

# The politics of environmental market instruments: Coalition building and knowledge filtering in the regulation of forest certificates trading in Brazil



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## ARTICLE INFO

### Keywords:

Advocacy coalitions  
Knowledge filters  
Forest certificates  
Brazilian forest code  
Environmental protection  
Market viability  
Agricultural consolidation

## ABSTRACT

Market instruments for environmental governance have a foundation in an economic theory that claims to be universal and atemporal, but their materialization in practice always takes place in specific socioeconomic and political contexts. The Brazilian trade in forest certificates (CRA) is a new market instrument that allows farmers that have deforested illegally prior to 2008 to become compliant by acquiring certificates from other farmers that conserve a forest area beyond legal requirements. Even though the CRA market has been praised as an innovative environmental policy, it is still unclear whether it will be implemented even after more than two decades of political debate, congressional approval of legislation and substantial investments in new supporting systems. This research paper aims to analyze the materialization of this market by reconstructing how policy participants form advocacy coalitions (i.e. environmental protection, market viability and agricultural consolidation) to advance their interests. Our results show that advocacy coalitions filter (i.e. absorb, reject or transform) new ideas, experiences and knowledge in order to influence the regulations for forest certificate trading. In doing so, they often combine positions, form new alliances and merge with other advocacy coalitions in accordance with the interests of their constituents. These fluid allegiances within and between coalitions explain why market materialization remains ambiguous and unlikely to become operational in the near future.

## 1. Introduction

Market instruments have become increasingly important for environmental governance since at least the 1970s. Although emissions trading schemes have received much attention from scientists and policy-makers (Convery, 2009; Lane, 2012; Voß, 2007; Woerdman, 2004; World Bank, 2018), market instruments have been used for broader conservation purposes (Chomitz, 2004; Chomitz et al., 2005; Kaplowitz et al., 2008; Weigand, 1998). Even in Brazil, known for its resistance to emissions trading in the context of international forest governance debates (e.g. Carvalho, 2012), scholars have observed an incremental increase in debates on the use of market instruments (Filoche, 2017). One of these market instruments involves the trade in forest certificates, which was established with the revision of the Brazilian Forest Code in 2012 (May et al., 2015; Soares-Filho et al., 2016) and further regulated by federal decree in 2018. Since its establishment, many scholars have critically discussed the potential of this market from different perspectives. Most studies have assessed its viability in terms of supply and demand, exposing the effects of varying design choices on spatial trade boundaries or supplier definitions (Bernasconi

et al., 2016; Brito, 2017; Freitas et al., 2017; Nunes et al., 2016; Rajão et al., 2018; Soares-Filho et al., 2016). Other studies have reviewed the potential trade-offs between environmental effectiveness, economic efficiency and social equity (Chomitz, 2004; May et al., 2015). Despite having raised much interest among scholars and policy-makers, this market instrument has not become operational by the first half of 2020.

The importance of understanding the construction of environmental market instruments from a political perspective has been widely acknowledged in the literature. Emission trading schemes, for example, often represent adaptations of economic theoretical perspectives to socioeconomic and political contexts (Voß, 2007). Such adaptations have enabled different modalities of market-based instruments to materialize (Pirard and Lapeyre, 2014). In some cases, these adaptations to reality have transformed concepts initially described as market instruments into quite different financial instruments (van der Hoff et al., 2019; Wunder, 2015). Similar processes would certainly be expected for the trade in forest certificates in a politically volatile country like Brazil. This expectation of conceptual transformation stems not only from the many design choices to be made (Chomitz, 2004; Chomitz et al., 2005; May et al., 2015), but also from shifting power relations in

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national environmental politics during the past two decades (Aamodt, 2018; Viola and Franchini, 2014). One of the principal consequences of these power shifts has been the general flexibilization of the Brazilian Forest Code during its revision in 2012, which has provided the legal basis for forest certificate trading (Antunes, 2013; Freitas et al., 2018; Sauer and França, 2012; Sparovek et al., 2011). This multitude of design choices implicit in market construction raises questions about how policy participants make these choices in practice, which has not yet been done for forest certificate trading in Brazil. Understanding these choices will help to identify the main political challenges for market materialization.

This study aims to understand how the Brazilian trade in forest certificates has been regulated by analyzing the negotiation between different stakeholders in policy-making processes. We pay particular attention to the mechanisms that stakeholders use to influence the outcome of these processes in accordance with their political interests and belief systems. Section two develops our analytical approach based on the concept of knowledge filters and the Advocacy Coalition Framework. We present our methodology in section three. Section four presents the empirical findings of this research and reconstructs how different stakeholders group together or drift apart as they negotiate the policy design for forest certificate trading. In section five, we discuss the implications of our analysis for the operationalization of the market and reflect on the influence of broader political tendencies. We conclude with some considerations for future research.

## 2. Environmental market instruments and the role of knowledge filters

The appeal of using market instruments in forest and land use policy builds on economic theoretical foundations that emphasize three core ideas (van der Hoff et al., 2019). Firstly, the governance of natural systems is restricted to those elements and features that directly relate to the maintenance of human systems. This restriction is deemed necessary in order to render nature controllable and manageable for human systems. Building on this identification of the most relevant elements of nature, secondly, economists argue that monetary valuation is a useful precondition for supporting decisions on environmental issues, because it renders intelligible the trade-offs between alternative policy options that add value to human well-being in different ways (Gómez-Baggethun et al., 2010). Finally, some economists argue that singular elements of nature with a monetary value should be bought and sold on a marketplace, where efficient resource allocation is often considered to be more likely than with command-and-control instruments (Lane, 2012). The initial concept of Payments for Ecosystem Services (PES), for example, has embodied this idea by emphasizing the voluntary transaction between buyers and sellers of ecosystem services like water regulation, carbon sequestration, climate regulation and others (Wunder, 2005).

