

Power and Climate Change Governance: Negative Power Externality and the Brazilian Commitment to the Paris Agreement

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Abstract

Brazil is facing a climate change governance puzzle where we can identify economic and political instabilities interacting in a conflicting manner with social power relations. The domestic governance and institutionalized power relations are working in a contradictory manner, since the exercise of institutionalized power through national government and international institutions should be enough to reach an environmental second best outcome – the institutional power coordination of the environmental agenda. We named this situation as a negative power externality. This could be a signal that the strictly neoclassical economic view has not been sufficient to handle with the environmental concerns and sustainable development policies.

Keywords: Power Externality, Governance, Climate Change, Welfare.

JEL Classification: A12, A13.

1 Introduction

Although government and civil society attention to climate change has been growing in Brazil over the recent decades, effective climate public policies are quite instable. The short run economic and political agendas prevail over an integrated governance agenda for climate change and sustainable development. The gap between official speech and effective actions for climate change denotes interplay among the uncertainties about the long run climate change impacts over the country, the abundance of natural resources, which remains, and the multiple policy cycles following political and economic circumstances.

For instance, before the climate impacts materialize, the process of decision making has been driving full of controversies and political conflicts about the sources of power that emerge from groups of interest and priorities that arise from the political-economic business cycles. In this sense, some authors have referred to climate change as a “wicked problem par excellence” (Rittel and Webber 1973, Lazarus 2008, Davoudi et al. 2009, Jordan et al 2010), since it is hard to implement policies for governance

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I would like to thank Dr. Joanilio Rodolpho Teixeira and Dr. Juliana Sandi Pinheiro for their helpful comments.

adaptation and there are vested interests involved. Besides, different levels of social power relations emerge from this scenario.

As Vink et al (2013) point out, the governance adaptation to climate change might be characterized by inherent uncertainties, given the long term character of this policy issue, the involvement of many interdependent actors with their own ambitions, preferences, responsibilities, problem framings and resources and the lack of a well-organized policy domain for enhancing and monitoring climate adaptation in the policy agenda. Following this view, despite Brazil has ratified the Paris Agreement, we found out evidences the Brazilian society has been living a climate change governance puzzle where we can identify connections among economic and political problems and power relations. These problems are often interconnected with the three levels of social power: social potential power, institutionalized power and informal power.

Once these different forms of power are interconvertible and interact with other levels and types of social power, the controversial actions concerning the climate change agenda the country has been experiencing is a result of a negative power externality. In this sense, a negative power externality is a situation where, although the government and the society are conscientious about the challenges and risks of exploiting the natural resources, because the flexibility and interchangeability between power relations, jointly with the political-economic business cycles and governance agendas, the best choices in terms of climate and sustainable development policies are not fulfilled as expected and the environment is harmed.

We start suggesting this concept as a theoretical proposition looking for a more integrated approach that deals with the interconnections among social power relations, economics and governance matters. We named it as power externality. The environmental discussion is a substantial subject that is able to encompass all of the aspects we are talking about. After this introduction, in section 2, we take some insights about the main governance structures that have been applied on climate change negotiations in order to propose an analytical path attaching them with economic welfare theory and institutional power relations. Finally, in section 3, we propose a brief case study considering the negative power externality situation Brazil is facing on its climate change agenda. We take into account that this study is a starting point of a research program on new elements of integrated structures on human centered economics.

2 Climate Change Governance and Economic Efficiency

Sustainable climate policies are the most complex and arduous actions to be implemented by the countries. The central problem is to motivate the society and governments to articulate individual and collective actions in order to do more than they would do under ordinary political and economic business scenarios. There are two traditional governance approaches to handle with this: the top-down approach and the bottom-up approach. The top-down approach settles assurance problems through legally binding obligations. On the other hand, the bottom-up approach has confidence in transparent and voluntary commitments that are subject to regular reviews. A mixed approach is possible too. Following this way, countries accept a bottom-up structure in terms of framework conventions and then adopt top-down protocols within a convention that bind them to accomplish obligations.

