



# Brazilian Agricultural Mitigation and Adaptation Policies: Towards Just Transition

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CLIMATE  
POLICY  
INITIATIVE





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Climate Policy Initiative (CPI) is an analysis and advisory organization with deep expertise in finance and policy. Our mission is to help governments, businesses, and financial institutions drive economic growth while addressing climate change. CPI has six offices around the world in Brazil, India, Indonesia, Kenya, the United Kingdom, and the United States. In Brazil, CPI partners with the Pontifical Catholic University of Rio de Janeiro (PUC-Rio).

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## LIST OF ABBREVIATIONS AND ACRONYMS

<b>ABC Plan</b>	Agricultural Sector Plan for Climate Change Mitigation and Adaptation for the Consolidation of a Low-Carbon Economy ( <i>Plano Setorial de Mitigação e de Adaptação às Mudanças Climáticas para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura</i> )
<b>ADENE</b>	Northeast Development Agency ( <i>Agência de Desenvolvimento do Nordeste</i> )
<b>AFSs</b>	Agroforestry Systems
<b>CCFI</b>	Crop-Cattle-Forest Integration
<b>CMN</b>	National Monetary Council ( <i>Conselho Monetário Nacional</i> )
<b>CPI/PUC-Rio</b>	Climate Policy Initiative/Pontifical Catholic University of Rio de Janeiro
<b>EMBRAPA</b>	Brazilian Agricultural Research Corporation ( <i>Empresa Brasileira de Pesquisa Agropecuária</i> )
<b>INCRA</b>	National Institute of Colonization and Agrarian Reform ( <i>Instituto Nacional de Colonização e Reforma Agrária</i> )
<b>LCA</b>	Low-Carbon Agriculture
<b>MAPA</b>	Ministry of Agriculture and Livestock ( <i>Ministério da Agricultura e Pecuária</i> )
<b>MDA</b>	Ministry of Agrarian Development and Family Agriculture ( <i>Ministério do Desenvolvimento Agrário e Agricultura Familiar</i> )
<b>MDS</b>	Ministry of Development and Social Assistance, Family and Fight against Hunger ( <i>Ministério do Desenvolvimento e Assistência Social, Família e Combate à Fome</i> )
<b>MMA</b>	Ministry of Environment and Climate Change ( <i>Ministério do Meio Ambiente e Mudança do Clima</i> )
<b>NTS</b>	No-Tillage System
<b>PGPM-Bio</b>	Minimum Price Guarantee Policy on Sociobiodiversity Products ( <i>Política de Garantia de Preços Mínimos para os Produtos da Sociobiodiversidade</i> )
<b>PNA</b>	National Plan for Climate Change Adaptation ( <i>Plano Nacional de Adaptação à Mudança do Clima</i> )
<b>PNAPO</b>	National Policy on Agroecology and Organic Production ( <i>Política Nacional de Agroecologia e Produção Orgânica</i> )
<b>PNMC</b>	National Policy on Climate Change ( <i>Política Nacional sobre Mudança do Clima</i> )
<b>PROAGRO</b>	Agricultural Activity Guarantee Program ( <i>Programa de Garantia da Atividade Agropecuária</i> )
<b>PROAGRO Mais</b>	Family Farming Agricultural Activity Guarantee Program ( <i>Programa de Garantia da Atividade Agropecuária da Agricultura Familiar</i> )

<b>PRONAF</b>	National Program for Strengthening Family Farming ( <i>Programa Nacional de Fortalecimento da Agricultura Familiar</i> )
<b>PSR</b>	Rural Insurance Premium Subsidy Program ( <i>Programa de Subvenção ao Prêmio do Seguro Rural</i> )
<b>RD&amp;I</b>	Research, Development and Innovation
<b>SINABC</b>	ABC Plan Information System ( <i>Sistema de Informações do Plano ABC</i> )
<b>UNEP</b>	United Nations Environment Program
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>ZARC</b>	National Program on Agricultural Climate Risk Zoning ( <i>Programa Nacional de Zoneamento Agrícola de Risco Climático</i> )

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# INTRODUCTION

A quarter of Brazil's greenhouse gas emissions come from agricultural activities. The sector not only contributes to the worsening of the climate crisis, but is also affected by it, facing increasingly frequent extreme temperature and precipitation events (SEEG 2021).

**The severity of climate risks requires the large-scale adoption of low-carbon practices, based on sustainable technologies, which combine increased productivity — without expanding the cultivated area — with resilience to climate events.**

This includes both mitigation measures — such as no-tillage agriculture, the recovery of degraded pastures, crop-cattle-forest integration (CCFI) systems, agroforestry systems (AFSs), planted forests, crop rotation, more efficient use of fertilizers and better soil management techniques — and adaptation measures that help manage climate risk in agricultural activities, increasing the resilience of agricultural systems and reducing their vulnerability.

Instruments, such as rural credit and insurance, technical assistance and rural extension, and research, development and innovation (RD&I) play a key role in promoting the adoption of these measures. But the implementation of such instruments needs to consider the context of different groups of producers to ensure a just transition towards low-carbon agriculture.

Rural producers are a heterogeneous group and are affected in diverse ways and to different extents by climate risks. Brazil has more than five million rural properties that vary significantly socially, economically, and culturally. In addition, a large share of agricultural production is concentrated in the hands of a small number of producers — approximately 4% of rural properties cover 63% of agricultural land (IBGE 2017).

The climate impacts on production volume and income generated also vary considerably by crop and geographic region. The poorest regions of Brazil — such as the Northeast, where the population has historically had the lowest income, education and housing conditions — will be disproportionately affected (World Bank Group 2023).

Thus, strategies to promote low-carbon agriculture and reduce emissions from the agriculture sector must target, primarily, most of the agricultural land, but without increasing the distortions between the different groups of rural producers and avoiding the exclusion of the most vulnerable groups.

**In this document, researchers from Climate Policy Initiative/Pontifical Catholic University of Rio de Janeiro (CPI/PUC-Rio) provide a policy map for climate mitigation and adaptation in Brazilian agriculture, identifying the government agencies responsible for implementation and the presence of elements of social and economic justice within each policy.** This mapping represents an important step towards understanding current public policies (their targeting and priorities, and whether they provide for the inclusion of the most vulnerable producers in the transition) and designing inclusive transition strategies to align climate and social goals and enable more efficient policies.

## HIGHLIGHTS

- Brazil's agricultural sector has public policies that seek to promote mitigation and adaptation to climate change. This policy framework, if well implemented, can be used as a catalyst for a scaled transition towards low-carbon agriculture.
- Climate-oriented policies are concentrated from 2010 onwards, which seems to be associated with the launch of the 2009 National Policy on Climate Change (*Política Nacional sobre Mudança do Clima* - PNMC) that established Brazil's commitment to reducing greenhouse gas emissions and resulted in the adoption of an Agricultural Sector Plan for Climate Change Mitigation and Adaptation for the Consolidation of a Low-Carbon Economy (*Plano Setorial de Mitigação e de Adaptação às Mudanças Climáticas para a Consolidação de uma Economia de Baixa Emissão de Carbono na Agricultura* - ABC Plan).
- Elements of social and economic justice are present in both mitigation and adaptation policies and are primarily aimed at prioritizing family farming and increasing income.
- The National Policy on Agroecology and Organic Production (*Política Nacional de Agroecologia e Produção Orgânica* - PNAPO), the National Policy on Planted Forests, and the National Policy on Crop-Cattle-Forest Integration stand out as policies that aim to promote the transition to lower carbon emissions in agriculture while containing elements of social and economic justice among their goals.
- The PRONAF ABC+ credit line is the only credit policy that incorporates elements of social and economic justice and a transition to low-carbon agriculture.
- Training and technical assistance foreseen in ABC/ABC+ Plan can be strengthened to include smallholders, family farmers, and beneficiaries of the National Program for Strengthening Family Farming (*Programa Nacional de Fortalecimento da Agricultura Familiar* - PRONAF).
- Regarding the governance structures of the policies mapped, the Ministry of Agriculture and Livestock (*Ministério da Agricultura e Pecuária* - MAPA) is primarily responsible for the implementation of the policies. The Ministry of Agrarian Development and Family Farming (*Ministério do Desenvolvimento Agrário e Agricultura Familiar* - MDA) also participates as co-manager of relevant policies, such as Brazil's Agricultural Plan and rural insurance.



