



Policy innovation for sustainable development: the case of the Amazon Fund

João Carlos Ferraz¹ · Juliana Santiago² · Luma Ramos³

Received: 15 February 2022 / Accepted: 6 January 2023 / Published online: 24 February 2023
© The Author(s), under exclusive licence to European Association for Evolutionary Political Economy and EAEPE Academy GmbH 2023

Abstract

For its “long, winding roads (Thanks, The Beatles!)” and unknown challenges, fostering sustainable and inclusive development requires new public intervention models. For that, the critical assessment of existing innovative policy experiments, their outcomes and determinants, is important not only to strengthen our knowledge base but also to inspire sound development-oriented policies, including green industrial policies. Based on an experimental analytical framework, this article analyses an original policy instrument in Brazil, the Amazon Fund (AF), during the 2008–2021 period. This article demonstrates that the Fund’s positive impacts on sustainable development are largely due to its three interconnected innovative dimensions (multistakeholder governance, donor-based pay-for-performance funding, and non-reimbursable financing of projects by the Brazilian Development Bank, BNDES). With hindsight, the article sheds light on the fundamental role of political decisions and the vital role played by different stakeholders in shaping or reversing the works of policy design, making, and implementation.

Keywords Policy innovation · Sustainable development · Development finance · Amazon Fund · Industrial policy · Multistakeholder governance

JEL Classification O38 · P48 · Q28 · Q56

✉ João Carlos Ferraz

Juliana Santiago
julianasantiago@ufl.edu

Luma Ramos
lumasramos1711@gmail.com

¹ Universidade Federal Do Rio de Janeiro, Rio de Janeiro, Brazil

² University of Florida, Gainesville, United States

³ Boston University, Global Development Policy Center, Boston, United States

1 Introduction

Either dormant for certain periods or a bright star in others, industrial policy as a research issue and policy matter never went away (Oqubay et al. 2020). Along the years, development challenges change so do industrial policies. Industrial policy is gaining centre stage in political priorities, and it will likely remain there in the near future. Beyond the current widespread practices by nations around the world (Labrunie et al 2020), analytical and policy narratives demonstrating the pertinence of State intervention to induce structural transformation are being mainstreamed. Even institutions with a historical track of not giving proper attention to the subject are taking a different stance towards industrial policy (Cherif 2019, Criscuolo et al. 2022). This tide of change can be related to different factors—the emergence of new societal challenges, such as the COVID-19 pandemic, the entry of new competitors in the international arena, and the emergence of potentially disruptive technologies. Still, climate change (almost) unanimously comes to the fore as a sufficient and strong reason behind the calls for decisive public action (IPCC 2021).

Different schools of thought and economic reasoning (market failure, social costs, “infant industry,” etc.) arguments support an active and effective institutional arrangement to promote public policies targeting “green-oriented” industrial strategies. Most narratives cross over the traditional manufacturing-biased industrial policy vision towards a productive, sustainable, and inclusive development perspective. Moreover, regardless of the strength of the visible hand of the State, different authors agree that the uncertainties associated with climate change also spill over to the public policy space (Rodrik 2014; Altenburg and Rodrik 2017; Mazzucato and Kattel 2020). That is, tackling productive, inclusive, and sustainable development challenges demand new approaches to green-related industrial policies.

However, despite extensive literature,¹ the inner workings of new public policy, especially that related to “green” development, remain inside various black boxes,² still demanding and deserving further examination. How does a policy innovation emerge and what can be its constituting elements? How to appreciate and determine the effectiveness of new modes of public intervention? How important are political decisions in shaping a policy design? The urgency of the matter and the state of our knowledge calls for more research, as argued by Bauer and Steurer (2014).

Policy components, policy effectiveness, and policy determinants are the three issues addressed in the forthcoming analysis. For that, this article explores one specific case of sustainable oriented policy innovation perspective relying on a frame of reference built from essential concepts drawn up from the political science, political economy, the economics of innovation, development finance, and economics of the environment literature. Based on an ample set of evidence, a plural conceptual baseline of inquiry is inspired by Ostrom’s (1990) design principles for managing the commons, and it is taken up as a (hopefully) resourceful intellectual and policy problem-solver endeavour, as argued by Jordan and Huitema (2014).

¹ Wu Howlett Ramesh (2018) provide a comprehensive analysis of this subject matter.

² After Nathan Rosenberg’s illuminating “Inside the Black Box” CUP, 1983.

This article analyses an original policy instrument in Brazil, the Amazon Fund (AF), during the 2008–2021 period, its governance system, performance, and determinants. The Amazon Fund is a partnership between the Brazilian administration and international and national donors, aiming at reducing carbon emissions from deforestation and fostering a productive, resilient, and inclusive-oriented economy in the Amazon region. In ten years, through its executive agency, the Brazilian Development Bank (BNDES), the AF raised above US\$ 1 billion in donations and granted about US\$ 568 million to over one hundred projects (BNDES 2021).

The article demonstrates that the Amazon Fund is a successful case of an innovative and effective productive development policy. The positive contributions of the Amazon Fund to the Amazon region's sustainable development rely on its three interconnected innovative dimensions: a multistakeholder governance, a donor-based pay-for-performance funding, and a non-reimbursable financing of projects. This article places considerable emphasis on the political dimension of policymaking by demonstrating the fundamental role of political decisions, and the vital role played by different stakeholders, in shaping and/or reversing the works of policy design, making, and implementation.

The article is organised into four sections, besides this introduction and the conclusive remarks. The first section reviews the literature and introduces the analytical framework. The second section analyses the innovative dimensions of the Amazon Fund, after a brief description of key features of the Amazon region. With such background, the following section examines the fund's performance and impacts. The last analytical section discusses the political attempts and the related resistance to unmake the most innovative features of the Amazon Fund, in the light of the relative power of the relevant players involved with the initiative. The last section contrasts the main findings against the relevant literature and discusses policy implications.

2 Green industrial policies and policy innovations: the literature and the analytical framework

2.1 Green industrial policies and development finance

Broadly defined, industrial policies aim at fostering productive activities, in the direction of development stages higher than pre-existing ones, in each national space. These policies imply the mobilisation of incentive, regulatory, and/or technical assistance-related instruments, affecting inter and intra-industrial allocation of resources and potentially influencing the structure, the conduct, and the performance of economic agents. To be effective, the mobilisation of instruments must be in tandem with the policy objectives and policy targets such as the nature of an economic activity, the structural features of a given sector, and the stage of development of firms. Industrial policies cannot be dissociated from science, technology, and innovation policies. Depending on their scope, they are also quite associated with other thematic policies (e.g. energy, transport, and communications, education policies). Moreover, industrial policies cannot address challenges

and fulfil mandates if not aligned with macroeconomic policies. To be effective, to the level of ambitions and expected goals, industrial policies require political priority, resource availability, executive capacity of institutions, intra-State coordination, accountability, networks, and credibility with the business sector and society at large (Ferraz et al 2022).

The recent renewal of the political priority and the intellectual debate over industrial policies is motivated by, among others, four recent phenomena: the COVID-19 pandemic; the emergence, at the commercialisation level of disruptive technologies, especially new digital technologies; the exacerbation of international competition; and the facing of the challenges associated with climate change and energy transition. The latter, a grand societal challenge, has motivated authors to argue, defend and call for a pro-active State stand, even with different nuances. Given the transversality of such a development challenge, Matthews (2020) argues that the scope of industrial policies must be extended to bring in the energy and resource usage dimensions. While recognising that green industrial policies must face the complex challenge of fostering structural change, leading to increases in productivity, social inclusiveness, and sustainability, Altenburg and Rodrik (2017:9) defend accountable policies, with clear objectives and discipline, not replacing market forces but with the challenge “to embed it within broader social welfare processes to improve the outcomes for society at large”. On their part, Mazzucato and Kattel (2020) call for an overhaul of the analytical posture anchoring the design of policies in which a mission-oriented State intervention should guide and even shape economic actors towards a sustainable development trajectory.

In the consensual calls for green industrial policies, one common issue is highlighted: the need for the expansion of fixed and intangible, green-related investments. Consequently, as raised by Braga et al. (2023), analytical and policy efforts are being made to design and/or propose and introduce new instruments or to adapt existing ones for “green” purposes. Of these, private or publicly sourced climate finance (loans, grants, equity, and guarantee instruments) occupy a central stage.

Padmanabhi et al. (2022) estimate that, in 2019/20, worldwide climate finance reached around US\$ 650 billion, sourced almost equally by public and private institutions. Out of the total, US\$ 237 billion came from development finance institutions. Pollin (2020:414) with an explicit concern with the energy dimension argues that, beyond their current engagement, development banks “will be crucial to build from these efforts to achieve the necessary level of financing for clean energy investments”. According to the same authors, such amount should increase by sevenfold to reach international climate goals. Thus, in a benign scenario, and for the sake of the argument, considering such proportions constant, development finance institutions (multilateral, regional and national banks) should have a very extended capacity and balance sheets to yearly mobilise significant resources for climate change purposes. For that, when discussing national climate funds, Flynn and Bhandary (2019:40) issue words of caution: “Mobilization of climate finance is not an automatic process but needs careful and concerted steering. Bringing together public and private sector institutions, including non-governmental organizations, can unleash the transformative potential of partnerships to facilitate the transition to low-carbon, climate-resilient trajectories”.

