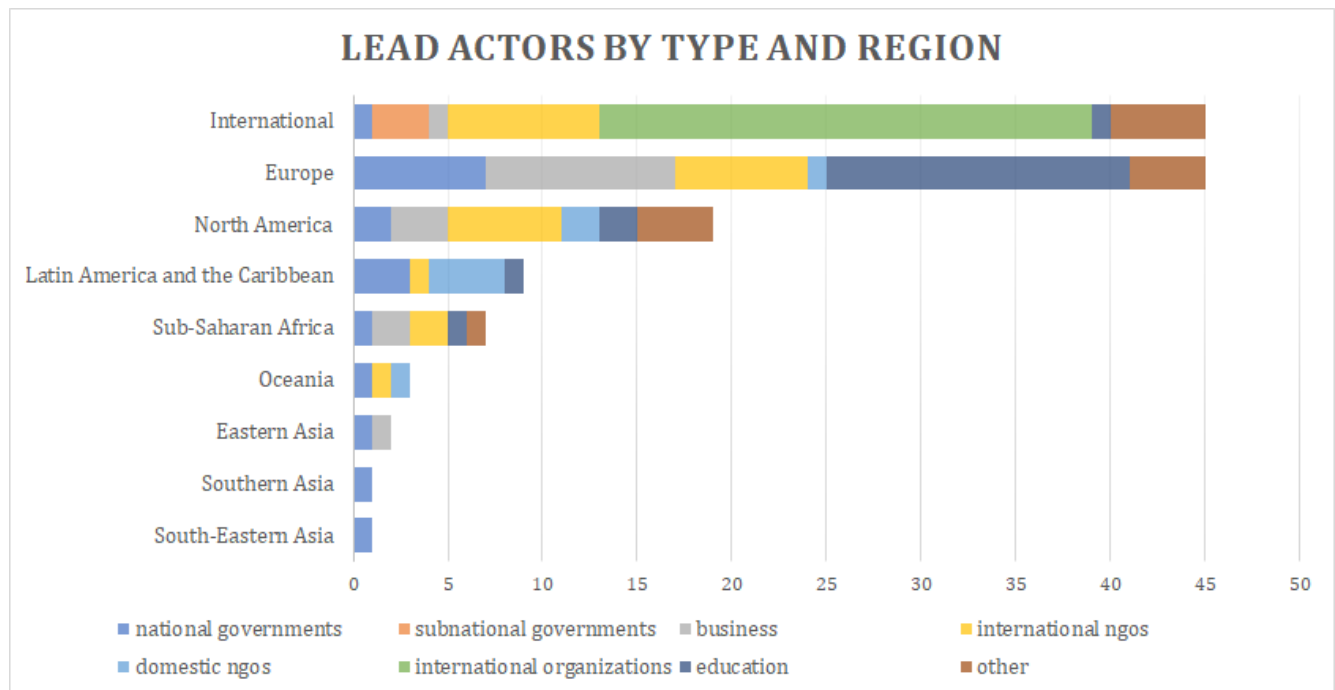


Figure 4: Actors leading land use cooperative initiatives

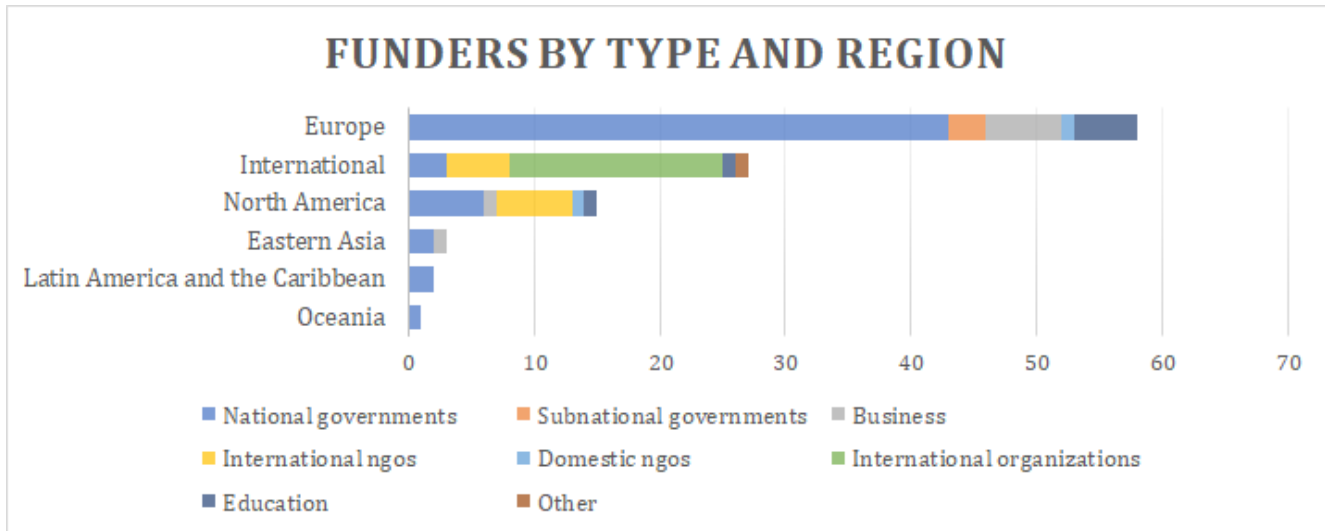


Figure 5: Actors funding land use cooperative initiatives

4.2 OUTPUT PERFORMANCE

By assessing land use initiatives through the Function-Output-Fit (FOF) methodology it is possible to measure if the outputs produced by the initiatives (e.g. new partnerships, infrastructure, reports, events) match with the initiative’s stated functions. If the initiative registers a match between outputs and functions it does not mean that the target is achieved, but it can be assumed that it is more likely that it will generate the desired environmental and social outcomes (ClimateSouth, 2018). For instance, the initiative named “Adaptation for smallholder agriculture programme” aims to improve the capacity of smallholder farmers by channeling financial resources and thereby making farmers access the necessary tool and technologies to improve their resilience to climate change (IFAD, 2015). In 2016, the British government has allocated a grant to help the initiative in achieving the goal. This operation can be interpreted as a function-output fit: one of the main functions of the initiative - funding - has been accomplished as the initiative has managed to raise funds that will be allocated to reach the target. Consequently, it can be assumed that it is likely that the initiative will continue raising funds.

