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Climate institutions in Brazil: three decades of building and dismantling climate capacity

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ABSTRACT

What kinds of national climate institutions can solve the governance challenges that the Paris Agreement devolves to them? This article identifies three stages of climate institutions in Brazil, a major emitter of greenhouse gases through deforestation that managed to reduce such emissions for nearly a decade. It shows that a narrow definition of climate institutions that seeks purpose-built state institutions fails to capture important dynamics there, and that such institutions have little direct impact on outcomes. In Brazil's political landscape, national presidents exercise a decisive influence on their climate ambitions and capacities. However, positive and negative feedback loops also brought some effective climate action from the layering of climate purposes into existing institutions, as well as through non-traditional institutions like private governance arrangements for agriculture.

KEYWORDS Climate change; climate institutions; Brazil; deforestation

Introduction

Strong national climate institutions are the foundation of the Paris Agreement, which asserts that there must be continuous advances in national ambitions and capacities to avoid catastrophic climate change (Jordan *et al.* 2018, p. 7–8). Yet, there have been few empirical studies of the national climate institutions central to these aims. The articles in this special issue on the Varieties of Climate Governance use case studies of large greenhouse gas (GHG) emitters to analyze how they have organized themselves internally to address climate change and the outcomes of those institutional choices (Dubash 2021). The project stresses that workable climate institutions will not follow some simple institutional formula, but will arise out of national historical-institutional traditions and will succeed as they harness the political economies that underlie those traditions.

Brazil, the focus of this article, offers an interesting viewpoint on this process of institutionalization, as it established institutions that successfully

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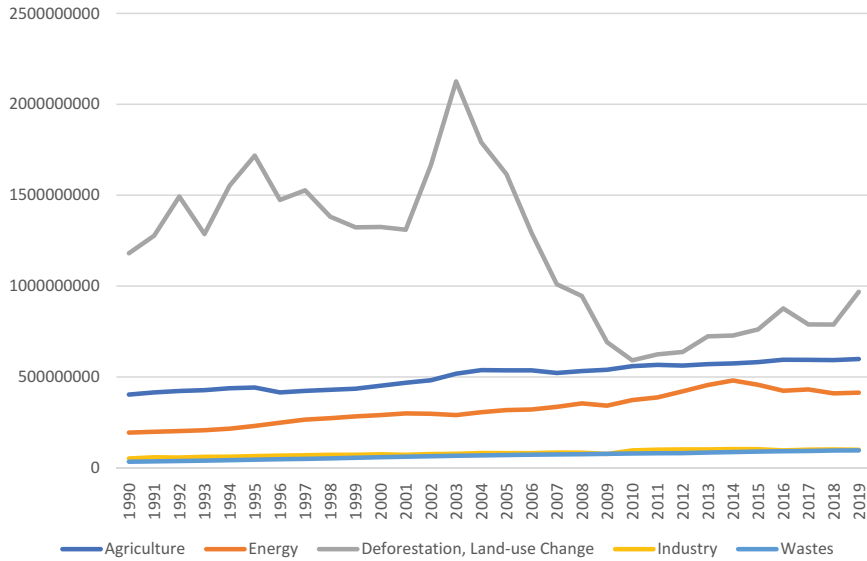

Figure 1. Brazilian greenhouse gas emissions (t CO_2eq) by sector, 1990–2019.

controlled emissions there after 2005, but then subsequently pared that governance capacity back. Figure 1 documents the empirical puzzle of success and stagnation just outlined. It shows the domination of deforestation and land-use change in Brazil's emissions profile and the steep drop in those emissions after 2005. Its GHG emissions were 2.2% of the global total in 2005, but only 1.4% in 2014. This was achieved by a reduction in annual emissions from 1940 to 1357 $MtCO_2e$, across years of both economic growth and retraction (CAIT Climate Data Explorer 2017). Figure 1 also shows that emissions are now rising in all sectors.

How might Brazil's climate institutions have contributed to these outcomes? The question presumes an answer to a prior question: what is a climate institution? The introduction to this special issue accepts definitional openness on this question, expecting that the case studies themselves will inductively delimit the domain (Dubash 2021). The domain is expected to include at least the state agencies deliberately created to deliver a habitable climate, so those are central to this article. However, Dubash also notes that institutions originally created for other purposes may contribute to positive climate outcomes by being repurposed or having climate responsibility layered on them (Mahoney and Thelen 2009). In addition, the broader literature on climate governance carries a more inclusive understanding of institutions, with concepts like polycentric governance stressing that institutions come in multiple forms, including

possibly originating among non-state actors (Jordan, *et al* 2018: 8–9; Ostrom 2010).

One conceptual contribution of the Brazilian case is that it underlines that a broad definition of climate institutions may be needed to capture those actors with direct relevance for decarbonization. While some purpose built climate institutions are created (and destroyed), pre-existing institutions carry much of the climate agenda through layering of new responsibilities on them. Conversely, governmental institutions that one would expect to be central to climate governance, like the Ministry of Environment, are sidelined initially and turn against climate action in the most recent period. These arguments are developed in a section of the article that traces the historical evolution of Brazil's climate institutions through three phases.

I follow the roles of three factors in this evolution, all ones that this special issue hypothesizes will be drivers of institutionalization: broader political institutions, bureaucratic configurations, and international influences. Calls for bringing the insights of historical institutionalism to the study of decarbonization stress the institutional path dependencies that may come from the first two in particular (Lockwood *et al*. 2017, Roberts and Geels 2019). Even new climate institutions are not established from scratch, but are grounded in the political and bureaucratic patterns that exist. I sketch these durable patterns in the next section of the article. Existing institutions may also have climate responsibilities layered onto them, with the alternate possibilities that pre-climate institutional cultures might shape the approach to climate, or that the institutions may be transformed as climate tasks are taken on (Mahoney and Thelen 2009).

My analysis also highlights the important role of institutional and policy feedback loops in establishing the historical trajectories that unfold: positive feedback reinforces the institutions and the policies they enable, while negative feedback undermines them. Andrew Jordan and Elah Matt have suggested that the difference between positive and negative trajectories has to do with the policy instruments used. They expect that positive feedback is associated with instruments that provide benefits, especially for large groups. In contrast, negative feedback is associated with regulations which '(re-) allocate costs towards a small number of actors . . . ' (Jordan and Matt 2014, p. 230).

Finally, international influences add dynamism and may interrupt national trajectories, notably through the requirements international negotiations make for climate action and the institutional models they favor (Frank *et al*. 2000). That influence can include the power of new framings to change the understanding of an issue or its normative valence (Jinnah 2017). Dynamism may, of course, also reflect framing work done domestically.