2.2 Policy innovation

Industrial policies and their financing component must be reinvented to address, even if partially, the nature and the size of challenges associated with inclusive and sustainable development. From various analytical stands, different authors have explored and demonstrated the importance of the capacities and capabilities of public institutions and their bureaucracies to introduce novel solutions for various purposes which would induce positive impacts on policy beneficiaries (Howlett 2014, Wu et al. 2015, Kattel 2022).

When dealing with policy innovation, the well-established concepts from the economics of innovation literature, such as product, process, and radical or incremental changes, are helpful in understanding the nature of innovations introduced by public organisations. Jordan and Huitema (2014:10) propose a definition of policy innovation (in their expression, policy invention) “the process and/or product of seeking to develop new and/or widely adopted, and/or impactful policies when existing ones are perceived to be under-performing”. Such specification, even if wide, has three manageable analytical dimensions—type, novelty, and potential impact of policy innovation—that make it worthwhile to guide case studies.

Evidence-based case studies provide the necessary analytical tools to the adequate understanding of different components of policy innovation, to discern whether a policy innovation implies incremental or radical product and/or process changes and whether such innovation is new to the organisation or a global first mover. Case studies also illuminate the extent to which an initiative has induced positive results for policy beneficiaries and the proper assessment of favourable and unfavourable determinants.

In terms of the components of a policy innovation, the related literature places considerable emphasis on the capacity/capability dimensions. Policy capacity can be defined as “the set of skills and resources – or competencies and capacities – necessary to perform policy functions” (Wu et al. 2015, p.166). In this sense, competencies depend on tacit knowledge, capabilities, and resources that an institution accumulates over time, which are unique to each institution. In particular, the dynamic capabilities approach allows for the understanding of the processes through which public servants examine the environment, recognize opportunities, search for, identify new solutions, and introduce and implement changes in established practices (Kattel 2022). In development finance institutions, this sequence of actions translates into operational procedures, financial instruments, methods of analysis, sources of funding, and modes of interacting with policymakers or beneficiaries (Ferraz et al. 2022).

The specific mode expressed by such dynamic capabilities can vary from one to another institution. But, regardless the model, a “mission mystique is a key feature of successful innovation bureaucracies” (Kattel et al 2022:201). Such mystique occurs because Schumpeterian policy entrepreneurs are in command, as argued by Minstrom and Norman (2009) and/or due to (intangible) capabilities of bureaucracy, practicing and accumulating innovative experiences. This mystique would then represent an inner driver of public institution innovation. Beyond the internal boundaries, the innovation drivers in public institutions are less discernible than in

corporate organisations. For example, it is widely recognised that in enterprises, the drivers of innovation are in the competitive and/or inductive policies, having the entrepreneurial spirit driven by the profit motive as an underlying fundamental reason. As the profit motive does not play a relevant role in public institutions, and competition is only sometimes present, how and why innovations in public policies and institutions happen is still an issue demanding attention and investigation. As policy directives emanate from political decisions, this article places emphasis on and brings evidence on the political determinants of policy making because the environment surrounding policymaking has a strong political content. In this sense, this article follows Karo and Kattel's (2018:139) proposed analytical framework that makes explicit the importance of considering "dominant political and ideological values (e.g., liberal vs. conservative), political decision-making traditions (e.g., authoritarian vs. democratic; majoritarian vs. consensual) and legal systems (public vs. common law)" when analysing local political capacities.

In short, as the profit motive does not play a relevant role in public institutions, and the competition driver is not always present, how and why do innovations in public policies and institutions come about is still an issue deserving further attention.

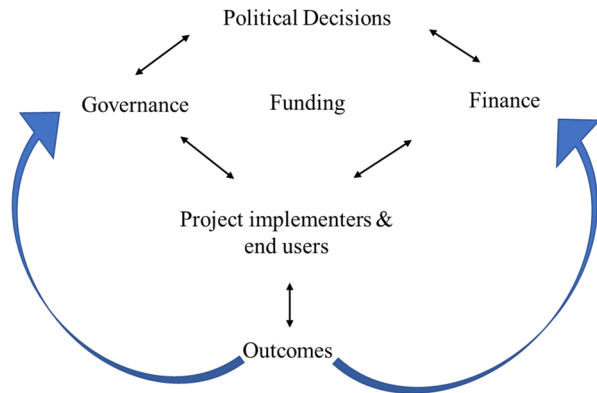
2.3 The analytical framework and the sources of information

The advance of effective governance of natural resources systems remains one of the most difficult challenges facing modern public policy. Interests diverge, and the behaviour of one may reduce resource availability for others. In Ostrom et al.'s (1999:2) terms, a given natural resource system is a finite system degraded through intentional action, where the "use by one reduces the quantity or quality available to others, and that use by others adds negative attributes to a resource". Given that, Ostrom (1990) proposes institutional conditions (8 design principles) for a successful management of finite systems: clearly defined boundaries; congruence between appropriation and provision rules and local conditions; collective-choice arrangements; monitoring; graduated sanctions; conflict resolution mechanism; minimal recognition of rights to organize; and nested enterprises—in case of large and complex systems.

Given that the object of analysis of this article is a policy initiative, not the innovative process of a specific organisation, Ostrom's principles were adapted to enable a frame of reference capable of addressing the relevant determinants, the nature of innovations, and the outcomes at the policy beneficiaries' level of the Amazon Fund. As shown in Fig. 1, these three dimensions provided guidance for the forthcoming analysis.

Political decisions are considered the superior determinant, triggering off the three types of innovation: governance, funding, and finance. Political decisions are absorbed at the level of the governance system where, with some degree of freedom, policy directives guide finance-related actions, at the policy executive level. It is also at the political level where funding principles are designed and agreed upon and where the executive agency (in this case, the BNDES) is mandated. Under such

Fig. 1 A framework for the analysis of a policy innovation



guidelines, funding is raised, and finance is channelled to resource users: project implementers and beneficiaries.

In time, project implementers turn actions into outcomes with different impacts in the targeted beneficiaries. As argued by Karo and Kattel (2018:125), “the operationalization of policy capacities is mostly done on the level of outcomes, i.e., the ‘ability,’ ‘efficiency’ or ‘effectiveness’ of certain political, analytical or operational skills, competencies and resources to contribute to public goal attainment”. This is expressed as the relative increase in variables representing, in the case of the Amazon Fund, the curbing down of emissions, the widening of forest conservation, and/or the increase in sustainable related productive activities. Information on outcomes then is channelled back to the governance system, the executive agency, and, eventually, to the political dimension, providing substantive evidence on the pluses and minus of such policy design, which may be useful to guide further political and policy actions.

To analyse the Amazon Fund case, this study benefitted from an ample stock of evidence. The following sources of information and knowledge were used. Firstly, and foremost, the article relies on a recent analysis of the AF governance system (Santiago 2021). Secondly, the extensive publicly available information about the history, development, performance, and internal and external evaluations of the Amazon Fund were thoroughly examined.³ Thirdly, while exercising functions at BNDES in the past, two of the authors had direct knowledge and work experience with the Amazon Fund, in different capacities, participating in negotiations for its formation, overseeing its functioning and directly managing its execution.

The work by Santiago (2021) provided inspiration for the analytical framework and provided empirical evidence for the analysis of the governance system and the evaluation of the relative power of different stakeholders associated with the fund. In particular, four sources of information were very valuable: (i) the minutes of all 25 meetings of the governance board between 2008 and 2018; (ii) the testimonies of 34 deponents in the public hearing conducted by the Brazilian Supreme Court in

³ www.amazonfund.gov.br

association with a lawsuit against decisions changing the status quo of the Amazon Fund taken by the Bolsonaro's administration in 2019; (iii) the results of a focus group held in 2021 with eleven technical staff from BNDES; and (iv) the semi-structured interviews with 16 government officials, donors, academics, and representatives of civil society. The focus group served to detect and analyse the relative power of different stakeholders in the governance board; the interviews were helpful in raising contrasting visions and interests to forest conservation and development as well as their evaluation about the governance dynamics and effectiveness and the stakeholders' interaction over the years.

3 The innovative features of the Amazon Fund

3.1 The Amazon region: a brief outlook

After burning fossil fuels, deforestation is the second-leading cause of climate change. Thus, to a great extent, global climate security is dependent on the effective contribution of tropical forests in the Amazon, Congo, and Mekong basins (Arneeth et al. 2019). Forest degradation has other severe environmental and socioeconomic implications such as reduced biodiversity, social conflicts, land concentration, increases in illegal economic activities, and the marginalisation of indigenous peoples (Fearnside 2006). Seymour and Busch (2016) demonstrate that halting tropical deforestation and reversing land degradation at scales from individual farms to entire watersheds can provide cost-effective, immediate, and long-term benefits to communities with co-benefits for adaptation and mitigation.