In a strictly economic view, these governance approaches could be seen as a way to deal with the contentious between the global society needs in terms of consumption and production and the scarcity of natural resources. A world of free market relations and spontaneous environmental and climate consensus, in terms of political thought and economic sustainable use of the natural resources can be seen as a first best outcome, in analogy with Pareto efficiency criterion¹ in the welfare theory in

¹ The earliest works of Vilfredo Pareto in his book "Manual of Political Economy", 1906; and Elvin Lancaster and Richard G. Lipsey, in their article "The General Theory of Second Best", 1956.

economics. However, this scenario is not achievable. Therefore, the governance challenge faced by governments and civil society relies on to perform the governance approaches as mentioned before, since the countries have different levels of development and socio-economic needs that frequently put in check the achievement of a climate change consensus.

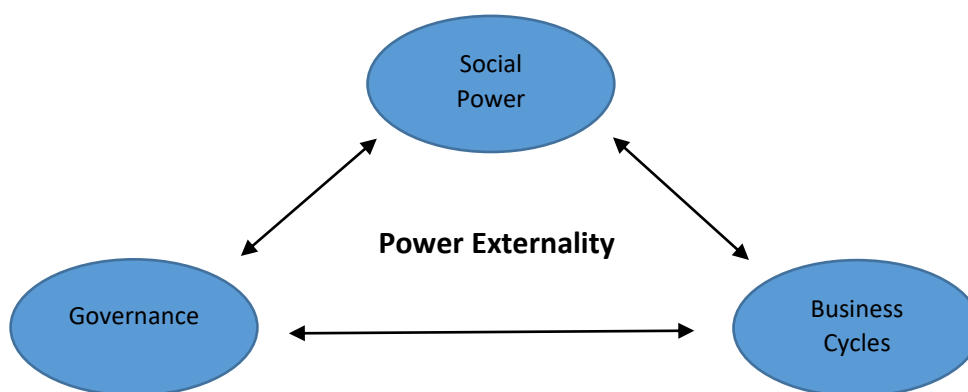
For instance, the second best situation is more likely to be reached in a real world and the governance structures play a crucial role, in terms of second best climate and environmental policies, since the first best option is never achievable. This means that the ideal or a first best solution of a full environmental consensus in terms of sustainable use of the natural resources that would generate global efficiency is not feasible. In this situation, it is not clear if only one or a few environmentally committed countries will be able to increase the efficiency of the climate policies as a whole. Thus, the countries may often have to negotiate in terms of governance structures that are more achievable, as we mentioned before.

The outcome of the countries negotiations is a second best solution and we consider that it denotes a result of exercising institutional power. The institutional power as a way of reaching a second best solution indicates an exercise of power through the authority of formal social systems and institutions - the national governments and international organizations, like United Nations and its leadership in the climate change negotiations.

2.1 Power Externalities

When we analyze the governance approach involving the environmental and the climate change agendas in terms of welfare economic theory and social power relations, another interconnection that could emerge is what we will describe as power externalities. In this sense, we can define power externality as a situation where the interconnected social power relations jointly with the political-economic business cycles and governance agendas affect a third part, in this case the environment, not directly related to this matter. Schematically, we can structure this argument as shown in figure 1:

Figure 1
Power Externality Triangle



Our argument is that since the economic decisions of production and consumption are interconnected with political and business cycles, the power relations are the arena that governs these relations. In this sense, the power externality concept we are proposing goes in the same way as in the economic theory, but with a difference. The power externality considers the interconnections between economics and the entire system of social power relations.

Following this view, when society produces and consumes goods and services, beyond the demand and supply socio-economic agents, there is a third part, external to this human mechanism that is affected in many ways. This part is the environment and the resulting effects on global warming and climate change. As a way to handle with the economic and political dilemmas that emerge from these connections, the governance structures deals with the contentions that could arise from them.

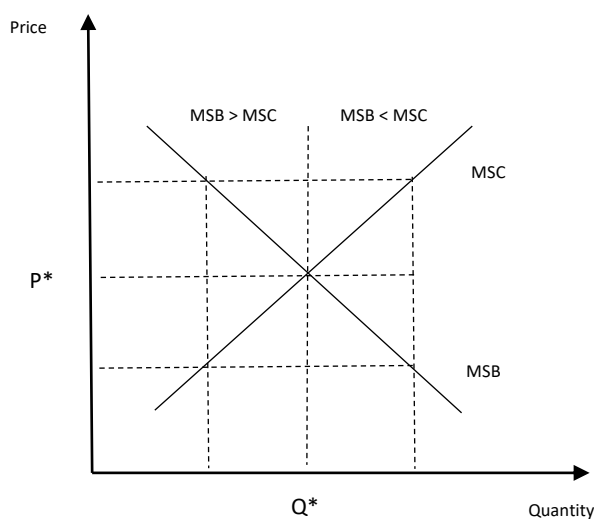
Likewise the economic theory, we can have a negative and a positive power externality. In this sense, a negative power externality is a situation where, although the government and the society are conscientious about the challenges and risks of exploiting the natural resources, because the flexibility and interchangeability between power relations, jointly with the political-economic business cycles and governance agendas, the best choices in terms of climate and sustainable development policies are not fulfilled as expected and the environment is harmed.