After showing how Brazilian climate institutions have evolved (climate institutions as dependent variable), the article asks how well they have addressed the challenges of effective climate governance (climate institutions as independent variable). In the first of those governance challenges, climate institutions must establish a *scope* equal to the scale of climate change's many impacts on the economy and society (Jordan *et al.* 2018, Dubash 2021). Next, those institutions must be robust and *transformative over time*, dependably implementing earlier commitments while remaining flexible enough to advance in changing conditions (Levin *et al.* 2012). Finally, they should be *responsive to the citizens* whose long- and short-term interests they organize. Climate institutions are not only the outcomes of power struggles among unequal groups, but they also structure future struggles among them and even the landscape of participants (Lockwood *et al.* 2017, Roberts and Geels 2019).

The methodology used is historical process tracing. The sources include many government documents and reports. The article also draws on twenty-five semi-structured, in-person interviews conducted with actors in the climate and energy fields in Brazil from 2012 to 2019 to complete the story. Interviewees were based in the Ministries of Environment and Mines and Energy, related industrial sectors, and NGOs. As 'elite interviewees', they were chosen for their individual expertise (Aberbach and Rockman 2002, p. 673). Given the Bolsonaro government's targeting of climate actors, citations are to publicly available materials where possible.

Political background

Brazil has been a presidential democracy since 1985. Its presidents have an unusual number of powers over institutions, including decree powers that allow them to temporarily do nearly anything, subject to eventual review by courts and the legislature (Pereira *et al.* 2008). One use has been to substantially reorganize the federal bureaucracy, particularly at the start of presidential terms. Thus, unlike countries where national bureaucracies sit unchanged for decades, Brazil has seen regular rearrangements (Hochstetler and Keck 2007, p. 38–39). Those bureaucracies once held some 50,000 political appointees; while that dropped to about 5000 in reforms in 2005 (Hochstetler and Keck 2007, p. 25–26), this still allows substantial political control over bureaucracies (Bersch *et al.* 2017). Strong budgetary powers allow presidents to not only initiate budget bills, but also impound spending even after budgets are passed (Pereira, *et al.* 2008: 25). This combination of powers means presidents have a great deal of power over not just the composition but also the functioning of national institutions. To the extent that climate institutions are federal state agencies, they can be strongly shaped by individual presidents.

Brazilian democracy also features many political parties, with at least fourteen represented in the National Congress at all times post-transition, requiring political coalition-building (Pereira *et al.* 2008). The Civil House/Chief of Staff (*Casa Civil*) is the actor in the presidency that oversees the government's political management (Decree 4607/2003), and presidents use it to advance priority agendas. Building governing coalitions complicates presidential leadership, not only in passing legislation when that is required, but also because it includes distributing ministries to coalition partners who may have their own agendas (Bersch *et al.* 2017). As discussed in more detail below, one cross-partisan 'ruralist' block has been linked to the interests of Brazilian agriculture – the major driver of deforestation – and has been an influential check on presidents (e.g., Mueller 2018).

Associational life is rich and varied in Brazil, with many civil society and economic actors politically engaged, through both formal and informal routes (e.g., Hochstetler and Keck 2007, Mayka 2019, Araújo 2020). Some of the most important forms of climate governance in Brazil are organized by civil society organizations, on their own or with industry organizations, especially in the agricultural and forestry sectors (Thaler *et al.* 2019). While these are not institutions in the narrower sense, they build governing frameworks that 'make norms and rules within a specific domain' (Ostrom 2010, p. 552) that could also be called climate institutions where they promote decarbonization.

Three stages of institutionalizing climate action

Stage 1: responding to international negotiations, 1990–2002

The early stages of Brazilian climate institutions were strongly responsive to international negotiations. The influence can be seen not only in the timing of the creation of two new institutions, but also in the international reporting and Clean Development Mechanism (CDM) oversight tasks layered on an existing ministry.

After the 1997 Kyoto Protocol to the UN Framework Convention on Climate Change (UNFCCC), the centre-right Cardoso administration (1995–2002) asked the Ministry of Science and Technology to lead a new Inter-Ministerial Commission on Global Climate Change, created in 1999. In part through Brazil's own diplomatic efforts, the Kyoto Protocol did not require developing countries to take climate action beyond reporting, but offered possible funds and technology transfers for doing so through the CDM (Hochstetler and Viola: 759). Those charges defined the Inter-Ministerial Commission's roles. One of its key functions was to be Brazil's Designated National Authority for the CDM. The Ministry of Science and Technology performed the reporting role, compiling Brazil's official climate

change statistics and overseeing reports to the UNFCCC on Brazil's emissions and actions (e.g., Brazil, Federative Republic of 2016). It also hosted scientific researchers on climate.

The choice of the Ministry of Science and Technology to lead Brazil's early climate initiatives reflected successive governments' conviction that climate change was a foreign policy and technology issue, not an environmental one, for Brazil (Rodrigues 2015, Aamodt 2018). The association of climate change with the obligations of developed countries to act meant a corresponding separation of the climate issue from deforestation. The latter was recognized as a national environmental problem in its own right, but not for its link with climate change. These unusual early frames for climate action in Brazil were only effectively challenged once institutional protagonism moved to the Ministry of Environment.

The Cardoso administration created a second climate institution in 2000 that followed the international mandate to consult with climate stakeholders. It was also influenced by the national tradition of participatory consultative councils (e.g., Mayka 2019). Long-time environmental leader Fábio Feldmann urged his co-partisan Cardoso to create a state-society institution that would build a wider conversation around climate change. He pushed it over the objections of the Ministries of Science and Technology and of Foreign Affairs, which saw little need for citizen participation (Rodrigues 2015, p. 140). Formally led by the national president, the Brazilian Climate Change Forum was a site that aimed for parity in numbers between governmental and non-governmental members. The Forum members were to both generate proposals on climate change for the government and respond to governmental proposals, sometimes even in the middle of active negotiations (e.g., Sirgado 2010).

Stage 2: the domestic politics of constructing climate institutions, 2003–2010

During Stage 2, Brazil took important steps toward creating climate-relevant institutional capacity, following largely domestic processes. In the Ministry of Environment, new units and approaches after 2003 brought deforestation under control even before climate-focused initiatives took hold. They were followed by a detailed National Climate Plan in 2008 and a formal National Climate Law at the very end of 2009 (Law 12.187/2009). These set the most important explicitly climate-oriented institutions in place by the end of this stage.

The first steps toward these institutional outcomes came with a change of government to the leftist Workers Party in 2003. President Lula da Silva chose rubber tapper and Workers Party Senator Marina Silva as Minister of Environment, where she led Brazil's first successful approaches to reduce

deforestation. Silva layered her programs into the existing ministry, whose capacity she built first with environmental activists and then a permanent career track (Abers and Oliveira 2015). They helped formulate the Action Plan for the Prevention and Control of Deforestation in the Amazon (PPCDAm) in 2004,[1] which studies show made major contributions toward reducing the annual deforestation rate by 76% from 2005 to 2012 (Assunção *et al.* 2015, Azevedo *et al.* 2017, p. 7653). Much of the PPCDAm drew on existing legislation, like that for designating conservation units, but Silva sought and gained a powerful ally in the Presidency's Civil House to oversee a cross-ministerial working group that brought new institutional weight to their use (Oliveira 2016, p. 177ff). In addition, the existing tools were used more effectively because the Ministry of Environment was now able to produce and analyze much better data for planning and oversight (Schwarzman *et al.* 2012). Because it did not rely on large new initiatives, the PPCDAm could develop without immediate political notice.