Although firmly grounded in economic theory, the inception, development and operationalization of market instruments for environmental governance are quite politically charged processes involving many design choices that could affect the outcome. The literature on Transferable or Tradable Development Rights (TDRs) has been particularly helpful for appraising the potential for forest certificate trading in Brazil, since it focuses on proprietors that give up a legal right to develop in exchange for financial compensation (Chomitz, 2004; Chomitz et al., 2005; May et al., 2015; Weigand, 1998). Studies point out that specific design features of TDRs, most notably spatial trade boundaries, the initial allocation of rights and the regulation of transactions, often impose challenges for policy-makers. Studies on forest certificate trading in Brazil have recognized similar challenges for implementing a viable market (Bernasconi et al., 2016; Brito, 2017; Soares-Filho et al., 2016). The outcome of political debates on these design choices have important consequences for the materialization of market instruments. Studies on the mainstreaming of emissions trading

schemes, for example, illustrate that “the messiness of reality” demands technical fixes or ‘repairs’ to original market designs in order to “secure acceptance by target groups and the wider public” (Lane, 2012; Voß, 2007, pp. 335–336; Woerdman, 2004). Notwithstanding the outcome, economists remain optimistic about the potential of TDRs for enhancing conservation goals in countries like Brazil (Chomitz, 2004; Chomitz et al., 2005) and the United States (Kaplowitz et al., 2008).

We use concepts of the Advocacy Coalition Framework (ACF) in order to understand how stakeholders in the policy process make the design choices that are necessary for constructing a forest certificate market. The ACF defines a policy subsystem (e.g. forest policy) that “consists of actors from a variety of public and private organizations who are actively concerned with a policy problem or issue [...] and who regularly seek to influence public policy in that domain” (Sabatier, 1998, p. 99; Sabatier and Weible, 2007). Following a Belief Homophily Hypothesis (Timothy Heinmiller and Pirak, 2017), actors tend to group together in advocacy coalitions on the basis of shared deep core beliefs (i.e. general assumptions about reality), policy core beliefs (i.e. subsystem-wide applications of deep core beliefs) and secondary beliefs (i.e. detail applications of policy core beliefs). Although policy change is possible through policy-oriented learning (i.e. relatively enduring alterations in thought or behavior) as stakeholders gather new experience or knowledge, actors tend to conserve their belief system by applying knowledge filters that absorb information that is coherent with their beliefs and exclude information that contradicts them. Consequently, changes in the belief systems of advocacy coalitions induced by policy-oriented learning tend to be restricted to secondary beliefs (minor change) or, less common, policy core beliefs (major change). This relative stability of belief systems allows researchers to clearly identify advocacy coalitions within policy subsystems.

Applications of the ACF to forest and land use policy generally define at least two advocacy coalitions, often reflecting rival concerns with environmental protection and economic (i.e. agriculture and forestry) production (Elliott and Schlaepfer, 2001; Harrinkari et al., 2016; Hysing and Olsson, 2008; Nicolle and Leroy, 2017; Timothy Heinmiller and Pirak, 2017; Villamor, 2006). The rivalry between environmental and agricultural concerns was also observed in studies on Brazilian climate politics (Aamodt, 2018; Aamodt and Stensdal, 2017), revisions of the Brazilian Forest Code (Medeiros and Gomes, 2019) and the establishment of Protected Areas in the Northern Amazon (Nicolle and Leroy, 2017). Some of these studies, however, have challenged the rigid demarcation of advocacy coalitions and the static relations between them. For instance, stakeholders may switch between advocacy coalitions after policy-oriented learning has taken place (Elliott and Schlaepfer, 2001) or engage in cross-coalition alliances based on mutual interests (Timothy Heinmiller and Pirak, 2017). Barnes, van Laerhoven, and Driessen (2016) argued that shared policy beliefs indeed concentrate stakeholders into clearly demarcated advocacy coalitions during initial stages of policy design (“early policy-making”), but also suggested that the boundaries of advocacy coalitions may dissolve in later stages of policy implementation (“late policy-making”). These accounts point to the need for a more nuanced understanding of how advocacy coalitions are formed, maintained, transformed and interact. In particular, we argue that the concept of knowledge filters may be enriched in order to transcend the original focus on compatibility with belief systems and account for the learning processes of individual actors.

Emphasizing the incompatibility of new ideas, experiences and knowledge, we draw on conceptual categories for knowledge transformation (Boezeman, 2015) and dealing with uncomfortable knowledge (Rayner, 2012) in order to enrich the concept of knowledge filters. Boezeman (2015) proposes a set of analytical concepts that describe different strategies for transforming knowledge into useful information in alignment with political contexts. More specifically, knowledge claims can be withdrawn from (reduction) or added to (extension) the problem definition; knowledge claims can be imbued with layers of

interpretation about what is considered important (rhetorical packaging); or they can be used to alter either the elements of a specific construction (modification) or the underlying assumptions, principles and theories (redefinition) of problem definitions. In contrast, Rayner (2012) argues that new knowledge could be considered ‘uncomfortable’ by stakeholders, who apply strategic behaviors in order to diminish their impact. Policy participants may not acknowledge their existence (denial), question their accuracy or relevance (dismissal), create distractive activities (diversion) or manage a representation of the main problem (displacement). While these concepts are mainly intended for understanding how knowledge claims contribute to the formulation of problem definitions in policy-making processes, they may also enrich the conceptualization of knowledge filters that stakeholders resort to when designing new policy instruments like forest certificates trading. In the remainder of this paper, we apply these concepts as an analytical framework for understanding the political processes related to the regulation of forest certificate trading in Brazil.

