

Methodology for the Climate and Environmental Objectives

BRAZILIAN SUSTAINABLE TAXONOMY

SECRETARIAT OF
ECONOMIC POLICY

MINISTRY OF
FINANCE



Credits

Minister of Finance

Fernando Haddad

Secretary for Economic Policy

Guilherme Santos Mello

Responsible team

Undersecretariat for Sustainable Economic Development

Cristina Fróes de Borja Reis

Matias Rebello Cardomingo

Edna Luiz Brandão

Henrique Comanduci Gama

Consultants

Bridget Mary Boule – Climate Bonds Initiative

Sofia Borges – Climate Bonds Initiative

Vishwas Vidyaranya – Ambire Global

Graphic design and layout

André Oliveira Nóbrega

Ecological Transformation Plan



**A new country
model for a
new world**

Technical Support

The Brazilian Sustainable Taxonomy was supported by *Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH* and the United Nations Environment Programme Finance Initiative (UNEP FI), with funding from the European Union (EU) and the German Federal Ministry for Economic Cooperation and Development (BMZ), under the programs *Finanças Brasileiras Sustentáveis* (FiBraS II), Euroclima, and the Sustainable Finance Advisory Hub. With additional technical support from Ambire Global, *Campo Consultoria e Agronegócios*, Climate Bonds Initiative (CBI), the Brazilian Agricultural Research Corporation (*Empresa Brasileira de Pesquisa Agropecuária (EMBRAPA)*), the Center for Sustainability Studies at *Fundação Getúlio Vargas (FGVces)*, *Impacta Finanças Sustentáveis*, and *Pacto pela Equidade Racial*.

Christine Majowski – GIZ

Gustavo de Melo Ribeiro – GIZ

José Henrique Lima – GIZ

Alana Stankiewicz Peters – GIZ

Tomas Rosenfeld – GIZ

Mercedes García Fariña – UNEP FI

David Batista de Paula – UNEP FI

Paula Peirão – UNEP FI

Table of Contents

Methodology for the Climate and Environmental Objectives 4

- 1. Introduction 4**
- 2. Methodology — Cross-cutting Methodological Approach 6**
 - Use of the National Classification of Economic Activities (CNAE) 7
 - Identification, assessment, selection and prioritization of sectors and activities 8
 - Development of technical criteria 9
- 3. Methodology for Objective 1 — Climate Change Mitigation 17**
 - Ambition of the objective 17
 - Prioritization of sectors 17
 - Identification, assessment and prioritization of economic activities 18
 - Development of technical criteria 20
- 4. Methodology for Objective 2 — Climate Change Adaptation 21**
 - Ambition 21
 - Prioritization of sectors 22
 - Identification, assessment and prioritization of economic activities and measures 24
 - Development of technical criteria 27
- 5. References 29**

Methodology for the Climate and Environmental Objectives

1. Introduction

The development of national taxonomies is a complex and multifaceted process that requires the involvement of multidisciplinary experts and the application of technically sound, consistent and transparent methodologies. This document contains the methodology for selecting activities and defining their technical criteria for the first edition of the Sustainable Brazilian Taxonomy (TSB) in line with its climate and environmental objectives. It is based on the TSB Action Plan, which establishes the general objectives and structure of the taxonomy (BRASIL, MF, 2023).

It is important to note that the scope of the methodologies described in this chapter is limited to the climate objectives of the first edition of the TSB indicated below. The methodology for the socio-economic objectives (Objective 9) of the first edition of the TSB is described in the Gender and Racial Equity Index chapter.

The TSB is designed as a dynamic tool that guides public and private investments in line with Brazil's climate, environmental, economic and social objectives, directing them towards the creation of a low-emissions, environmentally and socially sustainable and resilient economy. According to the TSB Action Plan, it has three strategic objectives (BRASIL, MF, 2023):

1. Mobilize and redirect public and private financing and investment towards economic activities with positive environmental, climate and social impacts, aimed at sustainable, inclusive and regenerative development;
2. Promote technological densification aimed at environmental, climate, social and economic sustainability, with increased productivity and competitiveness of the Brazilian economy on a sustainable basis;
3. Create the basis for producing reliable information on sustainable finance flows by encouraging transparency, integrity and a long-term vision for economic and financial activity.

To meet these objectives, the TSB is a classification system that clearly, objectively and scientifically defines activities, assets and/or projects categories that contribute to climate, environmental and/or social objectives, using specific technical criteria. As defined by the International Capital Market Association (ICMA), a sustainable finance taxonomy provides specific criteria and indicators to assess whether an activity makes a substantial contribution to a given environmental or social objective and/or the transition to a sustainable economy (ICMA, 2021).

The TSB's defined climate, environmental, socio-economic objectives are:

Climate and environmental objectives:

1. **Climate change mitigation;**
2. **Climate change adaptation;**
3. Protection and restoration of biodiversity and ecosystems;
4. Conservation and sustainable management and use of soil and forests;
5. Sustainable use and protection of water and marine resources;
6. Transition to a circular economy;
7. Pollution prevention and control;

Socio-economic objectives:

8. Creation of decent work and income growth;
- 9. Reduction of socio-economic inequalities, considering racial and gender aspects;**
10. Reduction of the country's regional and territorial inequalities;
11. Promotion of quality of life by increasing access to basic social services.

For the first edition of the TSB, the Action Plan set out to focus on climate and environmental Objectives 1 and 2, as well as socio-economic Objective 9 highlighted above.¹ The other environmental and social-economic objectives are therefore outside the scope of this document.

In March 2024, Decree No. 11.961/2024 established the Interinstitutional Committee of the Brazilian Sustainable Taxonomy (*Comitê Interinstitucional da Taxonomia Sustentável Brasileira* (CITSB)) and the other TSB governance bodies, including ten Sectoral and Thematic Working Groups (WGs). The eight Sectoral WGs were tasked with developing proposals for the technical criteria for the climate objectives prioritized in the first edition of the TSB. These WGs are supported by the Climate Bonds Initiative and Ambire Global, with additional contributions from Embrapa and Campo for Sector WG CNAE, along with specialized sector consultants.

The products of the Sectoral WGs are delivered in three main steps:

- **Step 1 — Methodologies:** The methodologies define the level of ambition for each of the climate objectives, the process for identifying, evaluating, selecting and prioritizing the economic activities that can make a substantial contribution to the prioritized objectives, and the process for developing the specific technical criteria for making a substantial contribution without significantly harming the other climate and environmental objectives.
- **Step 2 — Activity selection:** Activities are selected and prioritized based on the methodology developed in Step 1. The result is a spreadsheet organized by the codes of the National Classification of Economic Activities (*Classificação Nacional de Atividades Econômicas* (CNAE)) with a priority assigned to each activity.² For activities that are relevant for TSB purposes but not classified by the CNAE, an alternative code is provided.
- **Step 3 — Development of the technical criteria:** Based on the methodology defined in Step 1, technical criteria are developed to establish the assessment of "substantial contribution" and "do no significant harm" (DNHS) of each prioritized activity, considering each of the climate objectives that are relevant or material to that sector. The role of the technical criteria is to define — in a binary and quantitative way, whenever possible — which requirements an activity needs to fulfill to contribute substantially to at least one of the TSB objectives without significantly harming any of the other objectives.³

This document focuses on **Step 1**. Definitions of applied concepts are provided to guide analysis throughout the document, ensuring consistency and applicability across all relevant sections. The results of Steps 2 and 3 are provided in the sectoral chapters of the first edition of the TSB. Further guidance on the implementation and governance of the taxonomy revision and update process will be provided by the Ministry of Finance (MF) in the future, based on the decisions of the CITSB, and is outside the scope of this document.

The document therefore contains:

¹ The TSB Action Plan originally also foresaw for the inclusion of environmental objective 4 (Conservation and sustainable management and use of soil and forests) and socio-economic objective 10 (Reduction of the country's regional and territorial inequalities). These objectives are still under analysis and will be addressed in future editions of TSB.

² The CNAE is established by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística* (IBGE)) and is based on the United Nations' International Standard Industrial Classification (ISIC), which facilitates interoperability with other classification systems.

³ It should be noted that for the climate objectives, the technical criteria of "substantial contribution" and "do no significant harm" are defined at the activity level, except for sector CNAE A, which also considers criteria at the rural property level.

1. **A description of the workflows and main concepts:** Describing the fundamental elements of the TSB, detailing the main workflows and key concepts necessary for a clear understanding of the methodologies proposed and applied to the climate objectives prioritized in the first edition of the TSB.
2. **Methodologies for the selection of economic sectors and activities and the development of technical criteria for the climate objectives prioritized in the first edition of the TSB:** Providing detailed methodologies for addressing the prioritized climate objectives, including methodologies for the identification, assessment and selection of economic sectors and activities, the definition of the ambition by sector, and the development of specific technical criteria at the activity level for "Substantial Contribution" and "Do No Significant Harm" (DNSH).

Adherence to these methodologies provides a standardized and transparent process for the development of the TSB, ensuring that all included economic activities are evaluated and prioritized based on consistent criteria. This creates a robust, science-based, transparent and effective taxonomy tool that supports Brazil's climate, environmental, socio-economic objectives.

Minimum safeguards, as well as considerations on the general governance and the implementation of the TSB, are outside the scope of this document and covered in the chapters "Minimum Safeguards" and "Monitoring, Reporting and Verification (MRV) System".

2. Methodology — Cross-cutting Methodological Approach

After setting the objectives and their level of ambition, the relevant economic sectors and activities were selected and prioritized, and technical criteria for "Substantial Contribution" and "Do No Significant Harm" were defined for TSB users.