The PPCDAm largely follows a command and control model. It designated large numbers of conservation units, many with sustainable use designs from extractive reserves to indigenous areas. The area under formal protection rose 67% from 2004 to 2012, totaling 47% of the entire Amazonian territory (Nepstad *et al.* 2014, p. 1118). The PPCDAm also introduced meaningful real-time oversight of deforestation, using satellite technologies and a new Forest Service (Schwarzman *et al.* 2012). The Critical Municipalities program was added in 2008, denying agricultural credit to the 36 municipalities with the highest rates of deforestation (Oliveira 2016). João Paulo Capobianco, who helped develop many of these initiatives, argues that the suite of approaches and institutions together persuaded regional actors that the national state was really present for the first time, obliging compliance.[2]

Not surprisingly, these policies generated strong opposition from the 'ruralists', a group that includes not just farmers but also those who are economically and culturally attached to the sector. Agriculture has structural economic power: from 2012–2019, agricultural sectoral growth was below the national growth rate only twice and as much as four times higher, always leading exports.[3] Ruralists are the most powerful political bloc that challenges environmental institutions and programs (Aamodt 2018, Viola and Franchini 2018). After being caught off guard by the new approaches, more ruralists sought election to the National Congress in 2010 in order to defend their economic interests against the executive (Sauer 2019, p. 107). From holding 120 seats in the 2007–2010 legislature, they jumped to 160 after 2011 (DIAP – Departamento Intersindical de Assessoria Parlamentar 2010, p. 39). They were then poised to better fight back against the deforestation – and thus climate – policies and institutions.

It should be noted that not all ruralists fit this simple story of backlash. A modern, internationally-oriented subset of the ruralists had joined environmental NGOs in limiting deforestation through agreements that prevented agricultural traders seeking European markets from exporting commodity products from land deforested in the Amazon after 2006/2008 (soy) and 2009 (beef) (Gibbs *et al.* 2016, Thaler *et al.* 2019, p. 64). The Soy and Beef Moratoria are private, rather than public, institutions that became especially important in the third stage.

These public and private efforts to control forest clearing began targeting deforestation in its own right, as Brazil's forests are constitutionally protected as national patrimony (Republic of Brazil 1988: Article 225). As noted, the Ministry of Science and Technology and the Foreign Ministry had long led a national consensus that deforestation was not a climate issue (Aamodt 2018, Viola and Franchini 2018). But as global climate negotiations began to push for all countries to take climate action, first Silva and then other parts of the Brazilian government began to listen to the environmental activists who wanted to link the topics in order to strengthen both and to seek international financial support for forest protectors (Rodrigues 2015). The Ministry of Environment's unexpected success in taming deforestation hastened this framing shift. The Civil House was tasked with leading 16 ministries in a new Inter-Ministerial Committee that could coordinate these efforts to develop a national plan for climate action (Decree 6.263/2007).

Conjunctural political considerations and shifting coalitions of interests were in the background (Viola and Franchini 2018). The year 2007 was the first year of Lula's second term, requiring negotiations with Silva about her continuing role and setting off the beginning of a succession battle that eventually saw her as a 2010 presidential candidate challenging Lula's chosen candidate, Dilma Rousseff (Oliveira 2016). As that presidential race approached, all the major parties sent their candidates to the Copenhagen negotiation and competed to promote an issue with broad popular support that Silva would otherwise claim (Hochstetler and Viola 2012).

In this context, a detailed National Plan on Climate Change emerged in November 2008, which included a primarily sectoral approach that singled out energy, forests, and agriculture for special treatment (Comitê Interministerial sobre Mudança do Clima 2008). It layered climate directives on existing institutions, listing 15 ministries with a role (ibid: 127). Much of the Plan, drafted by the Brazilian Forum on Climate Change, is about taking credit for Brazil's pre-existing actions that had already reduced its emissions: its history of low-carbon hydroelectric power and the recent policies that controlled deforestation (ibid: 8). The Plan called for creating tax and fiscal incentives for climate-friendly private activities, and the Finance Ministry began examining the possibility of a carbon market in 2008 (Melo and Silva 2018, p. 364).

When the implementing regulation came a year later, the executive had included five sectoral programs of action, in two biomes, agriculture, energy, and steel, but did not advance the carbon market, which divided the Workers Party government (Decree 7390/2010).[4] The first four sectoral programs were assigned to the Ministries of Environment, Agriculture, and Mines and Energy, and proceeded to implementation in Stage 3. The steel program was part of Lula's 2008 industrial policy program, the Policy for Productive Development, (Hochstetler and Montero 2013, p. 1488) and neither outlasted his end of term in 2010.

The basic organization of Brazilian climate policy thus invokes specific sectoral targets and the primary implementing institutions are the national ministries responsible for them. The 2007 Inter-Ministerial Committee had coordinating responsibilities, with assistance from the continuing Inter-Ministerial Commission and Brazilian Climate Forum in their previous roles. Major protagonism remained with the existing ministries, however, layering climate responsibilities onto institutions designed for other purposes.

Stage 3: institutional and political disarray, 2011–2021

After this burst of institution building and re-purposing, the third and final stage of Brazilian climate institutions has mostly involved steps backward. The primary dynamics came from the area of agriculture and deforestation, tracking a backlash from ruralists as they gained political strength until electing one of their own, Jair Bolsonaro, to the presidency in 2018. Presidents Rousseff (2011–2016) and Temer (2016–2018) had already allowed attrition of many climate institutions through declining budgets and political commitment. President Bolsonaro went further, using provisional decrees to directly undermine the climate-focused institutions under his control. Yet even then, other institutions – non-state or not historically climate-focused – have managed some sectoral advances for resisting the backlash.

Before turning to the major developments in the agriculture/deforestation nexus, the energy sector deserves a brief look, as its developments are mostly independent.[5] Emissions in the energy sector have been historically low in Brazil because of its reliance on hydropower and its early adoption of biofuels. The 2010 regulations gave institutional responsibility for climate action in the energy sector to the Ministry of Mines and Energy and identified its annual energy planning document as the implementing tool. After the National Climate Law passed in 2009, the Ministry began to formally acknowledge Brazil's international commitments on GHG emissions in its optimization planning models (e.g., Ministério de Minas e Energia 2011, p. 283).[6] Yet, at the urging of the Ministry and the industry,

Lula had used a line-item veto to excise a clause in the National Climate Law that called for phasing out fossil fuels.[7] The annual planning documents are contradictory as a result, promoting low carbon in the electricity sector while omitting discussions of carbon in Brazil's growing oil and gas sector (Viola and Franchini 2018, Hochstetler 2021). The plans have also done little to address Brazil's fastest growing energy emissions, in heavy transport.[8] Designating the Ministry as a climate institution has thus done little to change its direction.

