



PUBLIC POLICIES AND CLIMATE FINANCE IN BRAZIL

Scoping study of for SAls
regarding climate action
financing



Public Policies and climate finance in Brazil: scoping study of for SAls regarding climate action financing

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May of 2021

Cite this document as:

Murasawa, L.; Lime; GR; Fares, LR; Wills, W.; Batista, AK; Wehb, OM (2021). Public policies and climate finance in Brazil: scoping study for SAls regarding climate action financing.

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This initiative was carried out as part of the Regional project for Strengthening External Control in the Environmental Area, a partnership of the German Cooperation for Sustainable Development (through GIZ - Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH), the TCU and OLACEFS, with the support of the German Federal Ministry for Economic Cooperation and Development (BMZ).

Acknowledgments

This report is the result of the collection of information from countless entities and specialists, whose contributions were fundamental to the realization of the study. We thank the BNDES, IDB, GEF/FUNBIO, GCF, GIZ, GEF/UNEP and TCU teams.

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Abbreviations and Acronyms

ADI - Direct Action of Unconstitutionality

AF - Adaptation Fund

DNA - Designated National Authority

BC - Central Bank of Brazil

EIB - European Investment Bank

IDB - Inter-American Development Bank

BMZ - Federal Ministry for Economic Cooperation and Development

BNDES – National Bank for Economic and Social Development

GCF - Green Climate Fund

CCAF - Federal Environmental Compensation Committee

CFCA - Federal Chamber of Environmental Compensation

CEF - CAIXA ECONOMICA FEDERAL

CIF - Climate Investment Funds

CMN - National Monetary Council

COP15 - 2009 Climate Conference of Parties

CPF - Standing Committee on Finance

DEFRA - Department for Environment, Food and Rural Affairs

SAI - Supreme Audit Institutions

ESG - Environmental, Social and Governance

FCA - Environmental Compensation Fund

FICA - Institutional Environmental Compensation Fund

FNDCT - National Fund for Scientific and Technological Development

FNMA - National Environment Fund

FNMC - National Fund on Climate Change

NDC - Nationally Determined Contribution

FSA - Caixa Socio-Environmental Fund

FSB – Financial Stability Board

FUNBIO - Brazilian Biodiversity Fund

GHG - Greenhouse Gases

GEF - Global Environment Facility

GIZ - German Technical Cooperation

GRU - Federal Collection Guide

IBAMA – Brazilian Institute of Environment and Renewable Natural Resources

ICMBio - Chico Mendes Institute for Biodiversity Conservation, 2010.

ICT - Science and Technology Institutions

JBIC - Japan Bank of International Cooperation

JICA - Japan International Cooperation Agency

MCTI - Ministry of Science, Technology and Innovations

MMA – Ministry of the Environment

NDC - Nationally Determined Contribution

NORAD - Norwegian Agency for Development Cooperation

ODA - Official Development Assistance

OGU - General Federal Budget

NEP - National Environmental Policy

PMR - Partnership for Market Readiness

SAIN - Secretariat of International Affairs

SNUC - National System of Protected Areas

TCU – Federal Court of Accounts

TFCD - Task Force on Climate-related Financial Disclosures

CU - Conservation Unit

UNDP - United Nations Development Programme (UNDP)

UNEP - United Nations Environment Programme (UNEP)

USAID - US Agency for International Development

UNFCCC - United Nations Framework Convention on Climate Change

UO - Budgetary Units

UNREDD - United Nations Collaborative Programs on Reducing Emissions from Deforestation and Forest Degradation

WWF - World Wildlife Fund

Executive Summary

At the 21st Conference of the Parties (COP21) of the UNFCCC (United Nations Framework Convention on Climate Change), in Paris, a new agreement was adopted with the central objective of providing a global response to the threat of climate change and improving the ability of countries to respond. Its main objective is to keep the global average temperature increase to well below 2°C above pre-industrial levels, preferably getting close to the 1.5°C limit.

Brazil presented its set of targets, the so-called Brazilian NDCs (Nationally Determined Contributions), to the United Nations at the end of September 2016. The country has pledged to reduce carbon dioxide emissions by 37% in relation to 2005 emissions by 2025, and to reduce 43% of emissions by 2030, also in relation to 2005. In December 2020, the country presented its 2nd NDC, in which it ratified the 2025 target and confirmed the 2030 target (previously indicative), in addition to indicating a possible carbon neutrality in 2060 or earlier, according to the financial resources allocated to the country for this purpose.

Regarding the need for resources in the country, some studies developed in recent years can give us an order of magnitude of the total volume of investments in mitigation necessary to reach the NDC. Among the main studies, we can mention IES Brasil 2030 (La Rovere et al., 2015), Mitigation Options (MCTIC, 2017), and the study of MMA and IDB completed in 2017. When we talk about the 2050 horizon, we can mention IES Brasil 2050 (La Rovere et al., 2018), and again the Mitigation Options study.

Due to the great complexity of these prospective studies, and the uncertain nature of the economic and technological scenarios, there is a considerable discrepancy in the estimates of the need for investment to reach the Brazilian NDC. The main studies cited estimate a volume of resources that varies between about R\$160 and R\$470 billion in the period, in updated values to reach the NDC in 2030. For the 2050 horizon, the volume of resources needed is even greater.

In this context, the lack of effective financial means to implement the transition and bring about the great transformation that will be necessary in the coming decades presents itself as a challenge for Brazil, and the current context of budgetary crisis and

fiscal restriction is an additional aggravating factor. In this scenario, national and international financing mechanisms gain importance for the achievement of climate targets, and can be quite economically attractive given the global panorama of zero (or even negative) interest rates and the need to accelerate actions to combat climate change brought about by the current pandemic.

Climate finance is based on resources from multilateral institutions, development banks, international funds and private banks, who allocate resources to various topics related to climate change. These resources originate from bilateral or multilateral agreements on the government side, and in the private sector, to allocate resources according to the position adopted by the institution, which may be donations or subsidies, concessional loans, debt conversions, green bonds or guarantees. The climate finance ecosystem has a large number of actors and institutional arrangements, which sometimes have different configurations, which can make it difficult to understand.

Given the great urgency and magnitude of the necessary measures for adaptation and mitigation of climate change, there is a need for greater resources than are available from public sources and, therefore, there is a need to also stimulate sources from the private sector, such as commercial financial institutions, corporations, NGOs, resources from donations, among others. Collaboration between public and private entities can generate mixed financing where risks to the private sector are reduced. Due to the complexity involved in the design of climate finance, there are international efforts to create a framework for standardization.

This study carried out an assessment of existing environmental and climate funds in Brazil with the objective of providing information resources to the Supreme Audit Institutions, especially the Federal Court of Accounts, in its institutional mission of improving public policies in the environmental area. This assessment was based on aspects of relevance identified in the literature that can be used to monitor the application of resources earmarked for these funds, including actors involved and institutional arrangements, transparency procedures, risk assessment mechanisms, result monitoring practices and synergy with public policies.

Eleven environmental and climate finance mechanisms were selected, seven national mechanisms, two UNFCCC mechanisms and two multilateral agency mechanisms. It can be seen that the set of these mechanisms constitutes a very diverse climate

finance ecosystem, with a wide variety of actors, arrangements and operational practices. Some analyzed funds have different sources and donors of resources, which are not directly responsible for their application, and this function is generally attributed to actors with expertise and knowledge of the local reality.

Transparency, risk management and monitoring practices also differ among the mechanisms evaluated, with each of these aspects presenting different challenges for their implementation. With regard to transparency, the existence of criteria established during the negotiations of the funds is noted, although the absence of a framework for the standardization of practices is also noted. With regard to risk assessment, the implementing institutions selected, in general, have a history of performance so that they meet the established legal and operational requirements, although care must be taken to avoid making the processes extremely bureaucratic. With regard to monitoring practices, there is an effort on the part of implementing and executing entities to monitor the effectiveness of the application of resources in order to achieve the objectives established by the mechanism, but there is a difficulty in assessing the real impacts, both quantitative as well as qualitative.

In terms of the synergy between the mechanisms analyzed and the existing public policies, there is also great diversity since the mechanisms have different objectives, some of them being focused on climate finance specifically, while others are aimed at environmental actions more broadly. For the former, the main framework that should be used as a basis today is the NDC, which is why it was presented in this report. Thus, the projects proposed to receive funding must be aligned with the priorities established at the NDC, especially when it comes to mechanisms within the scope of the UNFCCC.

In view of the results found, it can be concluded that the existing mechanisms for environmental and climate finance have gaps that are being filled in parallel with other initiatives to combat climate change. There is a need to build complementary mechanisms that can support the viability of climate projects, which have higher risks since they involve new technologies and longer terms, which means that they are often declined by traditional sources of credit. Therefore, an effort is needed to ensure more and more effectiveness in the management and execution of the existing mechanisms in achieving the objectives for which they were established.

Introduction

The Paris Agreement was a relevant milestone and represents a challenge for the 197 signatory countries committed to making efforts to combat climate change. Within this context, the Brazilian State formalizes its commitment to establish climate targets in its Nationally Determined Contribution (NDC), a document that will serve as a reference to guide public policies and initiatives to mitigate climate change in the country.

However, the lack of effective financial means for its implementation is a challenge, not only for Brazil, but for most of the signatory countries of the Paris Agreement. In the particular case of Brazil, the current context of budgetary crisis and fiscal constraint is an additional aggravating factor. In this scenario, the national and international financing mechanisms gain importance for the achievement of climate targets and can be very attractive economically, given the global scenario of zero (or even negative) interest rates and the acceleration of actions to combat climate change brought about by the current pandemic. For example, many countries - such as Europe and the United States - have announced economic recovery packages focused on the availability of resources to support low-carbon economies, with the possibility of funds for emerging economies such as Brazil.

The purpose of this report is to map and analyze the funding sources for actions to mitigate and adapt to climate change in Brazil to support the work of the Supreme Audit Institutions (SAIs) in their work of auditing and evaluating public policies. The funds analyzed were selected by mutual agreement between the parties to have a representative set for the vision of the funds operating in Brazil. For this, the possible list of existing mechanisms will be presented, among which, a subgroup will be analyzed in detail according to its relevance in the national and international scenario. Whenever possible, the relationship will be established between these mechanisms and public policies concerning the topic in the country.

Due to the complexity involved in the design of climate finance, there are international efforts to create a framework in search of a basis for standardization. In 2020, five years after the Paris Agreement commitment, countries were expected to review their results against the goal of keeping global temperature increase below 1.5°C and

submit new, more ambitious targets. In order to achieve the global goal, the NDCs would have to include an approximate reduction of 55% of emissions by 2030.

Brazil, ranked sixth among the largest emitters of greenhouse gases (GHG) on the planet, and for having played an active role in 2015 in the Paris Agreement, generated an expectation in the national and international community that, by submitting the new NDC, there would be measures, like other countries, to have a greater ambition when compared to the one that had been submitted in 2015. Supporting increased ambition means more opportunities and the development of a cleaner, fairer and more resilient economy, with greater opportunities for job creation.

In order to establish the basis for a discussion around the need for actions to combat climate change and the existence of mechanisms that make it possible to put them into practice, the first section of this report presents the concept of climate finance, the Nationally Determined Contribution of Brazil, and estimates of the resource needs for Brazil to achieve its targets. Initially, a concept and a brief history on climate finance are made, which is the main focus of this document. Next, the Brazilian NDC is presented with its emissions and performance sectors, as well as a comparison between the two versions already presented by the country, i.e., that of 2015 and that of 2020. Finally, results from different studies are presented that sought to estimate the volume of resources needed for Brazil to implement the actions necessary to achieve its climate targets.

Section 2 of the document delves into the topic of climate finance, addressing aspects considered relevant for the assessment of existing mechanisms from the point of view of the Supreme Audit Institutions. Based on the literature on the topic, questions are presented about the actors involved and institutional arrangements existing in the mechanisms, transparency procedures, risk assessment mechanisms in financing, and practices for monitoring the achievement of objectives and synergies with existing public policies that guide the use of resources.

Section 3 aims to present the analysis of the selected mechanisms. Initially, a macro flow of operationalization of climate finance resources is presented, aiming to provide a basis for understanding the operation of the funds. Then the analysis itself is presented, organized into three groups: national mechanisms, UNFCCC mechanisms and bilateral mechanisms. At the end of the section, a discussion of the results

obtained in the analysis is made. Finally, section 4 presents the final considerations on the study.



1. CLIMATE FINANCE AND IMPLEMENTATION OF THE BRAZILIAN NDC

This section of the report presents climate finance and its relationship to the implementation of climate targets. For this, a description of what constitutes climate finance and a brief history of its emergence under the UN Framework Convention on Climate Change (UNFCCC) will be introduced. Next, Brazil's Nationally Determined Contribution (NDC) will be presented, which currently consists of the main institutional framework for mitigation actions for greenhouse gas (GHG) emissions in the country. Finally, a survey of the resources necessary to achieve Brazil's NDC targets will be provided, based on the studies "IES Brazil," "GHG Emissions Mitigation Options in Key Sectors" and "PMR Brazil Project," which present estimates of the amounts needed to achieve a satisfactory decrease in the country's GHG emissions.

1.1 What is climate finance?

Climate finance is local, national or transnational funding from public, private and alternative sources that aims to support actions to mitigate and adapt to climate change, in accordance with the UN Framework Convention on Climate Change (UNFCCC). It aims to reduce emissions and improve GHG sinks, as well as reducing vulnerability and maintaining and increasing the resilience of human and ecological systems to the negative impacts of climate change, as defined by the UNFCCC's Standing Committee on Finance (SCF).

During the 2009 Climate Parties Conference (COP15), held in Copenhagen, a commitment was made by developed countries to invest US\$30 billion between 2010 and 2012 so that developing countries could implement mitigation and adaptation actions, and with \$100 billion annually by 2020. This commitment became known as the Climate Finance Framework and was reiterated in the Paris Agreement in 2015, extending this aid to 2025. The commitment to climate finance is also present in goal 13 of the Sustainable Development Goals (SDGs) of the 2030 Agenda, which sets the target (13.a) of mobilizing \$100 billion as of 2020 to meet the needs of developing countries in implementing mitigation actions and to fully operationalize the Green Climate Fund (GCF).

Climate finance is sourced from multilateral institutions, development banks, international funds, and private banks, which allocate resources to various climate change issues, both from the adaptation and mitigation perspectives. These resources

originate from bilateral or multilateral agreements between governments to allocate resources according to the position adopted by the institution, and may be donations or subsidies, concessional loans, debt conversions, green bonds or guarantees.

The UNFCCC establishes that the operation of climate finance mechanisms can be entrusted to one or more existing international entities. The Global Environment Facility (GEF) has served as an operating entity of the finance mechanism since the Convention came into force in 1994. At COP 16 in 2010, Parties also established the Green Climate Fund, and in 2011 also designated it as an operating entity of the financial mechanism. The financial mechanism is accountable to the COP, which decides on its policies, program priorities, and eligibility criteria for funding.

The Parties have established two special funds for the GEF:

- Special Climate Change Fund (SCCF)
- Least Developed Countries Fund (LDCF)

In addition to these, the Kyoto Protocol had already created an Adaptation Fund in 2001, which was incorporated into the GCF and GEF as of the Paris Agreement in 2015.

The financial instruments that are used for climate finance can be:

- Green bonds: debt issued by public or private institutions and aimed at using the resources obtained for the environmental objective, which can be a project related to climate change mitigation and adaptation issues;
- Debt conversions: sale of foreign currency debt by the creditor country to an investor, who can then convert the debt with the debtor country in exchange for the development of mitigation and adaptation projects;
- Concessional loans: finance climate change mitigation and adaptation activities, which can be differentiated by having longer repayment terms and lower interest rates, among other favorable conditions;
- Guarantees: commitments made in order to secure and cover obligations assumed by contractual relationships with third parties against the risk of breach of contract, which can be activities linked to climate change;
- Donations or subsidies: amounts awarded for projects related to combating climate emergencies, which do not need to be reimbursed.

Once this foundation is made regarding climate finance, the relationship between it and the need for resources for the implementation of climate policies will now be addressed, adopting the Brazilian Nationally Determined Contribution (NDC) as the main reference, which will be presented below.

1.2 Brazil's Nationally Determined Contribution

The first Brazilian Nationally Determined Contribution was initially submitted to the Paris Agreement in 2016, considered ambitious with its greenhouse gas reduction targets. Despite criticisms regarding the update of the document in December 2020, which reduced the country's ambition with the established targets, it will serve as a reference for delimiting and categorizing the objects of this study as it is a reference document and an official commitment by the State.