### 3. Research methodology

Our analysis builds on three main data sources: semi-structured interviews, policy documents and observations. Interviews were selected on the basis of their direct involvement in the regulation of forest certificates in Brazil, including officials from the Ministry of Environment and Finance, representatives of environmental and agricultural organizations, scientists and representatives of private organizations. In total, we have collected 14 semi-structured interviews that were conducted in Portuguese, and recorded and transcribed for analysis. In addition, we have collected legal documents, such as bills, laws, decrees, resolutions, Provisional Measures (MPs) and Direct Actions of Unconstitutionality (ADI – Portuguese acronym) that had a direct relation the Brazilian Forest Code. In the context of a broader research program, these documents have been organized in a Forest Code database, which was used in the present study to trace the development of forest certificate trading in Brazil. Specifically for this study, we collected ten draft versions of decree n. 9.640/2018, which currently regulates forest certificate trading, in order to trace the progress of political debates. Finally, our study benefited from a close involvement in regulation efforts through the participation in a series of meetings within the Ministries of Environment and Finance, which took place in Brasília between 2014 and 2017, and included the second author of this paper, governmental organizations, environmental NGOs, private companies and agricultural organizations. We used triangulation of interview data, documents and participant observations in order to safeguard the validity of research findings.

Our research data was analyzed by creating three sets of categories. First and foremost, we created categories for the different dimensions of designing and constructing the forest certificate market. In part, we were guided by the discussions in the available literature about the trade-offs involved in these design processes, but we also allowed interviewees to address the issues that they found important. This resulted in the three categories where stakeholder conflicts were most clearly observed: spatial trade boundaries, supplier definitions and certificates beyond compensation. Secondly, we created categories for the different knowledge filters that stakeholders use to manage new ideas, experiences and knowledge on the basis of the analytical concepts presented in the previous section (Boezeman, 2015; Rayner, 2012). This enabled us to identify the direction in which each actor was aiming to influence policy-making processes. By analyzing the use of perpetual filters within each of the stakeholder conflict categories, we were able to distinguish three broad advocacy coalitions (environmental protection, market viability and agricultural consolidation) that partially overlap and within which actors position and reposition themselves.

### 4. The political development of trading forest certificates

The political negotiations on regulating the Brazilian trade in forest certificates are part of a rather turbulent context of changing land use and forest policies in the past two decades. In particular, a surge of forest conservation concerns in the late 1990s (Viola, 2004; Hourii, 2004) has drastically changed policy-making and law enforcement by developing new environmental legislation and strengthening institutions, which led to notable reductions in deforestation rates in the 2000s (Cunha, Börner et al., 2016; Viola and Franchini, 2014). In particular, the Cardoso administration (1995–2002) had increased the Legal Reserve requirements of the Brazilian Forest Code (law n. 4.771), which compels landowners to set aside a parcel of their property for conservation purposes, through the adoption of a Provisional Measure (MP n. 1.511) in 1996. In the Amazon biome, for example, rural landowners were suddenly required to retain 80 % of their properties as Legal Reserve, instead of the 50 % initially required since 1965 (law n. 4.771). In response to these advancements in forest conservation, agribusiness interests gradually gained representative power in the National Congress since 2010 and were able to adopt more flexible forest legislation through the Forest Code revisions in 2012 (Metzger, 2010; Silva et al., 2012; Sparovek et al., 2011, 2012). Since then, environmental laws and policies have increasingly been under political pressure (Aamodt, 2018; Abessa et al., 2019; Fearnside, 2016; Metzger et al., 2019).

The development of the Brazilian trade in forest certificates occurred in the shadow of forest politics between the late 1990s to the late 2010s. The idea of a market instrument emerged as an attempt to reduce social compliance costs of environmental legislation by providing an alternative to restoration, while also stimulating landowners to protect native vegetation by offering an alternative source of income to agricultural production (Weigand, 1998). Since then, the first contours of forest certificate trading appeared in Brazilian federal law (MP n. 2166–67/2001) and was further developed with the revision of the Forest Code (Law n. 12.651/2012) and subsequent regulation (Decree n. 9.640/2018). Particularly after the Forest Code revisions, the politics of forest certificate trading had inspired a growing body of research (Bernasconi et al., 2016; Brito, 2017; Freitas et al., 2017; May et al., 2015; Nunes et al., 2016; Rajão et al., 2018; Soares-Filho et al., 2016) and involved the participation of the National Congress, executive governmental organizations, environmental scientists, NGOs, representatives of the agricultural sector, private companies and even the Supreme Court that formed alliances within and around three advocacy coalitions: an Environmental Protection Coalition (EPC), an Agricultural Consolidation Coalition (ACC) and a Market Viability Coalition (MVC).

The EPC builds on the policy core belief that the conservation of forests is a paramount condition in political discussions on the regulation of forest certificate trading. The EPC defends the constitutional provision that all properties must fulfill a socioenvironmental function, which includes adequate utilization of natural resources and environmental conservation (art. 5-XXIII and art. 186-II; see also Sauer and França, 2012). With respect to the Brazilian Forest Code, the *de jure* and *de facto* protection of Legal Reserves is one of the cornerstone objectives in order to warrant environmental protection (e.g. Metzger et al., 2019). Moreover, the EPC believes that forest certificate trading may prompt private landowners to go beyond legal compliance. Two concepts characterize these policy core beliefs of the EPC. The first is environmental additionality, which means that forest certificate trading adds to the protection of forests that would otherwise not be legally protected. Nunes et al. (2016), for example, describes such forest certificates as coming from “deforestable surpluses”, which are distinct from “compensation-only surpluses” that may supply forest certificates despite already being protected. Environmental integrity, secondly, refers to a concern with the contribution of forest certificate trading to higher deforestation rates or higher losses of ecosystem services. This

implies that a forest certificate does not represent a right to deforest, but rather a right to develop economic activities from standing forests. Actors that embody the EPC include deep green NGOs like Greenpeace, the Instituto Centro de Vida (ICV), the Institute of Agricultural and Forest Management and Certification (IMAFLOA), and the Socio Environmental Institute (ISA).

