MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE

















Belém Adaptation Indicators

Data availability and pathways for implementation in Brazil





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ACRONYMS

ANEEL	*Agência Nacional de Energia Elétrica* (National Electric Energy Agency)
BAI	Belém Adaptation Indicators
BTR	Biennial Transparency Reports
CIM	*Comitê Interministerial sobre Mudança do Clima* (Interministerial Committee on Climate Change)
CMA	Conference of the Parties serving as the meeting of the Parties to the Paris Agreement
COP	Conference of the Parties
ENA	*Estratégia Nacional de Adaptação* (National Adaptation Strategy)
EPE	*Empresa de Pesquisa Energética* (Energy Research Company)
ET-MGAT	*Estratégia Transversal de Monitoramento, Gestão, Avaliação e Transparência* (Cross-Cutting Strategy for Monitoring, Management, Evaluation and Transparency)
GGA	Global Goal on Adaptation
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
GST	Global Stocktake
GST 2	The Second Global Stocktake
Iphan	*Instituto do Patrimônio Histórico e Artístico Nacional* (National Institute of Historic and Artistic Heritage)
MCTI	*Ministério da Ciência, Tecnologia e Inovação* (Ministry of Science, Technology and Innovation)
MMA	*Ministério do Meio Ambiente e Mudança do Clima* (Ministry of the Environment and Climate Change)
NAP	National Adaptation Plan
SDGs	Sustainable Development Goals
ONS	*Operador Nacional do Sistema Elétrico* (National Electric System Operator)
PNL	*Plano Nacional de Logística* (National Logistics Plan)
SUS	*Sistema Único de Saúde* (Unified Health System)
UNFCCC	United Nations Framework Convention on Climate Change

Riverside community on the Acutipereira River, Pará. Photo: edsongrandisoli via Getty Images

Aerial view of the São Francisco River and its islands, Petrolina, Pernambuco. Photo: Cristian Lourenço via Getty Images

FOREWORD

In November 2025, by hosting COP30 in Belém, Brazil played a central role in a historic milestone for the international climate agenda: the adoption of the Belém Adaptation Indicators, designed to track collective progress towards the Global Goal on Adaptation established under the Paris Agreement. This achievement marked a significant step towards strengthening the ability to monitor global adaptation efforts and guide concrete action in response to the impacts of climate change.

For Brazil, adaptation is an urgent priority in the face of increasingly frequent and intense extreme climate events. Floods, prolonged droughts and heatwaves threaten lives, undermine livelihoods and exacerbate historical inequalities. Advancing adaptation therefore also means promoting climate justice, with particular attention to protecting the most vulnerable populations, communities and territories.

In recent years, Brazil has made significant progress in strengthening its climate governance, including the reactivation of the Interministerial Committee on Climate Change, the participatory development of the Climate Plan (Plano Clima), and the increasing integration of adaptation into public policies. These efforts reaffirm the country's commitment to establishing adaptation as a long-term State policy, centred on protecting people, ecosystems and territories.

Yet planning alone is not enough. It is equally essential to continuously monitor, evaluate and improve the implementation of adaptation actions. Indicators play a vital role in this process by generating evidence, identifying gaps, informing decision-making and enhancing transparency in adaptation efforts.

Against this backdrop, Brazil undertook an initial testing exercise of the 59 Belém Adaptation Indicators to assess their applicability in the national context, identify available data sources and examine technical, methodological and institutional challenges. By sharing the findings and lessons learned from this experience, Brazil actively contributes to the further refinement of the indicators at the international level, while strengthening its national adaptation monitoring and evaluation frameworks.

This initiative also underscores the importance of ensuring that global indicators reflect different national circumstances and capacities, while preserving their voluntary and non-prescriptive nature. It further highlights the need to strengthen existing information systems, foster institutional cooperation and enhance capacities for data generation and use to support more effective public policies.

This publication therefore represents a concrete contribution by Brazil to the collective development of tools that support the implementation of the Global Goal on Adaptation. Beyond presenting findings, it invites dialogue, cooperation and continuous learning, reaffirming that measuring progress on adaptation is, above all, about understanding the extent to which we are succeeding in protecting lives, reducing vulnerabilities and building a more resilient, just and sustainable future.

Cycle path along the Pinheiros River, São Paulo, São Paulo State. Photo: caio acquesta via Getty Images



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Aerial view of Flamboyant Park, Goiânia, Goiás. Photo: FG Trade via Getty Images

EXECUTIVE SUMMARY

Highlights

59

Belém Adaptation Indicators (BAI)

Brazil has a strong institutional, policy and data foundation for implementing the 59 Belém Adaptation Indicators (BAI). Its national adaptation policy is closely aligned with the new global framework, and the country is already able to report on more than half of the indicators, either fully or partially. The key challenge now is to integrate, standardize and institutionalize existing information, turning fragmented data into a coherent and sustained adaptation monitoring system.