This section presents the general approach, while the following sections present the specific approach by climate objective.

In the **international** context, TSB considers the following as foundational references:⁴

- 2030 Agenda for Sustainable Development, with its Sustainable Development Goals (SDGs);
- Paris Climate Agreement, especially the alignment of financial flows with carbon neutrality;
- Convention on Biological Diversity and the Kunming-Montreal Global Biodiversity Framework;
- International Convention to Combat Desertification;
- Conventions of Basel, Rotterdam and Stockholm on hazardous waste and persistent organic pollutants;
- International Human Rights Conventions, including commitments to gender and racial equality, labor rights and the rights of traditional peoples.

At the **national** level, the TSB is based on a broad set of legal, strategic and programmatic frameworks, including, but not limited to:

⁴ For more details, see the TSB Action Plan (BRASIL, MF, 2023).

- Federal Constitution and other legislations that safeguard human rights, labor rights, gender equality, and ethnic and racial equality;
- Strategies and commitments made by Brazil at the international level, such as the Nationally Determined Contribution (NDC) and the Sustainable Development Goals (SDGs) of the 2030 Agenda for Sustainable Development;
- New Brazil — Ecological Transformation Plan of the Ministry of Finance (MF); Framework for Sustainable Sovereign Bonds of Brazil, established by Decree No. 11.532/2023, which defines eligible categories and exclusion criteria for the use of proceeds;
- Decree No. 10.387/2020, which establishes incentives for infrastructure debentures with environmental and social benefits;
- New Industry Brazil (NIB) of the Ministry of Development, Industry, Trade and Services (MDIC);
- New Growth Acceleration Program (Novo PAC) of the Federal Government;
- Climate Plan of the Brazilian Ministry of Environment and Climate Change (MMA);
- Sectoral Plan for Adaptation and Low Carbon Emission in Agriculture and Livestock (ABC+ Plan 2020–2030) of the Ministry of Agriculture, Livestock and Supply (MAPA);
- National Regional Development Policy, the National Water Resources Policy, among other public policies relevant to sustainable development;
- National Environmental Policy (Law No. 6.938/1981);
- National Policy on Climate Change (Law No. 12.187/2009) and its developments.

The TSB also considers the following **international and national taxonomies**:

- Brazilian Association of Technical Standards (*Associação Brasileira de Normas Técnicas (ABNT)*);
- Guidelines of the Brazilian Financial and Capital Markets Association (*Associação Brasileira das Entidades dos Mercados Financeiro e de Capitais (ANBIMA)*);
- SDG Methodology of the Brazilian Development Association (*Associação Brasileira de Desenvolvimento (ABDE)*);
- Common Framework of Sustainable Finance Taxonomies for Latin America and the Caribbean (LAC);
- Sustainability Taxonomy of the Brazilian National Bank for Economic and Social Development (*Banco Nacional de Desenvolvimento Econômico e Social (BNDES)*);
- Mexico's Sustainable Taxonomy;
- Colombia's Green Taxonomy;
- Green Taxonomy of the Brazilian Federation of Banks (*Federação Brasileira de Bancos (FEBRABAN)*);
- European Union Green Taxonomy.

Use of the National Classification of Economic Activities (CNAE)

The National Classification of Economic Activities (*Classificação Nacional de Atividades Econômicas (CNAE)*) is Brazil's national system for standardizing economic activity codes and classification criteria used in public administration. It is based on the International Standard Industrial Classification (ISIC), established by the United Nations. The CNAE serves as the foundational structure for the TSB, allowing for consistency and interoperability with other ISIC-based industrial classifications.

The CNAE follows a five-level structure, as shown in the example below. The CNAE classification is maintained by the Brazilian Institute of Geography and Statistics (*Instituto Brasileiro de Geografia e Estatística (IBGE)*) and updated

regularly. In some cases, a detailed CNAE code may not exist for a given activity. Because classification systems evolve⁵ gradually, emerging technologies and industries are not always fully represented in the CNAE and/or ISIC. In those cases, the most general applicable CNAE code is used. Revising the CNAE classification itself is outside the scope of this document and of the TSB.

Table 1: CNAE structure (example)

Section	Division	Group	Class	Subclass	CNAE detailing
CNAE D ELECTRICITY AND GAS	35 ELECTRICITY, GAS AND OTHER UTILITIES	35.1 Electricity generation, transmission and distribution	35.11-5 Electricity generation	3511-5/01 Electricity generation	D1: Hydroelectric power generation
					D2: Wind power generation
			35.12-3 Electricity transmission	3512-3/00 Electricity transmission	N/A

Source: Own elaboration, based on IBGE (2020).

Identification, assessment, selection and prioritization of sectors and activities

The selection of sectors and activities generally follows a common approach, with the activity-level analysis conducted at a more detailed level.

This process is guided by the assessment of a set of metrics that determine the relevance of the sectors to achieving the climate or environmental objective, as well as to the country's current and/or future economy. The selection can also include an assessment of potential uses of the taxonomy and the sectors that are important for this use. For instance, in the case of financial instruments such as green bonds, certain sectors may carry greater importance than others.

Further information on the prioritization of sectors and activities is presented in Sections 3 and 4 for each objective.

The process of selecting sectors generally involves the following steps:

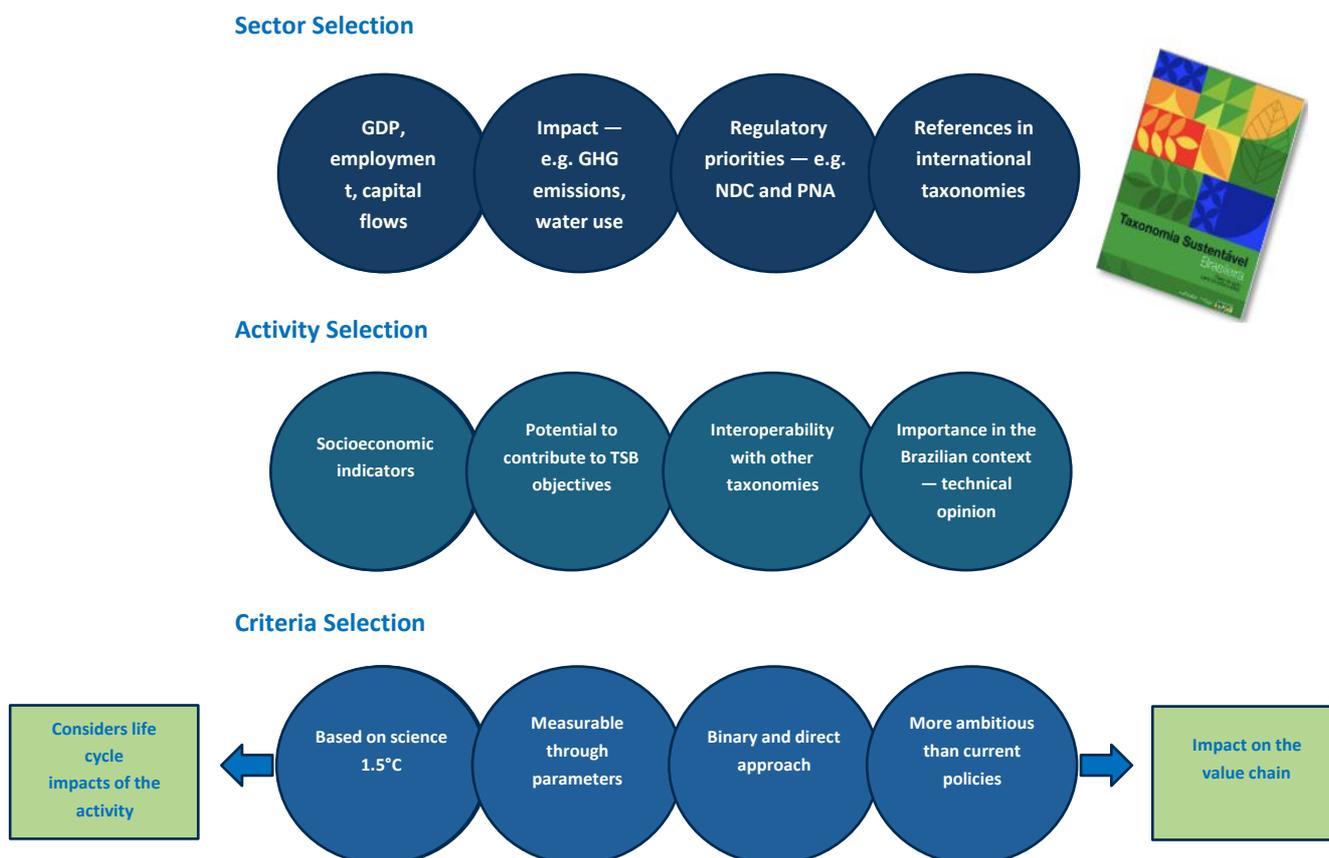
1. Select relevant indicators and metrics for assessment;
2. Identify relevant and reliable data sources;
3. Develop a framework or system for assessing and prioritizing indicators;
4. Insert the data into the assessment framework;
5. Review and discuss the results with sector experts for further refinement.

Figure 1 below illustrates the main elements of the process for identifying, assessing, and prioritizing sectors and activities, as well as for developing the technical criteria for climate change mitigation, which will be detailed in this section. It is important to note that this first edition of the TSB does not cover all relevant sectors and activities. The

⁵ The CNAE was last updated in 2020 (IBGE, 2020).

prioritization process described below shows how prioritized activities were selected. Activities not included in this first edition may be considered in future editions by the TSB governance. Each chapter introduces and highlights the activities identified for potential inclusion in future editions.