The ACC represents the policy core belief that landowners have the right to economically exploit their properties, which is a constitutional right in Brazil (art. 5-XXII and art. 186-I) and often conflicts with the EPC's policy core belief (Sauer and França, 2012). With respect to the Brazilian Forest Code, the ACC considers the protection of Legal Reserves to be an unfair and costly impediment for private landowners to use this constitutional right (see Campos and Bacha, 2019). This belief also inspired an agricultural coalition to push for more flexible Forest Code revisions in the early 2010 (Medeiros and Gomes, 2019). According to Sauer and França (2012, pp. 285–286), these revisions “stem from the principle that nature [...] is an obstruction to [economic] development”. As becomes clear in subsequent sections, forest certificate trading presented the ACC with the opportunity to alleviate some of the costs of private landowners by allowing an alternative source of income from forested (i.e. “unused”) areas. At the same time, the market instrument is only one of several ways to relieve landowners from this burden (see Metzger et al., 2019). The main advocates of the ACC involve representatives in the National Congress, but only became apparent after 2008 when agribusiness interests gained more representative power (Aamodt, 2018; Sauer and França, 2012; Viola and Franchini, 2014).

Compared with other ACF studies on Brazilian forest and land use policies (Aamodt, 2018; Medeiros and Gomes, 2019; Nicolle and Leroy, 2017), the MVC is very specific to the regularization of forest certificate trading. This coalition builds on the policy core belief that having a functioning market is the most important objective of policy debates, particularly because it is instrumental in attaining full compliance with Brazilian legislation. An official from the Ministry of Finance (#2), for example, explained that “flexibility mechanisms, given minimal environmental parameters, [...] are important for guaranteeing the integral compliance with legislation”. Although this objective is generally shared by other coalitions (particularly the EPC), the coalition is distinct from the EPC and ACC in that environmental or agricultural concerns are secondary to the implementation of the market. This does not mean that the concerns of other coalitions are unimportant, but merely that the balance between them should warrant a high accessibility of buyers and sellers to enter the market. In a way, actors in this coalition seem more committed to having a viable trade in forest certificates than other coalitions, which characterizes them as a distinct coalition. Typical advocates of this policy core belief are market intermediaries like BVRio and Biofilica as well as the Ministry of Finance.

While each advocacy coalition is spearheaded by actors that fully embody its respective policy core beliefs, there are many other actors that are better characterized by a combination of beliefs from different coalitions (see Fig. 1). Some actors strike a balance between environmental protection and market viability, such as bright green NGOs (i.e. technocratic and market-oriented civil society organizations) like the World Wildlife Fund (WWF) and the Amazon Environmental Research Institute (IPAM), but also environmental scientists like researchers from the Federal University of Minas Gerais (UFMG) or the State University of São Paulo (USP). Others strike a balance between market viability and agricultural consolidation, most notably the Brazilian Rural Society (SRB) and other representative organizations of Brazilian agriculture. There are also actors that have shifted their alliance with particular advocacy coalitions. The previously mentioned political shift towards a more powerful representation of agribusiness interests in the Brazilian environmental politics, for example, is reflected by the distinction between a National Congress on the boundaries of the EPC and ACC prior to 2008 and a National Congress where the ACC prevails. In part related to this political transition, the Ministry of Environment also exchanged

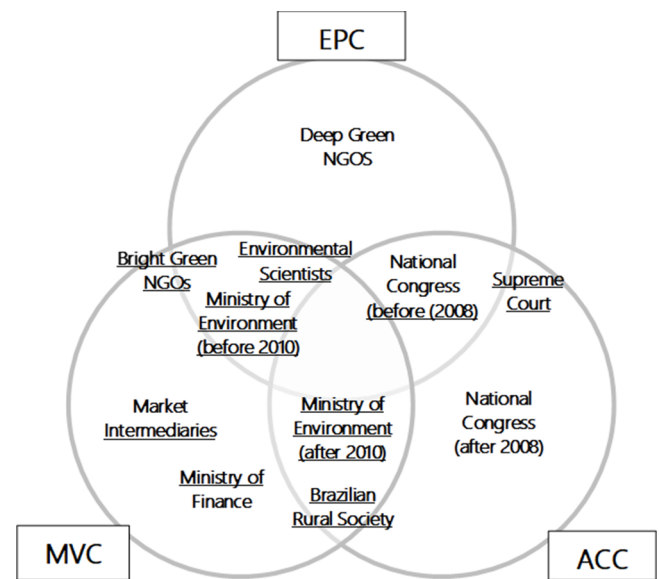


Fig. 1. Stakeholder interests and their positions in relation to the Environmental Protection (EPC), Agricultural Consolidation (ACC) and Market Viability (MVC) coalitions.

its alliance with the EPC for an alliance with the ACC after 2010, while still maintaining a concern with market viability. In the next subsections, we expound how these competing, overlapping and shifting alliances have influenced the regularization of forest certificate trading.

#### 4.1. Modifying spatial trade boundaries

One of the earliest issues related to forest certificate trading concerns the demarcation of spatial boundaries within which the market would be allowed to function. In 1998, this demarcation was confined to micro-watersheds (i.e. usually a few thousand square hectares) that, according to a deep green NGO, was the immediate outcome of successful efforts by the EPC reduce the risk of compromising environmental integrity:

“Our insistence on micro-watersheds was always an attempt to substitute what should be adequate enforcement or perfect control for geographically limiting the possibility to use this mechanism, because it would prevent someone to deforest high value areas and compensate with low value areas. The micro-watershed would not guarantee this, but it reduces the risk a lot” Deep green NGO #2

The restriction of forest certificates trading to micro-watersheds was intended to safeguard the provision of ecosystem services at the local level, particularly considering the heterogeneity of native vegetation and the tendency of rural landowners to undervalue most of these services.