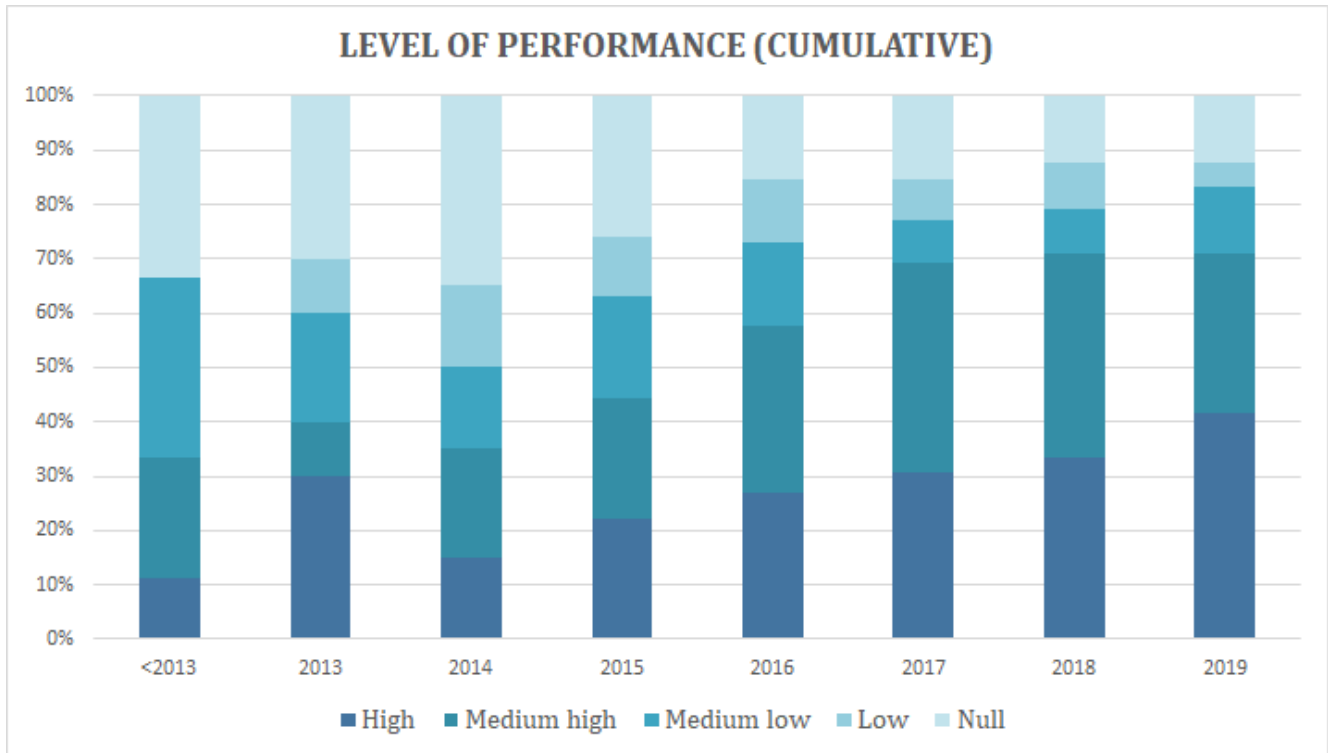


Figure 6: Output performance of land use cooperative initiatives

Over the years, the performance of land use cooperative initiatives (Figure 6) has registered significant improvements. Since 2014, as more initiatives were launched, a growing number of land use cooperative initiatives have reached high or medium-high scores, meaning that the activities carried out by these initiatives so far can be considered as promising initial steps towards the achievement of their goals.

4.3 DESIGN

The criteria for an optimal design elaborated through the literature review have been applied to assess the design of the thirty-four land use cooperative initiatives and the figure below (Figure 7) illustrates the results.

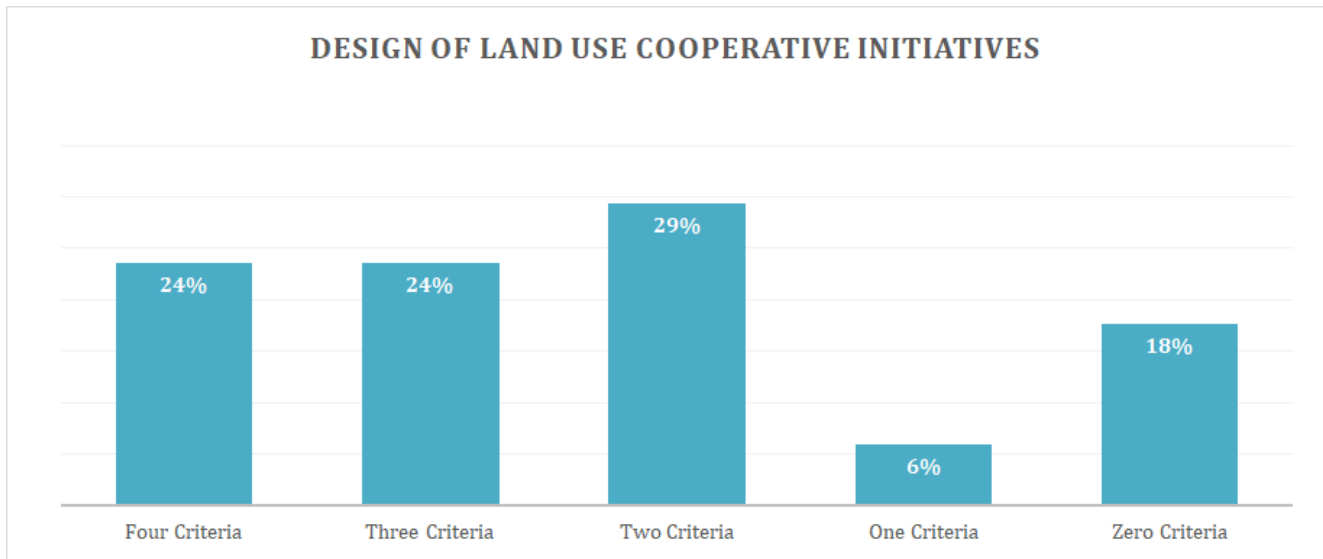


Figure 7: Design criteria met by land use cooperative initiatives

The figure shows that more than half of the initiatives meet at least two criteria, whereas more than 20% of the initiatives meet from one to zero criteria.