Although the new methodology is correct and current, the maintenance of the emission reduction percentages, combined with the increase in their calculation base, led to a "loosening" of the absolute emissions target. Furthermore, it did not offer an ambition that would put Brazil in a leadership capacity on the climate agenda, pursued by countries seeking carbon neutrality by 2050.

In this sense, it is important to emphasize that the NDC Synthesis Report, released by the UNFCCC in February 2021, pointed out that, even if all targets set in the countries' NDCs are fully achieved, the planet would still heat up by about 3°C in relation to pre-industrial levels. The result demonstrates the need for the updates planned for NDCs every five years, including the Brazilian one, to be more ambitious in the long run.

The fact that Brazil's NDC is "economy wide," i.e., it has a binding economy-wide GHG reduction target, and not sectorial targets, provides flexibility in its implementation. This allows the creation of different paths towards its goal, with different volumes of resources to be spent.

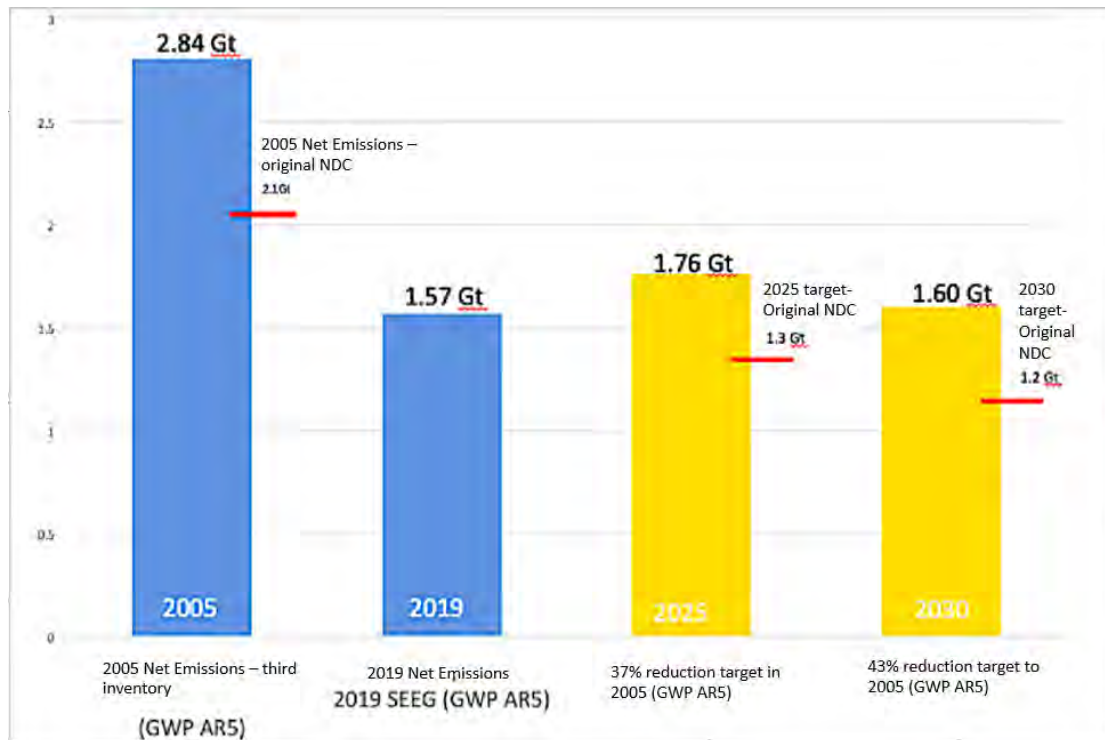
The first Brazilian NDC, submitted shortly after the Paris Agreement in 2016, presented a commitment to reduce 37% of national GHG emissions by 2025, compared to 2005 levels. The document also contained an indicative target of a 43% reduction by 2030, also in relation to the 2005 levels, and did not condition the achievement of the target to any external funding.

According to article 23 of Decision 1/CP.21, which adopted the Paris Agreement, countries with targets up to 2025 should, by the end of 2020, submit an update of their NDC. In December 2020, the Brazilian federal government did so, reiterating the target of reducing emissions by 37% for 2025 and 43% for 2030, in relation to 2005. It also indicated the possibility of net neutrality of emissions by 2060, conditioned to the "appropriate functioning of the financial mechanisms defined by the Paris Agreement." It also signaled the possibility of anticipating this deadline, in the event US\$ 10 billion in international resources are provided for climate action in Brazil starting in 2021.

The new document, however, generated a series of questions about the compatibility of the commitment with the Paris Agreement, including the level of emissions, the conditions imposed, and the impacts of methodological changes. This was because the new commitment adopted a different baseline, based on the Third National Inventory.¹ By improving the methodology for estimating land use emissions in the country, it ended up significantly increasing net emissions in the 2005 base year: from 2.1 billion tons of carbon dioxide equivalent (GtCO₂e) to 2.8 GtCO₂e. Applying the same percentage of the original NDC to this elevated baseline means that emissions in 2030 would be 1.6 GtCO₂e instead of 1.2 GtCO₂e, a significant increase of 33%. Figure 1 below compares the numbers related to the targets of the two submitted NDCs.

Figure 1 - Comparison of NDCs, Third National Emissions Inventory and SEEG (in GtCO₂e)

¹The Third National Inventory of GHG Emissions and Removals was published in 2016 by the Ministry of Science, Technology and Innovation as part of the 3rd National Communication from Brazil to UNFCCC.



Source: Climate Observatory

Finally, the new NDC does not cite the number of absolute emissions, expressed in GtCO₂e, that would be reduced in the commitment in contrast to the previous one. Nor does it contain the series of public policy intentions addressed in the original, which could contribute to the achievement of the target:

- Zero illegal deforestation, especially in the Amazon;
- Recover 15 million hectares of degraded pastures;
- Increase crop-livestock-forest integration systems by 5 million hectares by 2030;
- Increase the share of sustainable bioenergy to 18% in the energy matrix;
- Achieve between 28% and 33% of non-hydroelectric renewable energy in the matrix;
- achieve 10% efficiency gains in the electric sector by 2030.
- Achieve 45% renewable energy in the composition of the energy matrix in 2030;
- Renewable sources, in addition to hydropower, would represent at least 28% of the energy matrix by 2030;
- Non-fossil sources (in addition to hydropower) would represent at least 28% of the electrical matrix, by 2030.

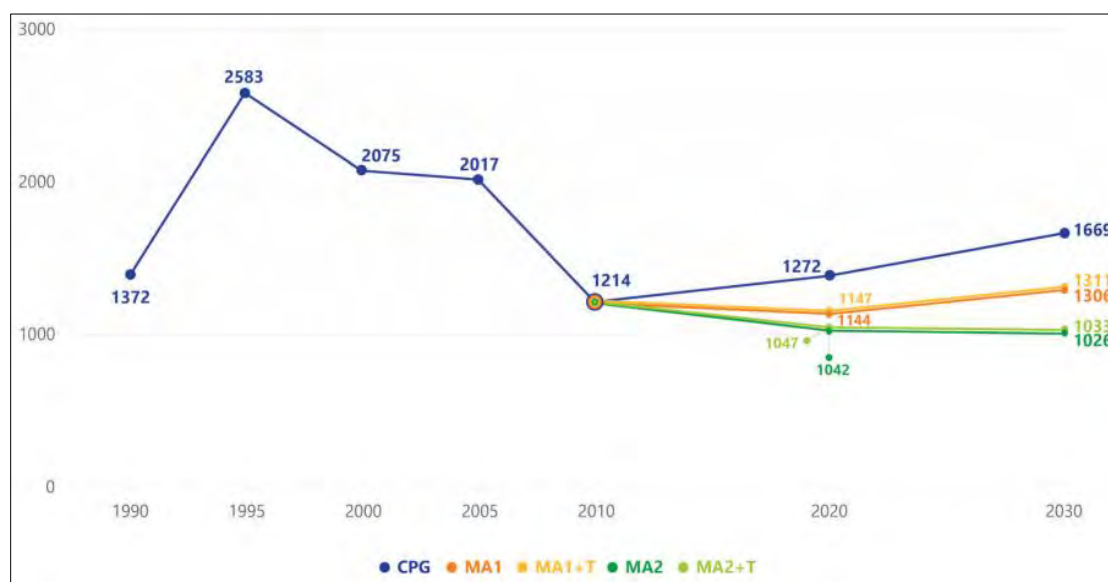
Despite the reduction of ambition in the last NDC presented by Brazil, the document is currently the main basis for the development of public policies to tackle climate change and, consequently, should guide decisions on the use of resources for climate finance.

1.3 Resources needed to achieve the targets of the Brazilian NDC

The IES-Brasil study analyzed the economic and social implications of adopting different sets of measures to mitigate GHG emissions in Brazil until 2030, based on a scenarios development committee (CEC) composed of specialists from the then federal government, the productive sector and civil society. This group formulated the hypotheses of two scenarios, selecting mitigation measures in addition to the extension of the government plans then underway: one with costs below US\$20/tCO₂e and another identifying a value of \$100/tCO₂e. The study also assessed the macroeconomic and social impacts in Brazil of adopting a global carbon tax on the burning of fossil fuels, with these same values.

For the first scenario, the need for R\$99 billion in the 2015-2030 period was identified, while for the second, the need for R\$372 billion was projected, both in 2005 values. When analyzing the graph in Figure 2 below, both scenarios are within the ceiling of 1.6 GtCO₂e of emissions in 2030, proposed in the NDC update. If considering the total numbers expressed in the first version of the Brazilian commitment, only Scenario 2 would be within the 1.2 GtCO₂e ceiling of the previous NDC, reaching 1 GtCO₂e. This scenario is also the one that presents the best total GDP gain over the period, reaching 609 billion added between 2015-2030 when compared to the baseline scenario.

Figure 2 - Evolution and projection of net emissions over the decades (in GtCO₂e)



Source: IES-Brasil 2030 (2018)

As an explanation of the graph, the line referring to the acronym CPG illustrates the continuity of government programs and related investments underway at the time of the study. On the other hand, MA1 and MA2 are the scenarios containing additional mitigation measures, as explained above, while the lines with "+ T" considered the possibility of a carbon rate in the period in each of these scenarios.

However, other important studies have identified different amounts for meeting national climate targets. The report "Mitigation options and public policy instruments for achieving the Brazilian goals in the Paris Agreement" identifies the amount of US\$41.2 billion, in 2017 values, to reach the goal of the first Brazilian NDC, highlighting the positive financial result when considering the revenues obtained from the adoption of low carbon sector activities (MCTIC, 2017).

The "Base Document to support the structured dialogues on the development of an implementation and financing strategy for Brazil's Nationally Determined Contribution to the Paris Agreement," produced by the MMA and the IDB, after recognizing that such projection "lacks robust financing," identifies an indicative value between R\$890 billion and R\$950 billion to achieve the targets of the Brazilian NDC, based on 2017 values. However, it is worth noting that such a survey signals a large part of the efforts in the energy-related sectors, which is a notably more expensive alternative to mitigate emissions in the Brazilian scenario.

The discrepancy in the estimates of the need for investment to reach the Brazilian climate targets for 2030 illustrates the related uncertainties, varying between approximately R\$160 and R\$470 billion, in values updated for 2021 and considering the largest contribution of resources in emissions reduction through combating deforestation, and programs for reforestation and recovery of degraded pastures.



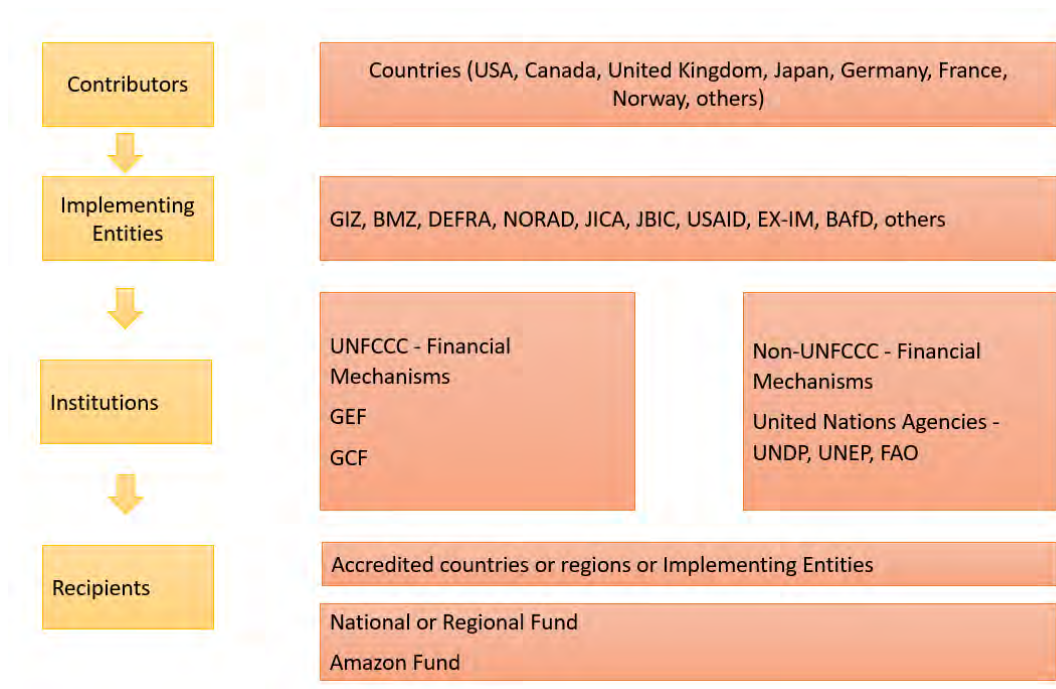
2. CLIMATE FINANCE ECOSYSTEM MECHANISMS

This section of the report presents the overall structure of global financing, with its actors and institutional arrangements, aspects related to transparency, risk management and monitoring, as well as the main legal instruments that should be considered beyond the NDC presented in the previous section. This set of elements, which can present great diversity and complexity, with particularities in each of the different mechanisms, is called here “climate finance ecosystem mechanisms.” Each of the elements of this ecosystem will be addressed below.

2.1 The role of actors and institutional arrangements

The climate finance ecosystem has a large number of actors and institutional arrangements, which sometimes have different configurations, which can make it difficult to understand. Climate finance can have many different sources, as different actors are mobilized to invest and contribute to the various existing funds for this purpose. Generally, climate finance comes from public sources, which are the main financial mechanisms, including multilateral organizations, governments, multilateral development banks and development agencies. However, given the great urgency and magnitude of the measures that need to be taken to adapt and mitigate climate change, there is a lack of resources available from public sources. Thus, there is a need to stimulate private sector sources as well, such as commercial financial institutions, corporations, NGOs, resources from donations, among others. Collaboration between public and private entities can generate mixed financing in which risks to the private sector are reduced. The schematic diagram in Figure 3 below allows the visualization of the components of this ecosystem.

Figure 3 - Actors in the climate finance ecosystem



Source: Adapted from the report The Global Climate Finance by the Heinrich Boll Stiftung Institute

Contributors

These are the countries that drive climate finance initiatives around the world with financial resources. The governance of these resources is usually established together with the recipient of the resources, including the role of non-governmental stakeholders as observers to finance meetings with opportunities for participation.

Bilateral Institutions

These are service providers in the area of international cooperation for sustainable development that are committed to building a future worth living and are therefore focused on issues of relevance to the global context. A list of bilateral institutions that make up the ecosystem is presented in Annex A, although it is noted that there may be others that are not listed here.

Multilateral Institutions

Multilateral climate finance institutions are composed of initiatives and funds, which can be divided into financial mechanisms whose origin and guidelines are from the

UNFCCC, and other financial mechanisms that come from other multilateral institutions. A list of these multilateral initiatives and funds is presented in Annex C.

- **UNFCCC Financial Mechanisms**

The two UNFCCC financial mechanisms that are addressed in this study are the Global Environment Facility (GEF) and the Green Climate Fund (GCF). The GEF was founded in 1991 as an operating entity of the UNFCCC financial mechanism, serving the same function in the Paris Agreement. It also serves as a mechanism for other conventions, including the Convention on Biodiversity and the Convention to Combat Desertification. The GEF has a variety of areas of activity, including climate change, and allocates resources in several developing countries and countries with economies in transition, and is considered the largest single source of cumulative multilateral financing for climate change actions.

In turn, the GCF was agreed on at COP 17 in Durban and became fully operational with its first projects approved in late 2015. Similar to the GEF, it serves as an operating entity of the UNFCCC's financial mechanism. The GCF is expected to become the main channel through which international public climate finance will flow over time, with a commitment to having a balanced allocation of financing for adaptation and mitigation, i.e., 50% of resources for each. In October 2017, the GCF implementation partner network grew to 59 accredited entities and the fund approved a total of 54 projects, with \$2.6 billion in GCF financing commitments. Both mechanisms will be analyzed in more detail in section 3 of this document, together with other financing mechanisms.