## POLICY RECOMMENDATIONS

- Increase understanding of the opportunities for alignment between climate and social development policies in rural areas and their possible trade-offs to support Brazil's efforts to meet its climate goals and achieve socioeconomic and environmental development.
- Strengthen policies for the transition to low-carbon agriculture that include elements of social and economic justice among their goals, such as PNAPO, the National Policy on Planted Forests, and the National Policy on Crop-Cattle-Forest Integration, as well as the PRONAF ABC+ credit line. However, it is important to assess whether the implementation of these policies ensures that the most vulnerable groups of producers are effectively reached and included in the transition process.
- Expand access to training and technical assistance – currently targeted to large-scale producers in the Low-Carbon Agriculture Plan (ABC/ABC+ Plan) — to include smallholders and family farmers who are PRONAF beneficiaries.
- Increase the coordination between the Ministry of Agriculture and Livestock (*Ministério da Agricultura e Pecuária* - MAPA) and the Ministry of Agrarian Development and Family Farming (*Ministério do Desenvolvimento Agrário e Agricultura Familiar* - MDA) within the scope of policies under shared management.

# WHAT IS CLIMATE TRANSITION IN AGRICULTURE?

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## GLOSSARY

**Transition** is understood as an intermediate stage between one situation and another, a change from one condition to another (HOUAISS nda).

**Climate** is the set of meteorological phenomena (temperature, atmospheric pressure, winds, precipitation, etc.) that characterize a region, accounting for the way in which they influence life in that location (HOUAISS ndb).

**Agriculture** is the “theory and practice of crop and cattle raising, considering their mutual relations”, agriculture being a set of practices that aim to prepare the soil for the production of plants and/or the raising of animals useful and necessary to man (HOUAISS ndc, as translated by the authors).

**Climate transition in agriculture** is the change from a specific soil preparation practice for the production of plants and/or animals to a practice that is concerned with the impacts of climate change and the increase of Earth’s temperature.

**Climate transition in agriculture is a change from a practice that emits a large amount of carbon dioxide to another practice that emits less carbon** (Figure 1).

There are two ways to reduce carbon dioxide emissions: (i) adopt practices that emit less carbon dioxide or (ii) adopt practices that capture it. An example of a practice that emits less carbon is the no-tillage system, in which a producer leaves straw and plant residues on the soil surface, resulting in the production of higher quality seeds and an increase of organic matter in the soil, which in turn reduces greenhouse gas emissions. In addition, there is the possibility of changing the production system to one with lower emissions, such as switching from conventional farming to agroecological farming, and the possibility of changing the farming inputs or technology for low carbon-emitting options — such as replacing mineral-based inputs for plant-based inputs.

Carbon-capture practices include planting trees in the vicinity of a cultivated area, as a natural means for capturing the carbon emitted by agriculture, or changing the soil management techniques to more sustainable practices that increase the capacity for carbon sequestration.

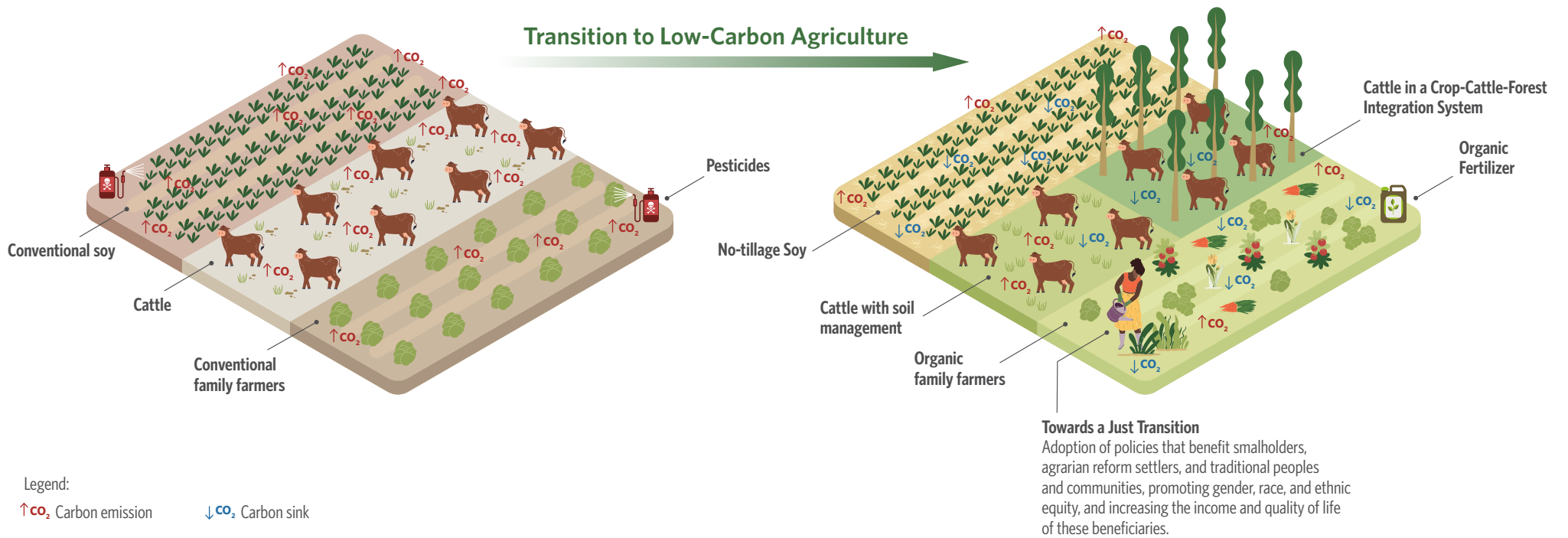
According to the PNMC, established by Law no. 12,187/2009 (as translated by the authors), “technological changes and substitutions that reduce the use of resources and emissions per production unit, as well as the implementation of measures that reduce greenhouse gas emissions and increase carbon sinks”<sup>1</sup> are called mitigation actions, which is precisely what happens in the examples above.

Therefore, climate transition in agriculture is, strictly speaking, mitigation actions, in line with the definition of the PNMC. This, however, does not guarantee that the transition will be just.

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<sup>1</sup> Original text: “mudanças e substituições tecnológicas que reduzam o uso de recursos e as emissões por unidade de produção, bem como a implementação de medidas que reduzam as emissões de gases de efeito estufa e aumentem os sumidouros”. (Law no. 12,187/2009).

**Figure 1.** Transition to Low-Carbon Agriculture



Source: CPI/PUC-Rio, 2023

# WHAT IS A JUST CLIMATE TRANSITION IN AGRICULTURE?

According to the United Nations Framework Convention on Climate Change (UNFCCC), agriculture is the sector with the largest workforce in the world, accounting for about one in every three workers. At the same time, it is the sector with the highest concentration of people living in poverty (UNFCCC 2020).

Adding the just layer to agricultural production, therefore, is not trivial. **Just**, as an adjective, is that “which is in accordance with justice, equity, reason”<sup>2</sup> (HOUAISS ndd, as translated by the authors). **Equity** is “respect for the equality of rights of each individual, which is independent of positive law, but is related to a feeling of what is considered just, considering the causes and intentions”<sup>3</sup> (HOUAISS nde, as translated by the authors). Equity in Law is construed as “material equality”, which means that the law must treat unequal individuals differently. That is, the law needs to recognize that society is made up of people with different backgrounds and that, because of such differences, certain groups of people are disadvantaged. To promote material equality for these groups, the law should provide for different conditions to help them reach the same place as groups that are not historically disadvantaged. Accordingly, the “State [should] intervene to correct the distortions arising from historical aspects that have led to economic, social, and cultural differences between social groups”<sup>4</sup> (Simão and Rodvalho 2014, as translated by the authors).

Thus, the government can implement policies that aim to reduce historical distortions between groups of people, which can be called social policies, as well as include elements of social and economic justice in policies with other goals. To this end, it is necessary to recognize that extreme weather events disproportionately affect the most vulnerable, who already suffer from hunger, conflict, and poverty, and who have also historically contributed the least to greenhouse gas emissions (IPCC 2023; OCHA, IFRC and Red Cross Red Crescent Climate Center 2022).