Figure 1 – Simplified process for identifying, assessing, and prioritizing sectors and activities, and developing technical criteria for climate change mitigation



Source: Own elaboration, based on Climate Bonds Initiative (2021).

The activities selected and included in the TSB are referred to as **eligible activities**. Activities that are not included in the taxonomy are referred to as **out-of-scope activities**. The relationship between compliance with the criteria and the classification of the activity as aligned or partially aligned is described in the Monitoring, Reporting and Verification (MRV) chapter.

Development of technical criteria

The development of the technical criteria for the climate objectives is guided by the principles established in the TSB Action Plan and described in the Introduction chapter.

Definitions

This section presents the definitions of the main terms and concepts relevant to the development of the technical criteria for the TSB's climate objectives.

According to the TSB Action Plan, for an activity to be classified as sustainable in terms of the defined climate, environmental or socio-economic objectives, it must meet the following **general criteria**:

1. **Make a substantial positive contribution** to one or more of the objectives;
2. **Do no significant harm** to any of the other defined objectives; and
3. Comply with the **minimum safeguards**.

Specific technical criteria: To determine the substantial contribution and the absence of significant harm, specific technical criteria will be defined at the activity level, with quantitative limits, whenever possible and appropriate.

Activities that meet these three general criteria, including the specific technical criteria, are referred to as **TSB-aligned activities** or **sustainable activities**. As defined by the MRV WG, **partially aligned activities** are also considered in an initial transitional phase. These are activities that meet the minimum safeguards and the substantial contribution criteria for at least one of the TSB's climate, environmental, socio-economic objectives. **Qualifying activities** refer to eligible activities that meet the substantial contribution criteria.

Substantial contribution: According to the technical report of the Joint Research Centre (JRC), the Science and Knowledge Service of the European Commission (CANFORA et al., 2021), and the Common Framework of Sustainable Finance Taxonomies for Latin America and the Caribbean (LAC) (UNEP FI, 2023), an economic activity can substantially contribute to one or more of the defined climate or environmental objectives by:

- Substantially reducing negative climate or environmental impacts;
- Substantially and directly improving the state of the climate or environment (often referred to as "restoration" or "regeneration" of the environment); or
- Directly enabling one of the first two categories — that is, directly enabling other activities to make a substantial contribution to a climate or environmental goal.

The first two categories are referred to as "**own-performance activities**", as these activities have the potential to substantially contribute to an objective based on their own performance.

The third category enables other activities to make a substantial positive contribution to one or more of the TSB objectives. Such "**enabling activities**" must also meet the technical criteria to qualify as sustainable and are not automatically qualified. Technical criteria are in place to ensure that enabling activities do not undermine long-term climate objectives, and their overall climate impact is positive throughout their life cycle (i.e., the benefits they enable should outweigh their negative impacts). To ensure that these requirements are met, the enabling activities are defined with specificity and generally have a low direct impact.

The above concepts and classifications were used by the technical team and the WGs to guide the development of the criteria. However, the activities in the final documentation, activities are not labeled or classified as "enabling", "transitional", or similar categories.

Do No Significant Harm (DNSH): The DNSH criteria ensure that economic activities that contribute substantially to at least one of the objectives do not significantly harm any of the other climate, environmental, socio-economic objectives defined in the TSB. For example, an activity that contributes substantially to the climate change adaptation objective would undermine the TSB's climate change mitigation objective if it caused significant GHG emissions.

Minimum Safeguards (SM): The MS are designed to ensure compliance with minimum legal requirements relating to climate change, the environment and socioeconomic issues. Users seeking alignment with the TSB must meet this criterion, which is based on current Brazilian legislation and standards, as well as international conventions and guidelines accepted by the national legal system. The MS cover thematic areas related to a just transition, including:

human rights; labor rights; the rights of indigenous peoples, *quilombolas* and other traditional peoples and communities; anti-discrimination and racial and gender equality; climate change; ecosystems and biodiversity; combating desertification; pollution, waste and water resources; tax compliance; and integrity. The MS apply at the level of the organization or entity responsible for the activity or project, whether an individual or a legal entity, using a binary criterion: the organization complies or does not comply with the SM. This compliance is assessed through objective legal compliance indicators, as per public databases, certificates and other documents. They may apply transversally to different sectors or to a given, specific sector. The MS were developed in a separate process and are not detailed in this document. For more details, see the Minimum Safeguards chapter.

Methodological approaches for defining technical criteria — Substantial Contribution

The TSB's technical criteria for the climate objectives aim to establish clear guidelines for identifying economic activities that contribute significantly to the respective objective. The TSB adopts different approaches to demonstrate substantial contribution to the prioritized objectives, depending on the objective's and activity's characteristics, to fully capture the context of each objective. These approaches consider both the intrinsic performance of activities and their role in achieving these objectives. The criteria and methodologies adopted to define this substantial contribution are detailed below.

Substantial contribution to the climate change mitigation objective: Based on the definition of substantial contribution provided above, activities can make a substantial contribution to climate change mitigation through their own performance or by enabling other activities to achieve this goal. Regarding the former, they are either activities which, by their nature, meet the definition of substantial contribution and do not require any additional requirements (directly qualified activities), or are required to prove a level of performance by fulfilling the specific technical criteria of substantial contribution. **Enabling activities** contribute substantially by supporting other activities in significantly reducing GHG emissions. They may either qualify directly or must meet specific technical substantial contribution criteria.

Substantial contribution to the climate change adaptation objective: For the purposes of the TSB, the substantial contribution to climate change adaptation is interpreted as any measure or activity that reduces vulnerability to climate hazards. No distinction is made between “significant” and “substantial” contributions; all contributions are considered eligible, provided they address a climate risk in a measurable way. This definition has been specifically adapted to the TSB, taking into account the JRC Technical Report, the Common Framework of LAC Taxonomies and the Climate Bonds Resilience Taxonomy (CBRT). To further delineate the activities so that the appropriate criteria can be developed, the activities and measures are divided into four categories:

- **Adapted measures:** Measures that make the economic activity in which they are implemented more resilient to climate change (for example, the implementation or use of leak detection equipment (measure) by a utility involved in water supply (activity));
- **Enabling measures:** An enabling measure is implemented in one economic activity to make other economic activities more resilient to climate change (for example, extending the water supply to households facing water scarcity);
- **Adapted activities:** An adapted economic activity is in itself climate resilient (for example, a water supply/distribution system undergoing renovation to make it resilient to water scarcity);
- **Enabling activities:** An economic activity that makes other activities more resilient to climate change (for example, the manufacture of leak detection equipment used in water supply). Like the other categories of activities, enabling activities need to meet the relevant technical criteria to be considered aligned.

Methodological approaches to the development of technical criteria for all climate and environmental objectives:

Based on the JRC Technical Report and the LAC Common Framework of Taxonomies, different types of methodological approaches can be used to develop the technical criteria for climate and environmental objectives, depending on the selected sector or activity and the availability of data to assess an activity, and how to define the required level of performance. None of these approaches are pre-defined; they are presented here in a conceptual way. Each method is adapted and adjusted for local use, and the resulting criteria are also updated over time. The WGs used these general concepts for guidance in developing the different types of criteria, as appropriate and supported by relevant scientific bases, data and policies. In general, quantitative criteria were prioritized over qualitative ones, when possible.

The approaches can be subdivided into:

Direct qualification, without additional criteria:

1. **Directly qualified activities and measures:** Activities that, by their nature, meet the definition of a substantial contribution according to the respective TSB objective and do not need to meet any additional requirements. In all cases, their climate or environmental impact is so low that they unequivocally meet the ambition level of the TSB. This approach can apply to an entire activity or parts of an activity.

Quantitative approaches (technologically neutral):

2. **Impact-based approach:** Requires assessing the overall impact of an activity on the climate or environmental objective under analysis. It considers both the pressure exerted by the activity (e.g., intensity of water use) and the context of its impact (e.g., local water availability). For activities to qualify under this approach, they must meet or exceed a minimum impact level threshold, which is measured by focusing on the impact of the activity, such as water use reductions, compared to alternatives, either within their activities or by supporting others to do so. In other words, they must contribute substantially to reducing pressure on the climate or environment or act as an enabling activity. This approach may take into account regional data and variations.
3. **Performance-based approach:** Requires assessing the performance of an activity in terms of the pressure it exerts on the climate, considering specific performance metrics (e.g., GHG emissions), independent of context. For activities to qualify under this quantitative approach, they must meet a defined level of performance derived from scientific models or climate policies. Their measurements focus on intrinsic performance metrics, such as GHG emissions per unit of activity. Unlike the impact-based approach, it focuses exclusively on specific performance metrics, regardless of the context.
4. **Best-in-class approach:** Defines criteria based on the pressure an activity exerts on the climate, as measured by relevant metrics. Activities qualify if they perform above a threshold derived from the current achievements of the best performers, such as the average performance of the top 10% of operators in their class in the country. This category of criteria allows high-impact activities, such as GHG emissions-intensive activities, to be included if no technically and economically viable alternative exists.
5. **Relative improvement approach:** Defines criteria that require a minimum improvement in a specific metric over time. This could involve enhancing the performance of an activity or asset or adapting to climate change. Activities qualify if they reach at least a defined threshold of improvement, such as a 20% increase in energy efficiency compared to a previous period.