The developments in agriculture and deforestation have been more dynamic. As Rousseff took office, the Ministry of Agriculture continued to develop its own climate program, the Low Carbon Agriculture Plan (ABC Plan). It held more than 30 meetings with participants from ministries, the agricultural research agency Embrapa, unions, agricultural groups, and environmentalists (Ministério da Agricultura, Pecuária e Abastecimento 2012, p. 17–18). The ABC Plan stresses resources for technological innovation that will reduce GHG emissions, limiting deforestation by increasing productivity on existing agricultural lands, a land-sparing strategy (Manzatto *et al.* 2020, p. 8). Restoration of degraded pastures and no-till farming have accounted for about three-quarters of the contracts, hectares, and financial value of the roughly US$ 3 billion (BR$ 12.46 billion) financed between 2012 and 2018 (ibid: 9). The ABC Plan is notably oriented to providing benefits and incentives.

At the same time, President Rousseff and her vice president and successor Michel Temer struggled to control the National Congress, dominated after 2011 by ruralists and their allies, albeit with some pushback from an environmental caucus (Araújo 2020). The ruralist caucus pushed through a revised Forest Code in 2012 that weakened controls on deforestation (Mueller 2018). Ruralists had paid little attention to the Forest Code (dating to the 1930s), but once it began to be seriously applied in the 2000s, they pushed back hard (McDermott *et al.* 2015, Schwarzman *et al.* 2012, p. 342). They gained legally looser restrictions on deforestation on private land and amnesty for past violations (Mueller 2018). At the same time, the Forest Code also developed new policies for land demarcation that enhanced both the command and control and the market-based initiatives (Thaler, *et al.* 2019).

Rousseff faced serious headwinds outside Congress as well, in large protest movements in 2013, a wide-ranging corruption scandal, and economic recession (Melo 2016). These brought much of ordinary governing activity and activism to a stop.[9] Fighting for her political life even after being narrowly re-elected in 2014, she sought political allies by leaving environmental regulations unenforced, undermining the environmental institutions by cutting their budgets and routinely declining to collect fines.[10] Even so, Rousseff was controversially impeached with the support of the ruralists in

2016 (Rochedo *et al.* 2018). Her replacement, Michel Temer, suffered from similar political weaknesses and made similar trade-offs. The Temer government kept the support of ruralists by signing legislative projects and provisional decrees that reduced the size of some protected areas and allowed land claims of up to 2500 hectares without verification that the land was not already occupied (Rochedo *et al.* 2018, p. 695). Neither Rousseff nor Temer made significant changes in the formal climate institutions themselves, but their policy and fiscal choices repeatedly weakened the Ministry of Environment and its programs to control deforestation, quickly reflected by annual deforestation rates that now began to rise.

Despite these setbacks, agribusiness was not unified in its approach to deforestation and thus decarbonization. Brazilian agriculture is highly inequitable, as fewer than one percent of farms produce more than half of all farm income, while 66% produce 3.27% (Mueller 2018, p. 342). Half of all deforestation from 2004–2011 was on large properties over 500 hectares, but those were also where deforestation dropped mostly quickly, down 63% over the same years. In contrast, deforestation on small and remote holdings had risen 69 and 88%, respectively (Godar *et al.* 2014, p. 15,591). Economic crisis after 2014 brought new pressures on these actors to deforest land. Yet, both state policies and the market incentives have targeted the large properties, where oversight is easier and less politically fraught (Godar *et al.* 2014, p. 15,594).

If the large properties receive more oversight, they also receive far more of the positive incentives for controlling deforestation. The state policies that reward intensification of cultivation in the ABC Plan, for example, are largely 'limited to favorable soils with good road access, in areas already under elite control' (Thaler *et al.* 2019, p. 67). Both the state and market-based policies depend on identifying the boundaries of agricultural land ownership precisely. Yet, the newly strong legal framework for land demarcation is too demanding for many small producers, especially in the Amazon, and their illegality then keeps them from being able to benefit from trade-based initiatives (McDermott *et al.* 2015, p. 138). To the extent that the new agricultural and deforestation policies reach small farmers, it will be the punitive side of them. Local communities have lost access to land and water with the soy market initiatives (Schilling-Vaca-Flor *et al.* 2021).

Market exclusion models like the Soy and Beef Moratoria offer the benefit of market access to agriculturalists who meet their requirements, starting with legal land demarcation. The agreements to have zero-deforestation in the Brazilian Amazon did measurably change the behavior of ranchers and meatpackers there. Property registration rose quickly for those who hoped to participate. In 2014, only four percent of supplying properties to slaughterhouses had recently deforested land, while 36% had in 2009. Supplying properties also had lower deforestation rates (Gibbs *et al.* 2016, p. 36–38).

For soybeans, the agreement also reduced rates of deforestation for soy cultivation in the Amazon, but did so by pushing it to the *Cerrado* region (Lima *et al.* 2019, Schilling-Vaca-Flor *et al.* 2021). While far from classic climate institutions, the Soy and Beef Moratoria are arguably part of a broader polycentric understanding of climate institutions, and helped to compensate for the declining state role.

Under Temer, the Ministry of Agriculture institutionalized coordination with such non-governmental initiatives. A new Sustainable Development Commission for Agribusiness did not mention climate change or even the ABC Plan in its mandate, but it laid out general areas of action in sustainable development and nodded to working with related civil society organizations (Portaria 171/2016). In 2017, the ABC Plan gained its own inter-ministerial governance structure for monitoring GHG emissions, with planned links to non-state actors (Portaria 2277/2017). Temer's Minister of Agriculture, the billionaire agribusiness leader Blairo Maggi, had been active in developing the Soy Moratorium through his Bunge commodity trading company and supported market-oriented initiatives to block deforestation (Rausch and Gibbs 2016, p. 2).