Twenty-six initiatives have been identified as “ambitious”, as they provide a detailed description of their approaches, which are suitable for a scale-up, and they promote the inclusion of smallholder producers and/or indigenous people. For example, the “Governors’ Climate Task Force” is a collaboration between subnational governments with the mission of helping member partners to implement innovative jurisdiction-wide programs to lower emissions (GCF Task Force 2019). The ambition of the initiative can be traced in its institutional openness, as the initiative aims to expand and to include more and more subnational participations, and in its detailed description of the approach of policy coordination which can be applied to every subnational government. Furthermore, the initiative has established a Global Committee for Indigenous Peoples and Local Communities, with the purpose of strengthening partnerships between subnational governments and indigenous peoples and local communities (Earth Innovation, 2018).

In most cases, the “ambition” criterion is complemented by the definition of resources needed and a statement promoting the interactions between different categories of actors. Obviously, there are differences in terms of details provided: some offer information on the amount of funding to raise, or the specific training tools needed to implement the programs, while others provide guidelines on how to mobilize the financial resources.

The majority of land use initiatives seem to have monitoring arrangements and in most cases, these are represented by annual reports assessing their progress. One of the most innovative and sophisticated monitoring systems has been created by the initiative “Bonn Challenge”. The goal of the initiative is concerned with the restoration of deforested areas and through the “Bonn Barometer”, the progress of the initiative can be monitored online for different geographic areas and in terms of hectares under restoration, tonnes of CO₂, financial flows and policies implemented (IUCN, 2019).

The Bonn Challenge is also one of the few initiatives that have a quantified target – restore 150 million hectares of degraded land – and implementation deadlines. Overall, only ten initiatives have formulated a quantified target and a time-bound goal.

4.4 IS THE DESIGN INFLUENCING THE OUTPUT PERFORMANCE?

In this section, it has been tested whether the presence of certain features, i.e. quantified target, monitoring arrangements, the definition of resources, and ambition, contributes to a better performance of the initiatives.

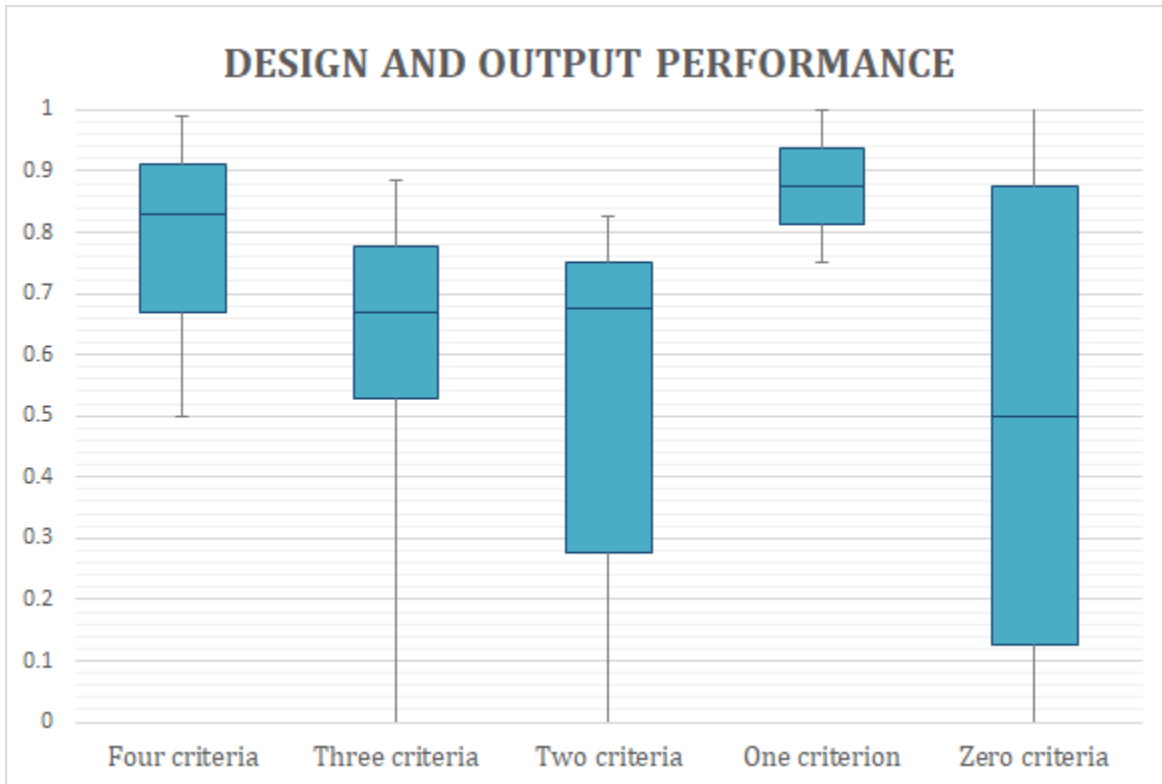


Figure 8: Box-plot of FOF scores distribution ranged along design criteria met by the initiatives

Figure 8 displays the distributions of Function-output fit (FOF) scores for six different groups of land use initiatives. The initiatives were clustered according to the number of criteria they meet in their design. The graph provides empirical evidence that an optimal design corresponds to high FOF. The initiatives that accomplished the four criteria seem to have produced outputs that fit the functions, and hence better performance. The FOF value decreases for the initiatives with three and two criteria, but it starts increasing again for the ones that meet from one to zero criteria.