- **Financial Mechanisms - from other multilateral institutions**

These are initiatives or funds that have been established by institutions such as the UN, the World Bank, the Inter-American Development Bank (IDB), the European Investment Bank (EIB), among others. Some initiatives such as the Partnership for Market Readiness (PMR), the Climate Investment Funds (CIF) and the United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation (UNREDD) can also be mentioned.

Recipients

These are the countries or regions that are accredited by the multilateral funds or are implementing entities. Within the resources directed globally for public climate finance, they are generally used in bilateral agreements managed by the development agencies existing in the countries, which through cooperation models establish the governance and the criteria for the use of resources. In Brazil, the Amazon Fund, for example, which is managed by the National Bank for Economic and Social Development (BNDES), has received more than \$1 billion from Norway and Germany.

2.2 Pillars of transparency

Transparency procedures have great importance in several areas, and when it comes to the financial sector, its relevance is mainly due to the great impact that bad practices or wrong information can have on society as a whole. An example of this potential impact was the financial crisis of 2007 and 2008, which had serious repercussions in the following years and generated an increased demand for transparency in the governance structures, strategies, and organizations' risk management practices.

In this context, the Financial Stability Board - FSB² created the Task Force on Climate-Related Financial Disclosures (TCFD) to develop a protocol for climate change related financial disclosures. The task force published four recommendations in 2017 that can be adopted by organizations from various sectors and jurisdictions, including those in the financial sector, such as banks, insurers, asset managers, and asset owners. These recommendations are organized into four thematic areas, as illustrated in Figure 4 below, which represent the core elements of the organizations' operations: governance, strategy, risk management, and metrics and targets.

²The FSB promotes international financial stability. Through the coordination of national financial authorities and international standard-setting bodies, they work to develop strong regulatory, supervisory and other financial sector policies.

Figure 4 - Pillars of transparency for climate finance



Source: TCFD Final Report (2017)

2.3 Risk assessment

Faced with a worsening climate change scenario, it becomes essential that investments in various types of activities take climate risk into consideration. Several financial institutions have incorporated this type of risk assessment in their investment decisions, as well as Central Banks in different countries having developed regulations in this sense.

Climate risk can be of two types: i) the risk related to extreme weather events, which can impact activities and affect asset pricing; and ii) the risk of asset deflation as the economy transitions to a less carbon-intensive model, giving rise to the so-called "stranded assets," which get this name because they gradually lose their usefulness as this transition occurs.

Within the scope of the TCFD, recommendations related to the assessment of climate risk in financial decision-making were made, which are relevant to the financial sector in the assessment of loans, investments and insurance. With regard to the cut for climate finance and for financial institutions, the critical point when addressing a credit

portfolio with GHG emission reduction projects is to integrate climate risks with traditional financial risks (credit risk, risk appetite, portfolio exposure, among others).

In Brazil, the following regulations currently exist that relate to climate risk:

- National Monetary Council Resolution - CMN 4,327/2014 - determines financial institutions reporting to the Central Bank (BC) to publish a Socio-Environmental Responsibility Policy, in addition to constituting a governance structure for the topic and developing a Socio-Environmental Risk Management System, according to their operations, products and services;
- CMN Resolution 4,557/2017 - deals with integrated risk management in financial institutions, with provisions on management, stress testing and capital allocation for different risk modalities, including socio-environmental risk (where it refers to CMN Resolution n. 4,327/2014 for procedures).
- BC Resolution n. 4,267/2013 - Provides for financing under the resources of the National Fund on Climate Change (FNMC).

The BC is currently in the process of a public hearing, and the purpose of this new regulation is to require banks to incorporate social, environmental and climatic factors into their risk management policies. These aspects should be considered in the analysis of credit, liquidity and market risks within the models that each institution uses to calculate portfolio exposure. As soon as the procedures are completed, the Central Bank must replace the current Resolution 4,327/2014 mentioned above.

There is still a need to improve the evaluation of climate projects, so banks must include short, medium and long term climate risks on models and evaluation processes, considering the climate scenarios (1.5°C, 2°C, 3°C, 4°C, etc.).

Considering that financial institutions take historical data into account in risk assessments, and that in the case of low-carbon projects, they must take into account predictive models in their analyses (scenarios of temperatures x physical risks and transition risks), we understand it is clear that institutions need to improve their credit models. There are several global groups working on modeling and simulations, such as the case of UNEP-FI with working groups involving various financial institutions in the world. There is also an effort by regulators in the world (Central Banks) to observe the introduction through public policies that continue to harmonize the financial system.

Another point of attention to be noted is the need for climate finance, as well as other lines of finance, to have guarantees. As climate change projects often have the character of innovation, there is an opportunity to think about new guarantee instruments, such as, for example, a guarantee fund or insurance.

2.4 Monitoring

Monitoring is a very important aspect of climate finance, since projects of this nature should generally have well-defined goals regarding the mitigation of GHG emissions or adaptation and increased resilience to climate change. In this way, monitoring the progress of the project that receives climate financing allows the evaluation of its effectiveness in achieving the goals for which the resource is destined.

With the advances in environmental, social, and corporate governance (ESG) and related requirements, the need to report the results of climate finance projects is a way to address investors and society. Demonstrating that the resources directed to climate issues bring results and that the socio-environmental impacts bring the expected benefits contributes to the understanding that we are on the path to a development that considers mitigation and adaptation planned in public policies. For the monitoring to be effective, it is necessary to implement a Monitoring, Reporting, and Verification (MRV) system and standards that help in the correct understanding that we are on the path towards a low carbon and climate change resilient economy.

In addition to monitoring the results of specific projects, as mentioned above, monitoring is also useful to verify that the resources are being applied for the correct purpose, that is, if in fact they are being allocated to actions related to climate change. However, this task can be complex due to the relative subjectivity of what can be defined as climate finance. The term may differ from one institution to another, as it depends on the scope defined by each one, as well as its form of operation. Credit lines, for example, can be a stamped line, that is, the resource is conditioned to the theme and with criteria established between the resource provider and the institution, thus targeting the projects adherence to the eligibility criteria.

Another form of action observed in institutions is a composition of the use of climate finance together with other lines of credit, composing the total value of the financing of a project that does not necessarily have the exclusive purpose of mitigation or adaptation, but that is consistent with the concept of projects adhering to the theme

of climate change. In these cases, monitoring can also become complex due to the difficulty of assessing how much of the results obtained can be attributed to the resource for climatic purposes. Generally, the credit line called climate finance works as an inducing or catalyst line for a given project to be supported.

Due to the scope of the climate issue, climate finance is aligned with the NDC, but not exclusively, and can support other sectors/themes whose focus is to reduce GHG emissions. In the Brazilian NDC, for example, one can observe the topics of renewable energy and energy efficiency, recovery of degraded areas for livestock, bioenergy, recovery of forest areas, clean technologies and infrastructure for public transport and urban areas, low carbon agriculture, combating deforestation, crop-livestock-forest integration techniques, and encouraging new low carbon technologies.

As financial resources in relation to climate finance are still scarce, the need to combine several lines of credit is a way of establishing support for different projects. However, on the other hand, it is difficult to monitor the understanding of the total volume of resources that are being directed specifically to certain issues, as the other credit lines have resources from other sources (partner entity) that are not necessarily the same as the climate finance in use in the financial institution.

Finally, monitoring is important because it allows the follow-up of procedures adopted by financial institutions that are authorized for the management of resources. The operationalization of the application of resources differs according to the institution, which will exercise different instruments and different procedures depending on the resource obtained. The complexity of the operation is due to the need to adhere to regulatory issues and/or internal policies established for each type of operation. Each financial agent has its own operating strategy and credit policies, which is why it defines different ways of achieving the objective of adapting or mitigating climate change.

There are gaps in standardization so that monitoring and verification can be carried out so that we can understand how far the country is advancing in the objectives set, and how much the country is collaborating globally in the fight against climate change. Thus, it is necessary to elaborate plans on how to achieve mitigation and adaptation that are in line with fundraising that will be directed towards the needs that present themselves in the country. Having a climate governance of the country, with clear, encouraged and monitored objectives, will bring a framework of practices and actions

that can generate opportunities for Brazil to be a country that promotes sustainable and low carbon development with the fulfillment of its NDC commitments.

2.5 Synergy with public policies

As already discussed in the previous items, the definition of what can be considered climate finance may vary depending on the context of each country. Thus, it is important that resources for this purpose are applied in line with existing public policies on this topic. In Brazil, the main framework is currently the NDC, presented in section 1. The following are other regulations considered more relevant at the federal level related to the topic and which may contribute when defining the financing of actions in the area of climate change.

- **Law No. 12,187** - National Policy on Climate Change (PNMC);
- **Decree nº 7,390/2010** - responsible for regulating the PNMC instruments, established the following sectorial action plans for mitigating and adapting to climate change:
 - a) Action Plan for the Prevention and Control of Deforestation in the Legal Amazon - PPCDam;
 - b) Action plan for the Prevention and Control of Deforestation and burning in the Cerrado - PPCerrado;
 - c) Ten-Year Energy Expansion Plan (PDE 2030)
 - d) Plan for the Consolidation of a Low Carbon Economy in Agriculture - ABC Plan;
 - e) Steel Emissions Reduction Plan;
- **Law No. 12,114, of December 9, 2009** - creates the National Fund on Climate Change (FNMC);
- **Law 13,800 of January 4, 2019** - amends Law 12,114 of December 9, 2009, and authorizes the public administration to sign partnership instruments and terms for the execution of programs, projects and other purposes of public interest with heritage fund management organizations;
- **Decree No. 9,578 of November 22, 2018** - consolidates regulatory acts issued by the Federal Executive Branch that provide for the National Fund on Climate Change and the National Policy on Climate Change;

- **Decree No. 10,143 of November 28, 2019** - amends Decree No. 9,578, of November 22, 2018, which provides for the National Fund on Climate Change and the National Policy on Climate Change.
- **Ordinance 575, of November 11, 2020** - approved the Internal Regulations of the National Fund on Climate Change Steering Committee.

In addition to these regulations at the federal level, several states have state policies and instruments to tackle climate change, including the establishment of specific targets for reducing emissions in some cases. The role of subnational entities in this area has been increasingly relevant, and several state governments have joined forces to propose actions that complement those established at the federal level. In this sense, the creation of an institutional framework in the states, focused on climate finance, is fundamental to make it possible to attract resources from the organizations that provide the resources. The creation of state funds for the management of these resources, with well-defined procedures for transparency and monitoring the application of resources, should contribute to creating a safe environment and attracting financing to the states.

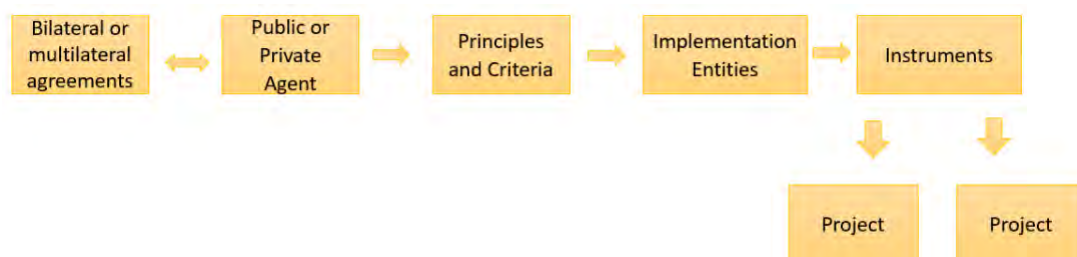
An aerial photograph of a coastal landscape featuring white sand dunes and turquoise water. The dunes are sculpted into smooth, flowing shapes, with deep shadows cast by the low sun. The water is a vibrant turquoise color, contrasting sharply with the white sand. The overall scene is serene and visually striking.

DISCUSSION OF RESULTS

This section of the report presents the results of the surveys on the selected mechanisms with regard to operation, governance mechanisms, the role of public managers in the management of resources, follow-up and monitoring processes, and policies and criteria for decisions on the use of resources..

However, before starting this presentation, it is important that a brief introduction is made on the macro-flow of operationalization of climate finance resources. Section 2 presented a description of the actors involved and the role played by each in the climate finance ecosystem. Figure 5 below illustrates the flow of the operational procedure generally followed by climate finance in Brazil, composed of five stages/elements/agents, which served as a reference for the analysis of the selected funds.

Figure 5 - Macro-flow of operationalization of climate finance resources



Source: Own elaboration

Bilateral or multilateral agreements

There are a number of multilateral, bilateral, non-governmental and private institutions with a key role in climate finance. These institutions provide non-reimbursable financial resources, such as donations, and/or reimbursable resources, such as investments, funds and credit operations for climate and/or environmental issues.

Public or private agent

These are government agencies that represent the recipient country or public/private companies that are designated by the local authorities as representatives of the recipient government to manage resources from either multilateral or bilateral institutions.

Principles and eligibility criteria

These are established in common agreement, based on priorities detected to achieve the objective of GHG mitigation targets, or projects/programs for adapting to climate change.

Implementing entities

The resources will be managed by an executing entity that can establish the necessary structuring to make operationalization available, in accordance with the defined principles and criteria.

Instrument

The form in which these resources will be made available is defined, such as financing, guarantee funds, insurance, among others.

Project

Projects linked to climate change related adaptation and mitigation issues can be financed.

2.6 Analysis of results

A pre-defined set of 11 financing mechanisms for actions in the areas of environment and mitigation and adaptation to climate change in Brazil were mapped and analyzed, divided into three categories, listed in Table 1 below.

Table 1 - Financing mechanisms analyzed

Category	Mechanism
National funds/financing	- o National Climate Change Fund - o National Environment Fund - o Amazon Fund - o Environmental Compensation Fund - o BNDES Environment Line - o Financier of Studies and Research - o Santander Sustainability Line
Multilateral Funds and Agencies	- o Inter-American Development Bank - o Latin American Development Bank
UNFCCC funds	- o Global Environment Facility - o Green Climate Fund

These mechanisms were selected for their relevance on the national and international scene, as well as for the importance of their analysis in contributing to the role played by SAls in their follow-up. In the choice, the scope of institutions with different governance, legal characteristics and roles within the climate finance “ecosystem” in the country was also prioritized, allowing a broad mapping of the financial flows that bring resources to the climate mitigation and adaptation projects.

2.6.1 National funds

As shown in Table 1, seven national funds were selected for analysis, some of which are directly related to the topic of climate change, while others just touch on the topic, without necessarily having mitigation and adaptation as final objectives.

i) National Fund on Climate Change

The National Fund on Climate Change (FNMC) was created by Law No. 12,114 of 2009 (recently amended by Law No. 13,800 of 2019) and has its regulation defined by Decree No. 9,578 of 2018 (amended by Decree No. 10,143 of 2019). This decree contains principles, concepts and general rules of the fund, composition and competencies of its steering committee, sources of resources, activities permitted to receive its resources, and on the elaboration and approval of the annual application plan.

The FNMC is managed by a Steering Committee linked to the MMA. As defined in Decree No. 7343, this committee is responsible for approving the budget proposal and the Annual Plan for Resource Application - PAAR, which defines the proportion of resources to be applied in each modality, with up to 2% of these resources being earmarked for payment to the financial agent or expenses related to the administration of the Fund and the management and use of resources. It also establishes biennial guidelines and priorities in the application of resources, approves non-reimbursable projects and annual reports of activities and performance of the financial agent and the coordination of the fund.

The Steering Committee is composed of a member and an alternate representing each of the 5 ministries, the financial agent, the confederations of interested sectors and the Brazilian Forum on Climate Change.

Among the possible sources of funding for the FNMC are the budget appropriations allocated to the Fund in the Federal Government's Annual Budget Law (LOA) and in its additional credits, and its own resources from interest and amortization of financing from reimbursable applications. The PAAR, at least since 2015, follows the planning pattern in which the resources obtained by the LOA are destined to the reimbursable applications, while the resources from the earnings from the applications are destined to the non-reimbursable modality.

PAAR 2020 established the following guidelines for financing projects in both reimbursable and non-reimbursable modalities:

- Non-reimbursable resources: the themes and priority regions of application will be determined within the scope of the choice of projects submitted by the MMA for approval by the Steering Committee, with an emphasis on the urban environmental quality agenda, including solid waste management and the closure of dumps.
- Reimbursable resources: are eligible for financing all existing BNDES Climate Fund lines, namely: urban mobility, sustainable cities and climate change, efficient machinery and equipment, renewable energy, solid waste, charcoal, native forests, carbon management and services, as well as innovative projects in all sub-programs.