The Amazon rainforest is the largest tropical rainforest. The so-called Brazilian Legal Amazon corresponds to a surface area of 5.0 million km², covering 58.9% of the country's territory. Amazonians are 13% of the total Brazilian population or around 28 million persons. The region is home to various cultures and languages from indigenous inhabitants, *quilombolas* (small enclaves of slave descendants), riverine communities, land settlers, and extractivist-based populations. The region has the highest income inequality in the country, with a GINI coefficient of 0.568 compared to the national average index of 0.63 (IBGE 2021).

Deforestation has been a long-standing critical issue in the Amazon region. It is strongly associated with illegal mining and occupation of public lands and of indigenous territories ("land grabbing") along a perverse course: (1) Public land is selectively deforested by the removal of its most valuable trees; (2) extensive degraded areas become more vulnerable to forest fires; and (3) cleared areas are then left idle or occupied by cattle ranchers or mining. To reverse such process is quite complex (Becker 2005). For that and to induce positive social and environmental externalities, long-term steady public policies are essential for sustainable development. But these do not come easy.

Through its National Policy on Climate Change, during the 2010s, Brazil was committed to reducing Amazon's deforestation rates, from a baseline of 19,625 km² (corresponding to the average of 1996–2005 rates) to a target of 3925 km² by 2020 (Silva et al. 2021). As shown in Fig. 2, a trend toward this goal was observed

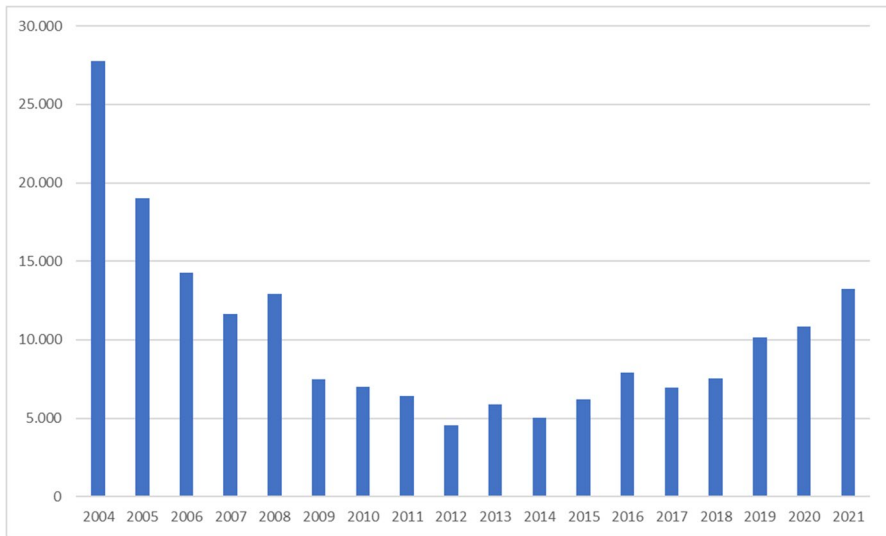


Fig. 2 Legal Amazon deforestation rate between 2004 and 2020 (annual rate in km²). Source: Prodes/INPE (http://terrabrasilis.dpi.inpe.br/app/dashboard/deforestation/biomes/legal_amazon/rates. Accessed 28–01–22)

between early 2004 and 2014. From then onwards, the trajectory changed direction. During the 2020–2021 period, around thirteen thousand km² were lost, the highest level since 2006. Brazil then is an interesting case of evolution and involution in policy design and implementation, with potentially positive and negative consequences. The Amazon Fund is part of such process.

3.2 A politically minded innovative policy design

Any policy initiative has a political foundation, the locus where fundamental and legal decisions are taken. In Ostrom's (2009) terms, at the political level is where rules—exogenous and hierarchically superior to the policy system and its functioning—are defined, directly affecting the components and executors of a given policy action. Political will and power thus define the contours of policy constituting elements and, consequently, whether such innovation is embedded (or not) in a given policy design. It demands ideological vision, translated into affirmative decisions built upon previous political preferences and alliances. In association with accumulated institutional and executive capabilities, policy decisions induce political credibility and policy capacity to implement a certain set of propositions.

If pertinent, political alliances must embrace the international dimension. This is the case of the Amazon Fund. Proposed by Brazil in 2007, during the 13th Conference of the Parties, under the United Nations Framework Convention on Climate Change (UNFCCC), in India, the Amazon Fund became an initiative to avoid deforestation based on voluntary donations and a design centralising

donations and execution of financial resources. At that time, Norway came to an executive and parliamentary decision to support initiatives to avoid tropical deforestation in Latin America, Africa, and East Asia, with the explicit commitment to donate resources of up to US\$ 1 billion for each region. An active cooperation process between the two countries was then to follow (ECLAC 2019).

The Amazon Fund was formalised by Presidential Decree 6,527/2008. It preceded and influenced agreements in the Warsaw COP 19, in 2013, which led to the proposition of the REDD+ framework. Such legal instrument laid down the formal innovative base of the fund, along the following lines:

- (i) Donations were based on a pay-for-performance basis: if deforestation was avoided, donations could be raised and vice versa.
- (ii) A multistakeholder committee, the Amazon Fund Guidance Committee (*Comitê Orientador do Fundo Amazônia*, COFA, the Portuguese acronym) would oversee strategizing, oversighting, and monitoring the investments made.
- (iii) Monitoring was to be conducted by an independent technical committee. Information came from an existing reliable satellite monitoring system from the National Institute of Space Research (*Instituto Nacional de Pesquisas Espaciais*, INPE).
- (iv) Resources were to be centrally managed by the Brazilian Development Bank and operationalised through non-reimbursable finance. BNDES was the designated executive institution, given its long history of development financing, established international credibility, and well-proven expertise in development finance.
- (v) Projects should be adherent to the Action Plan for the Prevention and Control of Deforestation in the Legal Amazon (PPCDAm, its Portuguese acronym) and the National Strategy for Reducing Emissions from Deforestation and Forest Degradation, Conservation of Forest Carbon Stocks, Sustainable Forest Management, and Increasing Forest Carbon Stocks (ENREDD+).
- (vi) Six thematic areas were initially prioritised: sustainable management of public and private forests; recovery of deforested regions; environmental control and monitoring; sustainable economic development; ecological, agricultural, and economic zoning and regulation; and preservation and sustainable use of biodiversity. The fund could also support projects aiming at monitoring and controlling deforestation in other Brazilian biomes and tropical countries with up to 20% of its resources.

Such provisions were formally agreed upon between Brazilian and Norwegian authorities (and later by Germany and the Brazilian State-owned company Petrobras). It was also agreed that donors would not interfere in the definition of guidelines, nor could they hold a seat in the governance board or participate in project selection/approval processes. As a courtesy, donors were always invited to attend the fund meetings, as observers, without voice or voting rights. Yet, donors always have had full access to information (except for BNDES project and credit evaluation processes) about the fund (BNDES 2021; ECLAC 2019).

In short, the basic configuration of the Amazon Fund was consubstantiated in a legal document that defined the contours of an innovative policy design. This design was the outcome of political orientations of Brazilian politicians/policymakers who found positive resonance with their Norwegian peers. It was expected that such policy design, aligned with public policies, would induce synergies among scalable projects leading to transformational development processes in the region.

3.3 The participatory governance: an innovative mode of policy strategizing

A well-established policy governance system is of paramount importance to triggering a policy implementation process, leading to positive outcomes. Definitions of policy-related governance abound. In this article, governance is understood as a “process through which State and non-state actors interact to design and implement policies within a given set of formal and informal rules that shape and are shaped by power” (World Bank 2017:41). Following Santiago (2021), two further definitions of power can be specified: (i) structural power and (ii) influential power. Structural power is embedded in stakeholders or organisations authority to make decisions, approve, change, or stop a policy. Power of influence tends to be more diffused, referring to the different (direct or indirect) ways that stakeholders can influence policy and decision-making processes, convincing other actors to alter their beliefs, interests, or actions (Gaventa 2006; Barnett and Duvall 2005). In other words, it is the power actors may have in persuading those with structural power to make decisions consistent with their views or agenda priorities.

Different stakeholders hold structural and influential powers within and beyond a governance system. A participatory process thus brings in and allows not only voice but effective prominence, in Ostrom terms, to those representing institutions or peoples affected by operational rules that will eventually affect the nature and scope of development projects. This is particularly important to maximise benefits and mitigate the inherent challenges of transversal themes. Where social and environmental externalities abound, participatory or multistakeholder governance of policy initiatives is necessary. As one of Ostrom’s designing principles, individuals affected by the operational rules should take part in modifying them and create a better fit for the specific characteristics of their settings.

To mitigate the inherent challenges of transversal themes, where social and environmental externalities abound, a participatory or multistakeholder mode of governance modes may be simple to propose but hard to effectively put in motion. Suppose, for example, that for a given policy initiative—financing forest conservation—a participatory governance system is set up with the responsibility to define priorities and oversee results, while project implementation is mandated to an executive agency. To ensure an effective policy execution, it is of fundamental importance that the governance body imposes to itself “executive limitations”, thus respecting, without interference, the technical autonomy of a public agency to evaluate, approve, grant, and follow up the results of a project. Such division of responsibilities is a social construction along the years, as argued in the next pages.