Qualitative approaches:

6. **Good practice-based approach:** Identifies a set of practices that ensure that the activity contributes substantially to the objective and therefore meets the TSB's ambition level. In practical terms, the good practice-based approach

is generally used for activities for which insufficient data availability impedes the use of quantitative technical criteria. In such cases, the application of best practices as a substitute or proxy for the quantitative indicator, allows the taxonomy user to circumvent the lack of available data. An example is the list of best practices in the Agriculture, Forestry and Livestock section in Colombia's Green Taxonomy.

7. **Process-based approach:** Identifies qualitative steps to reduce pressure or improve climate outcomes. Activities qualify if they follow these steps and implement the resulting actions. One example are the EU Taxonomy's climate change adaptation criteria, which apply a methodology for a vulnerability assessment of physical climate risks.

In the case of the TSB, it is important to note that the approaches described above are examples and do not necessarily apply to each of the objectives. Depending on the characteristics of each activity and aspects such as data availability, certain approaches are more suitable than others for defining technical criteria.

Methodological approaches for defining technical criteria — Do No Significant Harm

The principle of DNHS aims to ensure that, as far as possible, an activity that contributes substantially to the achievement of at least one of the TSB objectives does not cause significant harm to any of its other climate, environmental, or socio-economic objectives. This overarching principle is operationalized through specific criteria — that is, concrete requirements that users must meet in order to demonstrate that no significant harm occurs. DNSH criteria are distinct from MS, which, although outside the scope of this chapter, are generally based on existing legal standards and minimum compliance thresholds and apply at the organizational level (with the exception of sector-specific MS, which may also apply at the activity level).

DNSH criteria may be generic across multiple sectors (for example, water quality standards relevant to manufacturing, agriculture, and water sectors) or specific to a single sector (for example, tailings dam requirements relevant only to mining).

EXAMPLE:

An economic activity associated with the installation of solar panels for the generation of electricity from solar energy (climate change mitigation objective) must meet the criteria of not significantly harming any of the other TSB objectives, for example, the protection and restoration of biodiversity and ecosystems objective, demonstrated via:

1. Compliance with the regulations established for the country's protected areas;
2. The installation not replacing forest areas or agricultural land, especially soils intended for crops with the main contribution to GDP;
3. Presentation of the necessary permits to remove vegetation granted by the competent authority.

The methodological approach for developing the TSB's DNSH criteria is explained in the following.

Step 1: Identification of climate objectives and their ambition. For the activities identified in the climate objectives prioritized in the first edition of the TSB, the DNSH criteria are considered in the following objectives:⁶

Table 2: DNSH criteria by climate and environmental objective	
Objective	Relevant objectives for DNSH covered in the first edition of the TSB
Climate change mitigation	<ul style="list-style-type: none"> • Climate change adaptation • Protection and restoration of biodiversity and ecosystems • Conservation and sustainable management and use of soil and forests • Sustainable use and protection of water and marine resources • Transition to a circular economy • Pollution prevention and control
Climate change adaptation	<ul style="list-style-type: none"> • Climate change mitigation • Protection and restoration of biodiversity and ecosystems • Conservation and sustainable management and use of soil and forests • Sustainable use and protection of water and marine resources • Transition to a circular economy • Pollution prevention and control

Source: Own elaboration.

Step 2: Analysis of the different approaches of regional and international taxonomies relevant to the definition of DNSH criteria, aside from an analysis of international standards, for example: Performance Standards of the International Finance Corporation (IFC), Convention on Biological Diversity (CBD), standards of the International Organization for Standardization (ISO), among others.

Note: DNSH criteria from other taxonomies were not adopted unless assessed by the WGs as relevant and appropriate to the Brazilian context.

Step 3: Contextualization of the development of the DNSH criteria for the TSB's climate objectives, in two sub-steps:

1. Review of existing national climate regulations, strategies and business disclosure structures used in Brazil to ensure interoperability and usability of the criteria.
2. Consultation of experts from the respective sector in the country to complete, adjust and refine the DNSH criteria according to the country's climate and environmental standards, policies and structures.

Step 4: Finalization of the general and sector-specific DNSH criteria.

Application of the DNSH criteria

The implementation of the DNSH criteria will be tested following publication of the TSB to ensure that the criteria are appropriate and that users are prepared to apply the criteria. To ensure that users are focused on the priority objectives, the testing process will follow this approach: for each activity, the materiality of risk level — high, medium, or low — for each respective objective will be pre-classified. For example:

⁶ The DNSH criteria for the socio-economic objectives can be found in the Gender and Racial Equity Index chapter.

Activity	Climate change adaptation	Protection and restoration of biodiversity and ecosystems	Conservation and sustainable management and use of soil and forests	Sustainable use and protection of water and marine resources	Transition to a circular economy	Pollution prevention and control
D1: Hydroelectric power generation	High	High	High	High	Low	Medium
D2: Wind power generation	Medium	Medium	High	Low	Medium	Low
D3: Solar power generation	Medium	High	High	Medium	Medium	Low
D4: Generation of thermal electricity from renewable biomass, biogas, biomethane and other fuels	Medium	High	High	High	Medium	High

Source: Own elaboration.

Users must meet the DNSH criteria based on their materiality. The application of the DNSH will be implemented gradually over time, as exemplified in the following table.

Materiality	2026	2028	2030
High	All criteria	All criteria	All criteria
Medium	50% (e.g., 3 out of 6)	All criteria	All criteria
Low	Voluntary disclosure	50% (e.g., 3 out of 6)	All criteria

Source: Own elaboration.

This proposed approach will be refined, tested and published after the completion of a testing phase in 2026.

TSB classification system

Following the model used by the European, Colombian and Mexican taxonomies, TSB follows a binary approach, identifying sustainable activities that contribute to the respective objective, using specific metrics and thresholds: (i) adopted from other taxonomies, when appropriate for the Brazilian context; (ii) adapted from other taxonomies considering the Brazilian context; or (iii) developed especially for the TSB.

3. Methodology for Objective 1 — Climate Change Mitigation

Ambition of the objective

Brazil's NDC aligns with the Paris Climate Agreement's long-term goal of achieving carbon neutrality by 2050, which sets the TSB's ambition for Objective 1 — Climate change mitigation. This ambitious target is rooted in scientific research and international agreements, specifically the Paris Agreement, which underscores the urgent need to keep "the increase in the global average temperature to well below 2°C above pre-industrial levels" and to pursue efforts to "limit the temperature increase to 1.5°C above pre-industrial levels" (UNFCCC, 2015).

Prioritization of sectors

The TSB includes sectors and economic activities for which technical criteria are developed. While a taxonomy can technically cover any number of sectors and activities, countries typically prioritize those most relevant to their economy. For the climate change mitigation objective, other countries based their selection of sectors on various factors, such as climate and economic relevance, measured by its GHG emissions and relevance for the Gross Domestic Product (GDP).⁷

Accordingly, the technical criteria defined in the first edition of the TSB seek to cover the sectors responsible for most of Brazil's direct GHG emissions. The Brazilian government pre-identified these eight sectors using the structure established by the CNAE, basing the selection on climate and environmental impacts, as well as economic relevance in terms of GDP contribution and employment generation. As stated in the TSB Action Plan: "In 2020, Brazil was the seventh largest GHG emitter (flow) in the world, responsible for 2.28% of total GHG emissions (CLIMATE WATCH, 2023). Most of these emissions originate from land use, forests and land-use change (38%), including deforestation, followed by agriculture (28.5%) and the energy sector (23.2%). The waste and industry sectors account for 6.1% and 4.2% respectively (MCTI, 2022)" (BRASIL, MF, 2023).

Notably, the following sectors were selected in relation to the TSB's climate change mitigation objective:

- Agriculture, livestock, forestry, fishing and aquaculture (CNAE A);
- Extractive industries (CNAE B);
- Manufacturing industries (CNAE C);
- Electricity and gas (CNAE D);
- Water, sewage, waste management and decontamination activities (CNAE E);
- Construction (CNAE F);
- Transportation, storage and mail (CNAE H);

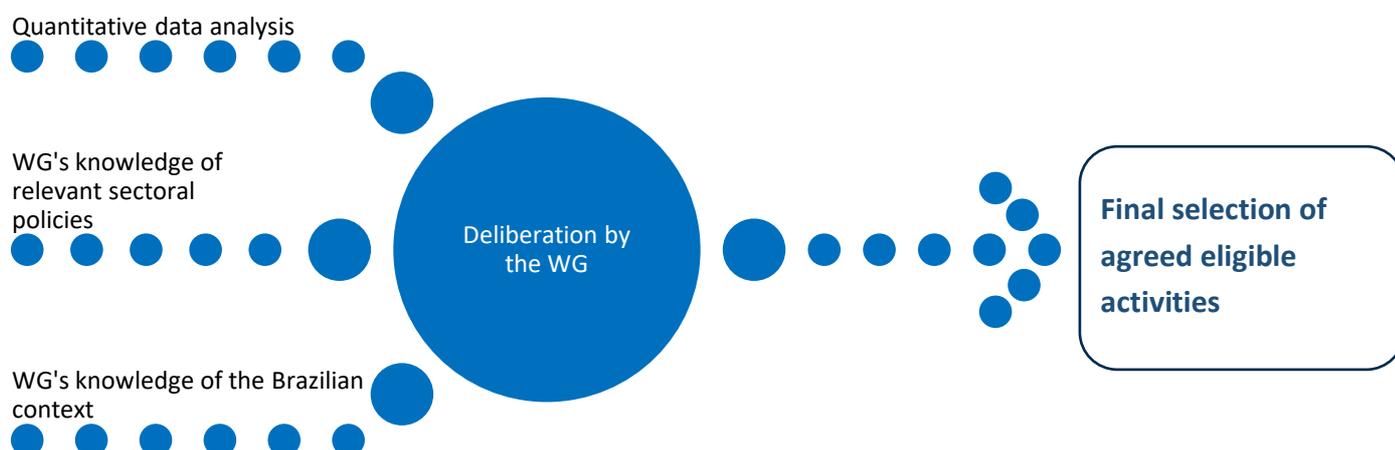
⁷As an example presented in the JRC Technical Report, the EU Taxonomy initially identified 21 sectors based on NACE codes, representing 93.5% of the EU's GHG emissions (CANFORA et al., 2021). This list was later refined to nine sectors, including more than 100 activities/assets and covering approximately 80% of the EU's GHG emissions (EUROPEAN COMMISSION). On the other hand, the substantial contribution to climate change mitigation is addressed as the main objective for the selection of seven economic sectors in Colombia's Green Taxonomy, which includes 47 activities/assets, excluding the Agriculture, Forestry and Other Land Use (AFOLU) sector. For the latter, Colombia's Green Taxonomy proposed an innovative way of addressing the five environmental objectives — climate change mitigation, climate change adaptation, soil management, water management, ecosystem and biodiversity conservation — in a transversal way as a substantial contribution in three land use sectors: Forestry, Agriculture and Livestock. These three sectors are highly relevant in Colombia's Green Taxonomy and are addressed differently from other sectors, given their materiality, currently contributing 59% of the country's GHG emissions (COLOMBIA, 2022).