The new market instrument (MP n. 2166–67), however, failed to attract investments. Part of this initial failure can be attributed to the restrictions related to spatial trade boundaries. According to a group of policy makers from the Ministries of Environment and Finance, responsible for regulating the market in the 2000s, these restrictions imposed an unsurmountable challenge to its operationalization, despite efforts to reinterpret (modification) them (Table 1).

“[The restriction to] micro-watersheds prevented us from having [forest certificates]. That is basically it. If we would not have this requirement, we could have had [forest certificates]. [...] We [tried in vain] whether it would not be possible to interpret the law [differently] in order to amplify at least this [...] micro-watershed, because we wanted to enable the market”. Former MMA official #1

This experience raised the conviction that, despite the importance for warranting environmental integrity, confining the market to micro-watersheds would obstruct the operationalization of forest certificate trading (rhetorical packaging). More importantly, it gave birth to an MVC that is primarily concerned with the economic viability of this trade. Although the regulation efforts of this MVC did not result in a decree, the effects of their rhetorical packaging have had a profound albeit indirect effect on the development of forest certificate trading, inspiring an argument for broadening spatial trade boundaries. This argument was already visible, for example, in earlier bills that sought to confine the trade within the same state and biome (e.g. bills n. 5.876/2005 and 5.226/2009). The final proposal, compiled and authored by ruralist Aldo Rebelo in 2010 and adopted in 2012, had allowed trade to occur between federal states within the same biome (Law n. 12.651/2012, art. 48-§2 and 66-§2-II) and prioritizing trade within state borders (art. 66-§2-III).

When the revised Forest Code was adopted, policy-makers from the Ministry of Finance, again responsible for regulating the market, continued to advocate the MVC by seeking to understand the viability of forest certificate trading in different regulatory scenarios (e.g. Champloni, 2015). For this purpose, the ministry invited a research team from the Federal University of Minas Gerais (UFMG) to conduct a multi-scenario simulation of this market (Rajão and Soares-Filho, 2015; Soares-Filho et al., 2016). This research team became increasingly important in forming an alliance between the EPC and the MVC by showing that maintaining the trade in forest certificates within the same biome could threaten their environmental additionality. Rural landowners in the federal state of Mato Grosso, for example, would be able to compensate their large forest deficits by acquiring low cost forest certificates from areas with a low risk of deforestation in states like Amazonas, while high risk areas along the arc of deforestation would be left unprotected (Rajão and Soares-Filho, 2015; Soares-Filho et al., 2016). Conversely, these losses could be prevented by restricting the market within state borders without jeopardizing market viability. These insights, however, were contested by advocates of the ACC and were particularly enacted on within state politics. The state government of Mato Grosso, for example, had received much criticism from agricultural lobbies on legislation that allowed inter-state trading only “if there are no available areas for compensation in the state of Mato Grosso” (decree n. 420/2016, art. 47) and had to revoke this requirement a year later (decree n. 1.031/2017). These observations illustrate that the possibility of state governments to restrict the trade in forest certificates within state borders (art. 66-§6-III) could be challenged, because the same legislation permits trade to occur within the same biome across state borders (art. 48-§2).

Another attempt by EPC advocates to further restrict forest certificate trading occurred in 2013, when the Socialism and Liberty party (PSOL) and the attorney general of the republic, supported by several deep green NGOs led by ISA, challenged the constitutionality of trading forest certificates within the same biome, among many other propositions, in four ADIs. In particular, the main argument was that the trade within the same biome does not warrant the provision of ecosystem services at the local level (i.e. environmental integrity), instead opting for trade within the same micro-watershed (ADI n. 4.903/2013). The final judgement of the Supreme Court in February 2018 was highly ambiguous. On the one hand, many of the propositions in challenged by the ADIs were considered constitutional, retaining the environmental setback that the Forest Code revisions represent (Sauer and França, 2012) and, consequently, illustrating an alignment with ACC interests. On the other hand, the trade of forest certificates within the same biome was judged to be only partially constitutional. Rather than reducing the spatial trade boundaries to micro-watersheds or even state borders, a majority of the members of the Supreme Court, most notably Marco Aurélio and Dias Toffoli, had decided that traders should demonstrate the ‘ecological identity’ of compensated lands. Although this appeared like a concession to warrant environmental integrity, it denoted a

stagnation of market development as decree n. 9.640/2018 did not regulate ‘ecological identity’ and policy participants were looking to researchers from UFMG, USP and other organizations to resolve the challenge for its definition and operationalization.

#### 4.2. Extending supplier categories

The second dimension of the trade in forest certificates emerged during the Forest Code revisions in the early 2010s. This dimension concerns the extension of market supplier categories to include areas other than those exceeding legal reserve requirements, which was successfully inserted by ACC advocates in the National Congress and later also defended by governmental organizations (including the Ministry of Environment) more broadly. The general aim of this coalition was to offer more possibilities for economic use of private properties, especially for those that were constrained to do so:

“In the end, you are imposing a restriction on the use of a private property without compensation. [...] You were transforming a legal reserve of biomass for economic use [...] into a legal reserve for environmental conservation” Former MMA leader #1

The first extension appeared in a report from ruralist congressman Aldo Rebelo (2010), which proposed that private properties within protected areas waiting for compensation could sell forest certificates. Some officials from the Ministry of Environment, such as Raimundo Deusdará Filho, supported the congressman proposal by emphasizing the restrictions that farmers faced on those areas. Nonetheless, Aldo Rebelo (2010) also included it as a category for potential suppliers of forest certificates (art. 44-IV). A second extension appeared after the bill for a revised Forest Code passed through the Chamber of Deputies, which determined that smallholders could supply forest certificates over the full extent of their legal reserve (law n. 12.651, art. 51-§4) rather than only the area that exceeds legal requirements. This extension builds on a broader concern with the socioeconomic condition of landowners of small and medium properties that, according to the critiques by Sauer and França (2012, p. 288), “was used as an excuse for sensitizing the public opinion”:

“This [small and medium] farmer [...] is the most vulnerable to environmental restrictions. Under pressure, he dives either into illegality or into a web of fines and legal assessments by environmental organs and the public ministry”. (Rebelo, 2010, p.5)

Both supplier category extensions have received considerable resistance from advocates of the EPC due to the disregard of the environmental additionality principle. Representatives of the Ministry of Environment prior to 2010 understood this threat. During debates in the National Congress, a former prime minister of environment, Carlos Minc (p. 88), opposed the proposal by pointing out that selling certificates over already protected areas would bring little environmental additionality. Similar arguments were also articulated after the Forest Code revisions were adopted.

The area that cannot be deforested will be inserted in the market as [forest certificate], does not have any opportunity costs because it cannot be used for any other [activity], and will compete in the market with those areas [suitable for] planting soy or raising cattle. This will create a competition that will lower prices [...] of [forest certificates] without opportunity costs, thereby erasing the incentive to conserve the areas that require conservation. Former MMA official #1

After the Forest Code revisions, many scholars have added new knowledge claims to substantiate this threat to environmental additionality and explain how the new supplier categories, together with broader spatial trade boundaries, drive down prices due to oversupply and stimulate demand for low value forest certificates (Bernasconi et al., 2016; May et al., 2015; Rajão et al., 2018; Silva and Ranieri,

2014; Soares-Filho et al., 2016). In particular, Rajão et al. (2018) showed that, due to their lower price, forest certificates lacking environmental additionality are likely to be responsible for up to 57 % and 41 % of the traded volume in Amazon biome in the states of Pará and Mato Grosso, respectively. A similar point was also made by two studies led by researchers from deep green NGOs (Bernasconi et al., 2016; Nunes et al., 2016) as well as by prof. Gerd Sparovek<sup>1</sup> from University of São Paulo (USP) at a presentation for the High Court concerning the constitutional validity of the forest code. Taken together, these new knowledge claims from EPC advocates attempted to constrain these new supply sources (reduction) due to lack of environmental additionality.

Despite these efforts to demonstrate the negative consequences of oversupply from extended supplier categories, the new knowledge claims were filtered by MVC and ACC advocates. In addition, some bright green NGOs, despite advocating EPC interests, seemed more strongly concerned with market viability. The knowledge produced by EPC advocates was filtered mainly by downplaying (dismissal) the evidence for the negative environmental consequences of oversupply. One bright green NGO indicated that the number of properties with legal ownership, a formal requirement for trading forest certificates, “are very few, and will not unbalance the market”. Also, they must invest financial resources in order to register at the local notary office, register in the Environmental Rural Cadaster (CAR – Portuguese acronym) and gain access to the trading system before participation becomes possible. An official from the Ministry of Finance agrees that the high transaction costs “make it practically unviable for smallholders to issue [forest certificates], so [...] this really is not a problem”. Alternatively, some NGOs (both deep and bright green) were also concerned that, by excluding supply from the entire legal reserves of small farmers, the forest certificate market would be unfair and promote social inequality. These argumentations illustrate that a stronger alliance with the MVC outweighed the attempts by EPC advocates to restrict oversupply, particularly in the context of shifting power relations towards an ACC advocacy.

#### 4.3. Redefining forest certificates beyond compensation

The third dimension of the forest certificate market concerns a redefinition of the very substance of the certificates. In one of the bills (bill n. 3.342/2008) that would later become part of the new Forest Code, ruralist congressman Homero Pereira proposed the renaming of the forest certificates from Forest Reserve Quota (CRF – Portuguese acronym) to Environmental Reserve Quota (CRA – Portuguese acronym). The congressman argued that, by focusing only on “forests”, the CRF ignored other forms of native vegetation that could be benefited from a legal reserve compensation scheme. Furthermore, by referring to the certificate as “environmental quotas” the market would be aimed at protecting not only hectares of land, but also the ecosystems services provided by those areas. Forest certificate trading would still constitute the compensation of legal reserve deficits with legal reserve surpluses, but the CRF-CRA transition would allow a broader interpretation of the composition of these legal reserves.

The subtle adjustment in the nature of forest certificates remained veiled until the final report of the UFMG researchers shed new light on the possibilities for regulating the market. In particular, the UFMG researchers concluded that the issue of oversupply could be resolved by establishing “an expanded market of forest certificates (X-CRA)” that aggregates the compensation of legal reserve deficits with the provision of ecosystem services like biodiversity protection, avoided carbon emissions and watershed protection (Rajão and Soares-Filho, 2015; Soares-Filho et al., 2016, p. 14; see also Wunder, 2005). Suppliers of

forest certificates would be able to choose through price signals whether to supply for compensating legal reserve deficits on other properties or for other uses. This proposal would allow the supply of the so-called ‘compensation-only’ forest certificates (Nunes et al., 2016) for providing ecosystem services instead of compensating legal reserves, which leaves environmental additionality intact and provides new incentives to rural landowners to conserve native vegetation. In this way, X-CRA denoted an extension of the usage of forest certificates.

Officials from the Ministry of Environment readily adopted the concept of X-CRA, calling it CRA-PSA (the acronym for certificates for payment for ecosystems services). More than that, they argued that, by extending beyond compensation, this broader understanding of the forest certificate market was something that was an inherent intension of the Forest Code revisions. According to an official from the Ministry of Environment, the original orientation towards to compensation of legal reserve deficits did not reflect the “intention” or “spirit” of the new Forest Code.