COFA is a multistakeholder governance to define strategies, guidelines, and project priorities and monitor results obtained. The federal and state administrations' policy directives for the environment serve as a guidepost for COFA in its discussions leading to the Fund priorities. Once COFA's strategic priorities were defined, the BNDES' role was to promote calls for proposals (through different formats) and, from there, to conduct project evaluation, approval, implementation, and monitoring.

COFA is separate from the managing organisation, BNDES, which recognises, acknowledges, and follows its directives. For BNDES, the agreed division of labour is an organisational innovation as it was the first time in its 60-plus years that accepted an independent body to define its policy directives. It was also an innovation for the board as it had to come to terms with remaining within the (relevant) confines of strategic prioritisation and monitoring and respecting its technical autonomy to select projects.

Inspired by the participative governance in place for many years at the PPCDAm (*National Plan to Prevent and Control Deforestation in the Amazon*), COFA was designed to open policy space for individuals representing different institutions and constituents. Such an innovative model enabled the emergence of a conflict-resolution mechanism and a locus to discuss strategies to foster the region's social and environmental development, featuring Ostrom's principles.

But while multistakeholder participation in PPCDAm was at the policy planning and formulation, COFA members had their hands on in policy implementation, given their mandate to define priorities for BNDES executive actions. In a short time, they had evidence of their decisions which fuelled a learning process for future prioritisation.

Until 2019, COFA was composed of 23 individuals, each with one vote, representing two types of stakeholders: (i) the public sector with 17 members (Federal Administration), with representatives of eight ministries or agencies, BNDES, and representatives of the nine Brazilian states of the Legal Amazon and (ii) the civil society with six members, including the representation of social movements, indigenous peoples, the scientific community, and business sectors. The Ministry of Environment was to preside COFA, and secretarial duties were to be performed by the BNDES. It was formally agreed that decisions were to be made by consensus. While inducing equal voice in decision-making, regardless representation size, consensus-building stimulated debate, convergence over relevant themes, and agreement over strategies and priorities.

In practice, the participatory mode of governance came as a gradual process. Discussions and decisions were initially centred on the type of supported projects. Later COFA evolved to define strategic areas to be supported by a competitive call for proposals mode of operation, larger in size, to induce greater impacts and externalities. Such a decision process was punctuated with the discussion of broader themes related to the effectiveness of Brazilian environmental public policies or the country's preparation for international negotiations on climate (Santiago 2021).

3.4 The performance-based funding: an international novel experiment

On the second dimension, funding, any incentive-related policy initiative can only occur if resources are available and fit the demand conditions. In its turn, the financing of beneficiaries can only happen if the executive agency has the capabilities and means to do so. Creating a low-carbon economy demands a pool of investors publicly or privately sourced⁴ and financial instruments including donor-based funding. Donors can provide, allocate, and/or execute resources through different forms. One is a performance-based funding, where resources' availability is subject to a previous verified positive performance incurred by the donation recipient. Such a mode of funding requires, among other features, a trust-based attitude of donors and recipients regarding the key capabilities that executive agencies need to conduct designated mandates and the setting of an independent and credible system of performance verification. The Amazon Fund operated that way, inaugurating what was to become a standard mode of sustainable financing under the REDD+ mechanism.

The design of such funding architecture did not emerge naturally. Discussions about financial mechanisms occurred in 2007/2008 and involved Brazilians and Norwegian policymakers, researchers, diplomats, and environmentalists. Brazilian negotiators supported a distinguished funding mechanism from traditional donor-recipient relations. They defended a different scheme, which does not include an ex-ante determination of a recipient country's priorities, a "first come first serve" approach or a "call for proposals". In a "first come first serve" approach, a country may receive financial resources for a given activity if its proposal meets the eligibility criteria defined by donors and funds are available. Under a "call for proposals" model, when donors mobilise a pool of resources, eligible candidates (countries and/or agencies) are invited to submit proposals on prescribed topics, with the relative merits of submissions being assessed usually in a selection committee with the presence of donors' representatives (with or without the right to decide).

Brazilians defended that such traditional donor-recipient methods should be avoided and substituted by a model placing the responsibility of earning (or not) resources on the recipient. Thus, funding was to be based on performance: a measured deforestation reduction in each moment implied space for fundraising in the following period and vice versa. Norwegians agreed on the pay-for-performance principle in the negotiation process (followed by other donors later) with two conditions: The calculation of deforestation rates should be technically impeccable and independent from the executive agency. The combination of Brazilian and Norwegian interests produced an accountable and independent auditing structure very much in line with "successful" commons institutions (Schlager and Ostrom 1992).

For that, alongside COFA, as mentioned above, a technical body, the Amazon Fund Technical Committee (CFTA, the Portuguese acronym), was specified with a composition of knowledgeable independent experts, appointed by the Ministry of the Environment (MMA) after consultation with the civil society organisation Brazilian Forum on Climate Change. CFTA was to evaluate deforestation rates based

⁴ To the amount of up to 6% of the global GDP as estimated by Bhattacharya et al. (2015)

on data provided by a trustworthy institution, the National Space Research Centre, and its satellite monitoring system. The Ministry of Environment, MMA, was responsible for providing the basic information for calculating the avoided carbon emissions.⁵

3.5 Non-reimbursable finance: organisational changes for financier, stakeholders, and policy beneficiaries

In terms of development finance, executive agencies, such as development banks, are a direct consequence of policy directives formulated at the political level, which are turned into corporate priorities through planning processes (Ferraz and Coutinho 2019). Priorities are revealed in operational procedures regarding a privileged position for a given priority in terms of resource allocation, mobilisation of teams, operational rules, and financial product specification, such as the term structure of interest rates or the type and quality of collaterals.

Policy directives are easily absorbed if they imply incremental changes to traditional loan operations, where terms of credit and associated obligations (collaterals) are well-established. However, it is quite a challenge for any financial institution, even development banks, if a new procedure, such as a grant-based operation, is to be introduced. Regardless of sourcing and destinations, for statutory, macroprudential, and regulatory reasons, financial institutions (and development banks) must meet capital requirements, respect client privacy, and keep segregation of functions. Grants, for example, demand a specific legal, accounting, and operational procedures as it implies providing financial resources to a third party without the explicit obligation of financial return or the provision of collaterals.

For this reason, BNDES⁶ sheltered the Amazon Fund under the legal and operational concept of “non-reimbursable credit” where no obligation existed to return the loaned resources or provide collaterals. Moreover, the AF and its governance system implied significant institutional changes. For the first time in its history, the institution had to explicitly recognise the mandate of an independent and multistakeholder board to define priorities, guide, and monitor its actions.

⁵ Based on INPE’s measured deforestation rates, the Ministry of the Environment calculated, annually, the reduction of carbon emissions from deforestation, in tons of carbon dioxide (ER) based on the difference between a baseline of a ten-year average historical deforestation rate (ADR) and the deforestation rate in a given evaluation year (DR). This result was then multiplied by the amount of carbon in the biomass, in tons of carbon per hectare (tC/ha): $ER = (ADR - DR) * tC/ha$, where ER = reduction of carbon emissions from deforestation, in tons of carbon (tC) and ADR = average rate of deforestation for the baseline period (in hectares), and DR = annual rate of deforestation for the current period (in hectares), and tC/ha = tons of carbon per hectare of forest.

To determine how much funding BNDES could raise in the following year, the Technical Committee used a reference valued at US\$5/tC3 for each ton of carbon avoided from deforestation (BNDES 2021).

⁶ BNDES was established in 1952 to support and finance investment projects for Brazil’s development. In time, BNDES became a diversified development finance institution, providing loans directly or through commercial banks, non-reimbursable credit (to social, cultural, and technological development), and equity (through investment funds or directly taking a position in state-owned or private firms (BNDES 2017).

But, at the same time, the governance body had to follow BNDES banking functions (project selection and support). With that, BNDES ensured its long-standing technical autonomy to approve—or not—a submitted project with no interference from outsiders was preserved.

Internally, the Amazon Fund induced process and product changes in the organisation in at least four directions.

First, BNDES became responsible for signing contracts with donors and responding judicially and extrajudicially on behalf of the fund. This implied changes in the bank's legal and financial norms. BNDES was also in charge of fundraising on behalf of the AF, not for its purposes, as it had extensively done over the years.

Second, BNDES had to adjust its internal procedures, including adapting its traditional banking ordinances, as it had to introduce an environment, non-reimbursable finance dimension to its product portfolio. This implied the legal and accounting design of these operations. Close-out settings clauses, for example—a process leading to the termination of obligations under a contract with a defaulting party and subsequent combining of positive and negative replacement values—had to be adapted to the profile of potential beneficiaries.

Third, to run the fund, it was necessary to invest in a specialised structure, mobilising and training technical staff and creating a new operational group (a department). Given BNDES collective procedures in project selection, a sustainable development dimension in legal and executive cadres was induced to analyse and evaluate project proposals.