- Social services for quality of life and planning (tourism, urban planning and development and information and communication technologies).

Identification, assessment and prioritization of economic activities

The identification, assessment, and prioritization of economic activities in each sector, prioritized by the TSB Action Plan, are based on a combination of quantitative data, where available, and qualitative analysis, following an iterative approach. For this first edition, all the assessments were conducted at a national level; it was not possible to incorporate regional specificities into the process of selecting activities.

Each economic sector is assessed independently. Due to the limitations of the available data, the prioritization of activities was conducted within each sector without considering the relationships between economic sectors. This approach was applied consistently to the eight sectors defined in the TSB Action Plan.



Step 1: Assessment of general indicators for all sectors.

Economic activities were assessed based on the following indicators:

Table 3: Indicators for assessing and prioritizing the TSB's economic activities	
Aspect	Indicator [weight in brackets]
Socio-economic relevance of the economic activity for the local economy	<ul style="list-style-type: none"> • GDP (5-year average 2017–2021) and Value Added (IBGE, 2023) [1] • Employment (average 2017–2021) (RAIS, 2022), (ROMERO and GRAMKOW, 2021) [1] • Economic Complexity Index ⁸ (5-year average 2017–2021) (CEDEPLAR, 2023) [1]

⁸ The Economic Complexity Index (ECI) of an activity measures its degree of sophistication and specialization. It reflects the capacity of an activity to produce complex goods and services, which require technical knowledge, advanced infrastructure and interconnected production chains.

Table 3: Indicators for assessing and prioritizing the TSB's economic activities

Potential for economic activity to contribute substantially to climate change mitigation	<ul style="list-style-type: none"> GHG emissions (5 year-average of the most recent data available) (BRASIL, MCTI, 2022) [2] Climate indicator (own data) based on scenarios from the Intergovernmental Panel on Climate Change (IPCC, 2023) and the International Energy Agency (IEA) (IEA, 2021) [2]
Interoperability with other taxonomies	<ul style="list-style-type: none"> Existence of the economic activity in other taxonomies (national and international) to facilitate interoperability (taxonomy count based on a sample of seven taxonomies: ABNT (2025), Colombia (2022), Costa Rica (2024), Mexico (2023), Panama (2024), Rwanda (2024), EU (2020) [2]

Source: Own elaboration.

Data for all indicators assessed was collected for each economic sector and CNAE division. They were then normalized on a scale of 0 to 1, where 1 corresponded to the highest value and 0 to the lowest, in order to make the scores comparable. Each indicator was also assigned a weight of 1 or 2, defined in discussions with the WGs according to its relevance to climate change mitigation. This weighting was applied uniformly across all sectors.

The resulting final score ranks the relevance of each economic activity from highest to lowest and is used to guide the discussions and decisions of the respective Sectoral WG regarding the selection of activities. Although the scoring system offers a numerical and standardized approach for each sector, other sectoral considerations were necessary for the following reasons: CNAE codes do not always have sufficient granularity to capture relevant climate solutions, resulting in limited data related to the indicators listed above and making it difficult to assign a specific score to the activity. For example, solar electricity generation does not have its own CNAE code (see Table 1), which limits the availability of data on employment and other aspects.

Step 2: Specific considerations by Sectoral WG (qualitative).

Following the scoring system described above, additional sector-specific factors were considered and discussed in each WG before final selection. This included discussions based on expert knowledge of the Brazilian social, environmental and political context, which could not be formalized in quantitative indicators. The respective WGs also recognized and took into account the need to prioritize the work for the TSB's first edition, given timeline constraints. In all CNAEs, certain activities that could not be included at this stage were identified as priorities for the second edition of the TSB. These activities can be found in the introductory text of each sectoral chapter.

Table 4: Summary of considerations by sector

Sector	Summary of considerations
A	<ul style="list-style-type: none"> At least one activity selected in each of the main sector groups Regional specifics Policies for subsidized credit Monitoring challenges

Table 4: Summary of considerations by sector

B	<ul style="list-style-type: none"> Minerals identified as strategic by Brazil's "Pro-Strategic Minerals Policy" (BRASIL, MME, 2021) in the categories 2 (important for high-tech products) and 3 (important for the country's GDP and exports) Critical nature of the mineral based on international assessments (e.g., IEA, EU, US Department of Energy) Importance of the activity for the future Brazilian economy, as noted in public policy documents and based on expert opinion Recent developments in the Brazilian mining industry (e.g., growth in the prospecting and implementation of new graphite and lithium mines) and in the Brazilian ore processing industry, such as the production of green steel
C	<ul style="list-style-type: none"> At least one activity selected in each of the main sector groups Future enabling role of the activity within the low-carbon economy (e.g., manufacturing of renewable energy technologies) Incorporation of generic measures required in all manufacturing activities (e.g., electrification), not covered by a specific CNAE code
D	<ul style="list-style-type: none"> Activities that enable an increase in the percentage of renewable energy in the system (e.g., grid investments) New low-carbon industries (e.g., low-carbon hydrogen) Important measures to reduce energy consumption not covered by CNAE codes (e.g., energy efficiency)
E	<ul style="list-style-type: none"> Social considerations such as access to water and increased coverage of sewage services
F	<ul style="list-style-type: none"> Useful sub-classifications for investment purposes (e.g., differentiating between new and existing buildings)
H	<ul style="list-style-type: none"> Infrastructure investments to support low-carbon transport not covered in CNAE H Relevance of transport as an enabler of social objectives
Other CNAE codes	<ul style="list-style-type: none"> Digital platforms and IT infrastructure for tourism Sustainable transport solutions for tourism Management of water services for tourism Structuring, restoring, expanding, maintaining and operating urban green areas Preparation of studies, policies and instruments for urban planning and development

Source: Own elaboration.

Development of technical criteria

As explained in the section "Methodological approaches for defining the technical criteria", both activities that *qualify directly*, without additional criteria, and activities whose substantial contribution is assessed by defined technical criteria — whether quantitative or qualitative — are considered in terms of their ability to contribute to achieving the level of ambition of this objective, i.e., to achieve carbon neutrality by 2050. The technical criteria for each activity are

established based on the technical work of the Sectoral WGs using the approaches described in the section “Cross-Sectional Methodological Approach”. The principles and methodologies presented serve as guidelines for the Sectoral WGs in defining specific technical criteria and their limits, taking into account the specific characteristics of each sector and activity.

As indicated in Section 2 of this chapter, other criteria, including those of other taxonomies, were consistently assessed for their applicability in the Brazilian context. However, these external criteria were only adopted if deemed relevant and applicable in the national context.

LIFE CYCLE ASSESSMENT (LCA):

The WGs consistently considered using Life Cycle Assessment (LCA) for the technical criteria, but they did not always apply it. Conducting a complete LCA can be costly, complex and/or act as a barrier to taxonomy adoption. Consequently, its application was not universally adopted. Instead, the WGs considered the following factors:

1. Presence in other parts of the taxonomy: The TSB aims for broad economic coverage. This means that, for example, GHG emissions from transport are addressed in the transport sector, from production in the manufacturing industries sector. Duplication is unnecessary when relevant emissions are deemed sufficiently covered upstream or downstream in other sectors.
2. Materiality of GHG emissions: If emissions are highly relevant to that activity, they are included through LCA or specific requirements — for example, in aluminum smelting, Scope 2 GHG emissions from electricity generation are highly relevant (accounting for more than 70% of the process), so criteria were developed to ensure that the generation or purchase of clean energy is a requirement. Conversely, in case of activities for which, for example, upstream emissions are not material, LCA is not necessary.

4. Methodology for Objective 2 — Climate Change Adaptation

The TSB's methodology for Objective 2 is based on the synthesis and adaptation of various existing approaches, adjusted to Brazil's climate-related, environmental, social-economic context. The proposed methodology incorporates the best practices of global standards while meeting specific national priorities. Through comprehensive data analysis and consultation with internal stakeholders, the TSB's methodology for Objective 2 ensures that the selected activities not only meet strict adaptation criteria but also strengthen the resilience of the economy, communities and ecosystems to the impacts of climate change.