For another hand, a positive power externality is a situation where, although the government and the society are conscientious about the challenges and risks of exploiting the natural resources, because the flexibility and interchangeability between power relations, jointly with the political-economic business cycles and governance agendas, the best choices in terms of climate and sustainable development policies are more likely to be achieved and the environment is benefited. A positive power externality is a good outcome for the environment and the society as a whole, since it brings improvement for the society.

In order to demonstrate this argument, we can use an analogy concerning the allocative market efficiency traditional approach in economics. We will define allocative efficiency in terms of two concepts: marginal social cost (MSC) and marginal social benefit (MSB). In this case, we will propose a definition connected with the environmental approach we are suggesting.

In this sense, MSC equals the extra cost to society of producing one more unit of output using the natural resources. The law of diminishing returns implies that MSC will be upward sloping. MSB equals the extra benefit to society of consumption one more unit of output using the natural resources. The law of diminishing marginal utility implies that MSB will be downward sloping. This analysis is shown in graph 1, as following:

Graph 1: Allocative Market Efficiency

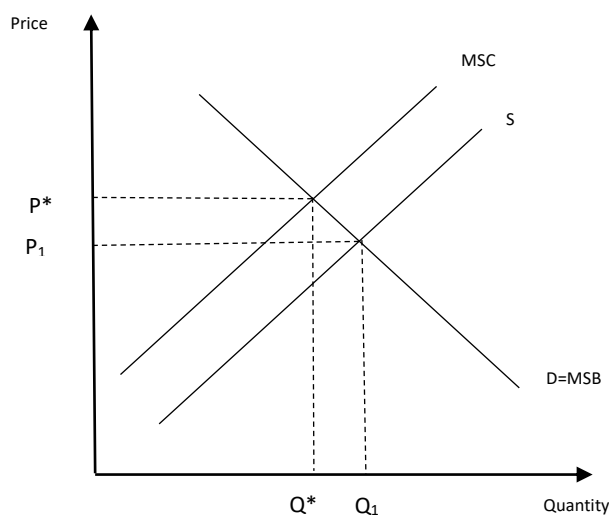


As long as MSB exceeds MSC, society is made better off by increasing output. In an opposite way, society is made better off by decreasing output as long as MSB is less than MSC. The allocative efficiency occurs where MSB is equal to MSC. In the market economy, the demand curve measures the

maximum price (P) that consumers are willing to pay for a given quantity of a good. In this way, the demand curve (D) is a measure of marginal benefit for all consumers in the market. In the absence of externalities, the market demand measures the marginal social benefit (MSB). Then, we can say that $MSB = D = P$. For the supply side of the economy, in perfect competitive markets, the supply side (S) is a measure of the marginal cost (MC). Consequently, in the absence of externalities, the marginal cost equals the marginal social cost. Similarly, we can say that $MSC = S = MC$ ².

In this sense, allocative market efficiency occurs whenever $MSB = MSC$. When a third part is harmed, we call this as a negative power externality. In terms of the allocative efficiency argument, the MSC (which includes the cost to the third part) does not equal the supply curve. So, the MSC exceeds the supply curve. For another hand, when a third part is benefited, we call this as a positive power externality. It occurs when the MSB (which includes the benefit to the third part) [does] not equal the demand curve. Hence, the MSB exceeds the demand curve. Negative and positive externalities, strictly in an economic sense, are shown in the graph 2 and graph 3, as following:

Graph 2: Negative Power Externality in Production
(Making furniture by cutting down rainforest)