The Climate Forum also revived during Temer's short government. Rousseff had de-emphasized this institution, and did not have it help write Brazil's Nationally Determined Contribution (NDC) for Paris (Observatório do Clima N.d.). After 2016, a coalition of 60 of Brazil's largest businesses, including agribusinesses, joined together to re-form the Business Council on Sustainable Development (CEBDS) and then, with NGOs, helped to reactivate the Forum (Hochstetler 2021). In 2017 and 2018, more than 500 people participated in the Forum's working groups that led to a first proposal for how to implement Brazil's NDC, following the sectoral format already in place but also urging development of a carbon tax (Fórum Brasileiro de Mudança do Clima 2018a). Simultaneously, the Forum's Working Group on Long-term Vision drew together analyses of how Brazil could reach net carbon zero by 2060 (Fórum Brasileiro de Mudança do Clima 2018b). When incoming President Bolsonaro threatened to leave the Paris Agreement, more than 130 organizations participated in the Forum's discussion of future directions in agriculture for Brazilian climate policy to show their ongoing commitment to climate action (Coalizão Brasil: Clima, Florestas e Agricultura 2018).[11]

The Bolsonaro administration, which began at the start of 2019, has tied climate action to partisanship for the first time in Brazil, so that anti-Petismo (opposition to the Workers Party) now includes climate skepticism.[12] Bolsonaro's rhetoric targets indigenous peoples and environmental civil society as opponents of its economic development agenda in the Amazon (Ferrante and Fearnside 2019).[13] His administration immediately began a systematic assault on climate and environmental institutions on entering

office, doing so mostly through decrees because of residual environmental power in the legislature (Araújo 2020, p. 4). Bolsonaro had proposed making the Ministry of Environment a branch of the Ministry of Agriculture before taking office, a breath-taking proposal to reduce climate capacity, but congressional and societal pressure stopped this (Araújo 2020, p. 5–6, Vale *et al.* 2021).

Even so, climate agencies inside the Ministries of Environment and of Foreign Relations were simply cut in early 2019 (Decree 870/2019), followed by the Inter-Ministerial Commission on Climate Change (Decree 9759/2019). Climate bureaucracies now need some detection to find. The Ministry of Agriculture handles climate change in its Secretariat for Innovation, Rural Development, and Irrigation, while climate change is the 'Environment II' agenda in the Foreign Ministry and has lost its links from the landing page. Near the end of Bolsonaro's first year, he cut the Forum from the Inter-Ministerial Committee (Decree 10,145/2019). Forum president Alfredo Sirkis was forced to step down in May of 2019 just before the long-term vision was released.[14] The new Inter-Ministerial Committee had met just twice by mid-2021 and did not take up the Forum's proposals (Casa Civil 2021).

Bolsonaro's Minister of Environment openly advocated using the COVID-19 pandemic as a shield to hide quick dismantling of his Ministry's capacity; scholars have found that the administration has issued 57 major regulatory changes to reduce environmental protection (Vale *et al.* 2021, p. 2). Opposition parties brought court cases in 2020 asking why the resources of the National Climate Fund and Amazon Fund had gone largely unspent since Bolsonaro's arrival (Supremo Tribunal Federal 2020). The Bolsonaro government had targeted the Amazon Fund in particular because it included civil society groups on its board and gave them funds (Araújo 2020, p. 16–17). Thus, through deregulation and budget cuts, formal climate institutions have seriously decayed even where they still exist.

In this context, meaningful climate action in the Bolsonaro years has mostly not come from the formal state institutions devoted to climate or even environmental ends. The Forum has continued to discuss important issues, including Brazil's long-term energy plan, the possibility of declaring a climate emergency, and more.[15] Yet, its influence is unclear. The Forum's discussion of Brazil's NDC ambition hit the limits of the Bolsonaro administration's approach, for example, as the representative of the Ministry of Environment just repeated the government's talking points about the historical responsibility of developed states versus Brazil's own historic achievements, stressing that the government spoke for all Brazilians rather than the 'intellectual elites' who might want more ambition from Brazil. In return, civil society actors have continued to be scathing in their critiques of the

government's lack of ambition in its second NDC (Observatório do Clima 2021).

Agribusiness is a partial, if incipient, institutional replacement. Under Bolsonaro's Minister of Agriculture, Tereza Cristina Corrêa da Costa Dias, the Sustainable Development Commission was relaunched to handle a wider set of projects (Portaria 34/2019). The new version states that the Ministry will be a protagonist on sustainability issues despite its completely different historical mission. The Ministry's climate protagonism was most evident in its plans for the second decade of the ABC Plan, which gained new institutions in the form of a Technical Committee and a new monitoring structure (Decree 10,606/2021). They would help the ABC Plan to lead in areas not historically attributed to the Ministry of Agriculture, like the development of carbon markets and the techniques of monitoring, reporting and verification, language adopted directly from the international climate regime (Ministério da Agricultura, Pecuária e Abastecimento 2021). These ambitious plans sit uneasily with the clear rise in deforestation that is visible in Figure 1. In addition, the Ministry of Economy, while continuing studies of carbon pricing with the World Bank, has made no commitments (Projeto PMR Brasil 2020).

In its initiatives, the Ministry is supporting the large agribusiness actors who have access to the positive incentives associated with decarbonization and have helped to create the non-governmental institutions (Rausch and Gibbs 2016). They are increasingly divided, however, between the traders and processors who directly interact with the European markets for deforestation-free Brazilian agricultural products and the producers who sell to them. The producers have become increasingly vocal during the Bolsonaro government, framing the Moratoria as illegitimate international violations of their rights in the Brazilian Forest Code to clear 20% or more of their land for agriculture, a position the Minister of Agriculture supported (Rodrigues 2019). In contrast, the traders and processers – and some large producers – express an increasingly confident discourse about their ability to use environmental credentialing as a strategy for opening and maintaining valuable markets. In an extended interview with the business newspaper *Valor Econômico*, Marcelo Brito, the president of the Brazilian Agribusiness Association, acknowledged in 2019 that conservation is costly and requires compensation, but stressed the role of high-technology, high-productivity, legal agriculture in assuring that the sector is not environmentally destructive (Chiaretti 2019). Just 2% of all properties are said to contribute as much as 62% of the illegal deforestation (Rajao *et al.* 2020, p. 246), supporting the argument that the sector does not need to be destructive.

The next section turns from these mixed historical observations to the questions in the introduction about whether Brazilian climate institutions meet the challenges of climate governance, drawing on the evidence and sources just surveyed.

Synthesis: Brazilian climate institutions in form and function

Brazilian purpose-built climate institutions have shown considerable continuity of organizational form. Both the Inter-ministerial Commission of 1999 and the Inter-ministerial Committee that largely replaced it in 2007 are aggregations of ministries related to climate change. The more powerful Committee is under the control of the presidency's Civil House, which means that presidential priorities and favored ministries hold particular weight. In both the Commission and the Committee, the implementing institutions are long-standing ministries with many long-standing tasks while the aggregations are the only institutions designed to take on specific climate tasks. Those were set by a combination of international agreements and changing national framings of the climate issue.

The Inter-ministerial Commission was located within the Ministry of Science and Technology, and its view that foreign policy and technology development should dominate Brazilian climate action drove the Commission's focus on the CDM and international reporting (Aamodt 2018). The Inter-ministerial Committee, in contrast, was oriented to climate change as an environmental issue, including deforestation, with the biome protection programs of the Ministry of Environment at the heart of Brazil's mitigation action and the Ministry coordinating the Committee's Executive Group. This reflected a reframing of deforestation as a climate issue and of climate action as a top domestic agenda item (Rodrigues 2015), further embodied in the leading role of the Civil House.