The distributions of the FOF scores for the “one criterion” and “zero criteria” initiatives are peculiar. While only two initiatives meet one criterion, the FOF values of the six initiatives meeting zero criteria show the highest variation value. There are indeed both initiatives with very high scores and others with very low scores. The explanation for the high values registered by the initiatives meeting one or zero criteria is found in the analysis of the initiatives’ main functions (see Figure 9).

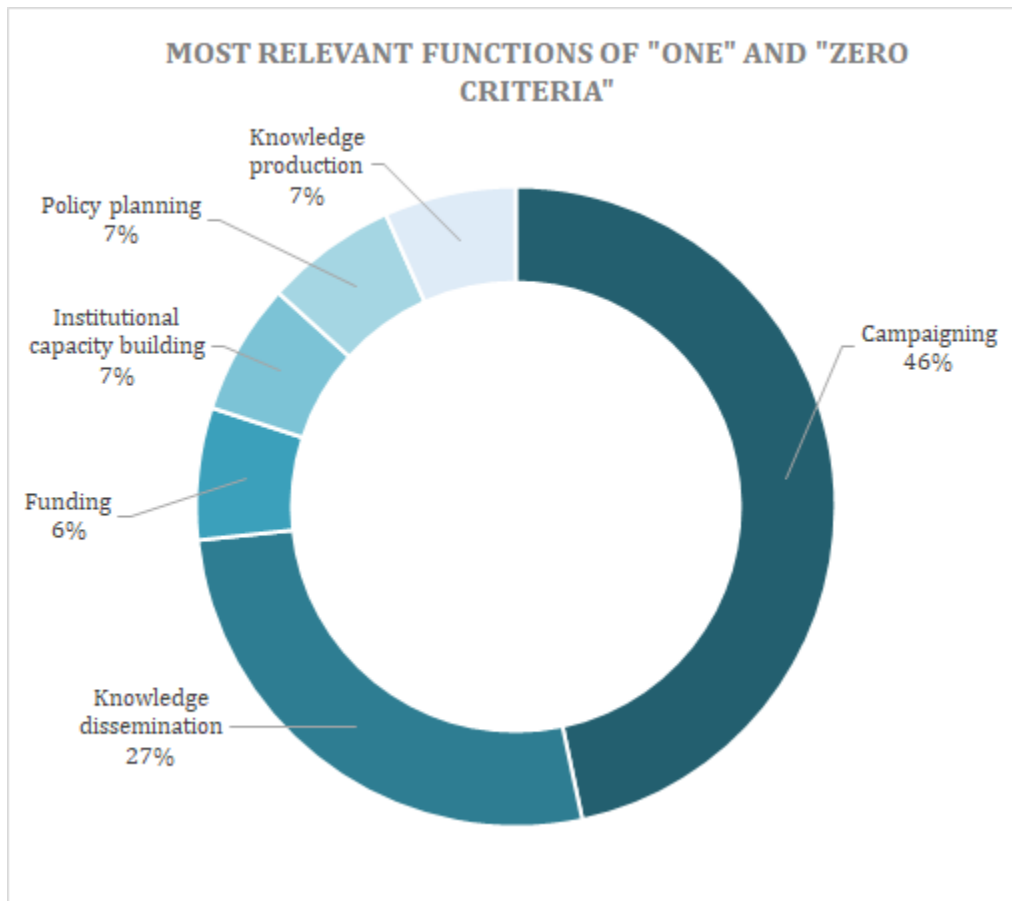


Figure 9: Main functions of land use cooperative initiatives with poor design

Given that an initiative can have more than one function, “campaigning” and/or “knowledge dissemination” have been recognized as the most relevant functions for 53% of the initiatives that meet one or zero criteria. Accordingly, the fulfillment of these functions has been achieved by the initiatives through the production of the following categories of outputs: “Event participation Science-to-Policy”, “Publication Advocacy”, “Social Media”, “Institution Partners”.

Objectively, the functions carried out by the initiatives meeting one or zero criteria are the ones that do not entail the realization of activities demanding considerable efforts in terms of resources and time (e.g. “Institutions setup”, “Funding raised”) rather they are aimed to disseminate knowledge or to campaign. This is indeed the case of initiatives taking the form of a call to actions (or declarations) whose objective is encouraging more and more endorses to make a certain pledge, but there are not specific and measurable demands for the listed members of the initiative. Consequently, the level of performance for this type of initiative is high (high FOF score) because the number of functions to accomplish is in most cases limited and the correspondent outputs required are relatively easier to produce.

4.5 DESCRIPTIVE CASE STUDY

The descriptive case study approach has been used to explore in detail the criteria of the design, the functions and the outputs of the New York Declaration on Forest. In this way, the case study offers a concrete example of land use cooperative initiatives. Moreover, the initiative has been considered one of the most important accomplishments for the governance of forest at the global level (Ludwig, 2018).

4.5.1 The New York Declaration on Forest

In September 2014, during the United Nations Climate Summit 2014, a broad coalition of governments, companies, indigenous people and civil society organizations signed the New York Declaration on Forest (NYDF). The NYDF is a voluntary non-binding declaration endorsed by almost two hundred members driven by the shared understanding that halting deforestation is essential to keep the temperature increases below 2°C above pre-industrial levels.

The overarching goal of the NYDF - to halve the loss of natural forests by 2020, and strive to end it by 2020 - is composed of a subset of ten goals, including reducing deforestation from agricultural supply chains and other economic sectors, increasing restoration, providing finance and securing forest and land rights for local communities (NYDF Global Platform, 2018).