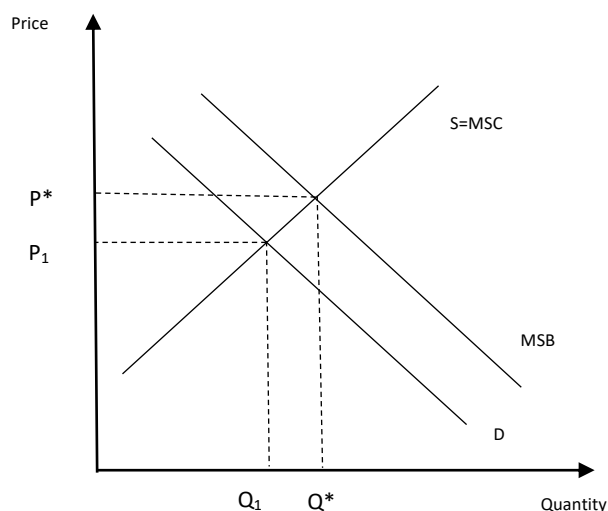
In both graphs the market equilibrium provides a resource allocation where demand (D curve) equals supply (S curve), which occurs in both graphs at point P_1Q_1 . Therefore, the market price is given by P_1 and market quantity of resources allocated are Q_1 . However, allocative efficiency occurs where the MSB curve equals the MSC curve, that is, at point P^*Q^* . As a result, when there are externalities in perfect free markets, resources will be misallocated and the market is inefficient. This means that an idealistic world consensus of sustainable use of the natural resources is not achievable.

When there is a negative externality, the market equilibrium will produce too much output, at a low price. In environmental terms, this means that the exploitation of natural resources is excessively and undervalued. In the case of positive power externalities, the market will produce too little at a low price. This means low productivity and undervaluation of the production.

² A more formal development in welfare theory of externalities can be seen in Steven A. Y. Lin and David K. Whitcomb, "Externality Taxes and Subsidies" in *Theory and Measurement of Economic Externalities*, 1st edition, 1976.

Also, we can find a modern approach in Nathalie Berta "On the Definition of Externality as a Missing Market", *The European Journal of the History of Economic Thought*, v. 24, Issue 2, 2017.

Graph 3: Positive Power Externality in Consumption
(Consumption of clean energy: Eolic)



As demonstrated before, both types of externalities ends in allocative inefficiency. This allocative inefficiency could be interpreted by the following way: due to flexibility and interchangeability between power relations and political-economic governance agendas, the first best solution, in terms of free competitive markets, or the first best choices, in terms of spontaneous and consensual climate and environmental development policies, are not performed as expected. In this sense the climate policies are a result of institutional power relations and perform a second best environmental solution. In this context, the second best solution gives us a way to overcome power externalities through institutional power intervention jointly with an appropriate governance scheme. For instance, the national and international organizations, as well as government institutions in all levels could do it.

2.2 Overcoming Power Externalities

A way to overcome power externalities is applying appropriate public policies in the exercise of institutionalized power by governments (or international organizations), since the economic agents by themselves do not consider the entire effects of their activities over the nature or the society as a whole. As Pigou (1920)³ noted in “The Economics of Welfare” private business pursued their own private interests and were not concerned with external costs to others in society (or in the environment). They have no incentives to internalize the full social costs of their actions.

In graph 2, we have analyzed a negative power externality in production. For example, making furniture by cutting down rainforests leads to a negative power externality to the environment and other individuals in general. The marginal social cost is greater than the individual cost of production. In this case, we see clearly that although the society and government are conscientious about the risks and losses ahead, because the power relations that interact jointly with the political and economic interests, the best choices in terms of sustainable development policies were not fulfilled. In this case, a fast way to

³ In 1920, Arthur C. Pigou wrote “The Economics of Welfare”, which is an early exposition of externality concept. Likewise, Pigouvian taxes are corrective taxes, which are used in order to diminish the consequences of negative externalities. Alternatively, subsidies stimulate positive externalities.

A more recent approach of Pigouvian taxes can be found in Robin Broadway & Jean-François Tremblay, “Pigouvian Taxation in a Ramsey World”, *Asia-Pacific Journal of Accounting Economics*. v. 15, Issue 2, 2008.

overcome this situation is to exercise institutional power by means of applying public and tax policies that harm the private political and economic interests that causes this injury to the environment.