Accordingly, while climate transition policies deal, strictly speaking, with mitigation actions, **just transition policies must also include climate change adaptation actions**, understood as “initiatives and measures to reduce the vulnerability of natural and human systems to the current and expected effects of climate change”<sup>5</sup> (Law no. 12,187/2009, as translated by the authors). A just climate transition in agriculture, therefore, considers that the reduction of greenhouse gas emission in economic activities impacts the lives of rural producers and seeks to minimize its negative effects.

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2 Original text: “que é conforme à justiça, à equidade, à razão” (HOUAISS ndd).

3 Original text: “respeito à igualdade de direito de cada um, que independe da lei positiva, mas de um sentimento do que se considera justo, tendo em vista as causas e as intenções” (HOUAISS nde).

4 Original text: “Estado [deve] intervir para corrigir as distorções oriundas de aspectos históricos que desembocaram em diferenças de índole econômica, social e cultural entre os grupos sociais” (Simão and Rodvalho 2014).

5 Original text: “iniciativas e medidas para reduzir a vulnerabilidade dos sistemas naturais e humanos frente aos efeitos atuais e esperados da mudança do clima” (Law no. 12,187/2009).

**Public policies aimed at promoting a just climate transition in agriculture are primarily concerned with reducing carbon dioxide emissions in the sector, but they also take steps in recognizing that rural producers are heterogeneous and that disadvantaged groups exist and, therefore, they promote actions, incentives, and/or measures to manage climate risk and increase resilience and adaptability to climate change to prevent the transition from increasing the gap between different groups of rural producers and resulting in the exclusion of more vulnerable groups.**

Thus, climate transition public policies that include elements of social and economic justice are aimed at promoting practices that emit less carbon dioxide than conventional agriculture and, simultaneously, raise the income and quality of life of their beneficiaries — namely family farmers, smallholders, agrarian reform settlers, rural producers grouped into different types of organizations (e.g., cooperatives, associations), and traditional communities and peoples. Such policies may seek to promote gender, generational, racial, and ethnic equity.

The United Nations Environment Program (UNEP) suggests that the challenge of implementing a just transition can be met through a strong commitment towards the dissemination of agricultural methods with low environmental impact that also promote social benefits (UNEP 2011). For example, countries such as India, Kenya, Cameroon, and the United Kingdom have implemented initiatives to transition from conventional farming to organic farming, which has lower greenhouse gas emissions but is more labor intensive. Therefore, it was necessary to invest in training this workforce. Thus, one of the elements to promote a just transition would be to offer assistance and extension for the rural population to empower them and encourage their participation in the shift to low-carbon production.

Rural producers must participate to ensure that assistance and extension are appropriate for each region. According to the UNFCCC (2020, p. 38), “the organization of farmers and workers is an important stepping stone to giving rural communities a voice in policymaking for rural development and greening agriculture, and the inclusion of women farmers is especially important.” It also suggests the establishment of cooperatives to help access knowledge, inputs, financing, and markets at fair prices.



## INTERNATIONALLY RECOGNIZED PILLARS FOR A JUST TRANSITION

The United Nations Framework Convention on Climate Change (UNFCCC) establishes three pillars that should guide a just transition: (i) consultation and social dialogue; (ii) social protection; and (iii) training and skills development (UNFCCC 2020).

- **Consultation and social dialogue:** Consultation and social dialogue are essential tools for anticipating and managing the effects that a low-carbon transition can have on employment quality. A prerequisite for social dialogue is respect for fundamental principles and rights at work, such as: freedom of association and protection of the right to organize (trade unions).
- **Social protection:** Mitigation policies can have a negative impact on companies and workers in high greenhouse gas emitting sectors. The design of social protection policies — including unemployment insurance, benefits, skills training, capacity building and workforce redeployment — provides a safety net for both companies and workers in times of economic transformation towards low-carbon production of services and products.
- **Training and skills development:** The transition to a low-carbon economy will require training and skills development for workers — those who already work in the sector and/or new workers — to adapt to activities compatible with this economy. This can be a challenge, considering the possible shortage of qualified professionals to train and qualify, as well as the accelerated progress of some sectors towards the transition and the unattractiveness of working in some sectors.

# WHO ARE THE MOST VULNERABLE IN THE AGRICULTURAL CLIMATE TRANSITION?

It is not easy to identify who is most affected in a scenario of transition to low-carbon agriculture. There are several ways to classify rural producers, such as, for example, by the size of their property, annual revenue, or production method.

The Forest Code defines a smallholder as someone who owns up to four fiscal modules, which varies according to the region of the country.<sup>6</sup>

The National Monetary Council (*Conselho Monetário Nacional* - CMN) distinguishes rural producers according to their annual revenue and adopts the following classification (MAPA 2021a):

- small: those who declare up to R\$ 500,000.00 of annual gross revenue;
- medium: those who declare more than R\$ 500,000.00, up to R\$ 2,400,000.00;
- large: those who declare more than R\$ 2,400,000.00.

The Family Farming Law, in turn, defines a family farmer as someone who: (i) has an area of up to four fiscal modules; (ii) employs family labor; (iii) whose family income is linked to the establishment; and (iv) manages the enterprise through their family.

The mode of production is also a criterion that can be considered to identify greater or lesser vulnerability, identifying, for example, those who produce for their own subsistence.

In addition to these categories, producers' specific characteristics may be considered, and other aspects included, such as gender, race, education, age and regionality. For example, National Program for Strengthening Family Farming (*Programa Nacional de Fortalecimento da Agricultura Familiar* - PRONAF), whose goal is to finance and increase the productivity of activities related to family farming, thus generating income for family farmers and agrarian reform settlers, is divided into subprograms, such as PRONAF Woman and PRONAF Youth, and each one has a specific goal.

Each of these characteristics, or each combination thereof, implies a greater or lesser degree of social (dis)advantage and vulnerability. For example, from a gender perspective, it is possible to identify that most properties headed by women are used for subsistence (Albuquerque et al. 2023). By understanding who these people are, their characteristics and vulnerabilities, it is possible to understand what policies are needed to ensure their participation in the transition to low-carbon agriculture.

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<sup>6</sup> The fiscal modules, defined by the National Institute of Colonization and Agrarian Reform (*Instituto Nacional de Colonização e Reforma Agrária* - INCRA) as "the minimum area where agricultural activity can provide, in each municipality, subsistence and social and economic progress for families that invest their workforce in it", represent an outdated measure to portray the size of the property (INCRA apud Souza, Herschmann, and Assunção 2020, as translated by the authors). The sizes of fiscal modules vary considerably throughout the country, which means that producers with the same amount of land in different municipalities can be classified differently. Furthermore, despite improvements in agricultural practices over the past 40 years, the size of each municipality's fiscal module, as instituted in the 1980s, has remained the same (Souza, Herschmann, and Assunção 2020).

# METHODOLOGY FOR MAPPING POLICIES ON CLIMATE MITIGATION AND ADAPTATION IN AGRICULTURE

The mapping exercise began by identifying the agriculture sector's guiding or "umbrella" policies. Agriculture policies were then classified into two groups: (1) mitigation policies that aim to reduce greenhouse gas emissions or increase carbon sinks, and/or (2) adaptation policies that aim to reduce the impact of climate change already underway.

The classification of policies as climate mitigation and/or adaptation was based on the presence of the following instruments and/or tools:

- Credit
- Technology, Assistance and Rural Extension
- Climate Risk Management Instruments
- Research, Development and Innovation (RD&I)

After identifying the mitigation policies and adaptation policies for the agricultural sector, analysts verified which ones have elements that indicate the goal of promoting justice in the climate transition.

To this end, those classified as "policies with elements of social and economic justice" have the following principles and/or objectives. They:

- Benefit family farmers, agrarian reform settlers, rural producers grouped in different types of organization, and traditional peoples and communities
- Increase the income of beneficiaries and add value to their production
- Improve the quality of life of beneficiaries
- Promote equity in gender, generational, racial, and ethnic relations

# EVOLUTION OF POLICIES ON CLIMATE MITIGATION AND ADAPTATION IN AGRICULTURE

The Rural Credit Policy and the Agricultural Activity Guarantee Program (*Programa de Garantia da Atividade Agropecuária* - PROAGRO) have been in place since the 1960s and 1970s, even before the creation of a general policy aimed at agricultural activity, indicating that public authorities were concerned with maintaining agricultural production and offering credit and has the role of releasing producers from the financial obligations of the rural credit costs motivated by natural phenomena, pests and diseases that harm production.