The composition of participants varies from national governments (e.g. Belgium, Burkina Faso, France, Chile), to subnational governments (e.g. Acre, Brazil; Aceh, Indonesia), influential multinational companies (e.g. Unilever, Cargill, L'Oréal, etc.), indigenous people and civil society organizations. The coordination is centralized within the NYDF Global Platform, which is convened by the UNDP serving as a secretariat (UNDP, 2017)

The declaration includes ambitious quantified targets and a time-bound implementation plan. The NYDF strives to end natural forest loss by 2030, with a 50% reduction by 2020 as a milestone toward its achievement. In addition, the NYDF calls for restoring 350 million hectares of degraded and deforested lands by 2030, supporting the private sector in eliminating deforestation from the supply chains of major agricultural commodities by 2020, and providing financial support to reduce emissions related to deforestation and forest degradation. The NYDF estimates that achieving the goals could reduce the global emissions of greenhouse gases by 4.5–8.8 billion metric tons every year (NYDF Progress Assessment, 2019).

To halt the loss of forest and respect the time-bound implementation plan, the NYDF emphasizes the necessity to accelerate the initiative's actions by "building partnerships, strengthening policies and create incentives" (UNDP, 2017). These represent the three pillars of NYDF's approach, which can be considered ambitious for different reasons. First of all, the Action Agenda provides detailed guidelines regarding how to develop such activities. An example of action stimulated by the initiative is the promotion of jurisdictional approaches consistent with the national REDD+ strategies, with the purpose of aligning the provision of REDD+ payments with private sector investments in states, regions, and municipalities that are reducing deforestation. Secondly, the initiative highlights the importance of taking measures at the smallholder level. Members commit to sustaining smallholder farmers' yields and productivity so that they can improve their incomes without having to expand into forested areas. Thirdly, the coordinating role of the NYDF Global Platform contributes to augment the ambition by assisting the implementation of forest commitments under the Paris Agreement. The platform is aimed to highlight and share

best practices and information on the monitoring of private sectors and government commitments (NYDF, 2014b). In general, the ambition of the initiative can be traced in its wide and diversified participation, which is open for expansion. Additionally, another peculiar element of ambition of the NYDF is the intention of promoting the creation of complementary actor-specific commitments. The NYDF was designed to be the overarching commitment triggering the “supply chain revolution”, characterized by the launch of the Zero deforestation commitments of commodity producers, traders and consumer goods, and other countries’ forest-specific commitments (NYDF, 2014a).

One of the most important messages conveyed by the NYDF is that government, businesses, indigenous people and civil society are required to join their efforts and work collaboratively in order to achieve the ten goals. Particularly, the Action Agenda of the NYDF defines the contributions and resources each category of endorsers can bring about. To support the decisions taken within the platform, the NYDF highlights that governments need to undertake a wide spectrum of actions, including aligning fiscal and other economic incentives for forest conservation and restoration, strengthening implementation and enforcement of legal frameworks, or using real-time satellite imagery and on-the-ground monitoring to clamp down on illegal deforestation. Investors and banks are requested to generate financial flows towards sustainable production practices and hence invest in those countries and jurisdictions that have ambitious plans to halt deforestation and that succeed in reducing emissions. Moreover, the collaboration with civil society also contributes to secure the implementation of the activities. Civil society organizations can assist both governments and companies to set and implement ambitious standards for sustainable and fair production and they can provide technical support and assistance to local communities, governments, and companies (NYDF, 2014b).

The monitoring activities of the NYDF are carried out by an external group of civil society organizations and research centers named NYDF Assessment Partners. This monitoring system was arranged since the inception phase of the initiative and it entails the publication of a report – the NYDF Progress Assessment - every year. The task of the NYDF Assessment Partners is to monitor whether effective implementation activities are occurring. However, the NYDF Progress Assessment does not assess individual contributions of NYDF’s endorsers, rather it focuses on monitoring the global status of forests and the overall efforts to meet the NYDF goals (NYDF Progress Assessment, 2019).

Given this background, the analysis has demonstrated that the NYDF meets all the four criteria for an optimal design.

In terms of output performance, six main functions have been identified for the NYDF. Table 4 illustrates how these functions have been matched with at least one output.

Function type	Activities	Examples of matching outputs
Knowledge production	Publication of annual reports providing empirical data on the rate of primary forest loss, restorations, CO2 emissions, etc.	Reports published every year since 2016
Knowledge dissemination	Showcasing best practices	Event organized during the 73rd session of the UN General Assembly to present forest-smart mining practices
Institutional capacity building	Facilitating the creation of partnerships	-Support in the establishment of the Inter-Institutional Committee for Sustainable Palm oil in Ecuador: a public-private partnership between the government and multiple private actors to strengthen the social and environmental governance of palm oil production - Partnership with the Scottish government to mobilize financial capital
Campaigning	Raising awareness on the topic of deforestation of the public at large	Social media accounts (Facebook, Twitter, YouTube channel)
Participatory management	Enhancing stakeholder engagement	New partners joining since 2014
Policy planning	Facilitation of policy planning at the national or subnational level	Publication of a policy document including government actions to advance the NYDF goals at the jurisdictional level

Table 4: Function-Output-Fit of the NYDF

The NYDF provides empirical evidence that optimal design corresponds to better performance. Notwithstanding the highly challenging target, the NYDF seems to hold the promises for successful achievements.

Chapter 4: Discussion

5.1 INTERPRETATION OF THE RESULTS

The empirical findings displayed in Chapter 3 demonstrate that a cooperative land use initiative that presents an ambitious design equipped with a quantified target, monitoring arrangements and definition of needed resources positively influences the capacity of the initiative to deliver on the desired goals. The descriptive case study on the New York Declaration on Forest confirms that a well-developed design corresponds to a good performance of the initiative. However, the findings indicate that this result is not clear-cut. Better performance in delivering on the desired goals is not always associated with an optimal design. Cooperative land use initiatives with a poor design can successfully fulfill their functions if these are relatively limited and mainly concerned with advocacy purposes.