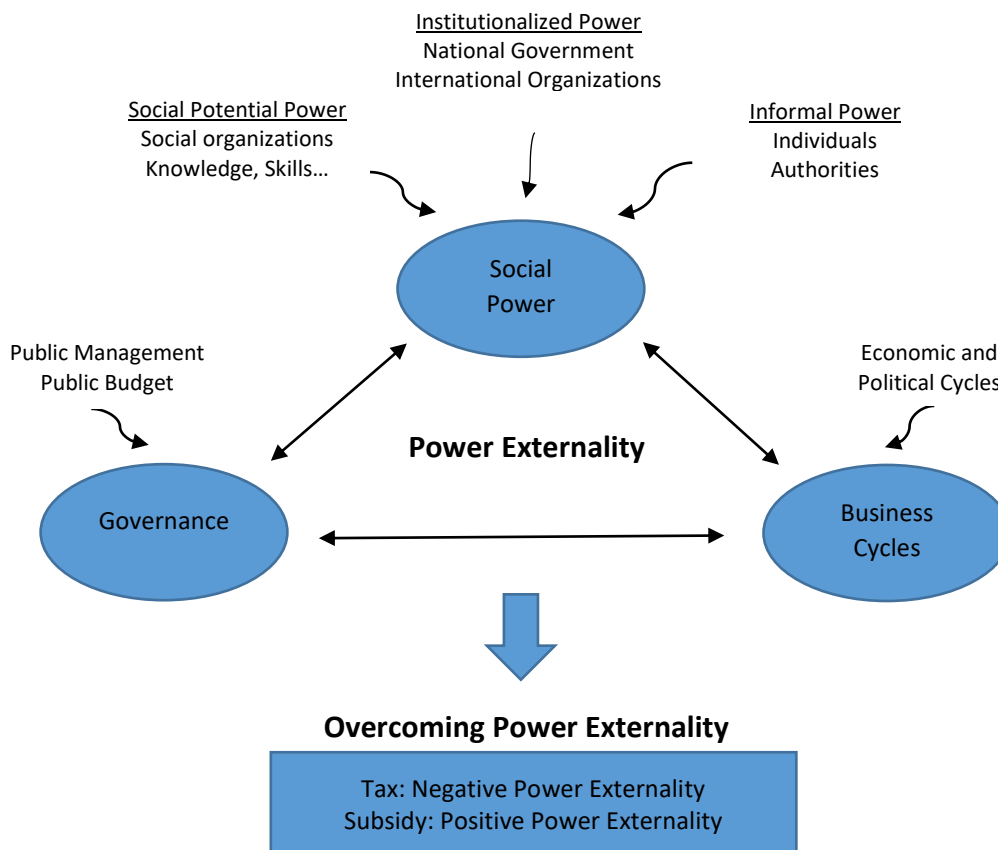
In another way, we see a case of positive power externality in consumption (graph 3), if you or your city make use of clean energy you will gain from this use, but other people and the environment can benefit from this consumption. The marginal social benefit from consuming clean energy is greater than individual or local benefit. Therefore, making use of public policies could be a way to stimulate positive power externalities, since allocative results are better for the environment and the society in general.

Although originally proposed by economic theory, we may use its principles in an interdisciplinary manner. Even though economic theory provides important elements for understanding the allocative principles of the market, it is necessary to go beyond these principles. The analysis of economic efficiency and welfare theory gave us just few insights about the importance of considering that, besides the economic agents directly related to the market, there is another entity, external to this mechanism, which is also affected by the human exchanges. This perspective shows how narrow is the idea of thinking the market logic alone would solve the inherent problems of the society.

We can think this with respect to the environment. It is an entity external to economic activities but directly suffers the effects of them. The principle of economic externalities partially considers the effect of human exchanges over an agent external to this mechanism. However, it does this in a partial way, because it sees only the market logic, without considering the integrality of all elements involved in the economic activities. In figure 2, we can see a more complete perspective of the power externality triangle considering different levels of social power, some governance subjects and the political and economic cycles (business cycles). We are suggesting that both ways of overcoming externalities should comprise all the aspects of the power externality triangle.

Figure 2

Power Externality Triangle: Overcoming Power Externality



Of course, the traditional Pigouvian taxation solution in economics is not the only manner to overcome externalities. Neither this is the only analytical way of working with the externalities matters in welfare economics. However, our intention is not to follow the strictly neoclassical economic view. We are making inferences with it and pointing gaps in the neoclassical economics that could be useful to design new elements of a more integrated and complete theory. In this sense, we will consider it as just a star point in our theoretical proposition.

