

# CLIMATE CHANGE IN BRAZIL

economic, social and regulatory aspects

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Climate change in Brazil : economic, social and regulatory aspects / editors: Ronaldo Seroa da Motta ... [et al.]. – Brasília : Ipea, 2011. 358 p. : grafs., maps, tabs.

Includes bibliographical references.  
ISBN 978-85-7811-128-1

1. Climate. 2. Climate Change. 3. Economic Aspects. 4. Social Aspects. 5. Brazil. I. Motta, Ronaldo Seroa. II. Institute for Applied Economic Research.

CDD 551.6981

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The review costs of this edition in English were financed by the Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH – GIZ. We thank for this valuable support.

## CLIMATE CHANGE REGULATION IN BRAZIL AND THE ROLE OF SUBNATIONAL GOVERNMENTS

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### 1 INTRODUCTION

The international geopolitical climate scenario faces the challenge of designing agreements to combine the economic development targets of the various countries and the differences of their distinct sustainability strategies, even among nations that are imbued with the common purpose of preventing climate change. Progress in public policy and regulatory governance in the direction of a worldwide climate governance has become increasingly more complex due to the plurality of political positions and statutory schemes in various countries (OBSERVATÓRIO DO CLIMA, 2008).

In this context, the evolution of national policies on climate change can play a key role in advancing the international climate agenda, contributing to the construction of a more harmonic and therefore more effective strategy. Regarding the importance of national action to achieve a global objective, Giddens (2008) establishes that political leaders must be constantly attentive to the analysis of the political changes needed to mitigate climate change impacts, especially at the national level, where such actions must indeed take place.

Taking into account the global scenario, the aim of this chapter is to analyze the evolution of climate change regulation in Brazil with the creation of sub-national policies and verify their impacts in the context of the National Policy on Climate Change (PNMC, in Portuguese), established in December 2009.

After this brief introduction, the next section of this chapter summarizes the recent literature that details some of the main national public policy guidelines for carbon emission reduction. Also, the state and local public policies on climate change in Brazil are discussed within the roles of subnational governments.

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In order to bring greater depth to the issues addressed, section 3 presents a summary of a series of interviews with researchers and experts on climate change issues in Brazil and abroad. Finally, section 4 offers the concluding remarks of this chapter. Among these, measures to be adopted in the implementation of local climate policies are highlighted. Also pointed out is the fact that regulatory issues related to the mechanisms to achieve these targets still must be clearly defined and analyzed, particularly concerning their criteria and impacts on the allocation of targets in the various economic sectors.

## **2 CLIMATE REGULATORY GOVERNANCE AND THE ROLE OF SUBNATIONAL GOVERNMENTS**

The analysis developed in this research carries as assumption the relevance of subnational governments in furthering state and municipal policies, on the progress of climate change discussions at national and international levels. However, there is a lack of convergence on measures taken by policymakers, as shown below (table 2 of subsection 2.1). Consequently, transparency and regulatory mechanisms of such policies could contribute to better governance in the area, facilitating the balance between environmental, social and economic aspects, as well as to promote convergence between the various local interests.

The Stern Report (STERN, 2007) asserts that public policies to reduce emissions should be based on certain guidelines. Among these, the following stand out: *i*) definition of a carbon price, through the implementation of taxes; *ii*) regulatory or market presence; *iii*) development of low carbon technologies with a focus on energy efficiency; and *iv*) removal of behavioral barriers.

In relation to the suggestion of levying carbon taxes as highlighted by the Stern Report, Marcovitch (2010) adds that carbon pricing could achieve some important targets in the arduous task of combating climate change. The first of these targets refers to increasing consumer awareness about goods and services with high carbon contents that should consequently be avoided. The second relates to inducing input substitution of low carbon options in the industrial sector. The third seeks to foster the development of more efficient products. Finally, the fourth and last objective aims to implement the above items at the lowest possible information cost.

Another aspect of carbon taxation to be considered, however, is how such taxation affects different economic sectors. This burden could entail a reduction or loss of competitiveness and thereby stimulate the migration of businesses and industries to regions or countries with less stringent regulation, to the detriment of the climate.

With regard to creating markets and regulation, the enhancement of carbon markets as well as the possibility of exemptions and the establishment of compensation by means of specific incentives, are considered necessary mechanisms and should be part of the objectives of all climate change policies in Brazil.

Another prominent tool in climate governance refers to the creation and improvement of mechanisms that encourage energy efficiency in various sectors. In this context, high-efficiency and low-carbon technology transfer policies deserve attention.