By looking at the representative example of the NYDF, it is possible to discuss the potential effects that certain features in the design might cause on the initiative's performance. In line with the argument that a precise target-setting leads to better and verifiable compliance (Pattberg & Widerberg, 2016), the articulation of the quantified target in ten different sub-goals has generated a systematic production of knowledge in terms of progress achieved. Thanks to the robust and clear monitoring arrangement, the NYDF produces every year accurate information regarding the current state of forest loss, forest landscape restoration and governance in the different geographical areas. Additionally, the reports showcase examples of good practices performed by some of the endorsers thereby accomplishing its function of disseminating knowledge and best practices. Therefore, it seems that the initiative allows for verification and thus for an increase in transparency around its activities.

Furthermore, the delineation of an ambitious and detailed Action Agenda, which also provides information on the specific contributions expected by each partner to support the initiatives, has led to the conception of new partnerships and the consolidation of a more inclusive engagement of stakeholders. For instance, by providing guidelines on how the national and subnational governments can develop policies in line with the commitments produced within the platform, the initiative has facilitated the creation of multi-stakeholder partnerships at the national level aimed to coordinate incentives to stop deforestation (UNDP, 2017). The NYDF represents an example of a cooperative initiative with a considerable amount of functions that go beyond mere advocacy purposes.

Regarding the initiatives meeting one or zero criteria, the analysis indicates that these cooperative initiatives usually take the form of "call to actions" and declarations. Arguably, the purpose of this type of initiative is to generate momentum. These high-level pledges mainly consist of calling companies, governments or other relevant actors to commit, rarely providing stringent requirements to translate the pledge into action. Presumably, these initiatives have opted for less strict commitments to encourage participation or to gain more flexibility in time to produce the expected mitigation and adaptation improvements in their sectors (Meijer, 2014).

5.2 LIMITATIONS

Several limitations have been acknowledged in this research. The generalizability of the results is limited by the fact that the analysis focuses only on initiatives tackling land use. The

effective design of cooperative initiatives related to different sectors (e.g. transport, human settlements, energy) may emphasize the presence of other features. Furthermore, the methods adopted for the identification of the design criteria and the functions are dependent on the interpretation. The functions carried out by the initiatives have been selected among a pre-established set of functions that, albeit comprehensive, might not leave enough space for nuances. The validity of the research is undermined by the assessment of the capacity of delivering the desired results. The analysis of output performance is not necessarily totally reflective of the actual performance of the initiatives. First, the results are only measured in terms of outputs, hence the analysis does not provide an assessment of the social and environmental changes generated by the initiative. Second, this method allows for a partial assessment of the initiatives' effectiveness because is dependent on the availability of the online information regarding the initiative.

5.3 IMPLICATIONS

As well as this study, the research from Michaelowa and Michaelowa (2017) focuses on the analysis of the design and it shows that the poor design of mitigation cooperative initiatives is explained by the fact that these initiatives were created mainly for networking purposes. This research confirms this finding by extending it also on initiatives with adaptation goals. The combination of the study of the design with the analysis of the output performance may offer some additional insights into the assessment of the output effectiveness. Even if the initiative seems to be performing well, if there is no monitoring arrangement or well-defined approach and target, inefficiencies in terms of translating the pledge into implementation practices are likely to occur.

As emphasized by Widerberg & Stripple (2016), the presence of criteria to measure and ensure progress plays a critical role in limiting the risk of greenwashing. On one hand, this does not imply that declarations and calls to actions are to be considered unnecessary to realize climate action. Zero deforestation pledges can send signals to the market: they can steer a market transformation and provide market reinforcement for the policy programs of tropical nations (Mcgrath et al., 2016). On the other hand, it is important to acknowledge that the initiatives that do not demand tangible and accountable commitments from the endorses might have limitations in terms of producing direct mitigation/adaptation benefits when addressing issues like deforestation.

Further research might complement the findings of this research in different ways. For instance, the analysis of the design criteria can be expanded by providing more specific criteria and mechanisms that ensure actual progress in the implementation of sustainable land use management thereby preventing the risk of greenwashing. To determine the effectiveness of cooperative initiatives in offering significant contributions and raising the ambition of national commitments, it seems necessary to assess not only the aggregated amount of actions developed but also the quality in terms of functions and types of activities undertaken. Do the functions pursued by the initiatives fit the complexity and the ambition of the established target?

As the issues related to land use are numerous and complex, further research on the effectiveness of cooperative initiatives should shed lights to the most effective and feasible ways to coordinate the contributions of different stakeholders towards the achievement of highly ambitious targets (e.g. the elimination of deforestation from supply chain by 2020).

Conclusion

For limiting the damaging impact of deforestation and lowering the emissions, it is fundamental that land use and forest-related strategies effectively prevent further degradation of forest habitats. Through the coordination of private interventions and government jurisdictional actions, land use cooperative initiatives should contribute to ensuring the sustainability of agricultural practices, the conservation of natural resources and better social inclusion of local communities, indigenous people and smallholder farmers (Pacheco et al., 2017).

In the last decades, there has been a proliferation of high-level voluntary commitments with the purpose of reaping the goodwill of multiple actors and coordinating their efforts to enhance more sustainable management of forest and land use. However, as the target date – 2020 - of most of the existing commitments is approaching, many reports agree that the implementation of these commitments is not on track to meet the deforestation goals (NYDF Assessment Partners, 2019; Rothrock & Weatherer, 2019).

This research has explored the realm of land use cooperative initiatives. While prevalently implemented in Sub-Saharan and Latin American countries, these initiatives are mainly led by international organizations and funded by European national governments. General participation is slightly more geographically balanced and diversified. The analysis on land use cooperative initiatives has been conducted in the attempt of answering the following question:

To what extent the presence of specific design features affects the capacity of land use cooperative initiatives to deliver on the desired goals?

This study suggests that a quantified target, a clear monitoring arrangement, and an ambitious and well-developed approach exert a positive influence on the initiatives' performance. Additionally, this research indicates that some land use initiatives characterized by mainly campaigning functions and lacking the presence of the aforesaid features are also performing well.