Fourth, considering the recipients' profile, the bank had to deliver technical assistance to projects to prompt (financial, legal, administrative) improvements in small civil society organisations or public institutions with limited capabilities. AF clients, on their side, had to adapt internal procedures to accept the notion of a grant being a “non-reimbursable credit”. They had to assume legal, financial, and operational obligations, comply with tax obligations, and render a complete account of their activities as a regular credit operation. The difference would be that no collaterals would be demanded from beneficiaries and no reimbursement of the financial operation would be required.

Over the years, third-party entities eventually learned to work within the BNDES demands. However, for many of them, it was complex to prepare for, negotiate, and implement projects within these patterns and restrictions. Working together created a mutual learning experience for the bank and third parties. The analysis criteria and the projection selection by BNDES contributed to the professionalization of beneficiaries in terms of financial administration, project management. And it helped them to access other sources of financing. Thus, accessing Amazon Fund's resources was a seal of approval of their good governance from a trustworthy organisation.

In summary, BNDES' engagement with the Amazon Fund demanded a series of institutional and organisational changes, in itself and in related partners. Perhaps the Amazon Fund and the related intense interactive learning the different partners went through was another opportunity to reveal BNDES “mission mystique” (Kattel et al 2022) in support of Brazilian development over the years.



Fig. 3 Size of relevant REDD+ Funds (US\$ million)

4 Outcomes: performance and effectiveness of the Amazon Fund

4.1 Performance

Since its creation in 2008, the Amazon Fund has attracted donations worth US\$ 1.3 billion. Norway, the primary donor to the fund, accounted for 93.8% of the total, followed by Germany with 5.7% through its development bank KfW and 0.5% from Petrobras, the Brazilian state oil company (BNDES 2021). In terms of donations received and projects supported, the Amazon Fund is one of the biggest REDD+ financial mechanisms in the world (Fig. 3).

The governance committee, COFA, defined four priorities for the Fund: sustainable production, monitoring and control, land use, and science and innovation. Over the years, sustainable productive actions accumulated 26% of total project approvals; monitoring and control, 48%; land planning and usage, 14%; and science, innovation, and economic development 13%.

As shown in Fig. 4, the Fund's clientele is diverse. The various levels of public administration entities received 60 percent of total grants, and one international project was approved to monitor tropical deforestation in various Latin American countries. Thirty-eight percent of the resources went to civil society organisations. ECLAC (2019) stresses that projects conducted by the third sector allowed the AF to reach vulnerable people and populations living in remote areas with limited access to public services and precarious state presence.

By the end of 2021, BNDES had approved approximately US\$ 700 million financing for 102 projects. Figure 5 shows the evolution of the number of projects and annual disbursements. On average, between 2009 and 2018, twelve projects

Fig. 4 Amazon Fund projects according to implementing institution: total values (R\$ million) and number of projects

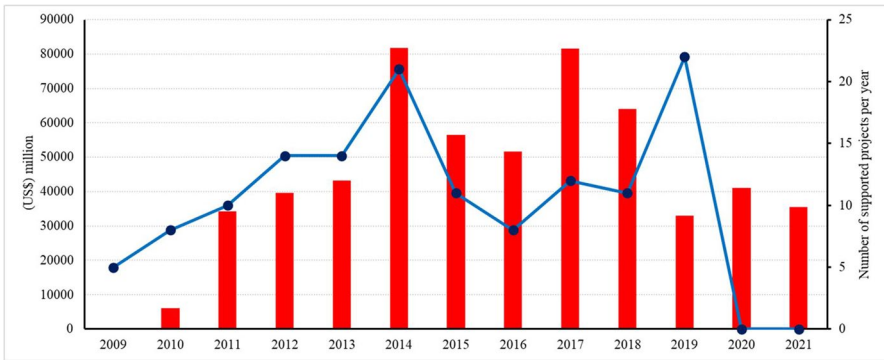
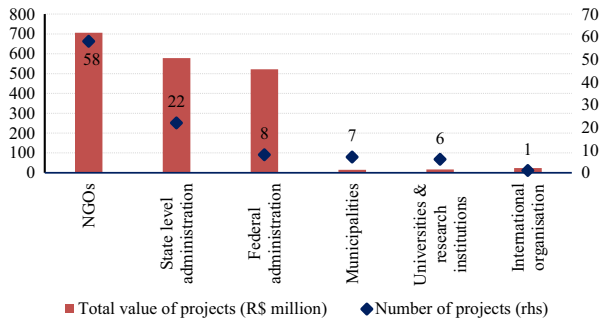


Fig. 5 Amazon Fund: number of supported projects and disbursements per year

were approved each year. After that, with changes in political decisions, no new projects went through the BNDES process approval system. Even so, as approved projects were in the operational pipeline, disbursements continued to occur after that year. Along the years US\$ 568.3 million were disbursed to the one-hundred-plus projects, an annual average of US\$ 43.7 million. By then, twenty-seven projects had been concluded (BNDES 2021). Up to 2017/18, an increased effectiveness of the governance system to define priorities and of the BNDES to foster and execute projects could be observed. After that, project support slowed down as the pipeline of new projects zeroed.

4.2 Efficacy and effectiveness

As shown in Fig. 6, by the end of 2021, the Amazon Fund had directly or indirectly contributed to improving the environmental management of 522.3 thousand km² of preserved or protected areas in the Amazon region. This is a relevant contribution if the extension of the so-called Legal Amazon (5 million km²) is considered. Fund projects supported the sustainable management of 74 million hectares of forests, directly benefitting 207 thousand of individuals, including almost 60 thousand indigenous peoples.

Extent of preserved areas with improvements in environmental control management (km ²)	522.3
No. of individuals directly benefited from supported activities	207,345.0
Extent of area of rural properties with CAR registry (1,000 hectares)	124,479.0
Forest area directly managed because of projects (1,000 hectares)	74,685.0
No. of indigenous peoples directly supported by projects	59,755.0
No. of individuals trained to practice sustainable economic activities effectively using the knowledge acquired	21,745.0
No. of rural properties with sustainable production projects	4,841.0
No. of rural properties registered in the Rural Environmental Registry Protocol (CAR, Portuguese acronym) (1,000)	1,075.0
Increase in revenue obtained from the commercialisation of processed products (US\$ 1,000)	41.6

Fig. 6 Selected outcomes of the Amazon Fund

AF support also included actions in indigenous lands, promoting food security, and building capacity for traditional peoples to sell their production to institutional markets, improving their income generation and well-being. Production-related projects benefited almost 5 thousand rural properties ad, and by the end of 2021, the increase in revenue obtained from commercialising processed products reached US\$ 40 million. The AF supported different income-generating activities, like crafting, ecotourism, and production chains of forest products—and açai berry, Brazil nuts, rubber/latex, cocoa, oilseeds, fish, fruit pulp, sustainable timber production, natural fibres, cassava and derivatives, and honey.

The Amazon Fund was also important in promoting the regularisation of land ownership, one of the region's major challenges, by supporting projects aimed at inducing rural proprietors to adopt the Brazilian Rural Environmental Registry Protocol (CAR, the Portuguese acronym). CAR thus provides the informational means for the monitoring and control of illegal activities, as well as for the fostering of sustainable projects.⁷ In the legal Amazon and neighbour regions, around 6.1 million properties are CAR registered.⁸ Thus, the support of the Amazon Fund for just

⁷ In 2012, the Brazilian Congress approved a new forest code, which included the mandatory registration of all rural properties in a single registry system, the Rural Environmental Registry (*Cadastro Ambiental Rural*, CAR). Through CAR, it became possible to geo-reference and register productive and preserved forest areas. Thus, the process of formalising ownership and the adherence to environmental norms could be initiated. The legislation also established deadlines for registration in the CAR, under penalty of suspension of access to public credit. CAR was a promising policy instrument, but its implementation faced dire straits. Constant pressure for normative changes from groups linked to the agricultural sector induced legal insecurity. For example, land registry deadlines were postponed, consecutively, four times. Moreover, amnesty was given to landowners who illegally cleared legal reserves before 22 July 2008, demotivating law-abiding landowners (Albuquerque Sant'Anna and Costa 2021).

⁸ <https://www.paraterra.com/meio-ambiente/quase-todos-imoveis-rurais-na-amazonia-e-matopibano-tem-car-validado/>. Accessed 03/09/22.

over one million properties by 2021 is quite relevant. A recent study has concluded that “CAR supported projects have contributed to avoiding 8571 km² of deforestation in the Amazon and Cerrado⁹ biomes from 2014 to 2018, which is, respectively, 8244 km² of deforestation avoided in the Amazon, and 327 km² in the Cerrado, which corresponds to 404 million tonnes of CO₂ avoided” (Crisostomo and Machado 2019:6/7), a synthetic indicator of a successful novel and environment-related policy intervention, as suggested by Jordan and Huitema (2014).