Ambition

The TSB's ambition for Objective 2 —Climate change adaptation — is to achieve a measurable reduction in exposure and vulnerability to climate change that affects the country's people, ecosystems, physical infrastructure, and economy. The criteria and measures in the relevant sectoral chapters were developed with this goal in mind, that is, to ensure a

measurable reduction in this vulnerability. This can be achieved by avoiding or reducing the negative effects of climate change on a given economic activity.

It was discussed and agreed that the use of a "measurable reduction" will be adopted as a general goal. Considering that adaptation is highly localized and specific, creating a standard metric or a single percentage of vulnerability reduction applicable to different contexts would be neither feasible nor meaningful. The criteria in each chapter seek to consider the specific features of the respective sector in relation to vulnerability. This can be specified through different indicators, such as cost reduction or a resilience index, as detailed in the chapters.

Prioritization of sectors

The following methodology was used to prioritize the sectors to be included in the first edition of the TSB:

1. Identification of the main national policies, instruments and tools that address adaptation to climate change;
2. Identification of relevant international references for climate adaptation or vulnerability in Brazil;
3. Review of the identified documents and mapping of the sectors prioritized within them;
4. Grouping of sectors and categories of related activities based on the CNAE code.

The following documents make up the repository of references mapped and analyzed for this exercise:

National policies, instruments and tools:

- Brazil's Nationally Determined Contribution (NDC)
- National Biodiversity Strategy and Action Plan (EPANB)
- National REDD+ Strategy (ENREDD+)
- Climate Plan – Adaptation 2024 (PCA)
- National Adaptation Plan 2016 (PNA)
- National Water Resources Plan (PNRH)
- Sectoral Plan for Adaptation to Climate Change and Low Carbon Emissions in Agriculture and Livestock, with a view to Sustainable Development (PlanoABC+) (Ministry of Agriculture, Livestock and Supply (MAPA))
- National Climate Change Policy (PNMC)

International references:

- Climate Knowledge Portal (World Bank)
- Global Adaptation Initiative of the University of Notre Dame (ND-GAIN)

The following table summarizes the results obtained in the relevance analysis, along with the conclusion of the sectors included for the climate change adaptation objective in the first edition of the TSB.

Table 5: Climate hazard categories identified				
Priority sectors for adapting to climate change in Brazil	Total references to the topic within the analyzed references	Similar themes grouped together	Main reference documents	Inclusion in the first edition of TSB

Table 5: Climate hazard categories identified

Agriculture	15	Agriculture, Family Farming, Food and Nutrition Security, Food Systems	PCA 2024, PNA 2016, NDC, NPCC, ABC+ Plan, PNRH, EPANB, ENREDD+, World Bank Climate Knowledge Platform, AdaptaClima, ND-GAIN Index	YES
Forests and Biodiversity	15	Forests, Biodiversity, Oceans, Ecosystem Services	PCA 2024, PNA 2016, NDC, NPCC, ABC+ Plan, EPANB, ENREDD+, World Bank Index, AdaptaClima, ND-GAIN Index	YES
Social Systems	12	Risk and Disaster Management, Vulnerable Populations, Gender, Women, Traditional Communities, Indigenous People, Indigenous Territories, Social Vulnerability, Racial Equality and Combating Racism	PCA 2024, PNA 2016, NDC, NPCC, AdaptaClima	YES
Cities	11	Cities, Coastal Zones, Urban Resilience, Urban Areas, Human Habitat, Infrastructure (Construction)	PCA 2024, PNA 2016, NDC, NPCC, PNRH, World Bank Index, AdaptaClima, ND Gain Index	YES
Water Resources	9	Water Resources, Water	PCA 2024, PNA 2016, NDC, NPCC, ABC+, PNRH, World Bank Index, AdaptaClima, ND-GAIN Index	YES
Health	6	Health	PCA 2024, PNA 2016, NPCC, World Bank Index, AdaptaClima, ND-GAIN Index	NO
Energy	5	Energy, Infrastructure (Energy)	PCA 2024, PRR 2022, PNA 2016, NDC, NPCC, World Bank Index, AdaptaClima, ND-GAIN Index, Climate resiliency (IEA, 2022)	YES
Transport	5	Transport, Infrastructure (Urban	PCA 2024, PNA 2016, NPCC, AdaptaClima	YES

Table 5: Climate hazard categories identified

		Mobility), Infrastructure (Transport)		
Industry	3	Industry and Mining, Industry	PCA 2024, PNA 2016, AdaptaClima	NO
Tourism	2	Tourism	PCA 2024, AdaptaClima	NO
Solid Waste	1	Solid Waste Management	NPCC	NO

Source: Own elaboration.

The results of this assessment show that Agriculture, Forests and Biodiversity, Social Systems, Cities, Water Resources and Energy are priorities for Brazil. The Transport sector is also covered by a considerable number of references and will therefore be included in this first edition of TSB development for the climate change adaptation objective.

The Health sector, despite being positioned in the middle of the ranking and singled out as a priority in a considerable number of documents, will be addressed in a subsequent phase of TSB development. This will allow for the incorporation of more technical experts into the WGs to support the development of the sector's list of activities and criteria. In addition, the Health, Industry, Tourism and Solid Waste sectors may be addressed in subsequent editions for the purpose of adapting to climate change.

Identification, assessment and prioritization of economic activities and measures

It should be noted that, throughout the adaptation objective, the term "activities and measures" is used to identify the different investments that can make a substantial contribution to climate change adaptation. *Activities* are defined as those entire economic activities that generally have a CNAE code. *Measures* are smaller-scale components of an activity. Measures may also be relevant to other environmental objectives, but they are essential to achieving the adaptation objective, as many measures cannot be linked to a specific economic activity.

The selection of potential activities and measures is based on a sector-specific analysis carried out in four steps:

1. Identification of the predominant climate hazards in the sector;
2. Identification of economic activities and potential measures to address specific physical climate risks in the sector;
3. Mapping of activities and measures to their CNAE codes, whenever possible;
4. Classification of activities and measures based on the inclusion parameters (explained below).

It should be noted that physical climate hazards and impacts can vary across Brazil based on the different geographical and ecological conditions and socio-economic characteristics of the regions. However, the methodology does not reach this level of granularity. Instead, it analyzes general national trends in Brazil's economic sectors to identify important or material threats. Greater granularity would be unfeasible for a national taxonomy.

I. Identification of material climate hazards by sector

Climate hazards were identified for each sector individually, as each TSB-aligned investment must contribute to climate change adaptation and resilience by addressing specific climate hazards. The selected sources of information to be provided are:

- **Comprehensive coverage** of a wide range of climate hazards that may be relevant to the wide variety of investments in the various sectors;
- Definitions and references **with scientific basis**, referring, as appropriate, to official definitions and sources of information, such as the IPCC;
- An **appropriate level of granularity** that reflects the diversity of climate impacts without making the taxonomy structure overly complex for users.

The National Adaptation Plan (PNA), which in Brazil is consolidated in the Climate Plan – Adaptation (PCA), is the main source for identifying physical climate hazards in each sector. For the purposes of selecting hazards by sector, additional national policies and specialized literature are used if this information is not present in the PCA. The hazard classification, based on the hazard categories listed in Table 6 below, is based on the CBRT (CLIMATE BONDS INITIATIVE, 2024), which seeks to simplify hazard categories by combining them wherever possible to support usability and clarity for users. The categorization is based on an investment perspective, ensuring that only risks that can be effectively addressed by investments are included.

Table 6: Categories of identified climate hazards

Hazard (category)	Definition
Heat stress	Consequences of high temperatures associated with rising average surface temperatures and/or extreme heat events.
Cold stress	Consequences of low temperatures associated with cold spells, frost, heavy snowfalls and ice storms, snow, glaciers and ice sheets, as well as lake, river and sea ice.
Water stress	Consequences of water scarcity associated with changes in average rainfall, aridity, hydrological, agricultural and ecological drought or reduced freshwater availability due to saline intrusion.
Floods	Consequences of flooding due to heavy rainfall and pluvial flooding, river flooding, coastal flooding and changes in relative sea level.
Storms	Consequences of severe windstorms, tropical or extratropical cyclones, sand and dust storms, hail and/or changes in average wind speed.
Movement of mass	Consequences of landslides, coastal erosion or other climate-caused events of mass movement.
Forest fires	Consequences of fire associated with simultaneous high temperatures, dryness and wind conditions.

Table 6: Categories of identified climate hazards

Changes in marine conditions	Consequences associated with changes in average ocean temperatures, marine heat waves, seawater salinity and seawater acidification.
Multiple risk	Consequences of several simultaneous risks, including (but not limited to) changes in the coverage of pests, pathogens and other disease vectors, soil degradation and erosion.

Source: Climate Bonds Initiative (2024)

II. Identification of activities and measures that address sector-specific climate risks

Activities and measures were identified based on a review of relevant national policies and tools (see above), national taxonomies and other references, such as the CBRT database and the LAC Common Taxonomy Framework.

To better delineate investments and develop appropriate criteria, activities and measures are classified into four categories, as described below:

- **Adapted activities:** Economic activities that, based on their own performance, are resilient to climate change.
- **Enabling activities:** Economic activities that contribute to increasing the resilience of other activities.
- **Adapted measures:** Measures that make the economic activity in which they are implemented more resilient to climate change.
- **Enabling measures:** Measures implemented within an economic activity to make other economic activities more resilient to climate change.