The application of non-reimbursable resources is the responsibility of the MMA, which must do so according to the thematic areas defined annually by the PAAR. There are four different types of project execution used: credit decentralization; contracting; voluntary transfer; transfer to an international organization (no projects in this last modality have been identified since 2015). Each type of execution can also use different instruments, as explained in the table below. It is worth noting that in the cases of voluntary transfer involving transfer agreements and execution of works, the transfer will be via Caixa Econômica Federal (CEF) or Banco do Brasil (BB) as trustee institution, responsible for the management and audit of the execution, as occurs in the Lixão Zero Rondônia Project approved by the Steering Committee in 2020.

Table 2 - Types of Execution of FNMC non-reimbursable resources

Execution type	Instrument	Nature of the Entity
Credit decentralization	Decentralized Execution Term	Direct and Indirect Federal Public Administration Bodies
Voluntary Transfer: Public Call	Agreement Term	State Public Administration, Federal District and Municipal Bodies or Entities. Private Non-profit Entities
Voluntary Transfer: Public Call	Partnership Term	Civil Society Organizations of Public Interest (OSCIP).
Voluntary Transfer: Public Call	Collaboration Term and Development Term	Private Non-profit Entities
Contracting: Bidding, Bidding Waiver or Unenforceability Articles 17, 24 and 25 of Law 8.666/93	Administrative Contract	Private Non-profit Entities. Private companies in general.
Contracting: Bidding, Bidding Waiver or Unenforceability	Transfer Agreement	Federal Public Financial Institution or Agent
Transfer to International Organization	International Cooperation Agreement	Technical Cooperation Agency

Source: PAAR (2017)

For the operationalization of reimbursable resources, the fund's financial agent is Banco Nacional de Desenvolvimento Econômico e Social (BNDES), which can qualify Banco do Brasil S.A., Caixa Econômica Federal, Banco do Nordeste do Brasil S.A., Banco da Amazônia S.A. and other public financial agents to act in financing operations with FNMC resources, in which case it will continue to bear the risks with the fund.

The BNDES receives the fund's reimbursable resources and grants credits for climate projects in two different ways: directly to the project executor through the modality called FINEM whose financial amount of the project is greater than R\$20 million; or indirectly through other financial institutions, called on-lending agents that finance operations whose financial amount is less than R\$20 million per project. In the case of the transfer agent, it follows the criteria established by the FNMC to the BNDES in relation to the eligibility of the projects, however the credit criteria are the responsibility

of the on-lending agent that will work with the analysis within the risk model that will be consistent with the defined risk appetite.

In the case of indirect operations, the client requests the financing from the accredited on-lending agent, which is a financial agent that assumes the risk of these financing operations, and has its own policies and rules for credit concession. The evaluations and approvals follow the standards of the accredited financial agent. It is the accredited institutions that also define the operation's guarantees.

In the case of indirect operations, the instrument used is a credit line, with long-term and reimbursable financing. The volume of resources disbursed in these operations in 2020 was R\$57.7 million, while the historical average of annual disbursements (between 2015 and 2019) is R\$55.3 million. On the other hand, financing through other intermediary financial institutions uses a credit line granting instrument, which is also long-term and reimbursable. These transactions totaled R\$70.8 million in 2020, slightly above the annual average of R\$66 million (2018 and 2019).

Table 3 - Reimbursable FNMC resources disbursed per year (R\$)

	2015	2016	2017	2018	2019	2020
BNDES indirect operation	74,597,000	36,478,000	363,000	73,074,000	92,260,000	57,656,000
Indirect operation	-	-	-	6,575,000	125,513,000	70,814,000

Source: Prepared by the authors based on FNMC BNDES Annual Report and Financial Statements

Through the fund's resources, the BNDES supports the implementation of projects, the acquisition of machinery and equipment and technological development related to the reduction of greenhouse gas emissions and adaptation to climate changes and their effects. The Climate Fund Program has nine subprograms, listed below with their respective criteria.

Urban mobility - aimed at projects that contribute to reduce the emission of greenhouse gases and local pollutants in urban passenger transport and to the improvement of urban mobility in metropolitan regions;

Sustainable Cities and Climate Change - supporting projects that increase the sustainability of cities, improving their overall efficiency and reducing the consumption of energy and natural resources;

Efficient Machinery and Equipment - aimed at financing the acquisition and production of machinery and equipment with higher energy efficiency rates or that contribute to the reduction of greenhouse gas emissions;

Renewable energy - support for investments in local generation and distribution of renewable energy from the use of biomass, except for sugarcane, capture of solar radiation, ocean and wind energy in the case of isolated systems; and investments in activities aimed at the technological development of the solar energy, ocean, wind energy and biomass sectors, as well as the development of the production chain of the solar energy and oceans sectors;

Solid Waste - support for projects to rationalize urban cleaning and waste disposal, preferably with use for energy generation located among the priority municipalities identified by the Ministry of the Environment;

Charcoal – aimed at investments to improve the efficiency and sustainability of charcoal production;

Native Forests - aimed at projects associated with sustainable forest management; forest planting with native species, including the production chain; processing; and consumption of forest products of sustainable origin; as well as the technological development of these activities;

Carbon Management and Services - intended for projects that improve the management of carbon emissions or that effectively reduce greenhouse gas emissions;

Innovative Projects - support for innovative projects related to the ventures supported in the other sub-programs of the Climate Fund Program.

The interest rate composition varies according to the form of support. For indirect operations, the final interest rate will be composed of the financial cost, the BNDES rate (including the BNDES remuneration and the financial intermediation rate), and the financial agent's rate. For indirect operations, the final interest rate will be composed

of the finance cost and the BNDES rate (includes the BNDES remuneration and the credit risk rate).

The financial cost reflects the BNDES funding cost from its various sources of funds and is determined according to each product, financing line, or program, and may be composed of one or more rates such as: TLP, SELIC, rates indexed to the IPCA, among others. The rates may vary throughout the financing contract, generating monetary updates of the contracted amounts.

The BNDES basic remuneration reflects the remuneration of the bank's activity, covering its administrative and operating expenses. The basic remuneration established for each product, line of credit or program is a minimum benchmark.

The credit risk rate reflects the remuneration to cover the credit risk incurred in direct financing carried out by the bank, defined in accordance with the BNDES Credit Policy. In indirect operations, the credit risk of the end client is covered by the remuneration of the accredited financial institution, since it is the latter that assumes the risk of the operation. The financial intermediation fee, on the other hand, reflects the remuneration to cover the credit risk before the accredited financial institutions.

The remuneration of the accredited financial institution reflects the credit risk assumed by the accredited financial institutions in indirect operations, as well as remuneration for their activities. The remuneration is determined according to the financial institution's own criteria at the time of the operation, and its amount is negotiated between the institution and the client.

Climate Fund resources were used between 2015 and 2020 to finance climate projects in seven categories of NDC sectors and climate adaptation:³

- Renewable Energy - R\$198,812,100
- Energy Efficiency - R\$193,438,800
- Recovery of areas (livestock) - R\$10,746,600
- Waste - R\$0,746,600
- Climate adaptation - R\$1,284,700
- Transportation - R\$96,719,400

³Classification estimate for NDC sectors based on the composition of the BNDES reimbursable FNMC portfolio in the 2nd quarter 2020 Report.

- Adaptation/Resilience of cities - R\$5,373,300

As can be seen, projects aimed at sustainable production and disposal were the main recipients of resources, accounting for 45.2% of the total. On the other hand, projects to reduce deforestation and reforestation (2.2%) and climate adaptation (1.1%) were the least benefited. It should also be noted that there is no funding for low carbon agriculture.

In relation to the general monitoring of the Climate Fund, this is carried out by the Climate Fund Management and the Steering Committee, with emphasis on the PAAR, the Annual Report and the Steering Committee Meetings. Regarding financial monitoring, this is carried out by the Integrated System of Federal Government Financial Administration - SIAFI, used to record, monitor and control the Federal Government's budget, and financial and patrimonial execution (Interministerial Ordinance CGU/MF/MP 507, of 24 November 2011), and the Federal Government's Agreement and Transfer Management System - Siconv, which allows the electronic monitoring of all agreements and other instruments for the transfer of resources. In addition, the fund is audited annually by the Office of the Comptroller General - CGU. Financial information on reimbursable resources is also reported in the Annual Execution Report and the FNMC Financial Statements by the BNDES.

Currently there is no set of socio-environmental impact performance indicators, making it difficult to assess the effectiveness of the PNMC, and technical results of emission reductions are not reported.

ii) National Environment Fund

The National Environmental Fund (FNMA), managed by the Ministry of Environment was established by Law No. 77797 of 1989. Its goal is, through financing for public agencies and private non-profit entities, to develop projects aimed at the rational and sustainable use of natural resources, including the maintenance, improvement or recovery of environmental quality. It is the oldest environmental fund in Latin America and has already supported more than a thousand socio-environmental projects with around R\$275 million invested.

The MMA is responsible for the fund's administration, for its budgetary, financial, patrimonial and administrative management and, therefore, the FNMA is subordinated to the internal control of this ministry. The fund's deliberative body is chaired by the

minister of the environment and currently composed of representatives from the Civil House, the Ministry of Economy, the Ministry of the Environment, IBAMA and ICMBIO. Its responsibility is to judge the projects to be approved to receive contributions from the Fund. The composition of the board was changed by Decree No. 10,224 of 2020, which excluded representatives of civil society and science.

The fund's main resources are:

- Fines for environmental infractions, which according to the Art. 73 of the Environmental Crimes Law (Law No. 9,605/98) must be allocated to the FNMA (or to the Naval Fund and state and municipal environment funds, as provided by the collection agency)
- Fines for administrative infractions imposed by Ibama and ICMBio, which according to Art. 13 of Decree 6,514/2008, must allocate 20% to the FNMA
- Sources of fund donations and loan agreements (have not been identified since 2015)

Since 2012, fines started to be identified by numeric codes in the Union Collection Guide (GRU) and sent directly to the FNMA (or others when applicable), but previously the values were destined to the National Treasury that should be performing its distribution.

With the decrease of OGU resources in the last decade, the FNMA sought alternatives to finance new projects and take advantage of the know how of its technical team, which originated new institutional arrangements with operations together with other funds. In a partnership that has been underway since 2010 through a cooperation agreement, the fund's team defines territorial and thematic priorities of Caixa Econômica Federal's Socio-environmental Fund (FSA). In addition, the FSA supports, through its instruments, projects approved by calls for proposals launched by the FNMA. In 2015 and 2018, calls for proposals were launched in conjunction with the National Fund on Climate Change in order to explore the synergies and common agendas. In neither case is there a transfer of resources between the institutions, but rather the definition of guidelines and joint actions.

More detailed disclosures about FNMA's governance, strategy, metrics, goals and partnerships are disclosed in the FNMA's Management Reports. However, this document was prepared and made available on the MMA website only in fiscal years 2012 and 2014, and risk management metrics with a focus on climate change were not identified.

In the 2014 report, the organizational chart was elaborated that presented how it is internally organized, with a deliberative body, a board of directors, two management offices, and three coordinating offices. However, within this organization only the deliberative body is formalized by Law No. 7,797 of 1989, while the board and project management positions were established by Decree No. 6,101 of 2007, which was subsequently repealed and followed by three other decrees in recent years (Decree No. 8,975 of 2017; Decree No. 9,672 of 2019; Decree No. 10,455 of 2020), but which no longer address project management.

Since 2015, there have been no updates on the application strategies, internal operations, assignment of duties, contracting stages, or organizational efficiency indicators. The updated information about the fund is disclosed briefly within the annual Execution Reports of the MMA itself, where only data about the period's budget execution and priority topics are described.

The resources are granted to the beneficiaries in two application modalities: spontaneous demand and induced demand. Both modalities are non-reimbursable but, in general, with the requirement of a financial counterpart from the beneficiary for the execution of the project in a volume that can vary according to the nature and size of the institution. Spontaneous demand seeks to support pilot projects that meet local demands and can be replicated in other locations. FNMA opens a public call for proposals on Plataforma +Brasil, or Siconv. The spontaneous demand projects must be worth between R\$100,000 and R\$300,000 and last up to 18 months.

FNMA's 2014 Management Report informs the strategic decision to forego this modality, which would require greater fund capacity to monitor and evaluate projects, since they tend to be more scattered and numerous. FNMA execution data released on the MMA/SFB Open Data Portal (transparency portal with data from the Ministry of Environment and the Brazilian Forest System), informs that, since 2016, no agreements have been executed in this modality. At the time of writing this report, the last update released was in 2019.

Table 4 - Funds from FNMA agreements approved by modality/year (R\$)

Modality	2015	2016	2017	2018	2019	Grand Total
Spontaneous Demand (DE)	387,583	418,264	-	-	-	805,846

Induced Demand (DI)	903,491	14,244,793	5,300,239	6,809,401	-	27,257,924
Total	1,291,074	14,663,057	5,300,239	6,809,401	-	28,063,770

Source: Prepared by the authors based on Open Data Portal of the MMA/SFB

The induced demand seeks to support projects presented in response to calls for proposals or terms of reference published by the FNMA according to the strategic priorities of the National Environment Policy, with emphasis on attracting proposals of greater value for the execution of structuring projects. The prioritization of projects along these lines reduces the total number of projects supported and, consequently, facilitates the execution of resources. Likewise, each project that is not executed or presents problems compromises a larger portion of the budget.

The FNMA monitors the supported projects through partial and final reports and physical visits, evaluating both their physical and financial execution. The project's financial execution stages must also be updated on the Plataforma +Brasil, but not their physical execution.

Since 2015, calls for proposals have been opened on three occasions: 2015, 2017, and 2018. The first was launched with the FNMC and CEF with the theme "Recovery of Permanent Preservation Areas for Water Production," representing 68% of the resources of agreements executed since 2015. In 2017, the call for proposals was launched only with CEF resources, with the theme "Composting Projects." In 2018, in partnership with the FNMC again, the theme was "Social and environmental initiatives to reduce vulnerability to climate change in urban areas." With this, FNMA's annual budget execution remained in the range between R\$ 3 million and R\$ 4.5 million in the period. FNMA's budget reflects the limit established for the MMA, which in turn defines the limit for the preparation of the Annual Budget Law Project (PLOA) for each unit within the ministry.

Table 5 - Total FNMA budget execution since 2015 (R\$)

2015	2016	2017	2018	2019	2020
3,706,151	3,676,721	3,595,085	3,839,222	4,323,193	3,339,995.00

Source: Own elaboration based on MMA Execution Reports

The topics of the calls for proposals must be approved by the deliberative body and follow the guidelines of the FNMA and the areas for the application of defined Fund resources, according to the law establishing the FNMA (Law No. 7,797 of 1989): Conservation Unit; Technological Research and Development; Environmental Education; Forest Management and Extension; Institutional Development; Environmental Control; Rational and Sustainable Economic Use of Native Flora and Fauna; Recovery of areas degraded by accidents or environmental disasters. The transversality of the FNMA's thematic areas with the Brazilian NDC can be identified in the control of deforestation (R\$903,490.86 executed), recovery of degraded areas (R\$19,545,032.08) and waste management (for which it was not possible to identify the amounts spent).

iii) (Amazon Fund)

The Amazon Fund (AF) is a pioneering initiative to finance actions to Reduce Emissions from Deforestation and Forest Degradation (REDD +). During the 13th Conference of the Parties of the UNFCCC, in 2007, Brazil took the proposal of the fund and received authorization for the BNDES to be the implementing entity, and the following year established the creation through Presidential Decree 6,527 of August 1, 2008.

For international donors, it was essential that the design of the Amazon Fund was defined based on three important points:

- Financing by result;
- Governance system with stakeholder representation (*multistakeholders*);
- Low cost management through the BNDES.

At the time, other factors led Brazil to obtain support for the creation of the fund, such as international recognition of the great success of Brazil's efforts to reduce the annual rate of deforestation in the Amazon and the existence of a system for monitoring deforestation by satellite produced by the National Institute for Space Research (INPE), which generates real, reliable data and whose methodology is internationally recognized. In addition, the international reputation of the BNDES is added as a trustworthy institution, with management capacity and transparency.

In the creation decree it was established that the BNDES will represent the Amazon Fund judicially and extrajudicially. The bank was authorized to take the necessary measures for the establishment and management of the Amazon Fund, intended to raise donations for non-reimbursable investments in actions to prevent, monitor and combat deforestation and to promote the conservation and sustainable use of forests in the Amazon biome, covering the following areas:

I - Management of public forests and protected areas;

II - Environmental control, monitoring and auditing;

III - Sustainable forest management;

IV - Economic activities developed from the sustainable use of the forest;

V - Ecological and Economic Zoning, and-use planning and land-title regularization;

VI - Conservation and sustainable use of biodiversity; and

VII - Recovery of deforested areas.