In addition to the ministry-based institutions, non-state actors had two major institutions that allowed their participation. The first was the Brazilian Forum on Climate Change, formed in 2000 to allow state and society actors to debate climate issues together. Like other state-society councils in Brazil, it provides a deliberative space to mediate interests and develop ideas, even to draft new legislation and plans. The Forum may be an unusual climate institution in global perspective, but it is a very typical institution in Brazil, where dozens of such councils existed at the federal level until the Bolsonaro government began to dismantle them (Mayka 2019). The Forum's role has varied according to the attention of the president in office, but it blossomed both in Lula's ambitious presidencies and under the very weak Temer, under whom it filled governance gaps. The Forum has been an important site for debates on critical climate governance issues, even if it ultimately can only recommend actions for others to take up. The Forum is also linked through shared membership to a second non-state climate institution, the private governance arrangements for deforestation-free trade in soy and beef. While these are not climate institutions as narrowly defined, they are part of a wider polycentric climate governance system (Jordan *et al.* 2018).

This institutional patterning provides an interesting lens on the climate governance challenges laid out in the introduction to the special issue. The first, the challenge of coordinating climate action in many sectors, is less relevant for Brazil because of the heavy dominance of deforestation in Brazil's historic GHG emissions profile. It could make good progress on reducing its emissions by focusing there, even as other sectors did much less. The close focus on deforestation meant that the battle between actors who favored and opposed deforestation dominated the broader political economy of climate action, allowing even rapidly expanding oil and gas producers to largely escape attention from climate institutions (Hochstetler 2021, p. 70, Viola and Franchini 2018).

The institutional package – an inter-ministerial format with significant participation from business and civil society and accountability to a powerful presidency – has the potential to take on ambitious action, the second governance requirement. In key moments, everyone was in the room: in meetings of the Inter-Ministerial Committee and in initiatives of the Forum on Climate Change. From 2005 to 2009, all of those actors pushed each other to ambitious designs and achievements in the climate area, building on the close, if tense, relationship between Lula and Marina Silva and the political ambitions of both (Oliveira 2016). Outside of the main arena of controlling deforestation, powerful ministries like the Ministry of Finance (Melo and Silva 2018) and the Ministry of Mines and Energy (Hochstetler 2021) pursued some gains in their own domains. Without strong leadership from the top, however, this institutional package lacks transformative power and at best can hold a stalemate with anti-transition forces. The Forum resurged after 2017, but its ambitious new proposals went nowhere without take-up from a strong executive. Similarly, the private governance arrangements for soy and beef provide some speedbumps to the Bolsonaro government's desire to develop the Amazon rapidly, but deforestation is arcing up as many regional actors conclude the government will not stop them (Vale *et al.* 2021).

Turning to the mediating politics, the historical survey shows there are substantial negative and positive feedback loops at work in the politics of how Brazilian climate institutions have functioned over time. There is a conundrum here. The cost-imposing command and control tools were critical for reducing the rates of deforestation, but their very success at limiting private economic behavior also spurred political strategies that then helped to undermine those very tools and the institutions that supported them (Assunção *et al.* 2015, Azevedo *et al.* 2017). Conversely, benefit-granting market tools like the soy and beef moratoria created a set of agriculturalists who favored controls on deforestation, but even rhetorically committed actors also took advantage of loopholes (Gibbs *et al.* 2016, Lima *et al.* 2019) and state-based support is still developing.

Conclusion

In the first decade of the 2000s, Brazil made significant gains in controlling its GHG emissions by reducing very high annual rates of deforestation. Looking at the institutions involved, the Brazilian experiences show that climate institutions do not need to be purpose-built. Significant decarbonization came from layering climate-relevant initiatives into institutions that had historically done other things. An climate institutional model that coordinated existing ministries with new climate responsibilities thus could provide a foundation for meaningful climate action. At the same time, the success and ambition of such a model in the Brazilian political and economic context proved to depend on what powerful actors allowed.

Looking at the broader political economy, there was a conundrum in the fact that command and control institutions were very effective for reducing emissions from deforestation in Brazil, but then generated political backlash that readily rolled them back. Conversely, positive incentives from institutions that provide market access or the ABC Plan's technology supports have not, in the Brazilian case, been widely enough shared to counter the negative feedback loops or to produce transformative strategies. This interest structure eventually led to presidential leadership that undermined and then openly dismantled the effective institutions, using the broader political tools that allow a Brazilian president to quickly excise relevant roles and capacities.

These observations raise cautions about the likely success and longevity of any particular institutional design for climate outcomes there. In such contexts, scholars of polycentric governance structures are right to suggest that there is more resilience in having multiple kinds of institutions to guide climate action (Jordan *et al.* 2018, p. 6). When a national executive is either embattled or outright committed to economic growth at the expense of climate outcomes, the presence of institutions with a stronger grounding in society – the Forum on Climate Change, the Soy and Beef Moratoria – could give proponents of climate action an institutional home that could create some counter incentives and activities. International pressures could also provide key external checks and incentives, especially as they supported domestic actors to resist presidents who were hostile to climate action.

Notes

1. Interview with João Paulo Capobianco, former Secretary of Biodiversity and Forests in the Ministry of Environment, São Paulo, 2018.
2. Interview with Capobianco.
3. Calculated from data.worldbank.org, accessed January 2021.
4. Interview with Adriano Santhiago de Oliveira, Director, Department of Climate Change, Ministry of the Environment, Brasília, 2014.

5. Interview with Oliveira; Interview with André Ferreira, Instituto de Energia e Meio Ambiente, São Paulo, 2018.
6. Interview with analyst of the Empresa de Pesquisa Energética, Rio de Janeiro, 2014.
7. http://www.planalto.gov.br/ccivil_03/_Ato2007-2010/2009/Msg/VEP-1123-09.htm.
8. Interview with Ferreira.
9. Interview with Celso Knijnik, Director de Energia do PAC, Ministry of Planning, Brasília, 2018; Interview with representative of the Instituto Socioambiental, São Paulo, 2014 (conducted by Ricardo Tranjan for author).
10. Interview with Capobianco.
11. Interview with Capobianco.
12. Interview with Andre Nahur, Coordinator Climate Change and Energy, WWF, Brasilia, 2018.
13. Interview with Nahur; Interview with representative of Greenpeace, São Paulo, 2018.
14. Private communication with former official of the Forum, London, 2019.
15. https://forumclimabrasil.org/2020-historico-de-atividades-do-fbmc/. This site includes YouTube links of multiple events, including the discussion of Brazil's NDC.

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References

Aamodt, S., 2018. The ability to influence: a comparative analysis of the rise of advocacy coalitions in Brazilian climate politics. *Review of Policy Research*, 35 (3), 372–397. doi:10.1111/ropr.12282.