Note: Enabling activities and measures ensure that the investment delivers a measurable improvement in the climate resilience of activities beyond the one in which it is implemented. Units of measurement can include, for example, the number of beneficiaries or people whose conditions have become more climate-resilient, the economic value of protected assets and the extent of natural ecosystems strengthened as a result of this investment. Processes should remain in place for at least the lifetime of the investment, and if possible, for the lifetime of the underlying asset/activity, to keep this assessment under regular review and subject to periodic reassessment in line with evolving needs and/or changing climate conditions affecting the investment. This may include, as necessary, monitoring and measuring against TSB criteria or other predefined indicators, as well as corrective actions when these criteria or indicators are not met.

Activities and measures are identified as follows:

1. Use of national strategies, policies and plans and document review: The identification of potential activities and measures that respond to specific hazards is conducted through a document review of national policies, such as the PCA, the NDCs, and other relevant sectoral plans (Table 6).
2. Classification of these activities and measures according to the four categories of activities and measures used in the TSB (adapted and enabling activities and measures).
3. Review and selection of activities and measures from other references that are aligned with Brazil's national priorities.

The objective of this stage is to ensure a comprehensive list of activities and measures for establishing the technical criteria.

III. Mapping of activities and measures in relation to CNAE codes

Finally, the corresponding CNAE codes were mapped for the identified activities. Measures may not have a direct correspondence with a CNAE code (for example, disaster risk reduction), or they may be too specific to be covered by a CNAE code and therefore only have the taxonomy code.

IV. Review of activities and measures based on inclusion parameters

The final list of activities and measures for all the priority sectors identified in the previous steps was drawn up by the Sectoral WGs and analyzed based on the following key characteristics:

1. **Potential for Substantial Contribution** through its own performance or through enabling other activities (e.g., to reduce climate vulnerability).
2. **Risk of maladaptation** addressed through the substantial contribution or the DNSH criteria. For the purposes of this document, maladaptation is defined as: the risk of an unintended material increase in vulnerability in the investment context; uncertainty or miscalculation about physical climate risks, leading to an increase in vulnerability to the risk that the investment is intended to address; and failure to consider system boundaries, leading to an increase in vulnerability to physical climate risks external to the investment context. However, it is not the intention or purpose of the taxonomy to measure maladaptation in any way, but rather to use the criteria to prevent (or mitigate the risk of) it from happening.
3. **Risk of jeopardizing other TSB objectives**, addressed through the DNSH criteria.

These criteria were established qualitatively through research and discussions with the WGs and other sector specialists and are used to define the applicable technical criteria. A more detailed explanation of this process will be provided in the next section.

Development of technical criteria

The methodology used to develop the technical criteria for the TSB's climate change adaptation objective is described below, which took into account the following factors:

- Alignment with the objectives and priorities defined in the PNA;
- Scientific evidence showing that the activity or measure makes a substantial positive contribution to climate change adaptation;
- Ambition to guarantee the adaptation and resilience of sectors, activities and assets to the impacts of climate change;
- Interoperability with other international and regional taxonomies.

Substantial contribution

As explained above, the TSB incorporates both adapted and enabling activities and measures. Complementary to the information described in the section "Methodological approaches for defining technical criteria – Substantial Contribution", the metrics used to define this substantial contribution in adaptation activities and measures were also based on the following options, in line with the LAC Common Taxonomy Framework:

- **Option 1:** Directly qualified activities and measures;
- **Option 2:** Quantitative approaches — impact-based, performance-based, best-in-class, and relative improvement approach (all approaches have quantitative/verifiable thresholds to demonstrate impact);

- **Option 3:** Qualitative approaches — based on good practices;
- **Option 4:** Qualitative approaches — based on processes (vulnerability assessment).

The choice of metric depends on several factors, including the nature and complexity of the activity or measure, the risk of maladaptation, the availability of data and the existence of relevant standards and methodologies for assessing the substantial contributions to climate change adaptation. The above options were assessed in relation to the activities and measures of all prioritized sectors, with the following distinctions:

Option 1. List of directly qualified activities and measures — Activities and measures with a low risk of maladaptation may be directly qualified or require simple technical assessments to determine their substantial contribution. This includes those that support other activities and measures in adapting to climate change or those that make implicit, sustainable contributions to adaptation with a low risk of greenwashing.

Option 2. Quantitative approaches — Quantifiable or verifiable metrics, such as rating systems and thresholds (e.g., percentage reduction in freshwater use, minimum return period for the design of stormwater drainage systems), are used when methodologies, standards, and technical or scientific references are available to assess the substantial contribution. While these metrics enhance clarity and facilitate verification, their feasibility may be limited since adaptation to climate change is context specific.

Option 3. Qualitative approaches — based on good practices — Approach suitable for specific activities and measures that have the potential to contribute substantially to climate change adaptation, while offering co-benefits for other climate and environmental objectives. It applies to activities with established guidelines, standards and regulations (e.g. nature-based solutions, or wetland restoration). The criteria allow for sufficient flexibility to accommodate different contexts (e.g. ecosystems and biomes), ensuring applicability in all regions.

Option 4. Qualitative approaches — vulnerability assessments — Risk-based vulnerability assessments rely on qualitative assessments or quantitative studies using established climate models and scenarios, such as Representative Concentration Pathways (RCP) or Shared Socioeconomic Pathways (SSP), to assess the vulnerability of an asset or activity to climate change over the lifetime of the activity, asset or project. As adaptation to climate change is context- and location-specific, this method can be applied to all sectors and is relevant to adapted and enabling activities.

Note: All activities or measures designated in the list of qualified activities and measures, that is, those considered as directly qualified, must pass through a verification in relation to their resilience to all potentially relevant climate impacts and their contribution to the climate change adaptation objective.

Do No Significant Harm (DNSH)

To ensure that the activities and measures defined in the TSB do not significantly harm the climate, the environment and/or other objectives, technical criteria — both general and specific — were established based on the national context.

Note: Since adaptation activities and measures are highly context-specific, generic DNSH criteria are more appropriate, as the potential damage can vary for the same activity or measure across different contexts and regions.

Based on the methodology described in this section, the sectoral chapters were developed by detailing the activities and measures assessed for each prioritized sector.

5. References

ACCOUNTABILITY FRAMEWORK INITIATIVE (AFi) **Deforestation- and conversion-free supply chains and land use change emissions**: A guide to aligning corporate targets, accounting, and disclosure. 2022. Available at: https://accountability-framework.org/fileadmin/uploads/afi/Documents/AFI-LUC-and-Emissions-Guidance-09_2022.pdf. Accessed: 12 Sep 2025.

ASSOCIAÇÃO BRASILEIRA DE NORMAS TÉCNICAS (ABNT). **Avaliação de desempenho ambiental – Instrumentos de dívida verde – Parte 3**: Taxonomia. 2025.

BRASIL. **Decreto nº 11.961, de 22 de março de 2024**. Institui o Comitê Interinstitucional da Taxonomia Sustentável Brasileira. Brasília, DF: 2024. Available at: <https://www2.camara.leg.br/legin/fed/decret/2024/decreto-11961-22-marco-2024-795420-publicacaooriginal-171337-pe.html>. Accessed: 12 Sep 2025.

BRASIL. MINISTÉRIO DA CIÊNCIA, TECNOLOGIA E INOVAÇÃO (MCTI). **Resultados do Inventário Nacional de Emissões de Gases de Efeito Estufa por Unidade Federativa**. Edição 1.1. Fonte oficial. 2022. Available at: <https://repositorio.mcti.gov.br/handle/mctic/4967>. Accessed: 12 Sep 2025.

BRASIL. MINISTÉRIO DA FAZENDA (MF). **Taxonomia Sustentável Brasileira – Plano de Ação**. 2023. Available at: <https://www.gov.br/fazenda/pt-br/orgaos/spe/taxonomia-sustentavel-brasileira/plano-de-acao>. Accessed: 12 Sep 2025.

_____. **Novo Brasil – Plano de Transformação Ecológica**. 2024. Available at: https://www.gov.br/fazenda/pt-br/acao-a-informacao/acoes-e-programas/transformacao-ecologica/biblioteca/publicacoes/1202_pte_digital.pdf. Accessed: 12 Sep 2025.

BRASIL. MINISTÉRIO DO MEIO AMBIENTE (MMA). **Contribuição Nacionalmente Determinada (NDC)**. 2023. Available at: <http://educaclima.mma.gov.br/wp-content/uploads/2023/11/NDC-1.4-Brasil-27-out-2023-portugues.pdf>. Accessed: 12 Sep 2025.

BRASIL. MINISTÉRIO DE MINAS E ENERGIA (MME). **Resolução nº 02, de 18 junho de 2021**. Define a relação de minerais estratégicos para o País. 2021. Available at: <https://www.gov.br/mme/pt-br/assuntos/noticias/mme-lanca-relatorio-anual-do-comite-interministerial-de-analise-de-projetos-de-minerais-estrategicos/resolucao2CTAPME.pdf>. Accessed: 12 Sep 2025.

BRASIL. MINISTÉRIO DO TRABALHO E EMPREGO (MTE). **Relação Anual de Informações Sociais – RAIS. Ano-base 2022**. Fonte oficial. 2022. Available at: <https://www.gov.br/trabalho-e-emprego/pt-br/assuntos/estatisticas-trabalho/rais/rais-2022>. Accessed: 12 Sep 2025.

BRASIL. PRESIDÊNCIA DA REPÚBLICA. **Lei nº 6.938, de 31 de agosto de 1981**. Dispõe sobre a Política Nacional do Meio Ambiente, seus fins e mecanismos de formulação e aplicação, e dá outras providências. Brasília, DF: 1981. Available at: https://www.planalto.gov.br/ccivil_03/leis/l6938.htm. Accessed: 12 Sep 2025.