Until 2019, the fund received voluntary donations for non-reimbursable application in projects related to the areas previously described in the Legal Amazon. Up to 20% of the fund's resources can be used to develop deforestation monitoring and control systems in the rest of Brazil and in other countries with tropical forests. The funds can also be used by the BNDES (3% of the total donations) to cover its operating costs and expenses related to the AF, including expenses related to the operationalization of the Technical Committee of the Amazon Fund - CTFA, of the Orientation Committee of the Amazon Fund - COFA and the costs of contracting audit services.

The governance of the AF was established by the decree, and is composed of the CTFA and the COFA. The CTFA was constituted with the attribution of certifying the Carbon Emissions from Deforestation (ED) calculated by the Ministry of the Environment, and for this purpose it had to evaluate the methodology for calculating the area of deforestation and the amount of carbon per hectare used in the calculation of emissions. The CTFA met annually, and was composed of six experts appointed by the Ministry of the Environment, after consultation with the Brazilian Forum on Climate Change, for a mandate of three years, extendable once for an equal period.

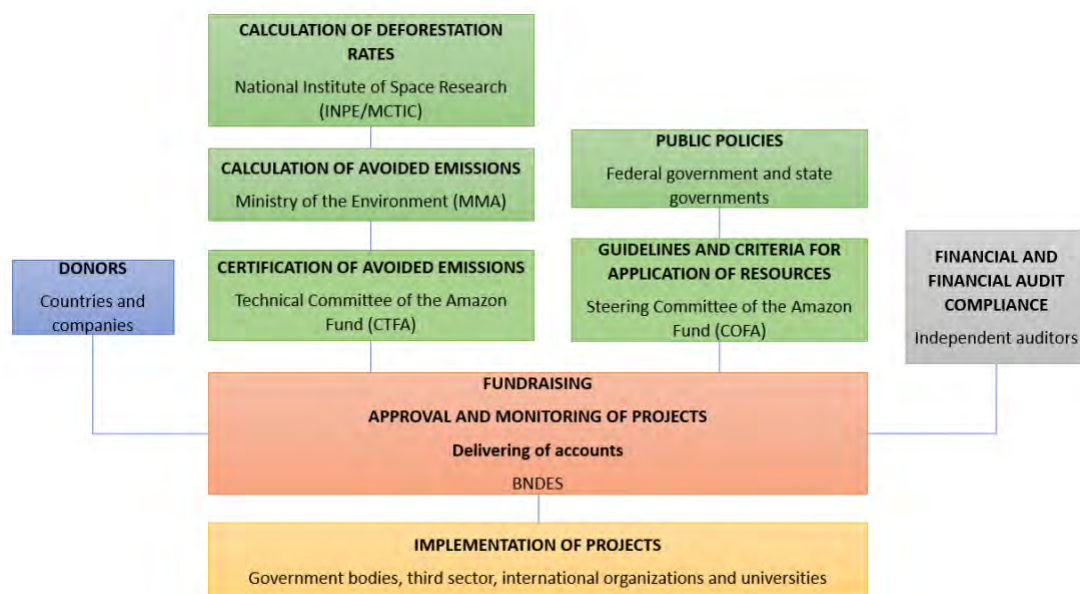
The COFA was composed of representatives from the federal government (eight ministries and the BNDES), from state governments (a representative of each state of

the Legal Amazon that has a state plan to prevent and combat deforestation) and civil society (including NGOs, indigenous peoples, industry, forestry sector, agricultural workers, and science). The members of the COFA were nominated by the respective municipalities and appointed by the president of the BNDES for a two-year term, extendable once for an equal period. The COFA was chaired by one of the representatives of the federal government's bodies, with a two-year mandate, with the first mandate being held by the MMA's representative, and the COFA's Executive Secretariat being held by the BNDES, and in the other years being chaired by members of other federal government bodies.

The BNDES was audited annually by an external company to verify the correct application of the resources. In order to request approval from COFA, the BNDES was obligated to present semi-annual information about the application of resources and the AF's annual report.

As a result of the promulgation of Decree 9,759, on April 11, 2019, which established rules for federal public administration collegiate bodies, the two committees that made up the governance of the Amazon Fund - the Orientation Committee of the Amazon Fund (COFA) and the Technical Committee of the Amazon Fund (CTFA) – have been extinguished since June 28, 2019.

Figure 6 - Governance of the Amazon Fund until June 28, 2019



Source: Amazon Fund Annual Report 2019

The Amazon Fund has already received approximately R\$3.4 billion in donations, with 93.8% coming from the government of Norway, 5.7% from the government of Germany, through KfW Entwicklungsbank, and 0.5% from Petróleo Brasileiro S.A. (Petrobras). Regarding project support, the AF ended 2019 with a portfolio of 103 supported projects, of which 27 were completed in the 2008-2018 period. The financial resources allocated to the supported projects totaled about R\$1.9 billion, and 63% were disbursed by 2019. Throughout the AF's operation, the BNDES has not been proactive in seeking to diversify its donors, which has caused it to be practically dependent on only two large donors (Norway and Germany).

The AF was the first to receive funding from Norway's International Climate and Forest Initiative (NICFI), created in 2007 with the intention of annually funding up to 3 billion Norwegian kroner (about US\$ 360 million)⁴ to reduce deforestation in tropical forests. The approval of Norway's resources to support the Amazon Fund was a multi-year parliamentary decision, with a focus on reducing GHG emissions from deforestation and forest degradation, conservation of forest carbon stocks, sustainable management of forests, and enhancement of forest carbon stocks (REDD+). Emission reductions are the basis for payments made annually, and these emissions are not counted as emission reductions by Norway..

The NICFI does not have the institutional capacity to monitor details of the implementation of the AF, but it does follow up through a representative of the Norwegian Embassy in Brazil as a guest observer at COFA meetings, and an annual meeting takes place with donors organized by the BNDES. In addition, an external audit is carried out annually, the report of which is public. As it is a public resource in Norway, in addition to transparency in the use of the resource, there is monitoring by the Norwegian Agency for Development Cooperation (NORAD) and a general audit by Norway carried out by the NICFI.

The German government is the second largest donor of the AF, with funds coming from the Federal Ministry for Economic Cooperation and Development (BMZ) through a specific budget appropriation that must be approved annually by the German Parliament for disbursements. The bilateral institution is the German Cooperation

⁴ Considering conversion 1 NOK = US\$ 0.1203 on 05/05/2021.

Agency (GIZ, acronym in German) and the implementing entity is the German State Development Bank (KfW, acronym in German), who are responsible for advocating for the Amazon Fund in the German Parliament and in the German Ministry of Finance.

There are questions about the German government's donations to the fund due to factors such as the relative degree of development of Brazil, the fact that payments are based on past performance (ex-post) and not on performance indicators related to the specific donation, and the fact that the REDD+ approach is not yet consensual in Germany. However, approvals have occurred because there is a perception by the government that the AF has contributed to generating positive results for the decrease of deforestation.

Germany's financial support for the AF is managed through KfW, with a total disbursement of 55 million euros, compared to a total funding of 100 million euros (ECLAC, 2019). GIZ provides technical support to the AF, and the funding for this technical support in the 2011-2021 period would reach 14.62 million euros, of which 8.02 million euros were from the BMZ (started in 2010), while the Norwegian government started co-financing the technical support (carried out by GIZ) in 2015 with a total amount of 6.60 million euros.

Table 6 - Resources received from donations by the Amazon Fund per donor (thousand R\$)

	2015	2016	2017	2018	2019
Norwegian Ministry of Foreign Affairs	501,985	330,163	139,272	272,365	-
KfW	-	-	131,993	-	-
Petrobras	2,830	979	1,824	1,239	-

Source: Prepared by the authors based on Financial Statements from the Amazon Fund

GIZ's technical support from the AF is focused on improving the implementation of projects and training. GIZ has extensive experience in Brazil with environmental projects and works in the context of environmental management policies and obstacles to the implementation of projects by governmental and non-governmental entities in the country. Regarding the execution of projects, the institution has developed several systems, processes, and instruments and, with other implementing entities, organizes workshops, courses and face-to-face or virtual training.

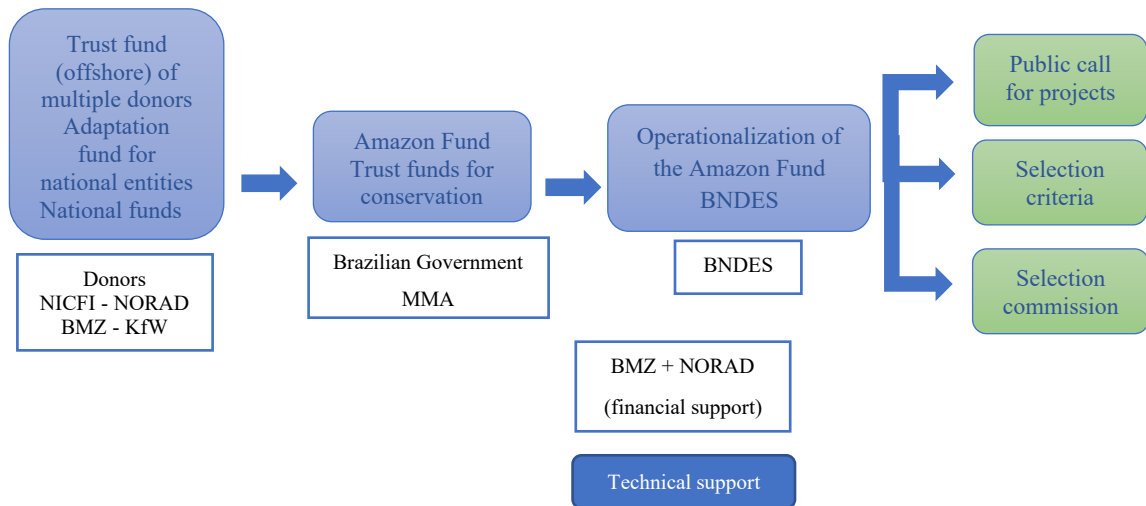
GIZ seeks, together with the implementing entity, to make a diagnosis of obstacles and bottlenecks, followed by the development of an action plan to solve the problems. Technical support helped to improve the average financial performance of project implementation by 45%, which generated an increase in disbursements for projects by 21%. Specifically, the disbursement to the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA), in the context of its project to control deforestation, increased by 84% (GIZ, 2019).

Another relevant support is related to evaluations of completed projects, for which an ex-post evaluation methodology (based on the Organization for Economic Cooperation and Development - OECD) was developed for these projects. The objective is to generate a learning process based on projects implemented to produce knowledge for the managers themselves, the BNDES, the COFA and the environmental area of the Brazilian government. The evaluations have shown significant contributions in reducing deforestation and in sustainable development (ECLAC, 2019).

Figure 7 below illustrates the scheme for operationalizing the resources of the Amazon Fund. The use of the trust fund⁵ is considered to be the appropriate vehicle to handle the support of commitments under the SDGs and their financing. In addition, trust funds provide professional management, institutional soundness, oversight, procedures of control and capacity, all of which provide donors with the fiduciary guarantees that legislation requires. As such, trust funds are often "best in class" when it comes to transparency and accountability regarding finances and the results of activities.

⁵ Trust Fund: is a legal instrument whose purpose is to hold the assets of a particular person or organization. The assets are managed by a trustee, who is someone neutral within the business, until they can be transferred to their beneficiaries. Trusts can contain various assets, including property, shares, cash, or the business itself. In addition, they can be a combination of different assets or many properties.

Figure 7 - Scheme of operationalization of the Amazon Fund



Source: Own elaboration

Once the resources are received from the offshore trust fund, they are transferred to the Amazon Fund, and the resources are managed by the BNDES, which has 3 pillars for using the resources in the projects:

- **Public Calls** - were adopted by the AF as a strategy to induce the presentation of good projects in specific and relevant thematic areas and to attract the broadest and most diverse participation of institutions interested in the topics, providing greater scope and capillarity in the fund's performance. Public calls were made in:
 - o 2012 - Sustainable productive projects;
 - o 2014 - Projects aimed at supporting Territorial and Environmental Management Plans in Indigenous Lands;
 - o 2017- Projects for the Consolidation and Strengthening of Sustainable and Inclusive Value Chains;
 - o 2017 - Vegetation Coverage Recovery Projects;
- **Selection criteria** - for each public call, a set of criteria with different weights for the choice of projects is constituted, as detailed below:
 - o Projects related to sustainable production (2012):
 - a. Contribution to job and income generation, with sustainability and permanence of results (weight 5)

- b. Action strategy, clarity in defining the objectives and methodology of the proposal, with the history and technical capacity of the bidder (weight 4)
 - c. Consistency between personnel costs, market costs and results. Relationship between the number of families benefited and the amount requested. Integration with public policies. Gender and youth issues. (weight 3)
 - d. Financial contribution and innovation (weight 2)
- o Projects linked to indigenous territories (2014):
 - a. History of work with the indigenous peoples covered in the proposal. Indigenous lands inserted in the target municipalities for the PPCDAm⁶ Sustainable Productive Activities Category. Indigenous lands located around large infrastructure projects. Projects that benefit an expressive set of indigenous lands and communities. Having proven experience with indigenous populations in the biome. (weight 2)
 - b. Well-dimensioned project, with well-defined objective, scope and methodology. Projects that include cultural promotion activities. Insertion of gender and youth themes (weight 1)
- o Sustainable and Inclusive Value Chains (2017):
 - a. Well-dimensioned project, with well-defined objective, scope and methodology. (weight 5)
 - b. History and technical capacity, impacts and financial sustainability (weight 3)
 - c. Insertion of gender and youth theme
- o Recovery of Vegetation Cover (2017):
 - a. Bidder's managerial and organizational capacity (weight 20)
 - b. Technical activities for recovering vegetation cover (weight 16)

⁶ Acronym in Portuguese for Plan for Prevention and Combat to Amazon Deforestation

- c. Costs, spatial priority. Social and ecological importance of recovering vegetation cover in the region. Productive chain, training and income generation (weight 12)
 - d. Synergy with public and/or private sector activities aimed at recovering vegetation cover (weight 10)
 - e. Gender and youth (weight 6)
- **Selection Committee** - for each public call, members of the federal, state, and civil society, the COFA and the BNDES were selected, according to the need for a collegiate body with a variety of knowledge and views.

The follow-up on projects is carried out by monitoring the indicators of each project through the report sent by the person responsible for the execution of the project, which must contain:

- a summary of the main activities carried out in the period;
- financial information referring to the amounts used in the period;
- documentation regarding the fulfillment of contractual obligations.

When necessary, the BNDES also checks the physical and financial execution of the project, which includes visits to the project site. The release of funds provided for in the project is also subject to the verification of compliance with the relevant norms and contractual clauses.

At the end of the project, the beneficiary presents a report evaluating its results. The main objective of this report is to consolidate information about the execution of the supported project and its results and impacts. The report must cover data on the evolution of the project, the indicators, the future sustainability of the results, problems that arose in its implementation, and describe the knowledge generated and lessons learned.

The main results achieved by the Amazon Fund until 2019⁷ were:

- SUPPORTED PROJECTS
- R\$1.86 billion - total supported

⁷Amazon Fund Annual Report 2019

- R\$1.2 billion - disbursed
- R\$3.4 billion in donations received
- 1.4 million rural properties registered in the Rural Environmental Registry (CAR)
- 202,000 people benefited from sustainable productive activities
- 338 institutions supported directly and through partnerships (61% public sector, 38% third sector and 1% international)
- 1236 environmental audit missions carried out
- 65% of the indigenous land area in the Amazon supported
- 190 protected areas supported
- 594 scientific or informational publications produced

iv) Environmental Compensation Fund

The Environmental Compensation Fund (FCA) was created by Law No. 13,668 of 2018 in order to receive the resources received from the environmental compensation provided for in the National System of Conservation Units (Law No. 9,985 of 2000). For a better understanding, a brief historical review of environmental compensation and the management of its resources is in order, which has already had a fund of the same type in the past.

The law that created the National System of Conservation Units (SNUC) established in its Article 36 that, when licensing ventures with significant environmental impact, the entrepreneur is obliged to support the implementation and maintenance of the protected areas of strict protection categories. Even before this law, there was already a CONAMA regulation regarding environmental compensation, so what was established in the SNUC Law was not an innovation but an adaptation (LIMA, 2015), but these details escape the scope proposed here.

After the enactment of the SNUC Law, some regulations related to environmental compensation provided for in article 36 were published and a Direct Unconstitutionality Action (ADI nº 3,378) was filed by the National Confederation of Industries questioning the provision. It is worth highlighting the rule on the priority of application of the compensation resources established by Decree nº 4,340/2002:

- i) Land title regularization and land demarcation;
- ii) Elaboration, revision or implementation of a management plan;
- iii) Acquisition of goods and services necessary for the implantation, management, monitoring and protection of the unit, including its buffer area;
- iv) Development of studies necessary for the creation of a new conservation unit; and
- v) Development of research necessary for the management of the conservation unit and buffer area.