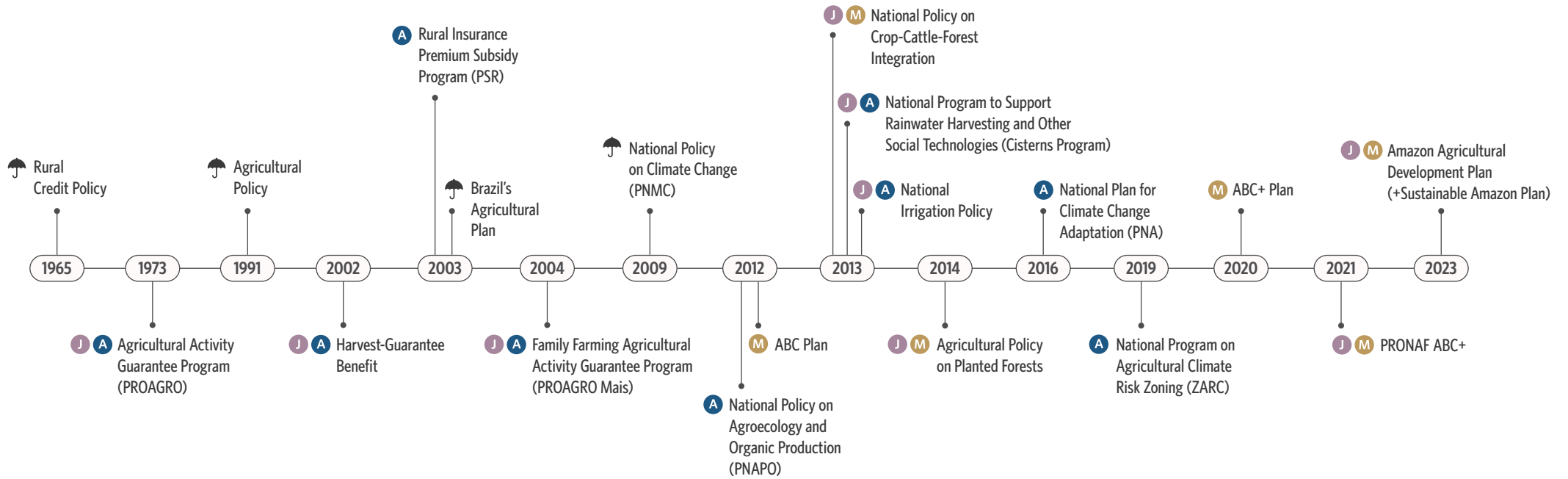
Only in the 1990s, twenty-six years after the creation of the Rural Credit Policy, was the Agricultural Policy published with general guidelines for the sector. Following that, a line of credit was established for family farmers, PRONAF, which recently incorporated a subprogram to finance low-carbon activities, PRONAF ABC+.

Adaptation policies emerged in the early 2000s — particularly the Rural Insurance Premium Subsidy Program (*Programa de Subvenção ao Prêmio do Seguro Rural* - PSR) and the Harvest-Guarantee Benefit. This is also the time when officials began publishing Brazil's annual Agricultural Plan as a consolidation of the Rural Credit Policy.

Starting in 2009, mitigation and adaptation policies increased, which is not surprising considering the publication of the National Plan for Climate Change Adaptation (*Plano Nacional de Adaptação à Mudança do Clima* - PNA), which established greenhouse gas emission reduction targets for Brazil, including sector-based targets. Such targets were established in the agricultural sector by means of the ABC Plan (2010), which was renewed in 2020 and renamed ABC+.

Figure 2 shows a timeline with an overview of the evolution of agriculture policies relevant to the just climate transition agenda, identifying those classified as “umbrella”, mitigation, adaptation policies, and/or policies with elements of social and economic justice.

**Figure 2.** Timeline of Climate Mitigation and Adaptation Policies in Agriculture



Legend:

- Umbrella policy
- Mitigation policy
- Adaptation Policy
- Policies with elements of social and economic justice

Source: CPI/PUC-Rio, 2023



## GUIDING POLICIES FOR THE AGRICULTURE SECTOR

This policy mapping for the agriculture sector draws on two guiding policies for the sector: the Agricultural Policy and the Rural Credit Policy, the latter of which is consolidated by Brazil's Agricultural Plan.

The Agricultural Policy provides the main guidelines for the Brazilian agriculture policy. It establishes the foundations, defines the goals and institutional competencies, provides for the resources, and establishes actions and instruments related to agricultural and agro-industrial activities and planning of fishing and forestry activities. Its goal is to systematize the State's action so that the various sectors involved in agriculture can plan their actions and investments from a medium and long-term perspective, reducing the sector's uncertainties. Additionally, it seeks to provide institutional support to rural producers, prioritizing small-scale producers and their families, as well as making agriculture policy actions compatible with those of the agrarian reform, among others.

The Agricultural Policy relies on 19 instruments to achieve its goal, four of which have the potential to be directed towards a just transition in agriculture: rural credit, technical assistance and rural extension, agricultural insurance, and scientific and technological research and innovation.

The Rural Credit Policy, on the other hand, is aimed at stimulating rural investments, supporting working capital, non-predatory extraction and marketing, encouraging increased productivity, supporting the intensification of cattle production, stimulating the development of the organic production system, among others.

In 2003, the federal government began to publish Brazil's Agricultural Plan, which, each year (from July to June of the following year), establishes how much the federal government will allocate to finance rural activities, guaranteeing credit for rural producers to invest and fund their activities. Rural credit rules are currently approved by the National Monetary Council (*Conselho Monetário Nacional* - CMN).

# MAPPING OF POLICIES ON MITIGATION AND ADAPTATION IN AGRICULTURE

The policy mapping includes policies that aim to promote climate mitigation and/or adaptation in agriculture, based on an analysis of the following instruments:

- Credit
- Technology, Assistance, and Rural Extension
- Climate Risk Management Instruments
- Research, Development and Innovation (RD&I)

For each policy identified, the presence of elements of social and economic justice is also examined.

## MITIGATION POLICIES

### **ABC+ PLAN (2012/2020) (MAPA 2021b)**

#### WHAT IT IS

The ABC Plan is the Agricultural Sector Plan for Climate Change Mitigation and Adaptation for the Consolidation of a Low-Carbon Economy, adopted in 2012 as part of the PNMC. The Plan was renewed in 2020 and renamed the ABC+ Plan.

#### INSTRUMENTS

- Credit line for financing carbon reduction practices, the ABC/ABC+ Program
- Training and technical assistance to assist rural producers in the transition to low-carbon agriculture
- Promotion of conservationist practices, adoption and maintenance of integrated systems; genetic improvement and increase in biological diversity; integrated risk management, climate forecasting, territorial zoning, and early warning systems, accompanied by effective contingency systems; socioeconomic and environmental performance analysis systems
- Encouraging and supporting applied research for the development or improvement of systems, practices, products and sustainable production processes with a focus on increasing resilience, productivity and income, as well as controlling greenhouse gas emissions

## **MITIGATION TARGET**

The Plan's current goal is to mitigate the emission of greenhouse gases by approximately one billion tons by 2030.

## **GOALS**

- Recover an area of 15 million hectares of degraded pastures through proper management and fertilization
- Increase the adoption of Crop-Cattle-Forest Integrated (CCFI) systems and Agroforestry Systems (AFSs) by four million hectares
- Expand the use of the No-Tillage System (NTS) by eight million hectares
- Expand the use of biological nitrogen fixation by 5.5 million hectares
- Promote reforestation actions in the country, expanding the area with planted forests — currently allocated to the production of fibers, wood and cellulose in three million hectares — from six million to nine million hectares
- Expand the use of technologies for the treatment of 4.4 million m<sup>3</sup> of animal waste for energy generation and production of organic compost
- Encourage the environmental registration of rural properties
- Carry out technology transfer, training and technical assistance
- Stimulate scientific research and technological development
- Foster recognition and appreciation mechanisms (economic incentives and market instruments, such as different types and scopes of certifications, payment for environmental and ecosystem services, identification of origin and traceability, among others)
- Foster economic, financial, and fiscal instruments (crosscutting instruments for trading greenhouse gas emission reduction credits)
- Create and maintain an integrated data and information management system (ABC Plan Information System - *Sistema de Informações do Plano ABC - SINABC*)

## **ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

Nonexistent.