However, if comparing two types of land use cooperative initiatives against the same ultimate deforestation goal, one requiring endorser to provide technical and/or financial assistance for restoring degraded lands and one that encourages its members to make a pledge, can they actually be considered potentially effective in the same way?

During the recent 2019 United Nations Climate Summit in New York, the action area on Nature-Based solutions has emphasized the importance of forest and land-based ecosystem as key measures to address climate change (UN Climate Action Summit, 2019). Nature-based solutions are deemed to be the most cost-effective carbon-capture technology available (Baldwin-Cantello, 2019). A very recent research has confirmed that transforming the land sector and deploying measures in agriculture, forestry, wetlands, and bioenergy could feasibly and sustainably contribute about 30% - equal to 15 billion tonnes of carbon dioxide equivalent (GtCO₂e) per year - of the global mitigation needed in 2050 to deliver on the 1.5 °C target (Roe et al., 2019).

In the post-2020 framework, it seems clear that there is an urgent need to move beyond pledges and transform promises of no-deforestation, sustainable agriculture, and development into tangible actions.

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Appendix

The Appendix provides detailed information on the list of the initiatives, actors type, category of functions and outputs and the theoretical linkages for the calculation of the Function-Output Fit.

List of land use cooperative initiatives

Name of the initiatives	Launch year
4/1000 Initiative: Soils for Food Security and Climate	2014
Adaptation for Smallholder Agriculture Programme (ASAP)	2012
Africa Climate-Smart Agriculture Alliance	2014
BioCarbon Fund Initiative for Sustainable Forest Landscapes (ISFL)	2013
Bonn Challenge	2011
CCAC Agriculture Initiative	2012
Climate-Smart Agriculture (CSA) Booster coffee & climate	2015 2010
EverGreen Agriculture Partnership (Old Name: Partnership to Create an EverGreen Agriculture)	2012
Food Security Climate Resilience Facility (FoodSECuRe)	2015
Foundations' Joint Statement Supporting Forests, Rights, and Lands for Climate	2018
GFAR: Empowering Farmers Organizations on Climate Change Through Better Foresight	2014
Global Alliance for Climate-Smart Agriculture	2014
Global Research Alliance for Agriculture (GRA) on Agricultural Greenhouse gasses	2009
Governors' Climate and Forests Task Force	2008
Green Commodities Program	2009
IFDC/VFRC: Yield, Income, and Climate Gains Through Smart Rice Fertilization	2013
Land Degradation Neutrality Fund	2017
Latin American Protected areas declaration	2015
Life Beef Carbon	2015
Lima Challenge	2014
Promotion of Smart Agriculture towards climate change	2015
Protection of 400 million hectares of forests by Indigenous Peoples	2014
R4 Rural Resilience Initiative	2011
Remove commodity-driven deforestation	2015
Solutions from the Land: Adaptive Management to Meet Food, Fiber, Energy and Environment Goals	2015
Statement of Support for the Cerrado Manifesto	2017
The 30X30 Forests, Food and Land Challenge	2018
The Climate Smart Agriculture Youth Network	2014
The New York Declaration on Forests	2014
Tropical Forest Alliance	2012
Tropical Landscape Financing Facility	2016
World Bank: Scaling up CSA for Impact	2014
Zero Deforestation Commitments from Commodity producers and traders	2015

Table 5: Complete list of the land use cooperative initiatives (ClimateSouth database)

Actors

Actor type	Explanation
States	States and national government agencies participating in climate action; includes the EU when the partner is an EU agency. The individual EU Member States are considered separate actors. Includes the following territories: Palestine National Authority, Hong Kong (HK SAR), Macau (Macau SAR), Taiwan (Republic of China) as (semi-)autonomous territories.
Business & Industry	For-profit firms, corporations, small- and medium-sized enterprises, state-owned enterprises, business associations and business NGOs (e.g. World Business Council for Sustainable Development).
Non-profits & NGOs	Non-governmental non-profit organizations, including environmental NGOs, consumer organizations, trade unions, faith-based organizations, indigenous groups, women's rights organizations, etc., but excludes business NGOs and business associations and alliances of sub-national actors.
International organizations	International organizations, including UN programmes, bodies and specialist organizations, for instance: United Nations Environment Programme, Food and Agriculture Organization of the UN, International Energy Agency, Organization for Economic Co-operation and Development. Includes multilateral development banks and financial facilities, e.g. International Monetary Fund, World Bank, Green Climate Fund. Excludes the EU.
Subnational	Subnational (governmental) authorities, including constituent states of federal countries (e.g. California, Nordrhein-Westfalen, Andhra Pradesh, Wallonia, etc.), dependent territories (e.g. Bonaire, Greenland, Cook Islands, Gibraltar, Guam, etc.), departments (Fr), provinces and counties (Noord-Holland, British Columbia, Gironde, etc.), and cities and villages. It also includes (trans- and international) alliances of regions (e.g. 'Euregio'), and alliances of sub-national actors (e.g. C40, International Council for Local Environmental Initiatives, etc.).
Research & Education	Research and education institutions, including universities, research networks (unless the climate initiative is a research network, then all partners are considered separately) and think tanks.
Other	Actors that do not belong to the above actor type categories, or which type is unknown. It also includes hybrid and multi-stakeholder arrangements that act as a single partner within a climate action (e.g. public-private partnerships, business-NGO alliances, etc.). Excludes arrangements consisting of one type of actor (e.g. cities alliances; business alliances, NGO alliances, etc.)