Aberbach, J.D. and Rockman, B.A., 2002. Conducting and coding elite interviews. *PS: Political Science and Politics*, 35 (4), 673–676.

Abers, R.N. and Oliveira, M.S.D., 2015. Nomeações políticas no ministério do meio ambiente (2003–2013): interconexões Entre ONGs, partidos e governos. *Opinião Pública*, 21 (2), 336–364. doi:10.1590/1807-01912015212336.

Araújo, S.M.V.G.D., 2020. Environmental policy in the bolsonaro government: response of environmentalists in the legislature. *Brazilian Political Science Review*, 14 (2), e0005. doi:10.1590/1981-3821202000020005.

Assunção, J., Gandour, C., and Rocha, R., 2015. Deforestation slowdown in the Brazilian amazon: prices or policies? *Environment and Development Economics*, 20 (6), 697–722. doi:10.1017/S1355770X15000078.

Azevedo, A.A., *et al.*, 2017. Limits of Brazil's forest code as a means to end illegal deforestation. *Proceedings of the National Academy of Sciences*, 114 (29), 7653–7658. doi:10.1073/pnas.1604768114.

Bersch, K., Praça, S., and Taylor, M.M., 2017. State capacity, bureaucratic politicization, and corruption in the Brazilian State. *Governance*, 30 (1), 105–124. doi:10.1111/gove.12196.

Brazil, Federative Republic of, 2016. *Executive summary: third National Communication of Brazil to the United Nations Framework convention on climate*

change. Brasília: Ministry of Science, Technology and Innovation. Available from: unfccc.int/resource/docs/natc/branc3es.pdf
CAIT Climate Data Explorer. 2017. Historical emissions data. Available from: www.wri.org/resources/data-sets/cait-historical-emissions-data-countries-us-states-unfccc .
Casa Civil. 2021. Atas do comitê interministerial sobre mudança do clima. Available from: www.gov.br/casacivil/pt-br/assuntos/comite-interministerial-sobre-mudanca-do-clima/atas-do-cim .
Chiaretti, D., 2019. Desmatamento afeta imagem do país e causa preocupação. *Valor Econômico*, 22 Aug.
Coalizão Brasil: Clima, Florestas e Agricultura. 2018. *Visão 2030–2050: o Futuro das Florestas e da Agricultura no Brasil*. Available from: www.unica.com.br/wp-content/uploads/2019/06/O-Futuro-Das-Florestas.pdf .
Comitê Interministerial sobre Mudança do Clima, 2008. *Plano Nacional sobre Mudança do Clima*. Brasília: Comitê Interministerial sobre Mudança do Clima.
DIAP - Departamento Intersindical de Assessoria Parlamentar. 2010. Radiografia do Novo Congresso: legislatura 2011–2014. Available from: www.diap.org.br/index.php/publicacoes/send/13-radiografia-do-novo-congresso/413-radiografia-do-novo-congresso-legislatura-2011-2015 .
Dubash, N., 2021. Varieties of climate governance: toward an understanding of the emergence and functioning of climate institutions. *Environmental Politics*.
Ferrante, L. and Fearnside, P., 2019. Brazil's new president and 'ruralists' threaten amazonia's environment, traditional peoples and the global climate. *Environmental Conservation*, 46 (4), 261–263. doi:10.1017/S0376892919000213.
Fórum Brasileiro de Mudança do Clima, 2018a. *Proposta inicial de implementação da contribuição nacionalmente determinada do Brasil (NDC)*. Brasília: Fórum Brasileiro de Mudança do Clima.
Fórum Brasileiro de Mudança do Clima. 2018b. (Draft) report for the presidency of Brazilian scenarios for net zero emissions for 2060. Available from: https://docs.wixstatic.com/ugd/fbec55_4b7299c708ee4b61abcd8d351dab1713.pdf .
Frank, D.J., Hironaka, A., and Schofer, E., 2000. The Nation-state and the natural environment over the twentieth century. *American Sociological Review*, 25 (1), 96–116. doi:10.2307/2657291.
Gibbs, H., *et al*., 2016. Did ranchers and slaughterhouses respond to zero-deforestation agreements in the Brazilian Amazon? *Conservation Letters*, 9 (1), 32–42. doi:10.1111/conl.12175.
Godar, J., *et al*., 2014. Actor-specific contributions to the deforestation slowdown in the Brazilian Amazon. *Proceedings of the National Academic of Sciences*, 111, 15591–15596. doi:10.1073/pnas.1322825111.
Hochstetler, K., 2021. *Political economies of energy transition: wind and solar power in Brazil and South Africa*. Cambridge: Cambridge University Press.
Hochstetler, K. and Keck, M.E., 2007. *Greening Brazil: environmental activism in state and society*. Durham: Duke University Press.
Hochstetler, K. and Montero, A., 2013. The renewed developmental state: the national development bank and the Brazil model. *Journal of Development Studies*, 49 (11), 1484–1499. doi:10.1080/00220388.2013.807503.
Hochstetler, K. and Viola, E., 2012. Brazil and the politics of climate change: beyond the global commons. *Environmental Politics*, 21 (5), 753–771. doi:10.1080/09644016.2012.698884.

Jinnah, S., 2017. Makers, takers, shakers, shapers: emerging economies and normative engagement in climate governance. *Global Governance: A Review of Multilateralism and International Organizations*, 23 (2), 285–306. doi:10.1163/19426720-02302009.

Jordan, A., *et al.*, 2018. Governing climate change polycentrically: setting the scene. *In*: A. Jordan, *et al.*, eds. *Governing Climate Change: polycentricity in Action?* Cambridge: Cambridge University Press, 3–25.

Jordan, A. and Matt, E., 2014. Designing policies that intentionally stick: policy feedback in a changing climate. *Policy Sciences*, 47, 227–247. doi:10.1007/s11077-014-9201-x

Levin, K., *et al.*, 2012. Overcoming the tragedy of super wicked problems: constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45, 123–152. doi:10.1007/s11077-012-9151-0.

Lima, M., *et al.*, 2019. Demystifying Sustainable Soy in Brazil. *Land Use Policy*, 82, 349–352. doi:10.1016/j.landusepol.2018.12.016.

Lockwood, M., *et al.*, 2017. Historical institutionalism and the politics of sustainable energy transitions: a research Agenda. *Environment and Planning C: Politics and Space*, 35 (2), 312–333.

Mahoney, J. and Thelen, K., eds, 2009. *Explaining institutional change: ambiguity, agency, and power*. Cambridge: Cambridge University Press.

Manzatto, C.V., *et al.*, 2020. *Mitigação das emissões de gases de efeito estufa pela adoção das tecnologias do plano ABC: estimativas parciais*. Jaguariúna: Embrapa Meio Ambiente.

Mayka, L., 2019. *Building participatory institutions in Latin America: reform coalitions and institutional change*. Cambridge: Cambridge University Press.