“If you are regulating CRA, which says it is an environmental title, and you only say that CRA can be used for compensating legal reserve [deficits], you are receding. [...] If you read [the Forest Code], you see that the intention is to be something more than just compensating legal reserve [deficits]” MMA Official #1

However, it later became clear that the concept of X-CRA was filtered by the Ministry of Environment, as well as other actors more closely related to the MVC and ACC, by excluding the original concern with environmental additionality. This filtering builds on a re-interpretation (rhetorical packaging) of the CRF-CRA transition that emphasizes an extension of potential usages for legal reserve surpluses as a way to increase the compensation of farmers and enable areas with a high opportunity cost to join the market. Since 2016, this rhetorical packaging became anchored within the draft text of the decree by emphasizing the “use” of forest certificates rather than the “compensation” of legal reserve deficits. Based on this understanding, officials from the Ministry of Environment together with some bright green NGOs, chiefly IPAM and WWF, defended the idea that a single hectare could provide the basis for multiple forest certificates of different nature at the same time. Therefore, an area already sold (and thus protected) as a forest certificate for legal reserve compensation, could be sold a second time as, for example, a carbon forest certificate. In late March 2017, this interest was incorporated into a draft version of the decree by stating that forest certificates “could be used for purposes of conserving native vegetation [...] other than compensating legal reserve deficits”. Moreover, the prohibition of “cumulative CRA utilization”, which had been a recurring proposition in earlier draft versions, was removed from the text. Rather than an extension of forest certificates, however, the intensions of the officials from the Ministry of Environment have resulted in a conceptual redefinition.

EPC advocates, most notably UFMG researchers and ICV (with the indirect support of the Ministry of Finance), challenged this filtering of the X-CRA concept. They dubbed this re-interpretation “bunk bed forest certificate”, in reference to the piling up of certificates sold separately over the same hectare of land. This coalition argued that the possibility of having multiple forest certificates for a single hectare counteracts their concerns with environmental additionality, since a second forest certificate would not add to the protection of that hectare already provided by a first forest certificate. This sentiment was voiced in different meetings that took place between 2016 and 2018 to discuss the forest certificate decree with the Ministries of Finance and Environment. But as officials from the Brazilian Forest Service, an operational organization within the Ministry of Environment that became responsible for the market, noticed that the actors within the EPC would not change their stance on the topic, they excluded the members from this coalition from the meetings. After a few other meetings in December 2018, restricted to the actors aligned with the ACC and the MVC, the Ministry of Environment issued a decree on the regulation of

<sup>1</sup> <http://www.stf.jus.br/arquivo/cms/audienciasPublicas/anexo/TranscriesNovoCdigoFlorestal.pdf>

the trade in forest certificates that ignored the concerns from the EPC. With respect to the X-CRA dispute, specifically, this decree states that forest certificates used for compensating legal reserve deficits is distinct from payments for environmental services, the latter of which is not excluded as a possibility by the existence of the former (art. 19-§9). This means that, while the decree prohibits the supply of multiple forest certificates for the same use on a single hectare (art. 20), it still allows for the coexistence of multiple certificates that represent the same hectare albeit supplied for different uses. In practice, therefore, a farmer may supply CRA for compensating legal reserve deficits on other properties, while using the same area, which is now protected, to sell other CRAs for carbon sequestration or biodiversity protection to other clients. In this way, the decree clearly denotes the prevalence of an interpretation aligned with ACC beliefs and in opposition of EPC demands of ensuring the environmental benefits of this trade.

### 5. Shifting coalitions and uncertain prospects

Our analysis has demonstrated how advocacy coalitions filter new ideas, knowledge and experiences that come into the policy making process. We found substantial support for the ACF's assertion that actors indeed use these knowledge filters to seek conformity with their policy core beliefs and thereby confirm their alliance with specific advocacy coalitions (Sabatier, 1998; Sabatier and Weible, 2007). We also provide details about the strategies that actors use to do so. This is evident, for example, in the effort by EPC advocates to restrict spatial trade boundaries to micro-watersheds, and later in the critique (rhetorical packaging) that the additional supplier definitions contradict environmental additionality and jeopardize environmental integrity. This is also evident in the ACC's successful extension of supplier definitions during the Forest Code revisions in the National Congress, and again in the redefinition of the X-CRA concept from an alternative for compensatory certificates to a diversification of forest certificates. We argue that such use of knowledge filters also enabled previous studies of forest and land use policies to identify advocacy coalitions (Aamodt, 2018; Aamodt and Stensdal, 2017; Harrinkari et al., 2016; Medeiros and Gomes, 2019; Nicolle and Leroy, 2017; Villamor, 2006).

The use of knowledge filters in defense of policy core beliefs, however, did not preclude that actors could form alliances in multiple coalitions (see Fig. 1). This is most evident in the activity of UFMG researchers in striking a balance between advocating environmental additionality and assessing the trade configurations necessary for warranting market viability (Soares-Filho et al., 2016). This observation nuances the argument by Timothy Heinmiller and Pirak (2017) that actors engage in cross-coalition alliances. The membership of advocacy coalitions were also found to be unstable over time. This was most clearly observed with the Ministry of Environment, which had transitioned from attempting to establish regulations for a viable market with narrow spatial trade boundaries (section 4.1) to an active proponent of allowing landowners to issue multiple forest certificates for a single hectare (section 4.3). This exchange of an alliance with the EPC for an alliance with the ACC partially confirms the hypothesis of Elliott and Schlaepfer (2001) that advocacy coalitions can have changes in membership, although we found no clear evidence that this was preceded by policy-oriented learning.