The IBAMA must calculate the compensation based on the degree of impact and the reference value, the former calculated from information contained in the Environmental Impact Studies (EIS/EIR), and the latter informed by the entrepreneur to IBAMA. Once the amount of compensation is defined and the Term of Commitment is signed for the implementation of the Environmental Compensation Plan, the resources must be allocated (LIMA, 2015).

The main actors involved in the management of environmental compensation, when licensing at the federal level, and their respective functions are (TCU, 2013):

- i) Entrepreneur - comply with the obligation of environmental compensation;
- ii) IBAMA - determine the amount of compensation during the licensing process;
- iii) Federal Chamber of Environmental Compensation (CFCA) - establish priorities and guidelines for the application of environmental compensation, as well as evaluate and audit the methodology and procedures for calculating compensation;
- iv) Federal Environmental Compensation Committee (CCAF) - to decide on the division and purpose of applying the compensation resources;
- v) ICMBio – apply the resources in the Federal Conservation Units in accordance with the CCAF's deliberations;
- vi) Caixa Econômica Federal - manage the accounts where the compensation amounts are deposited.

Between 2000 and 2007, the compensation was carried out directly by the entrepreneur. However, since this model was ineffective for both the entrepreneur

and the government, in 2005, the IBAMA signed a contract with Caixa creating the Institutional Environmental Compensation Fund (FICA) to receive the financial resources from environmental compensation (FARIA, 2008), as an alternative to companies obliged to invest in the creation and maintenance of CUs. Thus, the creation of this fund established a model of indirect compensation where the public sector performed the planned actions with the resources deposited by the entrepreneur, as opposed to the previous direct compensation model, in which the entrepreneur was responsible for the compensation actions, by himself or through third parties (LIMA, 2015).

However, in the face of criticism of this new model, FICA was extinguished and, in 2008, ICMBio (which became the manager of federal CUs in 2007) signed a new contract with Caixa to manage resources through bookkeeping accounts, which are opened in the name of each enterprise. From then on, ICMBio began to sign the terms of commitment with the entrepreneurs for the execution of the compensation, who started to choose this model, even though they still had the option of direct execution (TCU, 2013).

The decision on the division and purpose of the compensation resources is made by the Federal Environmental Compensation Committee (CCAF), which was created in 2011 within the scope of Ibama, with support from the agency's Licensing Board (Dilic) team. The CCAF replaced the former Environmental Compensation Chamber (CCA), which started to face difficulties in the deliberations when the split between Ibama and ICMBio occurred due to the uncertainty of which of the bodies would be responsible for this work (LIMA, 2015).

However, the application of resources by ICMBio did not have the expected agility, largely due to the lack of a mechanism that allows operationalization in an efficient and transparent manner. Given this context, in 2017, Provisional Measure (MP) 809 was published, which among other measures proposed the creation of the Environmental Compensation Fund. According to the explanatory memorandum of the MP, the creation of the FCA fills the legislative gap on the topic of Environmental Compensation and overcomes legal obstacles presented by the TCU, who understood that the possibility of indirect execution of environmental

compensation (hitherto done through bookkeeping accounts) was not legally provided.

In 2018, Law 13,668/2018 (which converted MP 809) was published, authorizing ICMBio to select an official financial institution to create and manage the fund for the management of environmental compensation resources, and this institution is also responsible for the direct or indirect execution of the resources. It was also established that the full deposit of the amount set by the licensing agency relieves the entrepreneur of the obligations related to environmental compensation.

ICMBio selected Caixa Econômica Federal (CEF) as the institution responsible for the management of the FCA, and the latter registered the fund in a notary's office in December 2018. Even before the fund was registered by CEF, ICMBio had published Ordinance No. 1,039, in November 2018, defining the criteria, policies and guidelines of the FCA. The ordinance defined the duties of the financial institution in the administration of the fund, as well as those of ICMBio as manager, who is responsible for monitoring, follow-up and evaluating the actions, defining the criteria and schedule for the execution, the application of resources based on the Annual Plans of Execution (PAE) approved by the Permanent Commission for Environmental Compensation (CPCAM), to monitor compliance with the PAE by the fund administrator, to deliberate on the annual accountability of the FCA, among other activities.

According to the ordinance, the fund's resources must be applied exclusively to the actions provided for in the PAE prepared by ICMBio and forwarded to the fund's managing institution. Thus, this document became the guideline for the use of FCA resources, with ICMBio being responsible for the guidelines.

Risk control and management mechanisms were also defined in the ordinance, with CEF being responsible for periodically carrying out an internal audit on FCA resources and forwarding the results to ICMBio. In addition to the internal structure, external mechanisms to support management and governance should be used, including independent auditing and social control over the management and execution of resources.

Therefore, after the publication of the recent instruments that sought to change the management mode of environmental compensation resources, ICMBio has a more

prominent role, acting as manager of the FCA, being responsible for the guidelines and the oversight of the use of resources. On the other hand, CEF assumes the role of administrator of resources, and must report to ICMBio on the actions carried out. The main instrument for the execution of the compensation became the Annual Execution Planning, which must be prepared by ICMBio and forwarded to CEF.

v) *The BNDES Environment Line*

The BNDES has a product with financing lines above R\$20 million aimed at investment projects in different topics, Finem (enterprise financing). More than 20 topics are covered by this product, among which is the Finem Environment.

The BNDES Finem Environment seeks to finance investments in sustainability, and it can be used for projects with the following purposes:

- Reduced use of natural and material resources
- Recovery and conservation of ecosystems and biodiversity
- Environmental planning and management.
- Recovery of environmental liabilities
- Energy efficiency
- Sustainable products or processes
- Acquisition of efficient vehicles, machines and equipment

As with financing linked to the Climate Fund, in Finem Environment, the BNDES finances projects both directly and indirectly, through intermediary financial institutions. In the first case, the instrument used is the credit line, while in the second, the instrument is the credit line. In both cases, the financing is reimbursable and long-term.

The amounts disbursed can be followed-up on through the Data base in Disbursements from the BNDE System, whose values for 2015 can be seen below. However, there is no follow-up of the results of the issuance after the event.

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Table 7 - Funds disbursed by the BNDES Credit Line by year and modality (R\$)

	2015	2016	2017	2018	2019	2020
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BNDES indirect operation	55,584,018	31,900,394	12,508,143	46,370,928	102,933,469	88,424,223
Indirect operation	-	-	-	9,100,000	25,496,053	6,770,684

Source: Prepared by the BNDES System Disbursements Database

Finem Environment exclusively finances climate projects, with companies based in the country, foundations, associations, cooperatives, and public entities and bodies being eligible. Finem Environment does not require the impact assessment of projects to grant credit.

Within the financing operations, guarantees are required which, in the case of the BNDES, are categorized as follows:

- Indirect operations - guarantees are negotiated between accredited financial institutions and the client;
- Indirect operations - real guarantees are required, such as mortgage, pledge, fiduciary property, receivables, others and/or personal guarantees such as surety or guarantee;
- Financing of machinery and equipment - fiduciary ownership of the assets subject to financing will be held, to be maintained until the final settlement of the contract. The substitution of the goods included in the guarantee with any other is not permitted, except in the case of claims or performance problems in the guarantee period, which must be reported to the BNDES.

vi) Santander Sustainability Line

Banco Santander has a line of financing for business projects that promote sustainability, with emphasis on low-carbon agriculture and renewable energy. Recently, the bank also extended socio-environmental financing to individuals, including practices such as solar photovoltaic generation, rainwater harvesting, among others.

Within the bank's sustainability line, eight mechanisms have been identified that can relate to climate finance:

- CDC Socioenvironmental Solar

- Sustainable CDC
- Sustainable CDC Solar
- Sustainable Working Capital
- CDC Agro Solar
- Sustainable entrepreneur plan
- BNDES Low Carbon Agriculture (BNDES ABC)
- Green Bonds.

In most of the listed mechanisms, credit is provided directly by the bank to the executor of a project, with the exception of CDC Socio-environmental Solar, whose borrower is a final consumer, and the BNDES ABC, in which Santander is actually an intermediary agent between the BNDES and the project executor. All financing is made through reimbursable loans,, with the exception of the Green Bonds mechanism, which is made through the issuance of green bonds. In general, financing is medium-term, with the exception of the BNDES ABC, whose credits are long-term.

With respect to eligibility criteria, the financing mechanisms of the Santander sustainability line do not require operating targets for sustainability, although there is an impact assessment of the projects. Borrowers can be natural persons or legal entities, depending on the type of mechanism, as shown in the table below.

In all cases, Santander is responsible for rendering accounts, with the exception of the Green Bonds mechanism, which is responsible for the issuing company.

vii) Financier of Studies and Projects - Finep

Finep is a public company linked to the MCTI with the mission of promoting economic and social development through the public promotion of Science, Technology and Innovation in companies, universities, technological institutes and other public or private institutions. Finep has different support modalities (reimbursable financing, non-reimbursable financing to Science and Technology Institutions (ICTs), economic subsidy, investment), which are detailed in its Operating Conditions, as well as priority areas.

Finep acts as executive secretary of the National Fund for Scientific and Technological Development (FNDCT), of which it is responsible for operating together with CNPq as

development agencies. FNDCT resources come from different sources, including a share on the value of royalties on the production of oil or natural gas, percentage of net operating revenue from electric energy companies, revenue from the contribution of intervention in the economic domain (CIDE), return on loans granted to Finep, Treasury resources, loans from financial institutions or other entities, among other sources.

There are two budgetary units (UOs) for the execution of FNDCT resources: UO 74910, whose budget is part of the Official Credit Operations of the federal government, where the resources are for application in the action of financing companies through a loan to Finep; and UO 24901, where discretionary expenses are: non-reimbursable actions to support ICTs and special operations (economic subsidy to companies, investment, equalization of resources and guarantee of liquidity), in addition to the contingency reserve. In this way, FNDCT resources can be used for reimbursable, non-reimbursable or capital support.

The FNDCT has fifteen sectorial funds with specific objectives, instruments of the federal government to leverage the country's science, technology, and innovation system. Among the fifteen funds, those most closely related to the issue of climate change or to sustainability in general are:

- CT-Energy - aims to finance programs and projects in the area of energy, especially in the area of end-use energy efficiency. The fund receives from 0.75% to 1% of the net revenues of concessionaires of generation, transmission and distribution of electric power.
- CT-Hydro - aims to finance studies and projects in the area of water resources, to improve the various uses of water to ensure the current and future generations high standards of quality and rational and integrated use, with a view to sustainable development and prevention and defense against critical hydrological phenomena or due to the inappropriate use of natural resources. The fund receives 4% of the financial compensation currently collected by the electric power generation companies (equivalent to 6% of the production value of electric power generation).

The governance of the FNDCT relies on the participation of collegiate bodies and operational bodies in the processes of planning, allocation and application of resources, with Finep being responsible for the executive secretariat. The sectorial

funds have Steering Committees that count on the participation of sectors of society in the decisions on the application of the funds' resources and allow the shared management of the planning, design, definition and follow-up on the actions.

The monitoring of financing carried out with FNDCT resources is presented in the Results Report, published annually, which also assumes a function of providing transparency in the use of resources. It should be noted that, in addition to Finep, CNPq and MCTI also use the fund's resources. By way of illustration, Table 8 below shows the allocation of FNDCT resources according to the latest report available, for the year 2019.

Table 8 - Total values in each of the closed support instruments (2019)

Modality	Instrument	Total amount contracted	Total Amount Disbursed
Non-Reimbursable Financing	Non-reimbursable funds for ICT	461,662.00	426,162.00
	Scholarships	30,000.00	30,000.00
	Economic Subsidies	95,963.00	77,415.00
Reimbursable Financing	Credit	1,851,606.00	1,175,568.00
Investment	Direct Investment	22,119.00	22,119.00
		2,461,350.00	1,731,264

Source: FNDCT 2019 Results Report⁸

Finep can still execute thematic programs for environmental agendas, as was the case of the Inova Sustainability Program executed between 2013 and 2016 together with the Ministry of Environment and the BNDES. Aiming to take advantage of synergies in areas of application and priorities among the three institutions, the program constituted a public call to support initiatives that promote sustainable development. To evaluate the proposals, an Evaluation Committee was set up with representatives from the institutions; subsequently, Finep and the BNDES would internally evaluate which of the available financial instruments the proposal could fit into, and the evaluation and monitoring procedures were carried out internally within the standards of the respective institutions.

The only thematic program specifically aimed at the climate agenda is the Inova Climate Program, which is in the preparation phase. A bilateral agreement of 4 million

⁸Available at <http://www.finep.gov.br/transparencia-finep/relatorios-do-fndct/relatorios-do-fndct>

euros was signed with KfW for its funding, the largest ever received by Finep from international organizations that are strategically seeking to expand their participation in this type of partnership. Furthermore, technical cooperation with the Inter-American Development Bank, which has internationally recognized governance mechanisms, is being implemented for planning support for this program.

2.6.2 Multilateral funds and agencies

Multilateral agencies, together with public development financial institutions are essential for long-term financing of the economy, and the need for financing to tackle climate issues brings uncertainties that lead the private financial sector to reduce these operations. These institutions have been engaged in coordinating with local governments and the private sector to assist countries' development, and they have been standing out, especially in emerging markets, with higher risk or long-term financing. Therefore, they play a key role in obtaining resources for climate change adaptation and transition investments.

The two main multilateral agencies for the Brazilian context, which were selected for analysis in this study, are the Inter-American Development Bank (IDB) and the Development Bank of Latin America (CAF).

i) Inter-American Development Bank

The Inter-American Development Bank is a multilateral bank that acts as an accredited institution by the Green Climate Fund, Global Environmental Facility, NAMA, among others. The IDB mobilizes resources for climate finance through member countries and stimulates through technical assistance when they originate from donations or can make up to 30% of project investments.

- In bilateral agreements, the contributor (donor country) establishes an agreement with the IDB (which plays the role of a financial mechanism) to work with the country receiving the resources, so in these cases the resources are not internalized in the country. These agreements require a Letter of No Objection from the competent local authority, for example, the Secretariat for International Affairs (SAIN), or the Brazilian cooperation agencies for the resources to be made available. In the case of resources for concessional financing, there is the need for sovereign guarantee.

Climate finance has the country's NDC as a guide, seeking innovation for the projects and strategic guidelines defined, as in the case of sustainable infrastructure. In 2016, the IDB and the Inter-American Investment Corporation (IIC) announced the creation of NDC Invest, a one-stop shop to help countries access the resources needed to translate national climate commitments into fundable investment plans and projects. NDC Invest is a platform composed of four elements:

- NDC Programmer;
- NDC Pipeline Accelerator;
- NDC Market Booster; and
- NDC Finance Mobilizer.

Together, the components aim to enable progress towards the loan objectives of NDC Invest and the IDB, as well as the achievement of the UN Sustainable Development Goals. In addition to using resources directly on the project financing format, the IDB may use different financial instruments as collateral, or equity, or first loss models. The resources earmarked for climate funds are used as a catalyst to make low carbon projects feasible and, therefore, the need to use these resources may be to make feasible, for example, an initial study necessary for the project to move forward.

Ten IDB climate finance mechanisms were identified, which are done through different instruments. The IDB is an accredited agent for the concession of credits with resources from climate funds for projects; in these situations the institution acts as an implementing agent of a certain project prepared together with government representatives and requested from the fund. The climate funds that the IDB currently works with are: Climate Investment Funds (CIF), Global Environment Facility (GEF), Forest Carbon Partnership Facility, Adaptation Fund, Green Climate Fund (GCF), UKAid, InfraFund, Canadian Climate Fund. With operations in Brazil, activities were identified with CIF, GEF and Canadian Fund. Besides these, the IDB also acts as manager of its own fund, the SECCI (Sustainable Energy and Climate Change Fund).

The Bank also acts as a financier of credit programs granted via intermediary financial institutions (Sicredi, Banco ABC, Banco Pine, and CCLIP with the BNDES). In these cases, the resources can be released periodically as the intermediary institution reports on the granting of the credit to the beneficiaries. When intermediary institutions are used, in general, the resources granted are the IDB's own, but

eventually, when synergies between the proposals are identified, they can be applied from funds for which the IDB is an accredited agent, including others that do not have an exclusively climatic purpose, as in the case of the loan made to Banco Sicredi for financing the low carbon agriculture sector, which also used resources from the China Co-Financing Fund for LAC. The project database on the institution's website provides documents for this type of mechanism, such as project impact assessment and project summary.