In the case of Brazil, it is clear that the country has advanced significantly in the implementation of climate policies and plays an important role on the international arena. Indeed, several States of the Federation have adopted laws to: *i*) encourage the reduction of emissions; *ii*) stimulate the protection of forests; and *iii*) promote the development and adoption of less energy-intensive technologies (IPEA, 2010).

It should be pointed out that the National Policy on Climate Change (PNMC), approved by the federal government in December 2009, stipulates a reduction target of 36.1% to 38.9% of estimated emissions by 2020. The law also recommends mitigation actions that should be adopted, and orders the creation of a Brazilian market to reduce emissions. A separate analysis of the PNMC is presented in chapter 1 of this book.

Additionally, some states have created local policies, establishing regulation to encourage mitigation and adaptation. For instance, in November 2009 the state of São Paulo approved a 20% emissions reduction target by 2020, considering 2005 as the base year. It is worth mentioning that until the beginning of 2011, this was the only State that presented targets of a mandatory nature.

The cities of São Paulo and Rio de Janeiro have also assumed reduction targets. São Paulo has pledged a 30% reduction, based on emissions from 2005 to 2010 (SÃO PAULO, 2009a), and Rio de Janeiro has pledged 8% by 2012, 16% by 2016 and 20% by 2020 (RIO DE JANEIRO, 2010). These local policies that encourage reductions of regional and local emissions, as well as generate statewide discussion forums on the topic, represent relevant and comprehensive efforts to engage different sectors of the economy and society. The effectiveness of such policies in achieving the targets will depend on how governments will enable the implementation of the relevant activities, as outlined in their respective laws. Especially, how governments will measure emission reduction targets, verify compliance and implement appropriate sanctions.

In this context, the authors considered it appropriate to review the legal frameworks outlining the roles of subnational governments and their

recognition of the climate change issue. Through a comparative analysis of the main features of the law, discussions were centered around the incentives implemented and the creation of additional mechanisms to contribute to the achievement of established targets.

## 2.1 Role of subnational government

In Brazil, the national and state climate change forums are intended to mobilize society and promote dialogue and integration between institutions of various sectors, with the objective of adopting policies and programs in accordance with the United Nations Framework Convention on Climate Change (UNFCCC). In this context, the Brazilian Forum on Climate Change was established in June 2000 and composed of 12 Ministers of State. By February 2011, 16 Brazilian states had established local forums as presented in Table 1, ordered by creation date.

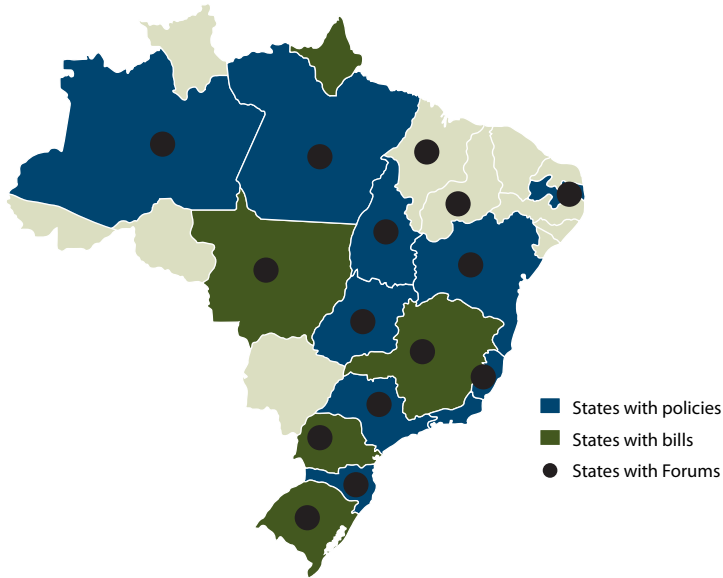
TABLE 1  
Chronology of the implementation of the climate change state forums

State Climate Change Forum	
São Paulo	February, 2005
Minas Gerais	June, 2005
Bahia	August, 2005
Maranhão	November, 2006
Espirito Santo	April, 2007
Tocantins	April, 2007
Rio de Janeiro	May, 2007
Piauí	June, 2007
Rio Grande do Sul	June, 2007
Ceará	April, 2008
Paraná	February, 2008
Pernambuco	February, 2009
Amazonas	February, 2009
Santa Catarina	March, 2009
Mato Grosso	April, 2009
Pará	September, 2009

Sources: State laws related to the creation of climate change state forums.  
Compiled by the authors.