The US\$ 568.3 million disbursed by the Amazon Fund to the 100-plus projects between 2009 and 2021 is just a small contribution to the sustainable and productive development in the region given the size of the region and the recent deforestation rates (13 thousand km² only in 2020–2021). But, as ECLAC (2019:24) argues, “the Amazon Fund did not alter the deforestation tendencies of the last couple of years, but without its implementation, deforestation would have been even more widespread.”

5 Political change and resistance

5.1 Political change

As mentioned previously, Brazil managed to curb deforestation rates until 2014. By then, the economy was entering a period of turmoil. In 2016, the country went through a significant political change with Dilma Rousseff impeached and substituted by vice-president Michel Temer until the 2018 presidential elections won by Jair Bolsonaro.

From Bolsonaro inauguration in early 2019, the political stand towards the environment changed drastically. The new administration questioned the very essence of environmental sustainability. It openly denied the existing evidence of the nation’s progress in forest conservation, while traditional rural and mining lobbies gained political space. Pro-active measures were taken to change the standing environmental legislation, decrease the institutional capacity of environmental-related agencies, and discontinue previous policies. Budgets were cut, and the activities of the Brazilian Forest Service, until then under the Environment Ministry, were transferred to the Ministry of Agriculture. The Climate Change Secretariat was extinguished, and inexperienced public servants replaced the top executive positions of environmental agencies. Most personnel came from military and/or police background with no previous environmental expertise (Vale et al. 2021). Moreover, political directives (Decree 9,759/2019) established new rules for collegiate bodies at the federal administration level, including extinguishing all environmental councils and committees. Participatory consultation bodies were simply eliminated.

The Decree 10,144/2019 formalised further changes to the Brazilian environment policy guidance mechanisms giving the federal administration considerable political and policy leverage. REDD+ related strategies, policies, and executive resolutions

⁹ Cerrado is the Brazilian equivalent of the African Savannah.

were to be formulated and conducted by a special commission presided over by the Ministry of the Environment and composed of 7 members: 5 from different ministries, one representative of the different state-level environment agencies, and one from the civil society.

This same decree directly impacted the Amazon Fund on four levels. First, while maintaining BNDES judicial responsibilities over the Amazon Fund, it eliminated its central and pivotal role in funding raising, opening the space for any institution to do so in the name of the Fund. Thus, BNDES's capacity to raise new donations for the Amazon Fund was hindered. Second, the Amazon Fund Technical Committee (CTFA) was dissolved, thus impeding independent assessments of deforestation for the functioning of the pay-for performance funding mechanism. Third, changes were made to the fund's governance system by limiting the participation of civil society and of state and local public representatives and increasing the relative presence of the federal administration. Fourth, changes were made to COFA's decision-making process, from consensus to a simple vote majority, giving de facto decision power to the federal administration. COFA would also incorporate a new role: It would have the mandate to approve BNDES analysis of projects thus lessening the institution's fundamental technical autonomy. In short, these changes implied a substantial dismantling of the participatory mode of governance and curbed down BNDES's role as an independent technical institution, exposing decisions to potential political influence.

These political and policy turnarounds led to an open conflict between the federal administration and the different stakeholders. Participants of the governance system and AF beneficiaries, especially organisations from the civil society made efforts to call the public's attention about the negative implications of proposed changes. National and international public campaigns were fostered with mainstream, and social medias and other constituted powers were called to action. One example is the public civil lawsuit filed at the Brazilian Supreme Court questioning the administration's suspension of AF operations. On November 3, 2022, the Court determined the reactivation of the Amazon Fund in 60 days.¹⁰

As the bases of the 2008 political agreements (participatory governance, pay-for-performance funding, and the centralisation at BNDES of project execution) were undermined, international donors became openly against the proposed changes. Diplomatic negotiations took place and, as the proposed changes, contradicted a bidding legal document. The original Amazon Fund Project Document specifies the roles of COFA, CTFA, and BNDES and constitutes an integral part of all donation agreements with Norway and later Germany which are still in place. Donors then used such relevant leverage to stop the implementation of policy changes as any changes to the agreed principles would require consent by all parties, which had not occurred. Thus, the implementation of the new administration proposed normative in fact imply a breach in the donation contracts (Santiago 2021). Diplomatic negotiations followed suit, but until the end of 2022, negotiations between Brazil and Norway and Germany did not proceed, and the Amazon Fund remained at a standstill.

¹⁰ <https://portal.stf.jus.br/noticias/verNoticiaDetalhe.asp?idConteudo=496793&ori=1>.

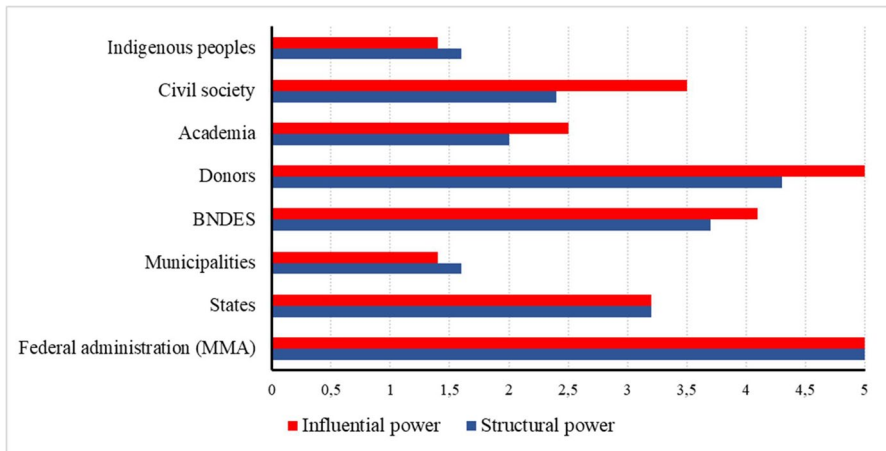


Fig. 7 Structural and influential powers of different actors in the Amazon Fund. Notes: $N=11$. Values are average grades. Grades range from 1 = very low to 5 = very high

Until then, current approved projects were to be continued, but new contracts and new funds were suspended.

5.2 The structural and influential powers of relevant actors

In the face of such political changes, a unique opportunity arises for analysing the effective and relative capacities of the different actors to influence its rules, decisions, and strategies. This analysis will be based on the perceptions of participants of a focus group who were asked to rate (on a 1–5 scale) the structural and influential powers (correspondingly, the capacity to make, change or stop a given policy and the persuasive ability to influence the direction of decisions) of different fund's stakeholders (Fig. 7).

Regardless of the direction of political decisions, the structural and influential powers of the federal administration, represented by the Ministry of Environment (MMA), were rated the highest compared to other stakeholders. By holding COFA's presidency, MMA called meetings, proposed agendas, and led discussions. MMA's power was even more evident when the Minister her/himself chaired meetings, which happened numerous times. According to interviews with COFA's members by Santiago (2021), even during the period when COFA was very active, having a minister leading its meetings could inhibit candid participation and criticisms to on-going policies by other members, thus facilitating MMA power to have accepted its proposals for the Fund's strategies. In short, within COFA, MMA had a level of structural power far superior to other members, including other public organisations. These other public organisations, in turn, were perceived as having a lower level of influence relative to BNDES and donors, but higher than civil society representatives. In a large, federalised country, the convergence between the three levels of executive administration is never easy. However, if such articulation is made

possible, the structural and influential powers of federal, state, and local authorities are quite high.

Donors' relative structural and influential powers follow suit: They are lower than those from the federal administration but still quite high. Despite not having a formal seat and voting rights in COFA, donors hold a strategic asset: They are the fund's source of resources, and their contribution is conditioned to the fund's overall policy design, as mentioned above. Donors' influential power emerges through legal documents and advocacy of the fund's principles by political forces and civil society in Norway and Germany.

The executive agency, BNDES, also has significant structural and influential powers. It responds judicially and extrajudicially on behalf of the fund, raises resources with donors, and is responsible for analysing and approving projects, disbursing funds, and reporting the results and impacts achieved. However, guidelines and priorities are COFA's responsibilities. More important, as a federal institution, BNDES must comply with political and policy directives from the standing administration. These two factors partially mitigate its structural power. As the Amazon Fund's institutional representative, BNDES power of influence is quite significant, especially with the credibility gained over the years related to its technical rigor in managing the initiative and its trustworthy relationship with donors.

The relevance of the various representatives from civil society in the governance system is relatively lower. But the significance of civil society goes beyond their direct influence over the Amazon Fund strategies: National and international academic institutions, business sectors, and local and international NGOs have played an essential role in raising the awareness and in mobilising public opinion in the defence of the Amazon Fund which became a symbol of initiatives aimed at protecting the environment and respecting human and local peoples' rights in the Amazon region.

In summary, until the 2019 political turnover, the interests of the various stakeholders largely converged, and the differences in structural and influential powers were of minor relevance. AF's contributions to curb deforestation and foster sustainable productive development evolved positively. Participants of the governance system and donors observed the established rules, and BNDES technical autonomy was preserved. When political directives changed, disruption followed suit. The federal administration had the power and enacted legal ordinances to bring the relevant decision-making procedures to its domain. But faced with civil society's and donors' structural and influential powers, the federal administration could not implement the proposed changes. Until the end of 2022, the Amazon Fund was paralysed in wait for political choices arising from the Brazilian presidential elections.