In addition to the IDB mechanisms mentioned above, the list contains three mechanisms from IDB Invest, an independent subsidiary of the IDB Group for investment in the private sector. The bank performs the *anchor* credit programs granted via intermediary financial institutions. Three events were identified with the climate agenda: loans to Banco Daycoval, loans to Sicredi, acquisition of *sustainable bonds* from Minas Gerais Development Bank (BDMG). IDB Invest's financing may not require guarantees in cases where the institution accepts greater exposure to risk. The terms for financing can be medium or long, depending on the mechanism.

ii) Latin American Development Bank

The Development Bank of Latin America (CAF) is a bank whose shareholders are mainly Latin American countries, including Brazil, and promotes a model of sustainable development through credit, non-reimbursable resources and support in technical and financial structuring of projects in the public and private sectors in Latin America. CAF is accredited as a project implementing entity before the Green Climate Fund (GCF), Global Environment Facility (GEF) and Adaptation Fund (FA).

CAF's Green Agenda seeks to promote sustainable productive transformation, green infrastructure in shareholder countries, migration to low carbon and climate change resilient economies, while promoting that the institution's operations contribute to the sustainable use of natural resources and social inclusion.

Regarding climate change, the Green Finance Program for Local Financial Institutions (IFL) was approved for a total of \$145 million, with co-financing from the Green Climate Fund (GCF) of \$95 million and CAF financing of \$50 million. The program aims to support small and medium enterprises (SMEs) in the region in financing climate change projects through credit lines to local financial institutions. Likewise, the

program includes non-reimbursable resources of US\$5.2 million aimed at strengthening the capacities of IFLs and SMEs in the area of climate change.

CAF has its 2019 carbon footprint offset of 10,810 tons of carbon dioxide equivalent through the Jari Pará REDD+ Project located in Brazil, which allows the bank to remain a carbon neutral organization. Another financing carried out in Brazil is the Macro Drainage and Flood Control Program for the Baquirivú-Guaçu River, Municipality of Guarulhos, for \$96 million.

2.6.3 UNFCCC funds

In order to meet its objective of stabilizing GHG concentrations in the atmosphere, the UNFCCC has established operational funding mechanisms to facilitate the transfer of financial resources to developing countries. The two main mechanisms, the Global Environment Fund (GEF) and the Green Climate Fund (GCF), were selected for analysis in this study. These funds operate with the support of multilateral institutions for their implementation, such as UNDP, UNEP, and the World Bank. They provide resources required by projects in developing countries that generate global environmental benefits, not only in the area of climate change, but also in biodiversity, ozone layer protection, and international water resources.

i) Global Environment Facility

The Global Environment Facility (GEF) was established on the eve of the 1992 Earth Summit in Rio to help solve our planet's most pressing environmental problems, and to date has disbursed more than \$21.1 billion in grants and mobilized another \$114 billion in co-financing for more than 5,000 projects in 170 countries. Through its Small Grants Program, the GEF has supported more than 25,000 civil society and community initiatives in 133 countries.

The GEF has recently taken a new direction in its work to achieve better results and help address the growing challenges. More information about these new GEF guidelines, as described in *Summary of the Negotiations of the Seventh Replenishment*, can be summarized as follows:

- Strategically focus investments to catalyze transformational change in key systems that are causing major environmental losses, in particular energy, cities, and food;

- Prioritize integrated projects and programs that address more than one global environmental problem at the same time, based on the GEF's unique position and mandate to act on a wide range of global environmental issues; and
- Implement new strategies and policies to improve results, including greater engagement with the private sector, indigenous peoples and civil society, and a greater focus on gender equality.

Both fundraising with contributing countries and project execution occur in cycles. In addition, in each cycle the STAR - System for Transparent Allocation of Resources (or RAF, Resource Allocation Framework, until GEF 4) is also prepared, which defines the amounts that can be allocated to each country and by thematic line. Currently, GEF 7 is being carried out between 2018 and 2022, and GEF 8 is already in the planning stage. 77 million was planned to be allocated to Brazil for this cycle, being US\$ 17 million for the climate agenda, US\$ 52 million for biodiversity, and US\$ 6.98 million for soil degradation.

The information about the projects carried out and in progress can be accessed on the fund's website in its database, where it is possible to access basic documents about each one. In addition, values, project cycle, implementing agent, and thematic line are also available - however, each project can access values from different lines and it is not specified how much was allocated to each one, which makes a difference given the limitation defined by STAR and makes an analysis by theme difficult.

The authorization for the operation is linked to the Ministry responsible for the type of proposal, which may be the MMA, MCTI or MAPA (representing the accredited country). The development, approval and negotiation process for the start of the execution of each project depends on several stages, such as the Letter of Intent, SAIN approvals, and GEF approvals. The resources for the country generally have a ceiling, in the case of the GEF, the so-called STAR - System for Transparent Allocation of Resources (or RAF, Resource Allocation Framework, until the GEF 4), thus allocating the resources to certain agencies without exceeding the volume ceiling of established resources.

The GEF has the procedure for authorizing an implementing agency to manage the resources, apply guidelines, and monitor the projects that will be developed by the executing agencies. Among the accredited implementing agencies are UNDP, UNEP, FUNBIO, and others. Besides acting as an implementing agency when it receives the

resources directly from the GEF, the FUNBIO also acts as an executing agency when the resources are applied through the IDB/GEF Terrestre. The IDB is an implementing agency of the GEF, and in the case of the GEF Terrestrial, the IDB approves FUNBIO as an executing agency.

FUNBIO is a non-profit civil association in operation since 1996, created as a financial mechanism with the objective of implementing actions to contribute to the Convention on Biological Diversity (CDB) in Brazil. FUNBIO is structured in 3 areas:

- National and International Donations - projects financed by resources from private donations and bilateral or multilateral agreements.
- Legal Obligations - projects financed from legal obligations such as environmental compensation.
- Special Projects - works on the diagnosis of the financial environment and the design of mechanisms and tools that enable access to new sources.

The governance structure of FUNBIO has a deliberative body (DB) and an advisory board (AB). The AB is made up of independent members from academia, the third sector, the federal government (MMA, ME, MCT and ICMBIO) and the business sector, and is responsible for defining general policy, goals and priorities, approving annual operational plans, policies for investment and developed projects. The DB is organized into Executive Commissions, Project Technicians, Finance and Audit, and Asset Management. The advisory board is made up of former advisers and invited leaders and provides technical advice.

The disbursements in dollars (US\$) made by the IDB are credited, according to the exchange contracts with Banco do Brasil, in a specific account in Reais (R\$). The same exchange rate is applied for the conversion of the resources disbursed in the Contribution's currency into the currency of the country of the Beneficiary or the executing entity. The funds available on December 31 are deposited in the Program's bank accounts and include revenues generated by financial investment income and exchange gains. The projects are executed and budgeted in reais and the control of balances to be internalized present in the rendering of accounts of the projects are updated by the current exchange rate. Reconciliations of the amounts to be internalized with the goals defined for the project are carried out regularly, and in case of significant variations, the project is redesigned.

The reporting standard is common via the SOI standard (IDB reporting system and which FUNBIO has implemented within the organization), so the information is similar and within the security standards established by the IDB/GEF.

FUNBIO's procedures are based on the World Bank, with the adoption of procedures and safeguards. For the execution of the projects, there is a project operational manual (MOP) that includes the purchasing procedures, adherence to regulations, scopes, and procedures (deliberations, consultative instance, operational instance) with cycle planning from 2 years to 5 years.

Regarding the requirements for adherence to regulations, there is a set of safeguards from the IFC (since 2017) and since 2015, internal and external auditing has been required. In the project monitoring process, the so-called "Missions" are held semi-annually, where accountability (monthly, semi-annual format) and possible revisions of the project are performed. In FUNBIO's view, this type of procedure for the assessment and due diligence mitigates potential risks, as it points out the direction/arrangement to be established.

In addition to FUNBIO and the IDB, the GEF also has UNEP as an implementing entity, with operations for an accredited country or region, such as Brazil. In this case, UNEP has the responsibility to manage and oversee the projects and act as the negotiator with the federal government. In the case of the climate fund, together with the MCTI, it assists in preparing the project for submission to the GEF and, if approved, receives the funds, directing them to the CGE (administrator of financial resources - executing entity). Regional projects can also be proposed by the agency together with governments from different countries.

In the sending procedure, the government does not receive the funds so as not to affect the Federal budget, but a government representative is appointed as the project coordinator, who follows up on the project. In the established agreements, fiduciary duties and adherence to legal requirements are listed. Each program has a 4-year cycle, and resource allocation is identified by the themes of biodiversity, climate change, land degradation recovery, and the project. The project proposal must state from which GEF thematic lines the requested resources are expected, since there is a previous division of the fund (System for Transparent Allocation of Resources - STAR) of amounts allocated by country and topic.

The project's contribution to the NDC is discussed with the Ministry itself. In the example of the Sustainable Cities projects, the main indicator is the reduction of emissions, and each project presents a table of indicators.

The disbursements of GEF resources follow the criteria of the projects' needs, and there is no fixed rule or schedule for disbursements. Generally there is a high volume of resources at the beginning of the project, due to the need to purchase equipment, infrastructure, staff, and others. The spending reports are controlled by the project manager and followed up on by the executing entity. Both the project manager and the executing agent must sign the report and send it to UNEP.

An estimated annual budget is prepared, which can be revisited if necessary, and is analyzed and approved by the responsible Ministry and the GEF. If the results of the project's progress are not satisfactory, this will affect the next cycle, whose financial amount will be reduced, and if the executing entity is unable to achieve results, the disbursements are interrupted.

The implementing entity makes the consolidated reports of the executing entities and sends it to the GEF who makes the consolidated publication. UNEP does not publish the report to the general public.

In some cases, UNEP/UNDP/FUNBIO may also play the role of the executing entity, however, this function has been less common, and the GEF is working to change the current arrangements.

The GEF requires compliance with IFC safeguards, legal and fiduciary requirements, in addition to the annual audit. In the case of UNEP, the PWC performs the audit with the projects' executing entities.

ii) Green Climate Fund

The Green Climate Fund (GCF) is a financial mechanism of the UNFCCC, which guides the fund's actions and establishes recommendations that are reflected in its policies and actions. The GCF's governance has a Board of Directors with members from 24 countries, 12 developed and 12 developing. The fund also has a secretariat, headed by an Executive Director, to assess the impacts of projects, the ethical issues involved, and to ensure that they are in compliance with established guidelines. The total

amount of the GCF today is US\$ 10 billion, with a team of 200 people serving the 197 member countries, which makes the selection very careful.

In its activities in Brazil, the GCF deals directly with the Secretariat of International Affairs (SAIN), of the Ministry of Economy, which is the Designated National Authority (DNA). The function of the SAIN is to present a Country Program to the GCF, containing the projects proposed for funding, and the strategy for using the resources. Brazil's Country Program was presented by SAIN to the GCF in 2018.

The GCF recommends that each government state what the top 5 projects are they want support from the fund for implementation over a 4-year horizon. Based on this recommendation, the GCF carries out the analysis of projects based on 7 criteria covering 8 areas that are linked to mitigation and adaptation. In this sense, the tendency is that the GCF takes into account the country's particularities for the evaluation of projects, so that the NDC can be a guiding document for this evaluation.

Earmarked funds are sent to the accredited countries, and in the case of Brazil, the implementing entities are the BNDES, CEF, and FUNBIO. However, the GCF can also finance projects through international entities (e.g. UNEP, IDB). These entities have the prerequisites of being able to manage the financial volumes, assess environmental and social risks, and have fiduciary capacity.

Social and environmental risks are linked to IFC safeguards. There is no need for a guarantee as in the case of the use of the Sovereign Wealth Fund; the process requires a Letter of No Objection from the SAIN.

Unlike the GEF, the GCF does not establish a ceiling on financial resources per country, but rather establishes by priorities and the programs presented, which the Board of Directors and its Secretariat will approve. It encourages countries to be realistic within the expectations of resources obtained and has established 5 priority projects as the expected benchmark per country. There is no interference in each country's strategy, respecting sovereignty.

The implementing entity is responsible for monitoring the project, and reporting annually on the portfolio management. The agreement has a term of 5 years, and at the end of this term the GCF makes an evaluation of the implementing entity and the projects. To date, Brazil has not submitted any other entities for accreditation. Within the GCF process as a function of the socio-environmental risk benchmark (IFC

safeguards), there is a resource of up to US\$ 1 million for the entity to be trained in this regard.

All projects must present the emission reduction calculation. The methodologies used for the calculations do not necessarily have to be from the UNFCCC, for example, methodologies recognized within the country can be used, such as Embrapa and Agriculture, due to the customization of country parameters.

It should be noted that the GCF is based on sustainability, to avoid the submission of projects that reduce emissions but are not associated with sustainable development.

The term of the GCF is 20 to 40 years, with concessional fees, and sometimes as a lost fund, or without interest to the public sector. Other models for using GCF resources such as First Loss can be considered, especially with the private sector.

There is a concern to mobilize the private and public sectors so that the GCF is used as a stimulus for resource allocation, as it is currently known that for every \$1 in the GCF, another \$3 from the partner is also mobilized.

2.7 Discussion of the results

As identified in the funds analyzed, the climate finance ecosystem is diverse, with a wide variety of actors, institutional arrangements, and operational practices. Regarding the actors and institutional arrangements, it was identified that the resources for financing can come from different sources, such as international funds, multilateral institutions, bilateral agreements, national funds with a federal budget, development banks, and private banks. However, not all financiers will be directly responsible for the application of the resources. This function will be assigned in particular to those with expertise in national performance, with a team in the country and a practice of direct monitoring with the beneficiaries, such as the private development banks.

The negotiations associated with each of the climate finance mechanisms are based on the COPs, when these financial mechanisms are defined. An example is the case of the UNFCCC mechanisms (GEF and GCF), who have the role of international financiers adopting high standard safeguards. Thus, the objective of the funds is not to define national strategies for application sectors, a role that is up to the country itself through its focal points and reference documents (such as the NDC), nor to

actually implement the projects, a role assigned to the agencies accredited as implementers. In this system of shared responsibility, the UNFCCC disburses the resources with the requirement of compliance with the established safeguards, including investing in capacity building with technical assistance for the agencies.

The other multilateral agreements, such as with the World Bank and IDB, present similar dynamics regarding the transfer of responsibility. However, they may present specific eligibility criteria depending on each negotiation, as is the case of financing operationalized by the CAF, which is only available for climate projects that import products from companies in the financing country.

In this ecosystem, the variety of forms of action and institutional arrangements of multilateral agencies stands out. They act as financiers for national private and development banks, as well as implementers of international funds, multilateral agreements, and technical assistance providers. This transversality of forms of action together with the performance in several countries requires high monitoring capacity and specialized governance. In this sense, the contrast between the disclosure of strategies of action of the IDB in relation to the CAF is a critical point for the latter.

Regarding transparency procedures, in the analyzed mechanisms there are criteria established during the negotiations, as in the case of regulatory adherence, monitoring, auditing, accounting, procedures associated with IFC safeguards, annual reports, establishment of committees, among others. Despite the existence of a list of requirements, one notices the absence of a minimum framework to standardize the way of acting, and the need to develop some indicators according to the typology of the project. Non-compliance with these procedures may affect the relationship in several ways. In the case of agencies accredited by UNFCCC funds, the renewal of their accreditation may be jeopardized for the following period. In the case of bilateral agreements, direct negotiation between the parties must be decisive, as in the case of the Amazon Fund, which has entered into negotiations with its contributors to define possible changes in governance and performance.

In funds with national sources of resources, especially the Federal General Budget, the non-disclosure of transparency data is a national responsibility and will not necessarily lead to the commitment of future resources. In this sense, the FNMA's last report was released in 2014, while the FNMC's annual execution reports were not published or

made biennially, compromising its monitoring, with only financial monitoring by the BNDES having occurred.

Regarding risk assessment, it was identified that the entities selected as implementers are institutions recognized for their performance, with a long track record and performance in operations where complexity is required. This is because there is a need to structure themselves in order to meet the legal and operational requirements without creating excessively bureaucratic processes.

As far as monitoring practices are concerned, we can see an effort on the part of the implementing and executing entities to monitor and prove the effectiveness of the application of resources. Considering that one of the goals is to reach a low carbon economy with sustainable development, there is difficulty in managing the socio-environmental impacts in a quantitative and, sometimes, qualitative way.

Regarding the synergy with public policies, it can be observed that, in several cases, the sectors where the resources are applied are directly linked to the federal government's decisions. In the case of the UNFCCC funds, it is the country representatives who must request the approval of a project, with freedom to elaborate projects for the sector they consider a priority. The funds' requirements will evaluate the project, the effectiveness of the project, and whether it is in line with the priorities defined by the country - in the GEF it will also take into account the thematic definition of resource allocation in the current project cycle. Moreover, in the specific case of the Brazil REDD+ mechanism, intermediated by the GCF, the receipts are only made with proof of results of public policies to control deforestation in the country, and its applications are still aimed at strengthening the sector.