McDermott, C.L., Irland, L.C., and Pacheco, P., 2015. Forest certification and legality initiatives in the Brazilian Amazon: lessons for Effective and equitable forest governance. *Forest Policy and Economics*, 50, 134–152. doi:10.1016/j.forpol.2014.05.011

Melo, A.L.P.D. and Silva, B.S.D., 2018. Projeto PMR Brasil: perspectivas sobre o Mercado Brasileiro de Redução de Emissões. *In*: F.W. Frangetto, A.P.B. Veiga, and G. Luedemann, eds. *Legado do MDL: impactos e Lições Aprendidas a Partir da Implementação do Mecanismo de Desenvolvimento Limpo no Brasil Como Subsídios para Novos Mecanismos*, 357–375. Brasília: IPEA.

Melo, M.A., 2016. Latin America's new turbulence: crisis and integrity in Brazil. *Journal of Democracy*, 27 (2), 50–65. doi:10.1353/jod.2016.0019.

Ministério da Agricultura, Pecuária e Abastecimento, 2012. *Plano Setorial de Mitigação e de Adaptação às Mudanças Climáticas para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura: plano ABC*. Brasília: Ministério da Agricultura, Pecuária e Abastecimento.

Ministério da Agricultura, Pecuária e Abastecimento. 2021. Governo federal institui sistema para monitorar plano ABC 2021/2030. Available from: https://www.gov.br/agricultura/pt-br/assuntos/noticias/governo-federal-institui-sistema-para-monitorar-plano-abc-2021-2030 .

Ministério de Minas e Energia, 2011. *Plano decenal de expansão de energia 2020*. Brasília: Ministério de Minas e Energia and Empresa de Pesquisa Energética.

Mueller, B., 2018. Property rights implications for the brazilian forest code. *Revista De Economia E Sociologia Rural*, 56 (2), 329–346. doi:10.1590/1234-56781806-94790560209.

Nepstad, D., *et al*., 2014. Slowing amazon deforestation through public policy and interventions in beef and soy supply chains. *Science*, 344 (6188), 1118–1123. doi:10.1126/science.1248525.

Observatório do Clima. 2021. 'Passando a boiada': o segundo ano de desmonte ambiental de jair bolsonao. Available from: https://www.oc.eco.br/passando-boiada-o-segundo-ano-de-desmonte-ambiental-sob-jair-bolsonaro/ .

Observatório do Clima. N.d. Interview with alfredo sirkis. Available from: https://www.ethos.org.br/cedoc/e-preciso-declarar-guerra-ao-desmate/#.XfZFiy10eb8 .

Oliveira, M.S.D., 2016. *Movimento para as Instituições: ambientalistas, Partidos Políticos e a Liderança de Marina Silva*. Brasília: PhD Dissertation at the Instituto de Ciência Política, Universidade de Brasília.

Ostrom, E., 2010. Polycentric systems for coping with collective action and global environmental change. *Global Environmental Change*, 20 (4), 550–557. doi:10.1016/j.gloenvcha.2010.07.004.

Pereira, C., Power, T.J., and Rennó, L.R., 2008. Agenda power, executive decree authority, and the mixed results of reform in the Brazilian Congress. *Legislative Studies Quarterly*, 33 (1), 5–33. doi:10.3162/036298008783743309.

Projeto PMR Brasil. 2020. Síntese das análises e resultados do projeto PMR Brasil. Available from: https://www.gov.br/produtividade-e-comercio-exterior/pt-br/assuntos/competitividade-industrial/pmr/relatorio-sintese-pmr.pdf .

Rajao, R., *et al*., 2020. The rotten apples of Brazil's agribusiness. *Science*, 369 (6501), 246–248. doi:10.1126/science.aba6646.

Rausch, L.L. and Gibbs, H., 2016. Property arrangements and soy governance in the Brazilian State of Mato Grosso: implications for deforestation-free production. *Land*, 5 (7), 5020007. doi:10.3390/land5020007.

Republic of Brazil. 1988. Constituição de República federative do Brasil de 1988. Available from: http://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm .

Roberts, C. and Geels, F.W., 2019. Conditions for politically-accelerated transitions: historical institutionalism, the multi-level perspective, and two historical case studies in transport and agriculture. *Technological Forecasting and Social Change*, 140, 221–240. doi:10.1016/j.techfore.2018.11.019

Rochedo, P.R.R., *et al*., 2018. (Letter): the threat of political bargaining to climate mitigation in Brazil. *Nature Climate Change*, 8, 695–698. doi:10.1038/s41558-018-0213-y.

Rodrigues, M.G., 2015. Bringing local voices to the global negotiation table: norm dissemination and consensus building on tropical forests and climate change. *New Global Studies*, 9 (2), 125–157. doi:10.1515/ngs-2015-0016.

Rodrigues, S. 2019. Ministra da agricultura critica moratoria de soja. *Globo/Reuters* 14 Nov. Available from: https://g1.globo.com/economia/agronegocios/noticia/2019/11/14/ministra-da-agricultura-critica-moratoria-da-soja-mas-diz-que-discussao-cabe-ao-mercado.ghtml .

Sauer, S., 2019. Rural Brazil During the Lula Administration: agreements with Agribusiness and Disputes in Agrarian Policies. *Latin American Perspectives*, 46 (4), 103–121. doi:10.1177/0094582X16685176.

Schilling-Vaca-Flor, A., *et al*., 2021. Contextualizing certification and auditing: soy certification and access of local communities to land and water in Brazil. *World Development*, 140, 105281. doi:10.1016/j.worlddev.2020.105281.

Schwarzman, S., Moutinho, P., and Hamburg, S., 2012. Policy update: amazon deforestation and Brazil's forest code: a crossroads for climate change. *Carbon Management*, 3 (4), 341–343. doi:10.4155/cmt.12.34.

Sirgado, P. 2010. COP-16: fórum Brasileiro de Mudanças Climáticas Discute Situação Climática no País. Available from: https://www.ana.gov.br/noticias-antigas/cop-16-fa3rum-brasileiro-de-mudanassas-clima-ticas.2019-03-15.6836207626, Accessed 29 Apr 2020.

Supremo Tribunal Federal. 2020. Arguição de descumprimento de preceito fundamental 708. Available from: http://portal.stf.jus.br/processos/detalhe.asp?incidente=5951856 .

Thaler, G.M., Viana, C., and Toni, F., 2019. From frontier governance to governance frontier: the political geography of Brazil's Amazon transition. *World Development*, 114, 59–72. doi:10.1016/j.worlddev.2018.09.022

Vale, M.M., *et al.*, 2021. The COVID-19 pandemic as an opportunity to weaken environmental protection in Brazil. *Biological Conservation*, 255, 108994. doi:10.1016/j.biocon.2021.108994.

Viola, E. and Franchini, M., 2018. *Brazil and climate change: beyond the Amazon*. New York and London: Routledge.