## ● **ABC/ABC+ PROGRAM (2012/2020)** (MAPA 2023a)

### **WHAT IT IS**

The ABC+ Program is the main source of funding for actions to reduce carbon emissions in agriculture. Despite its relevance, however, this line of investment corresponds, on average, to only 1% of the total annual amount of funds of the rural credit operations (working capital, investment, marketing, and industrialization).

### **INSTRUMENTS**

- Credit

### **MITIGATION TARGET**

Same as the ABC Plan, approximately 1 billion tons.

### **GOAL**

Finance carbon emission reduction practices provided for in the ABC Plan, with a view to reaching its targets.

### **ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

Nonexistent

## ●●●● **NATIONAL POLICY ON AGROECOLOGY AND ORGANIC PRODUCTION (PNAPO) (2012)** (Decree no. 7,794/2012)

### **WHAT IT IS**

PNAPO consolidates actions to promote agroecology and organic production.

### **INSTRUMENTS**

- Rural credit
- Technical assistance and rural extension
- Agricultural insurance
- Scientific and technological research and innovation

### **MITIGATION TARGET**

Nonexistent.

## GOAL

Integrate, liaise, and adjust policies, programs, and actions that induce an agroecological transition and organic and agroecologically based production.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

The policy's guidelines include the promotion of fair and sustainable food production, distribution, and consumption systems that improve the economic, social, and environmental functions of agriculture and forest extraction and that prioritize institutional support for family farmers. In addition, it aims to contribute to the reduction of gender inequalities by means of actions and programs that promote women's economic autonomy.

## **NATIONAL POLICY ON CROP-CATTLE-FOREST INTEGRATION (2013)** (Law no. 12,805/2013)

## WHAT IT IS

The National Policy on Crop-Cattle-Forest Integration defines the concept and principles of the Crop-Cattle-Forest Integration (CCFI) system and promotes its expansion.

## INSTRUMENTS

- Rural credit lines in accordance with the goals and principles of the National Crop-Cattle-Forest Integration Policy and with the interests of society.
- Qualification of rural extension agents from the public, private or third sector to address the environmental and economic aspects of diversification processes, rotation, intercropping and succession of crop, cattle and forestry activities
- Incentive for research, development and technological innovation activities

## MITIGATION TARGET

Nonexistent.

## GOAL

Mitigate deforestation caused by the conversion of native vegetation areas into pasture or crop areas, thus contributing to the maintenance of permanent preservation areas and legal forest reserves.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

Improve the financial return of integration activities based on traditional knowledge of sustainable use of natural resources; encourage integrated production, associativism, cooperativism, and family farming.



 **AGRICULTURAL POLICY ON PLANTED FORESTS (2014)**  
(Decree no. 8,375/2014)

**WHAT IT IS**

The Agricultural Policy on Planted Forests establishes the legal framework to promote commercial forests.

**INSTRUMENTS**

- Rural credit
- Technical assistance and rural extension
- Agricultural insurance
- Scientific and technological research and innovation

**MITIGATION TARGET**

Nonexistent

**GOAL**

Increase the production and productivity of planted forests, contribute to the expansion of forest cover, reduce pressure on native forests, and improve income and quality of life in rural areas. One of its principles is the mitigation of greenhouse gases.

**ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

One of the policy's objectives is to improve income and quality of life in rural areas, particularly in small and medium-sized rural properties.

 **NATIONAL PROGRAM FOR STRENGTHENING FAMILY FARMING (PRONAF ABC+) (2021) (MAPA 2023b)**

**WHAT IT IS**

National Program for Strengthening Family Farming is a subprogram of PRONAF, which, in turn, is the main financing instrument for family farming. Brazil's Agricultural Plan determines how much will be allocated to the Program and its subprograms.

**INSTRUMENTS (BCB ND)**

- PRONAF ABC+ Forest credit line: financing of activities related to the implementation and management of agroforestry systems, ecologically sustainable extractive exploitation, and recovery of degraded areas, among others.

- PRONAF ABC+ Agroecology credit line: financing of agroecological or organic-based systems.
- PRONAF ABC+ Bioeconomy: financing of the implementation of productive systems based on extractive exploitation and ecologically sustainable socio-biodiversity products, among others.

#### **MITIGATION TARGET**

Nonexistent

#### **GOAL**

Promote rural development and food security.

#### **ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

The primary goal of the Program is to provide access to credit for family producers. The actions are aimed at increasing production capacity, creating jobs and raising the income of family farmers.

#### **+ SUSTAINABLE AMAZON PLAN (2023)** (MAPA Ordinance no. 575/2023)

#### **WHAT IT IS**

The Sustainable Amazon Plan promotes the convergence of public and private policies aimed at sustainable agriculture and land use in the Legal Amazon.

#### **INSTRUMENTS**

- Credit
- Productive, managerial, and commercial technical assistance, guided by supply chains and business plans and technologies, especially with regard to the development of products with greater added value
- Study and research to identify new technologies and agricultural innovation actions that can be made available to producers

#### **MITIGATION TARGET**

Nonexistent

## GOAL

Its goal is the convergence of agricultural public policies and the ordering of the territory, through land and environmental regularization, and promotion of production, based on productive arrangements, better organization, and value-adding in agricultural supply chains. Its guidelines include promoting the implementation of good agricultural practices, encouraging and monitoring the adoption of practices that reduce greenhouse gas emissions, especially carbon dioxide, supporting access to credit and productive technical assistance, as well as conducting studies and research to identify new technologies and agricultural innovation actions.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

The beneficiaries are family farmers, agrarian reform settlers, rural producers grouped into different types of organization, and traditional peoples and communities; other categories of the agricultural sector may also be included.

## ADAPTATION POLICIES

### ● **AGRICULTURAL ACTIVITY GUARANTEE PROGRAM (1973)** (MAPA 2023C, Law no. 5,969/1973 and Law no. 12,058/2009)

#### WHAT IT IS

The Agricultural Activity Guarantee Program provides a guarantee to release small and medium-sized rural producers from the obligation to pay for rural credit working capital operations in the event of loss of production due to natural phenomena, pests, and diseases.

#### INSTRUMENTS

- Guarantee: financial institutions (i) release producers from their financial obligations in rural credit costing operations; and/or (ii) indemnify producers for the use of their own resources to cover operating expenses.

#### GOAL

Minimize the cost for rural producers in case of loss of production due to natural phenomena, pests, and diseases.

#### ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

Benefit granted to small and medium producers.

## ● HARVEST-GUARANTEE BENEFIT (2002) (MAPA 2023d)

### WHAT IT IS

The Harvest-Guarantee Benefit is a PRONAF benefit that can be granted to family farmers who are beneficiaries of the Program and (i) have a monthly family income of a maximum of 1.5 (one and a half) minimum wage, (ii) plant between 0.6 and 5 hectares of beans, corn, rice, cotton or cassava, (iii) reside in municipalities systematically subject to emergency situations or state of public calamity due to drought, located in the area covered by the Northeast Development Agency (*Agência de Desenvolvimento do Nordeste - ADENE*); (iv) contribute to the Harvest Fund; and (v) have lost at least 50% of the crop to drought.

### INSTRUMENTS

- Guarantee: the beneficiary contributes to the Harvest Fund an amount not exceeding 1% of the projected value of the annual benefit and, in case of loss of at least 50% of the crop, receives the annual benefit.

### GOAL

To guarantee minimum survival conditions for family farmers in municipalities repeatedly subject to severe crop loss due to drought or excess water.

### ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

The Harvest-Guarantee focuses on benefiting low-income family farmers, who are more vulnerable to adverse events.

## ● RURAL INSURANCE PREMIUM SUBSIDY PROGRAM (PSR) (2003) (MAPA 2019)

### WHAT IT IS

PSR provides rural production insurance at a reduced price, which is subsidized by the federal government. The following can be insured: grains, fruits, vegetables, coffee, sugarcane, forests, cattle and aquaculture. It is intended for producers who benefit from the guarantee offered by PROAGRO or Family Farming Agricultural Activity Guarantee Program (*Programa de Garantia da Atividade Agropecuária da Agricultura Familiar - PROAGRO Mais*) and who are not eligible to receive the rural insurance subsidy.