In relation to public policies on climate change, out of the 27 units of the Brazilian Federation (UFs), ten have established policies and five have initiated draft legislation (PLs). As mentioned, only the State of São Paulo has mandatory targets (PROCLIMA, 2011). Map 1 highlights states that have policies, bills and climate change forums.

MAP 1  
States with already established policies, bills and forums



Sources: State climate change laws.  
Adapted by the authors.

Table 2 summarizes the contents of public policies in Brazil with regard to climate issues. Some items considered relevant in the context of a climate change policy are highlighted, such as: targets, creation of funds, inventory, clean development mechanism (CDM) and incentives for energy efficiency.

TABLE 2  
Content of state public policies on climate change

State	Law	Decree	Targets	Inventory	MDL	Energy Efficiency
Amazonas	Jun./07	Yes	No	Yes	Yes	No
Tocantins	Apr./08	No	No	Yes	Yes	Yes
Goiás	Feb./09	No	No	Yes	Yes	Yes
Santa Catarina	Aug./09	No	No	Yes	No	Yes
Pará	Sept./09	No	Progressive	Yes	Yes	Yes
São Paulo	Nov./09	Jun./10	Yes	Yes	Yes	Yes
Rio de Janeiro	Apr./10	No	To define	Yes	No	Yes
Pernambuco	Jun./10	No	Progressive	Yes	Yes	Yes
Espírito Santo	Sept./10	No	To define	Yes	Yes	Yes
Bahia	Mar./10	No	No	Yes	Yes	Yes

(continues)

(continued)

State	Law	Decree	Targets	Inventory	MDL	Energy Efficiency
Amapá	Bill	No	Progressive	Yes	Yes	No
Mato Grosso	Bill	No	Progressive	Yes	Yes	No
Mina Gerais	Bill	No	No	Yes	Yes	No
Paraná	Bill	No	No	No	No	No
Rio Grande do Sul	Bill	No	No	Yes	Yes	Yes

Sources: Proclima – Laws and state data declared by April 2011.  
Compiled by the authors.

With regard to municipal climate change policies, two Brazilian cities have established mandatory targets: São Paulo and Rio de Janeiro. Table 3 summarizes the status of some items considered of greater relevance in the context of these two municipal policies, such as: targets, inventory, MDL and incentives for energy efficiency.

**TABLE 3**  
**Content of municipal public policies on climate change**

Municipal District	Law	Decree	Targets	Inventory	MDL	Energy Efficiency
São Paulo	Jun./2009	No	Yes	Yes	Yes	Yes
Rio de Janeiro	Nov./2009	No	Yes	Yes	Yes	Yes

Sources: Municipal regulations, updated as of February 2011.  
Compiled by the authors.

The main point of convergence in all analyzed state and municipal laws is the challenge to combine economic development with protection of the climate system, targeting specifically the reduction of greenhouse gas (GHG). In this sense, the analyzed Brazilian climate policies share the following basic features:

- Practical implementation of GHG mitigation through incentives to reduce emissions by the various productive sectors, either through the creation of a market for emissions, or through a carbon taxation mechanism.
- Implementation of actions to adapt to climate change effects according to the vulnerabilities of each region.
- Incentives for the development and transfer of low-carbon technologies.
- Dissemination of knowledge for human resource training.

Another relevant item discussed is the creation of additional mechanisms for the exchange of obtained rights. Such mechanisms are mentioned in four of the examined laws, as illustrated in table 4.



TABLE 4  
Provisions in laws for the creation of additional mechanisms

	Mechanisms provided in the laws
Pernambuco	Market mechanisms for implementing the goals of UNFCCC
Rio de Janeiro	Additional mechanisms for the exchange of rights obtained
São Paulo	Additional mechanisms for the exchange of rights obtained
Tocantins	Other mechanisms and market schemes to reduce emissions

Sources: State regulations, updated as of February 2011.  
Compiled by the authors.

São Paulo is, at the time of writing this chapter (March 2011), the only state with mandatory targets at state and municipal levels. Table 5 summarizes the targets established by federal laws and the state and municipal laws of São Paulo related to climate change.

TABLE 5  
National, state and municipal climate change policies in the State of São Paulo and São Paulo city

Policies	National Policy on Climate Change	State Policy on Climate Change of São Paulo	Municipal Policy on Climate Change of São Paulo
Law	nº 12,187/2009	nº 13,798/2009	nº 14,933/2009
Targets	36.1% and 38.9%	20% by 2020	30% by 2012
Baseline	Emissions projected by 2020	Based on the inventory of 2005	Based on the inventory of 2005

Sources: Brasil (2009), São Paulo (2009a, 2009b).