Additionally, we should consider the possibility these ways of overcoming power externalities do not work at all, since the governments could not have enough money or a provisional budget to deal with subsidies in order to improve a positive power externality. On the other hand, the governments cannot apply appropriate tax policies in order to correct negative power externalities. Still, there is a chance that groups of interest may interfere in a process of public policies in power externalities due to conflicts about interests and priorities.

With this in mind, let's reflect about the power externality triangle we are proposing. It shows us that beyond the business cycles concept (which encompass the economic and political cycles) there are another two concepts embracing the governance and social power subjects. These three concepts put together demonstrate that the climate change challenges need critical thought and effective actions on the part of civil society, business actors, institutions and governments. Despite this, the nation's climate change policies, in terms of effective public policies and societal actions, have not been made on unconditional way as it should be, as it is pointed by Repetto 2008, Biesbroek et al. 2010, Keskitalo 2010, Berrang-Ford et al. 2011, Ford and Berrang Ford 2011, Wolf 2011 and Vink et al 2013.

In this sense, our proposition is a way of thinking about the environmental and climatic issue beyond economics. Our intention is to provide future insights that consider interdisciplinary correlations. This may be an alternative analytical path in terms of propositions for a new economic theory in order to broaden the understanding of the complex phenomena regarding economic intervention and social power relations in climate change governance. In this sense, the next session is a preliminary empirical proposition of a more integrated analysis of the climate change problem considering the interdisciplinary mechanism with social power relations, economic and governance approaches.

3 Evidences of Recent Negative Power Externalities in the Brazilian Climate Change Agenda

Brazil has a legacy of relevant institutional contributions in climate conferences. Brazilian negotiators had an active participation in the creation of consensus among the visions of the countries for the elaboration of the Paris Agreement. Another Brazilian contribution was the suggestion of the design of an instrument that later came to be the reduction of emissions from deforestation and forest degradation, globally incorporated within the scope of the United Nations Framework Convention on Climate Change - UNFCCC.

Nevertheless, at the national level, recent economic and political instabilities reveal limits and inefficiencies in Brazilian governance with negative implications for the implementation of its climate policy. After a good performance at reductions in deforestations in 2012 and emissions of greenhouse gases, the environmental agenda since 2015 showed setbacks regarding protection of forests and the ways of life of indigenous people and traditional communities. Recent data on the increasing greenhouse gas emissions of key economic sectors, released by the greenhouse gas emission estimate system, showed risks to the achievement of climate policy objectives and goals established before.

This means that, although Brazilian government has ratified the Paris Agreement, which means a significant step by Latin America's largest emitter of greenhouse gases, effective and definitive climate actions remain a challenge that is subject to political-economic business cycles. According to United

Nations data, Brazil currently emits approximately 2.5 per cent of the world's carbon dioxide and other polluting gases. This is in contrast with the last decade performance where Brazil has achieved significant emissions cuts, thanks to efforts to reduce deforestation in the rain forest and increase in the use of energy from hydropower and other renewable sources including wind, solar and biomass.

We should remember that countries set their own targets for reducing emissions. The targets are not legally binding, but nations must update them every five years. Using 2005 levels as the baseline, Brazil has committed to cutting emissions 37 per cent by 2025 and an intended reduction of 43 per cent by 2030. However, after almost three years of a deep economic recession and political crisis, this aim may not be achieved.

The country is faced with the challenge of recovering economic growth and to remodel the domestic political governance structure that suffers from instabilities and corruption. Although the country had committed before to follow a way of recovering economic growth jointly with sustainable development policies with a focus on the aspects of climate change and reduction of greenhouse gases emissions, the current government is following the opposite way, such as the cut in the budget of the Ministry of the Environment and the amnesty to invaders of public lands.

Another action that demonstrates the current regression in environmental policies was the government's bet on fossil fuels. The 2026 Brazilian 10-year Energy Plan projects that 70.5 percent of the investments in the energy matrix over the next ten years will go to oil, especially in the exploration of pre-salt reserves. We see a profound contradiction in the environmental policies previously envisaged in the 10-year Energy Plan, since it was originally formulated as a climate change mitigation plan. This is contrary to the country's own strategic interests. Brazil has several energy solutions in terms of clean technologies such as bio mass and biofuels. In addition, the current Temer Government will approve provisional measure number 795 establishing tax exemptions for oil companies.