### INSTRUMENTS

- Insurance: the federal government (via MAPA) pays part of the rural insurance premium owed by the producer.

## GOAL

Minimize the production loss risks of rural producers due to extreme weather events.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

Nonexistent

## ● **FAMILY FARMING AGRICULTURAL ACTIVITY GUARANTEE PROGRAM (PROAGRO MAIS) (2004) (MAPA 2016)**

## WHAT IT IS

A guarantee for family producers linked to PRONAF to be paid for any loss of production due to natural phenomena, pests, and diseases.

## INSTRUMENTS

- Guarantee: financial institutions release producers from their financial obligations in rural credit operations to cover working capital or investment installments; (ii) indemnify producers for the use of their own resources to cover operating expenses; (iii) guarantee a minimum income from agricultural production linked to rural costing.

## GOAL

Ensure that family farmers do not suffer losses in case of loss of production due to weather events, pests, and diseases.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

Targets family farmers linked to PRONAF.

## ●● **NATIONAL SUPPORT PROGRAM FOR RAINWATER HARVESTING AND OTHER SOCIAL TECHNOLOGIES (CISTERNS PROGRAM) (2013)** (Law no. 12,873/2013)

## WHAT IT IS

The Cisterns Program supports the installation of cisterns by the federal government for family or school consumption and for farming, in regions with little rain, particularly the Brazilian semi-arid region.

## INSTRUMENTS

- Social technology for water access

## GOAL

Promote access to water for human consumption and food production through the implementation of simple and low-cost social technologies.

## ELEMENT OF SOCIAL AND ECONOMIC JUSTICE

The program targets low-income rural families affected by drought or regular water shortages and prioritizes traditional peoples and communities.

## **NATIONAL IRRIGATION POLICY (2013)** (Law no. 12,787/2013)

## WHAT IT IS

The National Irrigation Policy establishes definitions, principles, goals, and instruments for the implementation of irrigated agriculture in Brazil.

## INSTRUMENTS

- Credit
- Technical assistance and rural extension
- Scientific and technological research
- Rural insurance

## GOAL

Encourage the expansion of irrigated areas and increase productivity on an environmentally sustainable basis, reduce the climatic risks inherent in agricultural activity, as well as promote local and regional development, prioritizing regions with low social and economic indicators, among others.

## ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE

One of its goals is to promote local and regional development, prioritizing regions with low social and economic indicators.

## **NATIONAL PLAN FOR CLIMATE CHANGE ADAPTATION (PNA) (2016)** (MMA 2016)

## WHAT IT IS

The PNMC provides for the implementation of measures to promote climate change adaptation. To this end, the federal government published the PNA, which provides for sectoral and thematic strategies for agriculture, among other sectors. The Plan provides

guidelines and targets that must be considered in the Adaptation Program for Agriculture, which was included in the ABC Plan.

### **INSTRUMENTS**

- Financial instruments
- Technology transfer and technical assistance
- Research
- Insurance and guarantee

### **GOAL**

Establish strategies and actions to reduce vulnerability to the impacts of climate change by building adaptive capacity and resilience.

### **ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

Nonexistent

## **● NATIONAL PROGRAM ON AGRICULTURAL CLIMATE RISK ZONING (ZARC) (2019) (Decree 9,841/2019)**

### **WHAT IT IS**

ZARC provides an analysis of climate, soil, and cultivar cycle parameters to quantify the climatic risks involved in crop management that can cause production losses. Rural producers who wish to use the PROAGRO Mais guarantee or rural insurance must follow the recommendations of the climate risk analysis.

### **INSTRUMENT**

- Research

### **GOAL**

Improve the quality and availability of data and information on agroclimatic risks in Brazil, with emphasis on supporting the design, improvement, and implementation of management programs and public policies.

### **ELEMENTS OF SOCIAL AND ECONOMIC JUSTICE**

Nonexistent

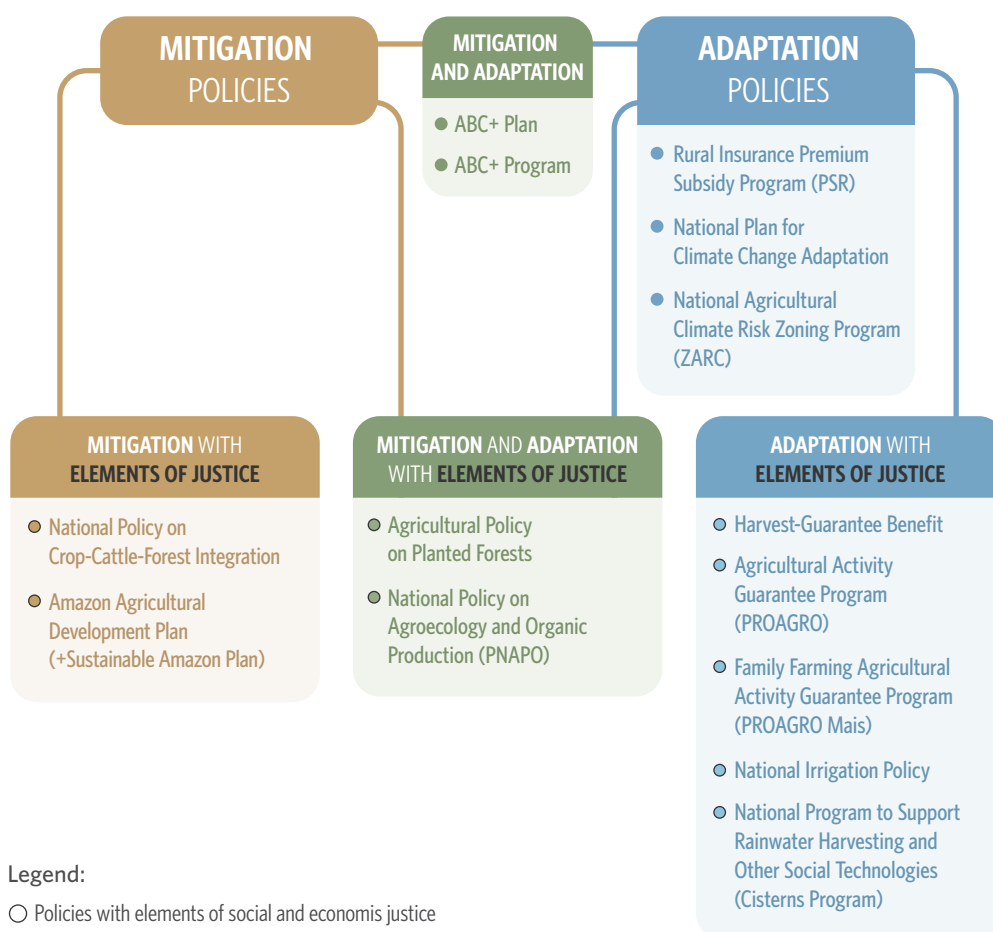
# REPRESENTATION OF POLICIES ON JUST CLIMATE TRANSITION IN AGRICULTURE

Based on the mapping of mitigation and adaptation policies in agriculture and the identification of the presence or absence of elements related to social and economic justice, **it is possible to portray just climate transition policies as adaptation and/or mitigation policies that include some intersection with social goals and incorporate, in some way, elements of social and economic justice**, as shown in Figure 3.

While this exercise identifies both mitigation and adaptation policies with elements of social and economic justice, these elements are not present in all of the identified policies. In fact, some exclusively focus on adaptation, as is the case of the Rural Insurance Premium Subsidy Program. Likewise, there are policies in various sectors of the economy that aim solely at mitigating climate change.<sup>7</sup>

Two policies in particular, the Agricultural Policy on Planted Forests and the PNAPO, incorporate more than one goal, including elements to promote mitigation, adaptation, and justice simultaneously.

**Figure 3.** Representation of Just Transition Climate Policies in Agriculture



**Source:** CPI/PUC-Rio, 2023

<sup>7</sup> An example would be the Climate Change Mitigation and Adaptation Sector Plan for the Consolidation of a Low-Carbon Economy in the Manufacturing Industry.