We observe that the PNMC and the actions stemming from it, performed under the responsibility of political entities and government agencies, and following its principles: *i*) precaution; *ii*) prevention; *iii*) sustainable development; and *iv*) common but differentiated responsibilities, have been extensively discussed because of their current relevance to the division among the state signatories to the UNFCCC into developed countries (with mandatory targets) and developing countries (no targets) (MULLER, HOHN, ELLERMANN, 2007).

Using the state of São Paulo as a reference, for being the first to establish a State Policy on Climate Change, it appears that its policy complies with the following principles: *i*) prevention; *ii*) precaution; *iii*) polluter pays; *iv*) user pays; *v*) civil society participation; *vi*) sustainable development; *vii*) common but differentiated responsibilities; *viii*) governmental action; *ix*) cooperation, nationally and internationally; *x*) wide publicity; and *xi*) environmental education.

The Municipal Policy on Climate Change in São Paulo meets the following principles: *i*) prevention; *ii*) precaution; *iii*) polluter pays; *iv*) user pays; *v*) protective receiver; *vi*) common but differentiated responsibilities;

*vii*) holistic approach; *viii*) internalization of social and environmental costs; and *ix*) the right of access to information. Table 6 presents these principles within the three legal spheres.

TABLE 6  
**Comparative overview of the principles set out in federal (Brazil), state (São Paulo) and municipal (São Paulo) policies**

Municipal	State	Federal
Prevention	Prevention	Prevention
Precaution	Precaution	Precaution
Polluter-pays	Polluter-pays	
User-pays		
Common but differentiated responsibilities		
Common but differentiated responsibilities		
Common but differentiated responsibilities		
Internalization of social and environmental costs		
Right of Access to information		
Sustainable development	Sustainable development	Sustainable development
	Governmental Action	
	National and International cooperation	
	Participation of civil society	Participation of civil society
	Environmental Education	

Sources: Brasil (2009), São Paulo (2009a) and São Paulo (2009b).

Based on the principles and targets established in the above laws, we find it appropriate to review the incentives and / or penalties (command and control policies) to economic sectors in order for the government to implement more effective actions related to climate change. As such, it is important to examine how to implement such mitigative and adaptive actions.

### 3 INTERVIEWS

In order to incorporate other views and perspectives in the analyses of this research, semi-structured interviews were conducted with certain researchers, scholars and journalists on climate change. The following questions were discussed:

- What are the major structural problems of the Brazilian national and state policies?
- How to combine the obligations and targets of state and local policies with the national policy?

- How should the private sector act in order to reduce potential risks and increase competitiveness?

The climate change experts interviewed belong to the Management Center for Strategic Studies (CGEE); Institute of Electrotechnics and Energy (IEE/USP), the Institute for Applied Economic Research (Ipea), Center for Economics and Finance in Energy (CEFEN/USP); Alberto Luiz Coimbra Institute for Engineering PostGraduate Studies and Research of the Federal University of Rio de Janeiro (COPPE/UFRJ), Polytechnic School of USP (Poli/USP); Estado de São Paulo Newspaper and the School of Economics, Business Administration and Accounting (FEA/USP).

According to the interviewees, the policies specify how items should be applied, however, with regards to the national policy the result is not very effective yet. Beyond the disability management structures and regulations there was little evidence of progress to implement the proposed actions established in these policies.

Although the science of climate change is already well established, comprehension and awareness of different scenarios require not only a scientific approach, but also political and economical viewpoints, which have entered the debate only recently. The various aspects of the climate issue have not yet been internalized as a requirement for adjustment and policy settings within all levels of government (federal, state and municipal). Thus, it is fair to say that the legal and regulatory framework is not yet properly implemented, especially in developing countries that lack targets for reducing greenhouse gas emissions under the UNFCCC. Some of the interviewees claimed that the Environment Ministry (MMA) had already anticipated the issue of forming a regulatory institution to deal with the instruments created by the national policy at the time when the National Plan on Climate Change was established, but ultimately no agreement was concluded. When considering the activities of each Ministry, climate change objectives are not always converging, which emphasizes the relevance of management that is independent of government objectives. But what kind of entity would be the most suitable to regulate the implementation of the PNMC? Considering that the task of the Executive Office is administrative management (and not political strategy, as has been observed in the legislation), some interviewees regard it necessary to establish a specific entity to be responsible for the implementation of the PNMC.

The interviewees point out that there have been advances in climate negotiations within the context of Brazil, which were materialized through the discussion and creation of a national climate policy. They also recognize that although there are still failures and barriers related to the effective management and governance of this policy, at least the issue of targets, even if voluntary, has entered into the discussion.