8 of 9



National Adaptation Goals

Eight of Brazil's nine National Adaptation Goals are directly aligned with the targets of the UAE Framework for Global Climate Resilience.

250



of 810 actions

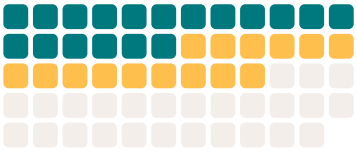
80%



47 of the 59 indicators

250 actions under Brazil's National Adaptation Plan are directly related to the BAI and cover 47 of the 59 indicators (approximately 80% of the set).

56%



Data are readily available for 18 indicators (31%), while another 15 (25%) have data of intermediate readiness. This means that 56% of the indicators have a basis for reporting, although further standardization or refinement is still needed in some cases.



By piloting the Belém Adaptation Indicators while they are still being refined at the international level, Brazil is positioning itself not only as an early adopter but also as a contributor of evidence to inform and strengthen the global adaptation monitoring framework.

250

actions, approximately 30% of the total, are directly linked to at least one BAI

of 810 actions

The adoption of the **59 Belém Adaptation Indicators (BAI)** at COP30 marked an important step toward operationalizing the **Global Goal on Adaptation (GGA)** by establishing a common reference for tracking countries' progress toward global adaptation targets. Their implementation, however, will depend on countries' ability to tailor them to their national contexts, draw on existing data and information systems, and build the capacity needed to address remaining gaps.

In this context, Brazil's Ministry of the Environment and Climate Change (MMA) and GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit) conducted a **preliminary assessment of data availability and potential pathways for operationalizing the BAI**. The assessment does not evaluate Brazil's performance against the indicators. Instead, it examines the country's existing capacity to report on them, identifies key gaps, and explores how the BAI could be integrated into national planning, monitoring, and reporting instruments.

Brazil already has a strong foundation for monitoring the BAI

The analysis found **strong alignment between Brazil's national adaptation instruments and the global framework**. Eight of the nine National Adaptation Goals are directly aligned with the targets of the UAE Framework for Global Climate Resilience, demonstrating that most internationally established priorities are already reflected in Brazil's national policy. The exception is the National Adaptation Goal related to energy security, for which no corresponding global adaptation target has been established.

80%

47 of the 59 BAI covered by these actions

The analysis also found substantial links between the BAI and the 810 actions included in the 16 Sectoral and Thematic Plans under Brazil's National Adaptation Plan (*Plano Clima Adaptação*). Of these, **250 actions, approximately 30% of the total, are directly linked to at least one BAI**. Together, these actions cover **47 of the 59 indicators (80%)**. Thus, although only about one-third of the planned actions are directly linked to the BAI, they collectively span most of the indicator set. Integrating the BAI into the monitoring of the National Adaptation Plan through its Cross-Cutting Strategy for Monitoring, Management, Evaluation, and Transparency (ET-MGAT) therefore offers a practical opportunity to build on existing structures and information, avoid duplication, and strengthen coherence between national policy and the international adaptation agenda.

Brazil could already begin reporting on a subset of indicators

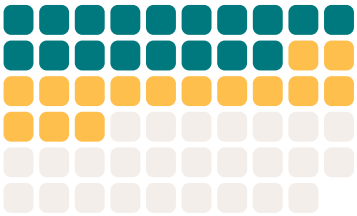
The assessment found that Brazil has a substantial data foundation, although availability varies considerably across the global adaptation targets. Of the 59 indicators assessed, **18 (31%) have high data availability**, providing a basis for reporting with relatively little additional preparation. Another **15 (25%) have moderate data availability** and could support partial reporting or reporting following further efforts to standardize, integrate, or refine the underlying data. For the remaining **26 indicators (44%), data availability was classified as limited**.

Reporting capacity is strongest for indicators related to impact, vulnerability, and risk assessment (target 10a), for which all seven indicators have high or moderate data availability. Water resilience (target 9a) and food and agricultural resilience (target 9b) also stand out, with relatively well-established data foundations.

More significant gaps remain in areas such as cultural heritage (target 9g), health (target 9c), human settlements, and infrastructure (target 9e). In many of these cases, however, the limitations do not stem from a complete lack of information, but rather from the need to integrate existing data, establish specific methodologies, develop comparable time series, and adapt information systems to track adaptation progress. Taken together, the results point to a **tangible initial capacity for reporting**, while highlighting the institutional and methodological improvements needed to progressively expand coverage and enhance the quality of the information available.