# **INSTITUTIONAL MAPPING OF POLICIES ON MITIGATION AND CLIMATE ADAPTATION IN AGRICULTURE**

The institutional mapping identifies the government agencies responsible for implementing the identified public policies and illustrates, by means of organizational charts, the connection between the ministries and the policies for which they are responsible. The governance of these policies is shared by four ministries, without cooperation or coordination between them necessarily being in place.

## **MINISTRY OF AGRICULTURE AND LIVESTOCK (*MINISTÉRIO DA AGRICULTURA E PECUÁRIA - MAPA*)**

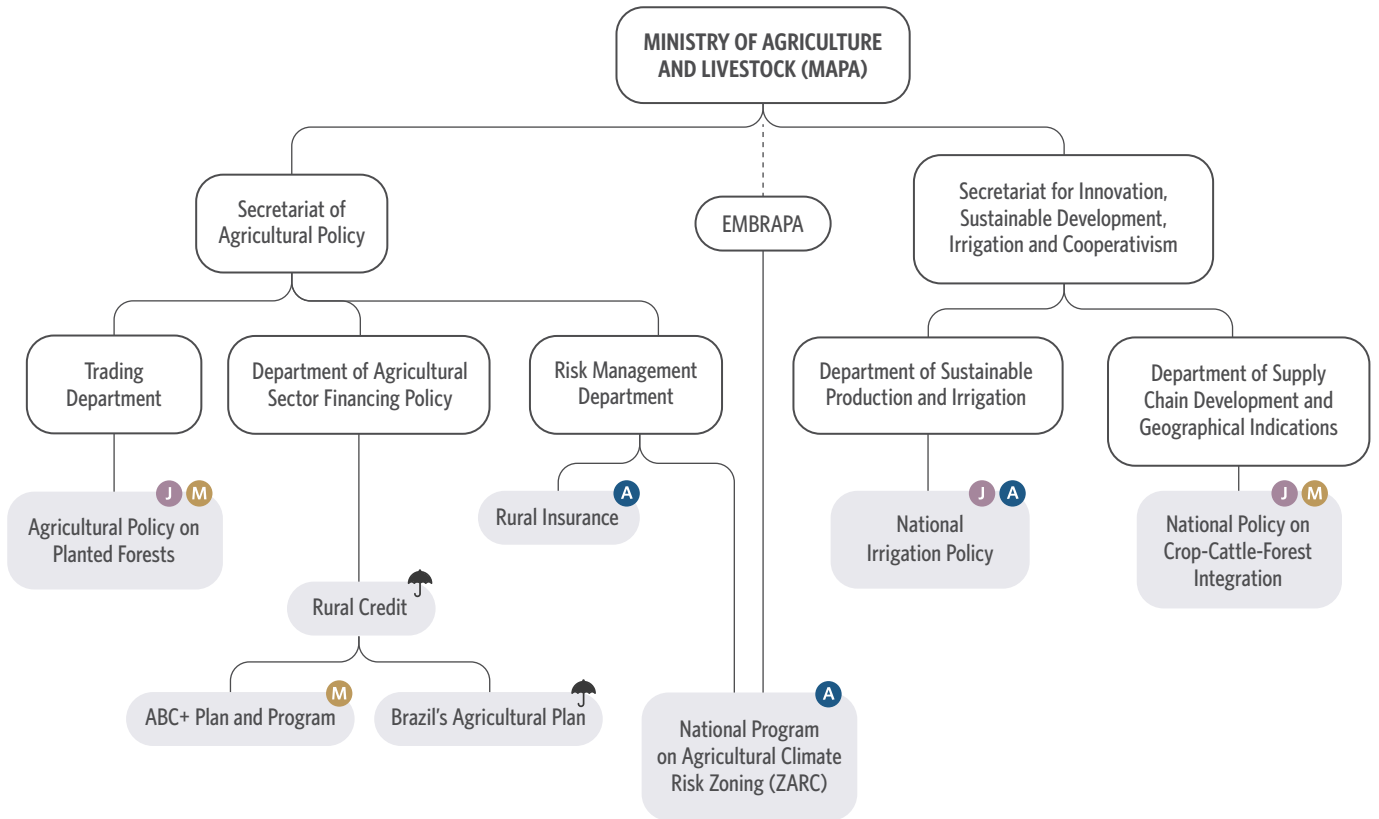
MAPA is responsible for managing public policies to support agriculture, for promoting agribusiness, and for regulating and standardizing services linked to the sector. It is the main actor responsible for the implementation of policies on just climate transition in agriculture with seven of the 15 policies mapped falling under it. Responsibility for Brazil's Agricultural Plan and rural insurance is shared with the MDA; responsibility for the National Policy on Planted Forests is shared with the MMA.

MAPA has two secretariats responsible for the policies under its remit. The Secretariat of Agricultural Policy, which is responsible for the planted forest policies of the ABC+ Plan and Program, for the ZARC, and for rural insurance. ZARC, in turn, is coordinated by the EMBRAPA, which is a public company linked to MAPA, created to develop the technological foundations of a tropical agriculture and cattle model.

The Secretariat for Innovation, Sustainable Development, Irrigation and Cooperativism is responsible for the National Irrigation Policy and the Crop-Cattle-Forest Integration Policy.

Among the mapped policies under the responsibility of MAPA, only the ABC+ Plan and the ZARC do not have elements of social and economic justice. That is, even though MAPA is focused on promoting agribusiness, it is also responsible for implementing policies classified as just climate transition.

**Figure 4.** Institutional Mapping of the Ministry of Agriculture and Livestock (MAPA)



**Legend:**

- Umbrella policy
- Mitigation policy
- Adaptation policy
- Policies with elements of social and economic justice
- Linked public company
- Bodies
- Policy

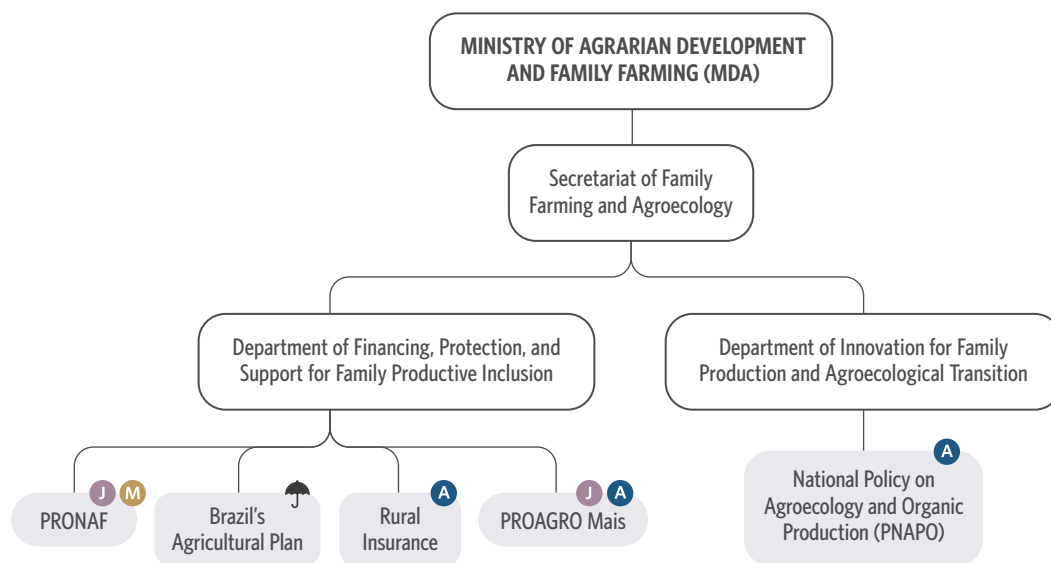
**Source:** CPI/PUC-Rio, 2023

## MINISTRY OF AGRARIAN DEVELOPMENT AND FAMILY FARMING (MINISTÉRIO DO DESENVOLVIMENTO AGRÁRIO E AGRICULTURA FAMILIAR - MDA)

MDA is responsible for public policies aimed at family farming and agrarian development. It shares the management of broader agriculture policies with MAPA, such as Rural Credit and Insurance, which have features targeting family farmers. In Rural Credit, for example, the MDA is responsible for PRONAF. As for Rural Insurance, its management is shared through PROAGRO Mais.