_____. **Constituição da República Federativa do Brasil de 1988**. Brasília, DF: 1988. Available at: https://www.planalto.gov.br/ccivil_03/constituicao/constituicao.htm. Accessed: 12 Sep 2025.

_____. **Lei nº 12.187, de 29 de dezembro de 2009**. Institui a Política Nacional sobre Mudança do Clima - PNMC e dá outras providências. Brasília, DF: 2009. Available at: https://www.planalto.gov.br/ccivil_03/ato2007-2010/2009/lei/l12187.htm. Accessed: 12 Sep 2025.

_____. **Decreto nº 10.387, de 5 de junho de 2020.** Dispõe sobre incentivo ao financiamento de projetos de infraestrutura com benefícios ambientais e sociais. Brasília, DF: 2020. Available at: https://www.planalto.gov.br/ccivil_03/_ato2019-2022/2020/decreto/d10387.htm. Accessed: 12 Sep 2025.

_____. **Decreto nº 11.532, de 16 de maio de 2023.** Institui o Comitê de Finanças Sustentáveis Soberanas. Brasília, DF: 2023. Available at: https://www.planalto.gov.br/ccivil_03/_ato2023-2026/2023/decreto/D11532.htm. Accessed: 12 Sep 2025.

BUSTAMANTE, M. M. *et al.* Ecological restoration as a strategy for mitigating and adapting to climate change: lessons and challenges from Brazil. **Mitigation and Adaptation Strategies for Global Change**, 24, 1249-1270. 2019.

CANFORA, P.; DRI, M.; POLIDORI, O.; SOLZBACHER, C.; ARRANZ PADILLA, M. **Substantial contribution to climate change mitigation – a framework to define technical screening criteria for the EU taxonomy.** JRC Technical Report. 2021. Available at: <https://publications.jrc.ec.europa.eu/repository/handle/JRC123355>. Accessed: 12 Sep 2025.

CENTRO DE DESENVOLVIMENTO E PLANEJAMENTO REGIONAL (CEDEPLAR). **DataViva: Complexidades das Atividades Econômicas.** Belo Horizonte: UFMG/CEDEPLAR, 2023. Available at: <https://www.dataviva.info/pt/rankings/economic-activities>. Accessed: 12 Sep 2025.

CONVENTION ON BIOLOGICAL DIVERSITY (CBD). **Decisão 15/4 do Marco Global da Biodiversidade Kunming-Montreal.** 2023. Available at: https://www.gov.br/mma/pt-br/assuntos/biodiversidade-e-biomas/biodiversidade1/convencao-sobre-diversidade-biologica/decisaomgkm_15-4_pt.pdf. Accessed: 12 Sep 2025.

CLIMATE BONDS INITIATIVE (CBI). **Agri-Food Deforestation and Conversion Free (DCF) Sourcing Criteria.** 2024a. Available at: https://www.climatebonds.net/files/documents/Climate-Bonds_Agri-Food-Deforestation-and-Conversion-Free-DCF-Sourcing-Criteria_Criteria-document_EN_Dec-2024.pdf. Accessed: 12 Sep 2025.

_____. **Climate Bonds Resilience Taxonomy Methodology.** 2024b. Available at: https://www.climatebonds.net/files/documents/supporting-documents/Climate-Bonds_Resilience-Methodology_2024.pdf. Accessed: 12 Sep 2025.

_____. **Taxonomy Roadmap for Chile.** 2021. Available at: <https://www.climatebonds.net/data-insights/publications/taxonomy-roadmap-chile>. Accessed: 12 Sep 2025.

COLOMBIA. **Taxonomía Verde de Colombia.** 2022. Available at: <https://www.taxonomiaverde.gov.co>. Accessed: 12 Sep 2025.

COSTA RICA. **La Taxonomía de Finanzas Sostenibles de Costa Rica.** 2024. Available at: <https://www.unepfi.org/publications/taxonomia-de-finanzas-sostenibles-de-costa-rica>. Accessed: 12 Sep 2025.

EUROPEAN COMMISSION. **EU Taxonomy Navigator – FAQ.** Available at: <https://ec.europa.eu/sustainable-finance-taxonomy/faq>. Accessed: 12 Sep 2025.

EUROPEAN UNION (EU). **Regulamento (UE) 2020/852 do Parlamento Europeu e do Conselho, de 18 de junho de 2020.** Relativo ao estabelecimento de um quadro para facilitar o investimento sustentável e que altera o Regulamento (UE) 2019/2088. 2020. Available at: <https://eur-lex.europa.eu/legal-content/PT/TXT/?uri=CELEX:32020R0852>. Accessed: 12 Sep 2025.

INSTITUTO BRASILEIRO DE GEOGRAFIA E ESTATÍSTICA (IBGE). **Sistema de Contas Nacionais, Tabela 10.3 - Valor adicionado bruto constante e corrente**. 2023. Available at:

https://ftp.ibge.gov.br/Contas_Nacionais/Sistema_de_Contas_Nacionais/2021. Accessed: 12 Sep 2025.

_____. **Classificação Nacional de Atividades Econômicas**: subclasses para uso da administração pública. Versão 2.3. Rio de Janeiro: IBGE, 2020. Disponível em: <https://biblioteca.ibge.gov.br/index.php/biblioteca-catalogo?view=detalhes&id=2101721>. Accessed: 12 Sep 2025.

INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC). **AR6 Synthesis Report: Climate Change 2023**. 2023.

Available at: <https://www.ipcc.ch/report/sixth-assessment-report-cycle>. Accessed: 12 Sep 2025.

INTERNATIONAL CAPITAL MARKET ASSOCIATION (ICMA). **Overview and Recommendations for Sustainable Finance Taxonomies**. 2021. Available at: <https://www.icmagroup.org/assets/documents/Sustainable-finance/ICMA-Overview-and-Recommendations-for-Sustainable-Finance-Taxonomies-May-2021-180521.pdf>. Accessed: 12 Sep 2025.

INTERNATIONAL ENERGY AGENCY (IEA). **Net Zero by 2050, A Roadmap for the Global Energy Sector**. 2021. Available at: <https://www.iea.org/reports/net-zero-by-2050>. Accessed: 12 Sep 2025.

_____. **Climate Resilience for Energy Security**. 2022. Available at: <https://www.iea.org/reports/climate-resilience-for-energy-security>. Accessed: 12 Sep 2025.

MEXICO. **Taxonomía Sostenible de México**. 2023. Available at: <https://www.gob.mx/shcp/documentos/taxonomia-sostenible-de-mexico?state=published>. Accessed: 12 Sep 2025.

PANAMA. **Taxonomía Finanzas Sostenibles Panamá**. 2024. Available at:

<https://supervalores.gob.pa/files/taxonomia/Taxonomia-Finanzas-Sostenibles-Panama.pdf>. Accessed: 12 Sep 2025.

ROMERO, João P.; GRAMKOW, C. Economic complexity and greenhouse gas emissions. **World Development**, v. 139, p. 105317. 2021.

RUANDA. **Rwanda's Green Taxonomy**. 2024. Available at: <https://www.minecofin.gov.rw/rwandagreentaxonomy>. Accessed: 12 Sep 2025.

SCIENCE BASED TARGETS INITIATIVE (SBTi). **Forest, Land and Agriculture (FLAG)**. 2022. Available at:

<https://sciencebasedtargets.org/sectors/forest-land-and-agriculture>. Accessed: 12 Sep 2025.

SECRETARIAT OF THE BASEL CONVENTION (SBC). **Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal**. 1989. Available at:

<https://www.basel.int/TheConvention/Overview/tabid/1271/Default.aspx> Accessed: 12 Sep 2025.

SECRETARIAT OF THE ROTTERDAM CONVENTION (SRC). **Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade**. 1998. Available at:

<https://www.pic.int/TheConvention/Overview/tabid/1044/language/en-US/Default.aspx>. Accessed: 12 Sep 2025.

SECRETARIAT OF THE STOCKHOLM CONVENTION (SSC). **Stockholm Convention on Persistent Organic Pollutants (POPs)**. 2001. Available at: <https://chm.pops.int/TheConvention/Overview/tabid/3351/Default.aspx>. Accessed: 12 Sep 2025.

UNITED NATIONS ENVIRONMENT PROGRAMME FINANCE INITIATIVE (UNEP FI). **Common Framework of Sustainable Finance Taxonomies for Latin America and the Caribbean**. 2023. Available at:

<https://www.unepfi.org/wordpress/wp-content/uploads/2023/07/Common-Framework-of-Sustainable-Finance-Taxonomies-LAC.pdf>. Accessed: 12 Sep 2025.

UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE (UNFCCC). **The Paris Agreement**. 2015. Available at: https://unfccc.int/sites/default/files/resource/parisagreement_publication.pdf. Accessed: 12 Sep 2025.

UNITED NATIONS ORGANIZATION (UNO). **Universal Declaration of Human Rights**. 1948. Disponível em: <https://www.un.org/en/about-us/universal-declaration-of-human-rights>. Accessed: 12 Sep 2025.

_____. **Agenda 2030 para o Desenvolvimento Sustentável**. 2015. Available at: <https://brasil.un.org/pt-br/91863-agenda-2030-para-o-desenvolvimento-sustent%C3%A1vel>. Accessed: 12 Sep 2025.

WORLD BANK GROUP (WBG). **Climate Risk Profile Brazil**. 2021. Available at: https://climateknowledgeportal.worldbank.org/sites/default/files/2021-07/15915-WB_Brazil%20Country%20Profile-WEB.pdf. Accessed: 12 Sep 2025.