18

indicators (31%) with high data availability



Advanced Moderate Limited

10a

all seven indicators with high or moderate data availability

Most significant gaps

9g cultural heritage

9c health

9e human settlements and infrastructure

The next challenge is to embed monitoring in existing systems and institutions

The pilot assessment suggests that consolidating the BAI in Brazil will depend less on creating a parallel system and more on **integrating the indicators into existing national instruments**. BAI monitoring can directly benefit from the monitoring and impact assessment cycles of the National Adaptation Plan, the IndicaClima platform, and sectoral and thematic information systems. At the same time, it can generate information useful for a range of national and international processes.

BAI data as input for

- Second Global Stocktake (GST2)
- Biennial Transparency Reports (BTRs)
- National Communications to the UNFCCC

This integration will be particularly important because data compiled for the BAI could also inform the second Global Stocktake (GST2), Biennial Transparency Reports (BTRs), National Communications to the United Nations Framework Convention on Climate Change (UNFCCC), and other instruments for tracking Brazil's climate policy. The indicators should therefore be understood not merely as a tool for international reporting, but as part of a **national information infrastructure for adaptation**.

Ensuring continuity will require further steps to institutionalize BAI monitoring in Brazil. These include clearly defining the roles of the coordinating body, ministries, and institutions responsible for producing and managing data, as well as establishing procedures for updating, validating, and disseminating information. These arrangements should be aligned with the monitoring cycles and processes established under the ET-MGAT for the Climate Plan.

The Interministerial Committee on Climate Change (CIM) provides a key forum for coordinating this process

The Interministerial Committee on Climate Change (CIM) provides a key forum for coordinating this process, given its governance structure and the range of institutions represented. The institutionalization of BAI monitoring could be advanced through coordinated action across the Committee's constituent bodies, in line with their respective mandates. The Technical Data Working Group could support the processing and integration of the information needed for monitoring. The Adaptation, Mitigation, and Monitoring and Evaluation Subcommittees could contribute to technical discussions, track progress, and validate indicators within their respective areas of responsibility. The Executive Subcommittee could facilitate coordination and move discussions forward within the CIM, while the Full Ministerial Committee could provide the political oversight and guidance needed to consolidate the process.

This approach would embed BAI monitoring within established climate governance mechanisms, avoiding parallel institutional arrangements and strengthening coordination across data production, technical analysis, progress tracking, and decision-making.

Furthermore, coordinating this work with other national information and reporting mechanisms under the United Nations Framework Convention on Climate Change (UNFCCC) will be equally important to avoid duplication of efforts and promote the integrated use of data.

Brazil's experience can inform the further development of the BAI internationally

Brazil's experience with the initial testing of the BAI can also contribute to the international refinement of the metadata. Lessons learned regarding data availability, methodological interpretation, integration with national systems, and implementation challenges could inform the **Belém-Addis Vision**, particularly in the process of refining the BAI methodologies and metadata planned for COP32.

Sharing this experience can contribute to **peer learning and regional exchange**, enabling countries to compare approaches, identify common solutions, and advance the operationalization of the indicators in ways that reflect their respective national circumstances.

Brazil's experience with the initial testing of the BAI can also contribute to the international refinement of the metadata.

Groynes along Avenida Beira-Mar beach, Fortaleza, Ceará. Photo: Cristian Lourenço via Getty Images

1. INTRODUCTION

The adoption of the **Global Goal on Adaptation (GGA)** under the Paris Agreement in 2015 marked an important step toward elevating climate adaptation to the same level of global ambition as mitigation. Established under Article 7 of the Agreement, the GGA strengthened the international commitment to enhancing adaptive capacity, strengthening resilience, and reducing vulnerability to climate change.

In the years that followed, negotiations focused on developing the standards and conceptual frameworks needed to operationalize the GGA. At COP26 in Glasgow in 2021, the establishment of the Glasgow-Sharm el-Sheikh Work Programme initiated efforts to develop a framework and metrics for tracking progress. Two years later, at COP28 in 2023, countries adopted the UAE Framework for Global Climate Resilience, which established **eleven global adaptation targets**.

Between 2023 and 2025, experts worked to develop indicators for monitoring progress toward these goals and informing the assessment of the GGA under the Global Stocktake (GST). This work resulted in a proposal comprising 100 indicators, which was presented for discussion at COP30 in Belém. Following negotiations, 59 Belém Adaptation Indicators (BAI) were adopted to help track countries' progress toward the global adaptation goals.

100 → 59

indicators proposed and indicators adopted at COP30 in Belém

While the indicators represent an important contribution to the operationalization of the GGA, substantial methodological work remains. It is in this context that the **Belém-Addis Vision** was established, calling for further refinement of the indicators' methodologies and metadata by COP32.