A single secretariat is responsible for implementing the mapped policies, the Secretariat of Family Farming and Agroecology. It is divided into two departments: (i) Financing, Protection and Support for Family Productive Inclusion, responsible for the shared management of PRONAF, Brazil's Agricultural Plan, Rural Insurance and PROAGRO Mais with MAPA, and (ii) Innovation for Family Production and Agroecological Transition, responsible for implementing the PNAPO.

**Figure 5.** Institutional Mapping of the Ministry of Agrarian Development and Family Farming (MDA)



**Legend:**

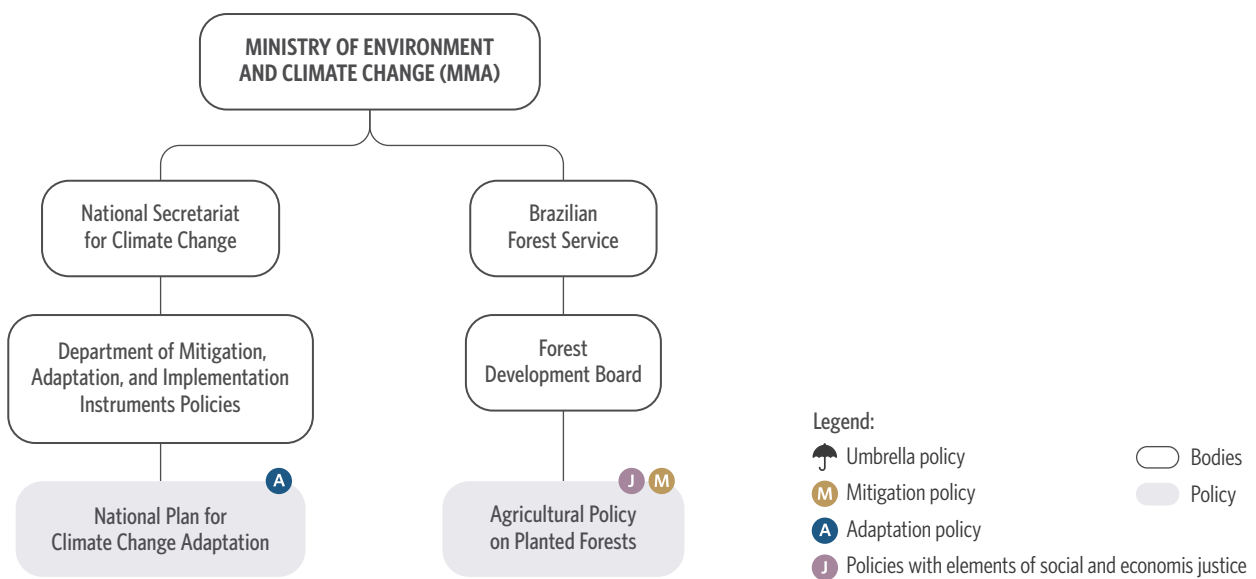
- Umbrella policy
- Mitigation policy
- Adaptation policy
- Policies with elements of social and economic justice
- Bodies
- Policy

**Source:** CPI/PUC-Rio, 2023

## MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE (MINISTÉRIO DO MEIO AMBIENTE E MUDANÇA DO CLIMA - MMA)

The MMA is responsible for promoting strategies for the protection and recovery of the environment, sustainable use of natural resources, and inclusion of sustainable development in public policies. It has two secretariats that play a role in the mapped policies: (i) the National Secretariat for Climate Change, responsible for implementing the PNA, and (ii) the Brazilian Forest Service, which, in collaboration with MAPA, is responsible for the National Policy on Planted Forests.

**Figure 6.** Institutional Mapping of the Ministry of Environment and Climate Change (MMA)

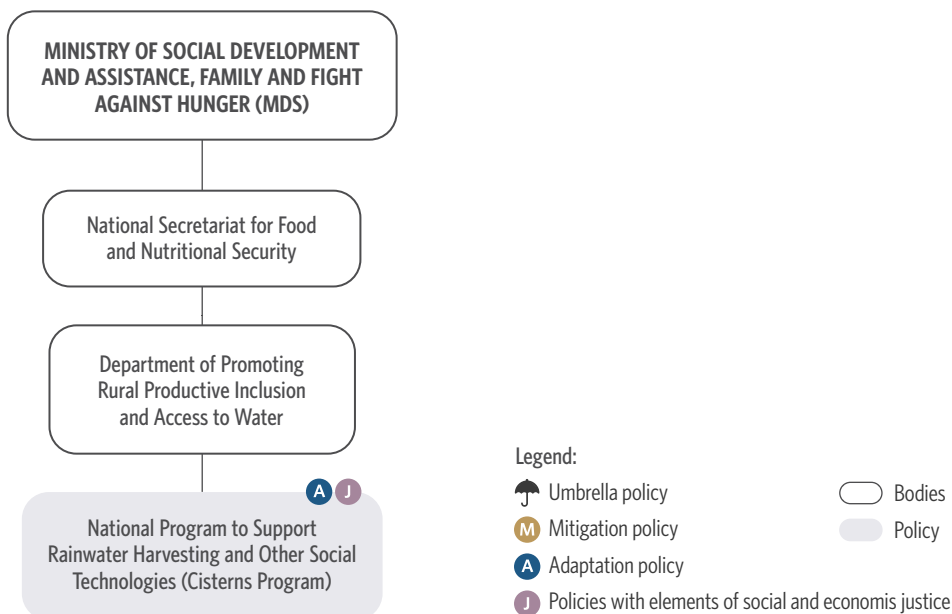


**Source:** CPI/PUC-Rio, 2023

## MINISTRY OF SOCIAL DEVELOPMENT AND ASSISTANCE, FAMILY AND FIGHT AGAINST HUNGER (MINISTÉRIO DO DESENVOLVIMENTO E ASSISTÊNCIA SOCIAL, FAMÍLIA E COMBATE À FOME – MDS)

The MDS, via the Department for Promotion of Rural Productive Inclusion and Access to Water, managed by the National Secretariat for Food and Nutritional Security, is responsible for facilitating the expansion of access to water for human consumption, food production and the establishment of resilient food systems, by means of the National Program to Support Rainwater Harvesting and Other Social Technologies, better known as the Cisterns Program.

**Figure 7.** Institutional Mapping of the Ministry of Development and Social Assistance, Family and Fight against Hunger (MDS)



**Source:** CPI/PUC-Rio, 2023

# CONCLUSION

This policy mapping presents Brazil's policies on mitigation and adaptation based on an analysis of their instruments, tools, goals, and bodies responsible for their implementation, and verifies whether they incorporate elements for a just transition.

This exercise identifies three main policies that primarily focus on promoting the transition to low-carbon agriculture and that have elements of climate justice: National Policy on Agroecology and Organic Production (PNAPO), National Policy on Planted Forests and National Policy on Crop-Cattle-Forest Integration. **While these policies contemplate elements of social and economic justice in their design, it is essential to evaluate the implementation of these policies to understand whether the most vulnerable groups of producers are effectively benefiting and included in the climate transition.**

This analysis reveals four opportunities for advancing a just transition in Brazilian agriculture. The first is to strengthen the PRONAF ABC+ credit line, the only credit line that has elements of social and economic justice and the goal of financing the shift to low-carbon agriculture for small family farmers.

The second opportunity involves including small rural producers and family farmers in training and technical assistance actions, currently foreseen as an instrument of the ABC+ Plan but restricted to large producers.

In terms of governance, Brazil currently does not have a national strategy devoted to a just transition in agriculture, or a body specifically tasked with the general coordination of this agenda. Most of the just climate transition policies fall under the responsibility of MAPA. Thus, the third opportunity requires strengthening the just transition agenda in the MDA and improving institutional coordination around policies under shared management.

Finally, a just rural transition requires a broad policy framework that extends beyond those focused on a climate transition. Social policies focused on improving economic, educational, and health indicators are crucial for strengthening justice in rural areas and tend to reach more people than policies focused on a just climate transition. Therefore, the fourth opportunity that emerges from this work highlights the need for policymakers to identify and align climate and social policies in rural areas that can effectively be leveraged for Brazil to meet its climate goals and achieve socioeconomic and environmental development.

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