In this sense, at a national level, the Brazilian environmental policy is going backwards. Additionally, the economic and political crisis in the last three years had influenced negatively the short run government policies since the country has faced with huge budget constraints, and the most common way for recovering the economy is to appeal to the traditional matrices of production like the oil chain and the fossil fuels. Nowadays, there is a lack of effective management and surveillance in the environmental policies previously established. This problem became worse when the government has announced a cut of fifty percent in the provisions for inspection and environmental surveillance in the 2018 budget of the Ministry of Environment.

We should observe that the Brazilian society is living a climate change governance puzzle in the last three years. The economic crisis, the political instabilities and different sources of social power are interacting in a way that damages the previous environmental commitments. The main power relations that govern this situation are the international institutionalized power and the Brazilian government power. At an international level, we have the institutionalized power relations built in United Nations and performed through the Paris Agreement and the recent COP 23, held in Bonn, Germany. The potential is to instigate the Brazilian government to review and rethink its efforts in promoting actions and measures of mitigation of greenhouse emissions. As we proposed, the institutional power is a way of reaching a second best solution and denotes the exercise of power through the authority of formal social systems and institutions.

A way to endorse this is through the bottom-up and top down governance structures, as discussed before. As an international treaty under the United Nations protocols, the Paris Agreement has the competence to motivate and channel the environmental thought into actions through consensual resolutions. In its turn, the Brazilian government exercises power through the authority of formal institutional system. In the past, the country had a legacy of important contributions in terms of political proposals and technical

body, now has declined its performance in terms of leadership in reducing greenhouse emissions and coordination of effective environmental efforts.

We must not forget that together with the institutional power are other potential and informal sources of social power like civil society organizations and groups of environmentalist acting in many ways, inside and outside the country. These are important means of disseminating the environmentalist thinking in order to influence and to mobilize effective efforts towards sustainable development policies. Furthermore, these social groups of environmentalist interest help to combat the political and economic individualist way of thinking that neglects nature to a last priority. With this in mind, we could schematize a negative power externality situation the Brazil is living in figure 3, as follows.