6 Reflections and policy implications

6.1 Contrasting findings and literature

This article has argued and provided evidence that the Amazon Fund is an innovative "managing the commons" case. Its participatory governance system,

pay-for-performance funding, and the organisational changes leading to a specific mode of finance (non-reimbursable credit) at BNDES resulted in positive impacts on policy beneficiaries. Over the years, the multistakeholder governance perfected its capacity to define strategies, hierarchise priorities, and monitor results while respecting BNDES technical autonomy to foster and implement projects. In turn, the bank learned how to absorb and accept an external body setting up priorities for its actions.

The fund's pay-for-performance funding mechanism changed the traditional donor-recipient modes of operation and preceded and inspired the emergence of the REDD+ instruments. In this respect, the existence of an active donor (Norway) to provide resources, with the provision that implementation capabilities existed in the recipient country, were essential elements. The new mode of "green" funding demanded the mobilisation of an independent deforestation monitoring and evaluation system, allowing (or not) the process of fund raising. BNDES technical capacity to raise funds, foster, select, finance, and evaluate projects instilled trust in Brazilian political decision-makers and their international partners and made such feasible endeavour.

In terms of outcomes, given the vastness of the challenges facing the Amazon region and being a short-lived initiative, the fund's contribution is relatively modest. After all, even being the largest REDD+ fund in the world, the US\$ 568 million granted to hundred-plus projects along its history represents a mere 0.24% of worldwide disbursements to climate finance by development finance institutions in 2019–2020. Notwithstanding, it was implemented within well-defined boundaries around a complex resource system, fitted local conditions and needs, and created nested tiers from the lowest level up to the interconnected system. Independent evaluation studies show positive impacts on forest conservation and sustainable development brought about by the Amazon Fund (ECLAC 2019).

The innovative dimensions of the Amazon Fund did not emerge naturally. The Brazilian federal administration outlined and maintained political choices from the early 2000s until the late 2010s. In 2019, a Brazilian presidency with different political values proposed changes in the essential elements of the standing policy, toward centralising power in the hands of the federal administration. The initial innovative proposal and the recent drastic shifts reveal the strength of the structural power held by the federal administration.

But the structural power of the federal administration found its limits: Decisions to implement changes in the AF were not implementable. Other stakeholders, in particular donors and civil society, were active partners in halting the consecution of desired changes. Thus, the case of the Amazon Fund reveals that influential power of the civil society, facilitated by the participatory governance system does matter to sustain the innovative spirit of such policy initiative. The Amazon Fund became a locus of collective learning where national and subnational administration, international donors, development finance institutions, scientists, businesses, and civil society constructed convergent interests around common goals: to reduce deforestation, to benefitiate the indigenous population, and to foster an inclusive and sustainable development of the Amazon region.

All in all, the Amazon Fund case contrasts nicely with the standing literature. It is a successful case of an innovative productive development or green industrial policy (ECLAC 2019; Jordan and Huitema 2014). Policy directives by the governing body and the executive actions by BNDES opened and shaped, with discipline and accountability, policy beneficiaries towards expected goals, with positive results (Mazzucato and Kattel 2020; Rodrik 2014). The operationalisation of the Fund would not be possible without BNDES's dynamic capabilities (Kattel 2022, Wu et al. 2015). The transversality of climate change was observed, as the fund fostered a wide array of projects (Matthews 2020). Moreover, it demonstrates that not only governance, funding, and financing matters: For the sustainable development of regions and nations, the principles of political choices and the way innovative policies are politically designed and implemented do make a difference (Karo and Kattel 2018). Thus, the article provides sound evidence to demonstrate that AF is a successful case of managing commons (Ostrom 1990).

In short, it is hoped that the case study approach, the framework of reference, and the evidence brought in by this article may inspire other studies aimed at opening up the box of implementing new policies and how to relate them to the relevant determinants and outcomes.

6.2 Where to “green” industrial policies?

This article hopes to contribute to the “green” industrial policy debate by explicitly advocating the pressing need to bring the political dimension of policymaking to the debate. What comes to the fore in this article is that political decisions can affect positively and negatively the emergence and management of new forms of policy intervention. Thus, the changing winds of political decisions may be for good and evil. How to protect against a policy pendulum? What comes to the fore from the Amazon Fund is that the convergence between a participatory governance system and the active mobilisation of relevant stakeholders serve as armour against attempts to change the course of innovative policy experiments.

While leaders' ideological vision and quality and the political climate matter for policymaking, this case study also reveals the importance of concatenating the political and industrial policy dimensions in at least four aspects.

First, new policy experiments are associated with the capacity of political leaders to search for and build up, at a prominent level, political alliances with relevant stakeholders as well as their ability to explore opportunities in the socio-political-economic environment. In this respect, the political wisdom to identify development challenges and design pertinent policy frameworks, with adequate policy executive institutions is of paramount importance. Second, a given political decision has a higher probability of success if grounded on a correct technical evaluation about the feasibility of implementing a given policy innovation. Third is a participatory mode of governing policymaking matters. The case of the Amazon Fund shows that the continued existence of a multistakeholder governance system has enabled learning processes leading to the effective setting of policy priorities while respecting the boundaries between the setting up strategies and policy execution. Finally, a green

industrial policy (in fact, any public policy) requires capable, resourceful, and technically autonomous executive agencies to design and implement adequate development finance instruments.

In short, political wisdom and political alliances to design a policy initiative, participatory governance system, appropriate funding, and reliable project implementation capabilities compose a mosaic of necessary ingredients for a successful and effective green productive development or green industrial policies. The case of the Amazon Fund reveals that a successfully implemented policy innovation produced positive impacts on beneficiaries and generated sufficient social capital to resist attempts to obliterate accumulated capabilities and gains.

The Amazon Fund is one case of a successful “green” productive development policy. Other equally successful and not as much certainly exist and should come to light, given the urgent need for innovative and effective public action to face up the development challenge associated with climate change. The research agenda aimed at a better understanding of processes of policy innovation, their determinants, and outcomes is wide open. After all, innovative policy experiments must rely on new concepts, frames of reference, and sound evidence.

6.3 Postscript

In November 2022, Lula won the presidential elections against the Bolsonaro candidacy. In the immediate aftermath (perhaps because of the coincidental running of Egypt 27 COP), from national and international quarters, a wide and loud clamouring emerged for the reversal of the prevailing anti-environment policies, of which the halting of the Amazon Fund had become of high symbolical importance. For political values and political opportunities, climate change and sustainable development will likely become a priority agenda and permeate Brazilian policies in the new Lula administration. In fact, the president-elected and international partners rapidly agreed on the importance of re-enacting the Amazon Fund.¹¹

Given these positive perspectives, what are the future strong trends and possibilities for the Amazon Fund? Most probably the constituting elements of the Amazon Fund—participatory governance, pay for performance-based funding, BNDES as the executive agency—will remain unchanged. After all, this is a successful case of public policy, and the political actors involved in initial policy design and implementation of the Amazon Fund are active members of the new administration.

Nevertheless, as the public attention and investor interest in the Amazon have increased over the years, there is an interesting opportunity for the Amazon Fund to attract new partners. After all, one of the challenges to face up climate change is exactly how to design facing a solid governance and how to effectively execute available funds. If this is so, two directions are possible: (i) the Amazon Fund attracting more funding in the established pay-for-performance mode and (ii) new finance modes coming about, such as blended finance, where financing partners agree on the

¹¹ <https://valorinternational.globo.com/politics/news/2022/11/17/lula-agrees-with-norwegian-government-on-reopening-of-amazon-fund.ghtml>, accessed December 22nd, 2022.

destination of resources while preserving independence on the source and funding operational procedures. In any case, what comes as a powerful trend is a qualitative and quantitative change for the Amazon Fund. Political actors, policymakers, and stakeholders must be prepared for such a scenario.

Acknowledgements We want to express our deep gratitude to two anonymous reviewers for the extremely careful reading and pertinent comments made to earlier versions of this article.

Author contribution All authors contributed to the study design and elaboration. The article conception and first draft of the manuscript was produced by João Carlos Ferraz. The background material was provided by the graduate work by Juliana Santiago. All authors worked and edited the various versions of the manuscript. All authors read and approved the final manuscript.

Declarations

Conflict of interest The authors declare no competing interests.