The outcome of political debates on regulating the Brazilian trade in forest certificates (Decree n. 9.640/2018) was deeply influenced by contextual factors, as argued by Hysing and Olsson (2008), that correspond with the shifting power relations in broader climate and forest politics (Aamodt, 2018; Medeiros and Gomes, 2019; Viola and Franchini, 2014). This became explicit not only in the gradual transition of both the National Congress and the Ministry of Environment in the direction of the ACC, but was also reflected in the rhetorical packaging of some key elements prior to more definitive filtering strategies. The extension of new supplier categories by the National Congress, for example, built on a rhetoric that prioritized (1) the

**Table 1**  
Overview of main stakeholder positions, knowledge filters and motivations.

	Advocacy Coalition	Actors	Filtering strategy	Description
Spatial trade boundaries	EPC	Deep Green NGOs	Modification	Limit trade to micro-watersheds in order to avoid compensation with low value areas
	EPC / MVC	Ministry of Environment (before 2010), Ministry of Finance	Rhetorical Packaging	Perceiving market viability as a problem for implementing the market
ACC	EPC / MVC	National Congress (before 2008) Environmental Scientists	Modification Rhetorical Packaging	Broadening of spatial trade boundaries in order to enable a functioning market Advocating trade within state boundaries in order to ensure environmental protection while maintaining market viability
	ACC / MVC	National Congress (after 2008)	Rhetorical Packaging	Alleviating the economic burden of legal reserve compliance for smallholders is necessary, since it obstructs the economic use of private property
Supplier definitions	ACC / MVC	National Congress (after 2008) Environmental Scientists, Deep Green NGOs	Extension Rhetorical Packaging	Adding new supplier categories: smallholders and UC properties The additional supply from smallholders and UC properties risks oversupply, jeopardizes market viability and relinquishes environmental additionality
	MVC EPC / MVC	Market Intermediaries Ministry of Finance, Bright Green NGOs	Denial Dismissal	Oversupply is not a problem, because cheaper forest certificates benefits the economy Oversupply will not be a problem, because smallholders are limited by strict rules, UC properties are more likely to prefer alternative forms of regularization (buy out)
Beyond compensation	EPC / MVC	Environmental Scientists	Extension	Allowing supply of forest certificates for ecological uses as an alternative for compensation (X-CRA) could solve the problem of oversupply without relinquishing environmental additionality
	ACC / MVC	Ministry of Environment (after 2010)	Redefinition	Allowing supply of forest certificates for ecological uses in addition to compensation could offer landowners multiple options to earn money from legal reserves.

provision of economic opportunities for landowners as well as (2) the enhancement of legal compliance with the Forest Code by offering more flexibility for regularization. Such rhetorical packaging also inspired the redefinition of X-CRA by the Ministry of Environment (later also MF officials) by reinterpreting the concept in light of the “spirit” of the Forest Code. At the same time, we argue that some actors balancing an alliance with two advocacy coalitions have indirectly played an important role in determining the outcome. Some bright green NGOs dismissed claims that the new supplier categories will contribute to an oversupply of forest certificates, which reduces the political pressure to warrant environmental additionality.

Despite having reached an outcome (Decree n. 9.640/2018), political debates have entered a phase of late policy-making (Barnes et al., 2016) where advocacy coalitions become less clear and implementation still faces substantial challenges. Most notably, the judgement of the Supreme Court in favor of “ecological identity” in an attempt to compromise with the EPC directly contradicts the achieved outcome that built on an alignment between ACC and MVC concerns. Concurrently, it remains unclear who will be responsible for solving this issue or what the main caveats (substantial and political) will be. Another factor that jeopardizes a successful implementation of the forest certificate market involves the political hostility to environmental concerns that has increasingly characterized Brazilian politics in the 2010s (Abessa et al., 2019). These occurrences signal that broader political debates on the Forest Code continue without an MVC advocacy, which leaves the Brazilian trade in forest certificates vulnerable to its aforementioned contextual factors (Hysing and Olsson, 2008).

## 6. Conclusions

Establishing regulations for the Brazilian trade in forest certificates has been the core objective of the political interactions between advocacy coalitions that defend environmental protection, agricultural consolidation and/or market viability. Our analysis has demonstrated that these interactions are more complex than the ACF accounts for as actors do not neatly pertain to a single advocacy coalition. More specifically, the allegiance of some actors to multiple coalitions and the possibility of shifting membership based on contextual factors have had a determining impact on the political outcome that scholars are only beginning to recognize (Elliott and Schlaepfer, 2001; Hysing and Olsson, 2008; Timothy Heinmiller and Pirak, 2017). In Brazil, the outcome of political debates have entered a new phase where advocacy coalitions are less clear and where political processes are not yet understood from an ACF perspective (Barnes et al., 2016). For this reason, we encourage future research to further explore these late policy-making processes. With respect to forest certificate trading in Brazil, this phase may need to emphasize the operationalization of “ecological identity” and the responses of the materialized market to broader political trends. Similar efforts in other areas of forest and land use policy could enhance our understanding of what happens after legislation has been adopted or policy instruments have been created. In this respect, researchers could seek to understand how advocacy coalitions related to protected areas (Nicolle and Leroy, 2017; Villamor, 2006) continue after establishment, especially if demarcations are under threat from illegal logging, land grabbing or other pressures.

## CRedit authorship contribution statement

**Richard van der Hoff:** Conceptualization, Formal analysis, Investigation, Methodology, Writing - original draft, Writing - review & editing. **Raoni Rajão:** Conceptualization, Supervision, Writing - review & editing.

## Acknowledgements

We would like to thank the Brazilian Federal Agency for Support

and Evaluation of Graduate Education (CAPES) for the financial support provided for this research. We also thank the Climate and Land Use Alliance (CLUA), the Brazilian Council for Scientific and Technological Development (CNPq) and the Foundation for Supporting Research in the state of Minas Gerais (Fapemig) for their support.

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