At the same time, national funds in general have their resources defined for their creation, precisely with the intention of supporting a specific public policy. This is the case of the Amazon Fund, which must be applied to prevent, monitor and combat deforestation, and to promote the conservation and sustainable use of the Legal Amazon, or the National Environment Fund, which must follow the guidelines of the National Environment Policy.

Both the Amazon Fund and the FNMA support entities with structuring projects for public policies, a modality whose objective is the development of robust policies with greater results. At the same time, it is worth highlighting the importance of

spontaneous demand projects that seek to meet subnational priorities in smaller-scale public policies. Besides enabling financing for municipalities with less financial capacity, this modality also allows the development of innovative projects that, when successful, can be replicated in other locations. However, in the last few years this modality has been decreasing due to the difficulty of monitoring and the budgetary scarcity.

It is observed that there is a search for the transformation of business models that is essential and, for that, the basis of educational transformation and promotion of research becomes fundamental for the realization of the transition, which will not be achieved without the necessary knowledge and tools, whether financial, technological or human capital. Increased resources for a structuring base will bring positive impacts.

Table 9 below presents an overview of the results of the analyzed financing with their main common points:

Table 9 - Summary of analyzed loans

Business Category	Mecanism	Results	Common Points
National funds/financing	BNDES Environmental Line;	BRL 379 million	Variety of projects
	FINEP	BRL 1.7 mi (2019)	Different metrics/projects
	Santander Sustainability Line;	BRL 4.8 thousand million (2019)	In some cases, innovative projects
Funds and Multilateral Agencies	National Fund on Climate Change	BRL 568 million (until Jun/2020)	High risks due to the novelty
	Amazon Fund	BRL 1.1 thousand disemb (2008-2019)	Training need
	National Environment Fund	BRL 275 million (1989-2019)	Use of other instruments or financial counterparts to complement
	Environmental Compensation Fund	BRL 500.3 million	Climatic financing is a catalyst for financing the entire project;
	Inter-American Development Bank	USD 2.6 thousand million (2015-2020)	High standard of demands such as safeguards;
CMNUCC Funds	CAF – Andean Development Corporation;	USD 156 million (2015-2020)	Variety of projects
	GEF – Global Environmental Facility;	USD 96 million (2015-2020)	Different metrics/projects

Source: Prepared by the author

* Includes the results of Project finance



3. FINAL CONSIDERATIONS

The climate finance ecosystem has been widely discussed at a global level and is composed of a great diversity of actors, institutional arrangements, operational practices and financial mechanisms, making its approach complex. Each financial mechanism, throughout its negotiations, focuses on different types of projects and covers different sectors, which requires the establishment of guidelines and procedures related to transparency, communication, governance and risk management, pointing out indicators for both projects and Sustainable Development Goals.

It is observed that the multiplicity of different project focuses brings the need for regulatory adherence in several aspects, verifying from the legislations related to the public sector, financial sector, and the sectors the projects are involved in, to the issues directly related to the objectives of environmental protection and the fight against climate change for which the financing was established.

Climate change has generated the reflection that it is necessary to change, creating standards for a more sustainable development with low GHG emissions, introducing new methodologies, new business models, new risk management models, and reinforcing the need for transparency and measurement, monitoring, and verification. But we are in a transitional moment, where at the same time there is pressure to achieve the target of keeping the global average temperature increase below 2°C, there is a warning that collaborative models must be established in order to accelerate the learning curve. In this sense, shared knowledge from different areas will make a difference to establish a compass that generates effective actions.

In the case of the use of climate finance, there is a paradigm in risk management. The warning refers to the need to direct financial resources to innovative projects, in the broadest sense of innovation, that is, from small changes to disruptive ones. In the traditional view of credit analysis, these are projects that may present greater risk. Many times they are projects with medium or long-term financing, involving new technologies, not yet fully proven, or projects that involve process changes to achieve results with positive social and environmental impacts and with lower GHG emissions. This typology of projects may present characteristics of a high-risk financing, with great chances of having access to credit declined according to the analysis criteria of each implementing entity.

Thus, it is necessary to build complementary mechanisms that support the financial viability of the projects, such as guarantee mechanisms, risk sharing, seed capital, blended finance, as well as support for certain studies and the training of the actors involved. There are gaps that are being discussed at the global level to apply the financing resources, requiring collective efforts, such as the case of integrating climate risks into traditional credit risks, which needs to be accelerated, remembering the need to accelerate the pace of GHG reduction..

Financial institutions around the world are also adapting to a new context, where there is a need to build tools within the institutions that allow them to work with agility, scalability, accuracy, and that require new investments such as building big data, using artificial intelligence and machine learning, combining traditional economic analysis with environmental, social, and governance analysis.

It is important to establish new analysis models, complementing historical data with predictive analysis, which can provide subsidies for decision making. The activities of SAls will be relevant in supporting the understanding of the effectiveness of resource targeting and the need to target new public policies that can help create the necessary scale for the transition from existing models of action. A global collaborative effort is urgently needed to prioritize the most promising initiatives. However, there is still a need for each country to design its climate strategies, improve its governance, and support these transformative initiatives through public policies and incentives for education, research, innovation, and the use of human capital. Only then will it be possible to redirect financial resources towards accelerating the transition from current business models to a preferably carbon-neutral economy by 2050, as established by the Paris Agreement.



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5. ANNEXES

Annex A - Actors in the climate finance ecosystem

Bilateral Institutions	
AfDB	African Development Bank
AFD	French Development Agency
ADB	Asian Development Bank
BMZ	Federal Ministry of Economic Cooperation and Development
CIDA	Canadian International Development Agency
DECC	Department of Energy and Climate Change
DEFRA	Department for Environment, Food and Rural Affairs
DFAT	Department of Foreign Affairs and Trade (Australia)
DFID	Department for International Development
EBRD	European Bank for Reconstruction and Development
EIB	European Investment Bank
Ex-Im	Export-Import Bank of the United States
FAO	Food and Agriculture Organisation
FFEM	French Global Environment Facility
GIZ	German Technical Cooperation
IADB	Inter-American Development Bank
IFAD	International Fund for Agricultural Development
JBIC	Japan Bank of International Cooperation
JICA	Japan International Cooperation Agency
KfW	German Development Bank
MIES	Inter-ministerial Taskforce on Climate Change
MOFA	Ministry of Foreign Affairs
NORAD	Norwegian Agency for Development Cooperation
ODIN	Ministry of Foreign Affairs
OPIC	Overseas Private Investment Corporation
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
USAID	US Agency for International Development
WB	World Bank

Multilateral Funds and Initiatives	
AF	Adaptation Fund (GEF is the secretariat and the WB is the trustee)
ACCF	Africa Climate Change Fund
ASAP	Adaptation for Smallholder Agriculture Programme
CBFF	Congo Basin Forest Fund (hosted by AfDB)
CDM	Clean Development Mechanism (implemented under the Kyoto Protocol)
CIF	Climate Investment Funds (implemented through WB, ADB, AfDB, EBRD, and IADB)

CTF	Clean Technology Fund (implemented through WB, ADB, AfDB, EBRD, and IADB)
FCPF	Forest Carbon Partnership Facility
FIP	Forest Investment Program (implemented through WB, ADB, AfDB, EBRD, and IADB)
GCCA	Global Climate Change Alliance
GCF	Green Climate Fund
GEF	Global Environment Facility
GEEREF	Global Energy Efficiency and Renewable Energy Fund (hosted by EIB)
JI	Joint Implementation (implemented under the Kyoto Protocol)
LDCF	Least Developed Countries Fund (hosted by the GEF)
PMR	Partnership for Market Readiness
PPCR	Pilot Program on Climate Resilience (implemented through World Bank, ADB, AfDB, EBRD, and IADB)
SCCF	Special Climate Change Fund (hosted by the GEF)
SCF	Strategic Climate Fund (implemented through WB, ADB, AfDB, EBRD, and IADB)
SREP	Scaling Up Renewable Energy Program (implemented through WB, ADB, AfDB, EBRD, and IADB)
UNREDD	United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation

Annex B - Study methodology

This section contains the methodology used for data collection and the presentation and analysis of the results. To this end, it will be divided into two subsections, the first concerning data collection and the second concerning data analysis.

i) Data survey

The methodology adopted consisted of an in-depth survey of the characteristics and history of the funding sources selected from primary sources - such as the institutions' electronic addresses, annual reports and video call interviews when necessary - and secondary, through reference surveys, and documents from institutions that operate transversally to the desired ones.

The activities consisted of: (i) search and standardized survey of the desired information in the electronic addresses and reports of the institutions in question; (ii) complementary search and survey from secondary sources; and (iii) elaboration of the set of tables and flowcharts with the collected information. Interviews with the relevant actors were carried out to complement information whenever necessary and possible.

A predefined set of 11 financing mechanisms for mitigating and adapting to climate change in Brazil were mapped and analyzed, listed below, divided into three categories:

Category	Mechanism
National funds/financing	- o BNDES Environment Line; - o Finep - o Santander Sustainability Line; - o National Fund on Climate Change - o Environmental Compensation Fund - o Amazon Fund - o National Environment Fund
Multilateral Funds and Agencies	- o IDB - Inter-American Development Bank - o CAF - Development Bank of Latin America;
UNFCCC funds	- o GEF - Global Environment Facility; - o GCF - Green Climate Fund;

These 11 mechanisms were selected for their relevance on the national and international scene. In the choice, the scope of institutions with different governance, legal characteristics and roles within the climate finance “ecosystem” in the country was also prioritized, allowing a wide mapping of the financial flows that bring resources to the climate mitigation and adaptation projects.

For each listed institution, the financial mechanisms for climatic purposes in which the institution participates were identified, either as a recipient or as a financier. For each mechanism identified by institution, data were collected divided into categories: characteristics of the mechanism; eligibility criteria; history; thematic line; source/accountability.

Whenever possible, the following were raised for the characteristics of the mechanism: (i) types of institutions involved; (ii) whether it is reimbursable or not; (iii) term, divided as short (up to 3 years), medium (between 3 and 8 years), or long (over 8 years); and (iv) the financial instrument used.

To understand the eligibility and execution criteria, the existence of exclusivity for climate mitigation or adaptation activities, operational sustainability goals, and environmental impact assessment were raised. In this set of information, the tables also have a column for additional information on possible criteria considered relevant in each case.

The history of each mechanism was surveyed with information about the start and end year of this mechanism, and the amounts disbursed annually (in cases where it was impossible to access disbursement information, the financial values of approved projects were used as reference). For the time frame, the Paris Agreement, a relevant climate treaty, was used as a reference. That is, data from 2015 onwards were considered.

The division by thematic line seeks to identify the destination of the financial resources of each mechanism regarding the themes highlighted in the Brazilian NDC: (i) renewable energy; (ii) energy efficiency; (iii) control of deforestation; (iv) recovery of areas (livestock); (v) waste; (vi) transport; (vii) low carbon agriculture; and (viii) adaptation/resilience of cities - the latter, despite not listing among the NDC’s thematic lines, was included due to the assessment of its relevance to the theme. In cases where the mechanism in question does not use this same classification as the NDC,

an assessment of the collector was made to adapt it in the best way within the existing lines. Data on thematic line breakdown was only included in cases of transfers to the final beneficiaries (or to the transfer closest to them).

Finally, information on transparency was recorded, such as the institution responsible for rendering accounts for the allocation of the resource, the source used, and the website used - if applicable.

For the classification of which financial mechanisms would be included in the scope of this survey, the direct participation of the focus institution and the explicit targeting of resources for the climate agenda were taken into account. Mechanisms that fit exclusively into one or more of the 8 thematic lines previously listed were considered, but an exception was made for mechanisms that, in addition to the aforementioned lines, covered some thematic line related to the environmental agenda, such as biodiversity.

It should be noted that the supply of resources through climate finance mechanisms, however, is not intended to meet all demand from the key sectors of the NDC alone. The role of these mechanisms is also to make projects financially viable and to serve as a driver for more investments in the sector. The importance of this role will be further explored in section 4.2.

To a lesser extent, this is reflected in the governance of financial institutions when synergies are observed between a project benefited by a particular line of climate credit and other financing instruments, which allows the capture of resources that a priori would not have been committed to this purpose. Therefore, the disclosure of financing results for climate purposes by a financial institution will not necessarily only include the disbursements of the exclusive mechanisms for this topic, depending on the methodology used by the institution. This fact may cause apparent inconsistencies, and therefore caution is indispensable when comparing financial values disclosed by different sources and surveys carried out with different methodologies.

ii) Conceptual framework for data analysis

The data surveyed were analyzed in the light of the Theory of Change, a planning methodology widely used by international institutions such as the United Nations and the World Bank. The use of this reference to support the analysis of climate finance

mechanisms involves understanding the context, the objectives, and the assumptions made to understand how the positive impact on climate intended by the financing agents will be achieved. According to Mafra (2016), the use of this technique can bring benefits for operational audits of the Federal Court of Accounts in cases where a diagnosis is carried out for a better understanding of the audited object, as is the case of this report.

iii) The Theory of Change seeks to explain the various stages, assumptions, agents and inputs of projects that have as their goal a certain positive socio-environmental impact, such as reducing deforestation. However, the scope of this report does not seek to evaluate projects and public policies as a whole, but rather to understand the functioning and role of one of their main inputs within this context, the financial resources, by analyzing their effectiveness and identifying possible bottlenecks. Therefore, it can be considered that the use of this technique in this case is an adaptation of the Theory of Change for understanding the universe of climate finance mechanisms within public policies and the sectors' demand for resources.

Its analytical application in this study, in summary, can be described as follows: funding mechanisms from different sources are tools that, if applied consistently, will lead to the efficient implementation of public environmental projects and policies, which, consequently, will lead to a reduction in greenhouse gas emissions marked by the Brazilian NDC goals.

Annex C - List of Climate finance Mechanisms

Green Climate Fund
Global Environment Facility
Adaptation Fund
Canadian Climate Fund
Acumen Fund
Adaptation for Smallholder Agriculture Programme (ASAP)
Climate and Development Knowledge Network
NDC Invest
Japanese Fund for Global Environment (JFGE)
Climate Investment Funds
FCPF Readiness Fund
FCPF Carbon Fund
Sustainable Energy and Climate Change Initiative
Clean Technology Fund
Strategic Climate Fund
Powering Agriculture: An Energy Grand Challenge For Development
Euroclima +
FinBRAZEEC
National Environment Fund
National Fund on Climate Change
Environmental Compensation Fund
Amazon Fund
Ethical Fund - Banco Real ABN
Caixa – Socio-environmental Fund
National Forest Development Fund (FNDF)
Itaú Eco-change Fund
Brazilian Biodiversity Fund FUNBIO
Fund for Recovery, Protection and Sustainable Development of the Hydrographic Basins of the State of Minas Gerais - Fhidro
BNDES - Finem Environment
BNDES Pronaf ECO
BNDES Finame - Low Carbon
BNDES Finame Renewable Energy
Innovate Climate Program - Finep

Banco do Nordeste - FNE Verde
Box - BCD Ecoefficiency PJ
BNDES FINAME - Renewable Energy
BNDES ABC Environmental Program
BB Pronaf Eco
FCO Ficoob
Environmental Services Payment Program (PSA HÍDRICO) - CEIVAP
Bando do Nordeste - FNE SOL
Ministry of Regional Development - Advancing Cities - Sanitation
Caixa - Pro-Transport Program
AgeRio - Being Sustainable
Banco da Amazônia - FNO Sustainable Amazon
Banco Amazônia - FNO Biodiversity: Legal Reserve APP
Banco Amazônia - FNO Biodiversity: Alternative Land Use
Banco do Brasil - Pronatureza
Caixa - Green Credit Company Green Customer Company
Develop SP- Green Economy Line
Develop SP- Green Economy Machinery Line
Santander - Stamped Lines (CDC)
Bradesco Environmental Leasing
Bradesco Socio-environmental Credit
Bradesco Forest Working Capital
Bradesco CDC Solar Heaters
Bradesco CDC Photovoltaic Energy
Bradesco CDC Gas Kit
Bradesco CDC Forestry Certificate
Petrobras Socio-environmental Program
Boticário - Biodiversity of Paraná
Boticário - Support program for conservation actions (projects)
Boticário - Program to support conservation actions (programs)
Reserves Research Program - Boticário Grupo Foundation for Nature Protection
Oásis Program - Boticário Group Foundation for Nature Protection
BB Ações Young Corporate Sustainability Index