References

- Albuquerque Sant'Anna A, Costa L (2021) Environmental regulation and bail outs under weak state capacity: deforestation in the Brazilian Amazon. *Ecol Econ* 186:107071. <https://doi.org/10.1016/j.ecolecon.2021.107071>
- Altenburg T, Rodrik D (2017) "Green industrial policy: accelerating structural change towards wealthy green economies" in T. Altenburg, C. Assmann (Eds.), *Green industrial policy: Concepts, policies, country experiences*, UN Environment, Deutsches Institut für Entwicklungspolitik, Geneva, Bonn
- Armeth A, Barbosa H, Benton T, Calvin K, Calvo E, Connors S, Cowie A, Davin E, Denton F, van Die-men R (2019) "IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems." Summary for Policy Makers. Geneva: Intergovernmental Panel on Climate Change (IPCC).
- Barnett M, Duvall R (2005) Power in international politics. *Int Organ* 59(1):39–75
- Bauer A, Steurer R (2014) "Innovation in climate adaptation policy". *Environ Polit* 23 (5). <https://doi.org/10.1080/09644016.2014.924196>
- Becker BK (2005) Geopolítica Da Amazônia. *Estudos Avançados* 19(53):71–86. <https://doi.org/10.1590/S0103-40142005000100005>
- Bhattacharya A, Oppenheim J, Stern N (2015) "Driving sustainable development through better infrastructure: key elements of a transformation program". Brook Global Work Pap Ser
- BNDES (2017) Livro Verde: Nossa história tal como ela é. BNDES, Rio de Janeiro
- BNDES (2021) "Amazon Fund. Activity Report 2021". <http://www.amazonfund.gov.br>. Accessed 12 Dec 2022
- Braga JP, Hayde E, Torracca J (2023) Green fiscal policy and development: reconciling climate and structural change. In: Devezas, T.C., Leitão, J.C.C., Yegorov, Y., Chistilin, D. (eds) *Global Challenges of Climate Change, Vol.2. World-systems evolution and global futures*. Springer, Cham. https://doi.org/10.1007/978-3-031-16477-4_14
- Cherif R, Hasanov F (2019) "The return of the policy that shall not be named: principles of Industrial Policy". *IMF Working Paper WP/19/74*. IMF, Washington
- Crisuolo C, Gonne N, Kitazawa K, Lalanne G (2022) "An industrial policy framework for OECD countries: old debates, new perspectives". *OECD Science, Technology and Industry policy papers*, n. 127. May 2022, OECD, Paris
- Crisostomo AC, Machado G (2019) "Thematic study of projects supporting the rural environmental registration (CAR)". Mid-term evaluation report on the effectiveness of the Amazon Fund. <http://www.fundoamazonia.gov.br/export/sites/default/en/galleries/documentos/monitoring-evaluation/Independent-evaluations/CAR-Guide-Impacts.pdf>. Accessed 03/09/2022

- ECLAC (2019) "Mid-term effectiveness evaluation report of the Amazon Fund (2008- 2018)." <http://www.fundoamazonia.gov.br/en/news/noticia/Mid-term-evaluationreport-on-the-effectiveness-of-the-Amazon-Fund/>. Accessed 03/09/2022
- Fearnside PM (2006) Desmatamento Na Amazônia: Dinâmica, Impactos e Controle. *Acta Amazônica* 36(3):395–400
- Ferraz JC, Coutinho L (2019) Investment policies, development finance and economic transformation: lessons from BNDES. *Struct Chang Econ Dyn* 48(C):86–102. <https://doi.org/10.1016/j.strueco.2017.11.008>
- Ferraz JC, Ramos L, Plattek B (2022) "Development finance innovations and conditioning factors: the case of the Brazilian Development Bank and sustainable industries ". *Braz J Polit Econ* 42 (4). <https://doi.org/10.1590/0101-31572022-3303>
- Flynn C, Bhandary RR (2019) "Designing fit-for-purpose national climate funds". *United Nations Development Programme*, New York, and Climate Policy Lab, Tufts University, Medford
- Gaventa J (2006) Finding the spaces for change: a power analysis. *IDS Bull* 37(6):23–33
- Howlett M (2014) Why are policy innovations rare and so often negative? Blame avoidance and problem denial in climate change policy-making. *Global Environ Change* 29:395–403. <https://doi.org/10.1016/j.gloenvcha.2013.12.009>
- IBGE (2021) "Cidades e Estados." Instituto Brasileiro de Geografia e Estatística. ibge.gov.br/cidades-e-estados.
- IPCC (2021) "Summary for Policymakers". *Climate change 2021: the physical science basis. Contribution of Working Group I to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change* [Masson-Delmotte, V., P. Zhai, A. Pirani, S. L. Connors, C. Péan, S. Berger, N. Caud, Y. Chen, L. Goldfarb, M. I. Gomis, M. Huang, K. Leitzell, E. Lonnoy, J.B.R. Matthews, T. K. Maycock, T. Waterfield, O. Yelekçi, R. Yu and B. Zhou (eds.)]. CUP
- Jordan A, Huitema D (2014) Innovations in climate policy: conclusions and new directions. *Environ Polit* 23:5. <https://doi.org/10.1080/09644016.2014.924209>
- Karo E, Kattel R (2018) "Innovation and the state: towards an evolutionary theory of policy capacity" in Wu, X.; Howlett, M.; Ramesh, M. (eds) (2018) *Policy Capacity and Governance – Assessing Governmental Competences and Capabilities in Theory and Practice*. Palgrave Macmillan.
- Kattel R, Dreschsler W, Karo E (2022) How to make an entrepreneurial state: why innovation needs bureaucracy. Yale University Press, New Haven
- Kattel R (2022) "Dynamic capabilities of the public sector: towards a new synthesis", *IIPP/UCL Working Paper 2022/7*, IIPP/UCL, London
- Labrunie M, Penna CCR, Kupfer D (2020) The resurgence of industrial policies in the age of advanced manufacturing: an international comparison of industrial policy documents. *Revista Brasileira de Inovação* 19:e0200020. <https://doi.org/10.20396/rbi.v19i0.8658753>
- Matthews JA (2020) "Greening industrial policy", in Oqubay, A., Cramer, C. Chang, H and Kozul-Wright, R., *The Oxford Handbook of Industrial Policy*, OUP. <https://doi.org/10.1093/oxfordhb/9780198862420.013.10>
- Matthews JA (2020) Greening industrial policy. In: Oqubay A, Cramer C, Chang H and Kozul-Wright R (eds) *The Oxford handbook of industrial policy* OUP. <https://doi.org/10.1093/oxfordhb/9780198862420.013.12>
- Minstrom M, Norman P (2009) Policy entrepreneurship and policy change. *Policy Stud J* 37:649–667. <https://doi.org/10.1111/j.1541-0072.2009.00329.x>
- Oqubay A, Cramer C, Chang H, Kozul-Wright R (2020) "Introduction to industrial policy and development", in Oqubay, A., Cramer, C. Chang, H and Kozul-Wright, R. (eds) *The Oxford Handbook of Industrial Policy*. OUP. <https://doi.org/10.1093/oxfordhb/9780198862420.013.1>
- Ostrom E (1990) *Governing the commons: the evolution of institutions for collective action* (political economy of institutions and decisions). Cambridge University Press, Cambridge. <https://doi.org/10.1017/CBO9780511807763>
- Ostrom E (2009) A general framework for analyzing sustainability of social-ecological systems. *Science* 325(5939):419–422. <https://doi.org/10.1126/science.1172133>
- Ostrom E, Burger J, Field CB, Norgaard RB, Policansky D (1999) Revisiting the commons: local lessons, global challenges. *Science* 284(5412):278–282. <https://doi.org/10.1126/science.284.5412.278>
- Padmanabhi R, Stout S, Strinati C (2022) "IDFC green finance mapping 2022". IDFC and Climate Policy Initiative, IDFC

- Pollin R (2020) "An industrial policy framework to advance a global green new deal", in Oqubay, A., Cramer, C. Chang, H and Kozul-Wright, R., *The Oxford Handbook of Industrial Policy*. OUP. <https://doi.org/10.1093/oxfordhb/9780198862420.013.16>
- Rodrik D (2014) Green industrial policy. *Oxf Rev Econ Policy* 30(2014):469–491
- Santiago JMQ (2021) Connecting the means with the needs: the Amazon Fund adaptive governance in supporting conservation of tropical forests. MA thesis, Graduate School, University of Florida
- Schlager E, Ostrom E (1992) Property-rights regimes and natural resources: a conceptual analysis. *Land Econ* 68(3):249–262
- Seymour F, Busch J (2016) Why forests? Why now? The science, economics, and politics of tropical forests and climate change. Center for Global Development, Washington
- Silva CHL Jr, Pessôa SCM, Carvalho NS, Reis JBC, Anderson LO, Aragão LEOC (2021) The Brazilian Amazon deforestation rate in 2020 is the greatest of the decade. *Nature Ecol Evol* 5(2):144–145. <https://doi.org/10.1038/s41559-020-01368-x>
- Vale M, Berenguer E, Menezes M, Viveiros de Castro E, Siqueira L, Portela R (2021) "The COVID-19 pandemic as an opportunity to weaken environmental protection in Brazil." *Biol Conserv* 255. <https://doi.org/10.1016/j.biocon.2021.108994>
- World Bank (2017) World development report 2017: governance and the law. DC, Washington. <https://doi.org/10.1596/978-1-4648-0950-7>
- Wu X, Ramesh M, Howlett M (2015) "Policy capacity: a conceptual framework for understanding policy competences and capabilities". *Pol Society* 34 3–4
- Wu X, Howlett M, Ramesh M (eds) (2018) Policy capacity and governance – assessing governmental competences and capabilities in theory and practice. Palgrave Macmillan

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.