Finally, climate change legislation depends on a thorough process of discussions to be implemented. The Climate Change Policy of the State of São Paulo, for example, indicates that there are many elements to be further developed in other state policies, especially the issue of including mandatory or voluntary targets for reducing GHG emissions. This reinforces the importance of incentives, at least at this early stage of implementation of the climate framework. Considering that the incentives aspect should dominate this initial phase of regulation, it is worth citing some recommendations of practices aimed at reducing emissions that resulted from the conducted interviews:

- Investment in research and development (R&D) and in extension projects, in order to facilitate means to implement the adoption of low carbon practices.
- Fostering greater dialogue with the private sector regarding implementation of the PNMC and subnational policies, as well as in international negotiations on climate change in conjunction with the ministries involved in the issues.
- Involvement of the various economic sectors in discussions on the implementation of the climate change legislation.

Public policies generally sanction the creation of economic and financial mechanisms, as well as provide technology investments, in order to seek solutions to mitigate and adapt to the effects of climate change. Sanctions on the other hand are restricted to specific cases as mandated by laws and vary in accordance with regional and local contexts. Thus, the development of climate policy should be an ongoing effort to provide the conditions for Brazil to join the international effort and contribute to the necessary coordination of global climate issues. When setting targets it is important to determine the impacts of the actions proposed by policies on the competitiveness of states and the country itself. This is one reason why viable economic incentives are necessary. Consequently, a difficulty of dealing with the subject predominates in the business arena, especially considering the ignorance or the multiplicity of information that is not always convergent, as well as the very complexity of the issues. The private sector needs a clear idea of the obligations they will have to meet, so that the actions related to climate do not become merely new costs, but rather competitive advantages.

If a company decides to invest in a potentially polluting activity, the lack of clear rules could make the enterprise unviable in the medium and long term. Over a period of five or ten years such an activity may be blocked due to the creation of a more severe restriction on the type of enterprise, and the investor, without advance warning, could face serious losses in trying to adapt.

#### 4 CONCLUDING REMARKS

This chapter discussed the evolution of policies to tackle climate change in Brazil as well as various aspects of the regulatory framework. The adoption of national targets through the National Policy on Climate Change (Federal Law nº 12.187/2009) can bring, if properly implemented, significant emission reductions that can be combined with regional and local actions.

The use of economic instruments such as fiscal incentives and fees can play a key role in the development and implementation of climate policies throughout the different states. These tools can accelerate the process of efficient energy use, while enabling the development and dissemination of advanced technologies to reduce GHG emissions.

Mechanisms to achieve the targets to avoid harmful climate impacts, however, still require a greater degree of definition regarding regulatory aspects. We observed that the guidelines currently in place are not clear enough and that the measures to be adopted still need definition, particularly with regards to criteria for allocating targets (emissions by sector or by units). The main obstacles observed include the lack of convergence of actions implemented in the various units of the Federation and the temporality of policy measures adopted at national, state and municipal levels. In São Paulo for example, the municipal policy was enacted in June 2009, while the state policy did not surface until November 2009, and finally the national policy was enacted in December 2009. Furthermore, the targets and strategies are also distinct in the three spheres of the country – federal, state and municipal – which makes the standardization of GHG reduction measures and its respective monitoring even more difficult and less effective. Regulations still do not indicate if concrete reduction targets will be established for each economic sector, which would be a great innovation since Brazil does not yet have binding reduction targets under the scope of the Climate Convention. Equally relevant would be the creation of a market for emission reductions, at the Federal Government level.

However, it should be stressed that environmental policy is still a relatively recent phenomenon not only in Brazil but in all countries, thus subject to failures, problems, trials and new initiatives, until satisfactory solutions and arrangements can be found. As such, the lack of appropriate governance mechanisms observed in this study should not discourage new initiatives in the environmental area.

The barriers within the current governance framework should not be cause for discouragement, but rather viewed and yet another element that must be part of future planning and analysis of any organization, institution or country that seeks to maintain future competitiveness. To maintain competition, initiatives such as increasing stakeholders awareness about the real impacts of reducing

emissions and creating a business environment favorable to minimizing the future regulatory risk resulting from climate change policies, are necessary.

These policies are certainly important tools in Brazil's progression towards sustainable development and, consequently, of its productive sectors towards a low carbon economy. The fact that some of the analyzed policies already have voluntary targets for reducing emissions indicates advances toward a less intensive effect on climate. The creation of climate policies, coupled with proper regulation and necessary enhancements, represents an opportunity for developing countries to enhance their positions in the international context.

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