Table 6: Categories of actors

Functions

Function category	Explanation
Knowledge production	Production of knowledge, information, innovation (scientific or applied).
Knowledge dissemination	Dissemination of knowledge, including dissemination of 'good practices'.
Technical implementation and 'on the ground' action	Implementation of previously existing technologies, plans, and policies, including pilot and demonstration projects.
Institutional capacity building	Building new social institutions (with or without legal status, for instance, new partnerships) or expanding existing support organizations.
Training and non-state and subnational capacity building	Training of employees, other social actors, or students (including school training if the new curriculum is introduced with specific content related to climate change).
Transnational norm and standard-setting	Setting up new norms or standards or spreading the use of such new norms, including the certification of products. Excluding internal (organizational) norm-setting and policies.
Campaigning	Campaigns, including raising public awareness on a given topic, and education of the public at large.
Lobbying	Lobbying restricted to pressure applied to governmental actors from non-governmental ones.
Participatory management	Participatory management and involvement of local communities in policy programmes.
Funding	Providing funds for the climate-related project, or raising funds.
Product development	Developing new or renewed climate-friendly commercial products and services.
Policy planning	Planning at national or regional levels (including the production of large policy plans, development or planning of policy instruments).

Table 7: Categories of functions the initiatives seek to fulfill

Outputs

Output category	Explanation
Publication research PUB_RES	Any publication by the initiative (not by individual partners) documenting academic research, data gathering for implementation, policy and action research.
Publication Advocacy PUB_ADV	Any publication by the initiative (not by individual partners) arguing in favor of the action's cause with a wider audience than policymakers (public); including campaign material, newsletters, petitions, and promotion materials (such as posters, leaflets, and brochures).
Publication standards PUB_STA	Any publication by the initiative (not by individual partners) setting out policy and/or procedural standards (excluding internal operating procedures) for application to climate or sustainable development issue.
Publication education PUB_EDU	Any publication by the initiative (not by individual partners) aimed at training, including best practice manuals and instruction materials.
Publication policy PUB_POL	Any publication by the initiative (not by individual partners) arguing for specific policies (whether regional, national or transnational) with public policymakers to regulate and or manage climate (and sustainable development) issues.
Publication emission reports PUB_EMR	Any publication by the initiative (not by individual partners) indicating emissions reductions as a result of an initiative's activities.
Publication report PUB_REP	Any publication by the initiative (not by individual partners) pertaining transparency and accountability towards its partners, stakeholders and wider audiences (such as annual reports, and [self-] evaluations).
Data aggregator DTB	Databases and systematically organized and retrievable information, including significant changes to existing databases.
Event organization Science-to-science EVO_S2S	Science-to-science events (co-)organized by the initiative.
Event organization science-to-policy EVO_SCP	Science policy interface events (co-)organized by the initiative.
Event organization policy-to policy EVO_POL	Policy-policy exchange events (co-)organized by the initiative.
Event organization popular EVO_POP	Popular events (co-)organized by the initiative.

Event participation science-to-science EPA_S2S	Participation by the initiative in science-to-science events.
Event participation science-to-policy EPA_SCP	Participation by the initiative in science policy interface events.
Event participation policy-to-policy EPA_POL	Participation by the initiative in policy to policy exchange events.
Event participation popular EPA_POP	Participation by the initiative in popular event.
Infrastructure ITT	Construction or improvement of new and existing physical facilities as well as the application.
Social media SOM	Active and operational websites (including sub-domains), and social media accounts.
Institutions setup INS_ORG	Organizations, institutions, and new partnerships and initiatives, (partly) brokered or set up by the initiative (excluding the initiative itself).
Institutions tools INS_PIN	New or enhanced public policy tools and instruments.
Institutions partners INS_PAR	New partners involved in the initiative and/or in public policy processes.
Funding raised FUN_RAI	Funding raised for new and existing projects relating to climate action.
Funding provided FUN_PRO	Funding distributed for new and existing projects relating to climate action.
Commercial products and services –New COM_PRS	Any marketable or marketed new or enhanced products and services with benefits from a climate and/or sustainable development perspective, excluding consultancy services.
Commercial products and services – Advice COM_CON	Provision of professional advice relating to climate (and sustainable development).
Other OTH	Other types of output not on the list.

Table 8: Categories of tangible outputs

Function-Output Fit

Function categories	Fitting outputs									
Knowledge production	<i>PUB_RE</i> <i>S</i>	<i>DTB</i>	<i>EVO_S2S</i>	<i>EPA_S2S</i>						
Knowledge dissemination	<i>PUB_ED</i> <i>U</i>	<i>DTB</i>	<i>EVO_S2S</i>	<i>EVO_SCP</i>	<i>EV</i> <i>O_</i> <i>PO</i> <i>L</i>	<i>EVO_PO</i> <i>P</i>	<i>EPA_SC</i> <i>P</i>	<i>EPA_PO</i> <i>L</i>	<i>EPA_PO</i> <i>P</i>	<i>SO</i> <i>M</i>
Technical implementation and 'on the ground' action	<i>ITT</i>	<i>PUB_EM</i> <i>R</i>								
Institutional capacity building (governments and formal institutions)	<i>INS_OR</i> <i>G</i>	<i>INS_PIN</i>	<i>EVO_POL</i>	<i>EPA_POL</i>						
Norm and standard-setting	<i>PUB_ST</i> <i>A</i>									
Campaigning	<i>PUB_AD</i> <i>V</i>	<i>EVO_PO</i> <i>P</i>	<i>EPA_POP</i>	<i>SOM</i>						
Lobbying	<i>PUB_PO</i> <i>L</i>	<i>COM_CO</i> <i>N</i>	<i>EVO_POL</i>	<i>EPA_POL</i>						
Participatory management	<i>INS_PA</i> <i>R</i>	<i>PUB_RE</i> <i>P</i>	<i>EVO_POP</i>							
Training and non-state and subnational capacity building	<i>PUB_ED</i> <i>U</i>	<i>EVO_PO</i> <i>P</i>								
Funding	<i>FUN_RA</i> <i>I</i>	<i>FUN_PR</i> <i>O</i>								

Product development	<i>COM_PR</i>
	<i>S</i>

Policy planning	<i>PUB_PO</i>	<i>EVO_SC</i>	<i>EVO_POL</i>	<i>EPA_SCP</i>	<i>EP</i>	<i>INS_PI</i>
	<i>L</i>	<i>P</i>			<i>A_</i>	<i>N</i>
					<i>PO</i>	
					<i>L</i>	

Table 9: Complete table of function category and fitting outputs