Figure 3
Negative Power Externality Triangle: The Brazilian Climate Case

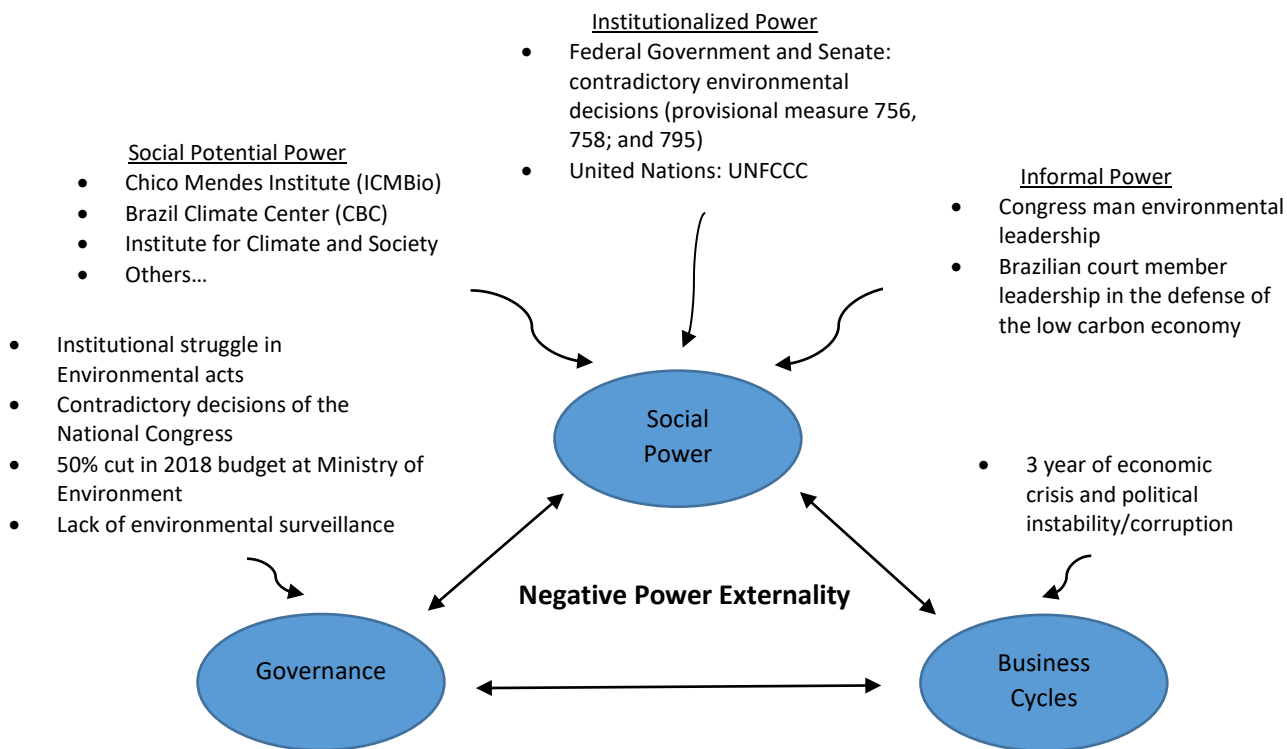


Figure 3 shows us some examples of domestic actions among three pillars of power externality. The recent negative power externality is a combination of diverse elements, which results in injuries to the environment and delays in the accomplishment of climate commitments. When contradictory environmental governance actions in the public sector are put together with circumstances of economic crisis and political instability, the effects on climate change policies are quite conflicting, since the fast way of economic recovery consists of using the traditional sources of productions and energy. Although a negative power externality reflects biases in driving the public environmental policies, it is not a permanent situation, since it could oscillates according to the multiple elements of the dynamic power externality triangle. In this sense, whenever a part of the triangle works in a bad sense in terms of the economic and environmental system as a whole, the power relations could work jointly with the economic policies and the governance structures in order to reach an integrated reorientation of the eco-social power externality system.

4 Concluding Remarks

Brazil is facing a climate change governance puzzle where we can identify economic and political instabilities interacting in a conflicting manner with power relations. The exercise of institutionalized power through national government and international institutions should be enough to reach an environmental second best outcome – the institutional power coordination of the environmental arrangements. However, the domestic governance and institutionalized power relations are working in a contradictory manner, since the second best solution is not enough to reach effective and sustainable agendas for climate change and sustainable development. This is a signal that the strictly neoclassical economic view of free markets regulation is not sufficient to handle with the environmental concerns and sustainable development policies.

In this same context, the free market system generates externalities over the third parties. Our proposition is that the environment is seriously damaged by the economic activities as an entity and not like an object subjected to economic exploitation. Therefore, we should perceive the efficiency criterion behind the neoclassical postulations is full of gaps. Additionally, we have political instability and economic crisis occurring at same time when the institutionalized power relations are working in a conflicting manner. In this sense, we should consider the need of a more complete and integrated system of thought where a more complete analytical framework for formulation of public policies and decision-making can exist.

The concept of power externality comprises this proposition. It has the ambition of considering the social power relations as the main vertex of a governance puzzle triangle that contemplates the economic market system (with its inherent contradictions) and the political aspects. The negative power externality Brazil is living is a result of the interconnected relations of these three spheres of analytical thought we are suggesting. In the recent Brazilian case, they are influencing negatively the environmental agenda. The Brazilian case we have explored is just a brief example of a future empirical research agenda that may explore this concept and its multidisciplinary interconnections.

The notion of power externality reflects the effects of the human activities over the society and the ecosystem together. Accordingly, in a situation of negative power externality, although the society and the governments are conscientious about the risks and losses ahead, because the interchangeability between power relations jointly with the business cycles, the best choices in terms of climate change policies and sustainable development ways of growth are not fulfilled as expected.

As a start point of a research agenda, the concept of power externality must be further developed considering the dynamic interconnections among economics, the governance approaches and social power relations. As we seek to make evident throughout this study, the power externality conception puts light on the gaps of the economic neoliberal theory in order to emphasize the need of a more complete way of theoretical thinking that reveals the market logic cannot be considered alone. Actually, it encompasses many agents (or actors) and must contemplate the intrinsic relationship among society, environment, politics, economics and the social power relations.

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