At the national level, Brazil has also made significant progress in developing its adaptation agenda. A first milestone was reached in 2016 with the launch of the first National Adaptation Plan (NAP), which laid the groundwork for guiding Brazil's response to the impacts of climate change. In 2021, Brazil presented the final implementation report of its first NAP, concluding its first planning cycle and paving the way for a more ambitious approach focused on implementation.

This new cycle began to take shape in 2023 with CIM Resolution No. 3, dated September 14, 2023, which provided for the update of the **National Plan on Climate Change (the "Climate Plan")**

Participation in developing the Climate Adaptation Plan

4,000 people

700 institutions

25 ministries

11 workshops

6 webinars

9 National Adaptation Goals

12 National Adaptation Targets

16 Sectoral and Thematic Plans

810 actions

and established the **Temporary Technical Groups** on Mitigation and Adaptation. In 2024, work began on the **Climate Adaptation Plan**, Brazil's new National Adaptation Plan. The process aimed to expand both the scope of the policy and public participation in its development. More than 4,000 people, 700 institutions, and 25 ministries took part through 11 workshops and six webinars, bringing together perspectives from different sectors and stakeholders to define national adaptation priorities.

In 2025, the Interministerial Committee on Climate Change (CIM) approved the **National Adaptation Strategy (ENA)**, a document that established a common vision for adaptation in Brazil. The strategy was structured around **9 National Adaptation Goals and 12 National Adaptation Targets**, which translate national priorities into a framework capable of guiding and monitoring climate action.

In 2026, this framework advanced further with the publication of the Climate Plan by the CIM. The plan comprises the National Mitigation and Adaptation Strategies, their respective Sectoral and Thematic Plans, and the Cross-Cutting Strategies. Within this framework, the Climate Adaptation Plan builds on the National Adaptation Strategy through 16 Sectoral and Thematic Plans encompassing **810 actions**. These plans give the strategy greater operational detail, linking national goals to concrete implementation measures.

The Cross-Cutting Strategy for Monitoring, Management, Evaluation, and Transparency of the Climate Plan (ET-MGAT) established the foundations and technical guidelines for annual monitoring of actions, biennial evaluation of national goals and objectives, and quadrennial updates of the Climate Plan. Building on this framework, the Monitoring and Evaluation Subcommittee and the Technical Data Working Group were established, and the IndicaClima platform was developed to systematize implementation data and strengthen transparency.

This national trajectory closely reflects the evolution of the international adaptation agenda. Since the adoption of the GGA, the focus of global discussions has progressively shifted from planning toward implementation, monitoring, measurement, and the effectiveness of results.

This national trajectory is closely aligned with the international adaptation agenda. Since the adoption of the GGA, global discussion has been shifting from an emphasis predominantly focused on planning toward an agenda increasingly oriented toward implementation, monitoring, measurement, and the effectiveness

of results. Brazil's strengthened framework for climate policy planning, management, and transparency reflects this shift. By establishing national goals and targets alongside implementation mechanisms and monitoring tools, Brazil has been translating international progress and lessons learned under the GGA into its own policies and institutions. These developments at the national and international levels are illustrated in Figure 1.

Figure 1 – International and national progress since the adoption of the Global Goal on Adaptation

2015

INTERNATIONAL

→ Adoption of the **Global Goal on Adaptation (GGA)** | Paris Agreement, Article 7, during COP21



Photo: UN Climate Change/Hajü Staudt

2016

NATIONAL

→ Launch of the first National Adaptation Plan (2016-2020)

2021

NATIONAL

→ Final monitoring and evaluation report on the first National Adaptation Plan (2016-2020)

2023

INTERNATIONAL

→ Adoption of the **11 global targets for the GGA** (United Arab Emirates Framework for Global Climate Resilience) during COP28

→ Beginning of expert work to propose a set of indicators to monitor global progress towards the targets (UAE-Belém Work Programme)

NATIONAL

→ Launch of CIM Resolution No. 3, which provided for the update of the National Plan on Climate Change ("Climate Plan") and established the Temporary Technical Groups on Mitigation and Adaptation

2024

NATIONAL

→ Work begins on Brazil's Second National Adaptation Plan (2024–2035)

2025

INTERNATIONAL

→ Adoption of the **59 Belém Adaptation Indicators** during COP30 (Decision 12/CMA.7), setting concrete indicators to monitor progress towards the targets

NATIONAL

→ Approval of the **National Adaptation Strategy**, including the **9 National Adaptation Goals** and **12 National Adaptation Targets**

2026

NATIONAL

→ The Interministerial Committee on Climate Change (CIM) launches the new National Adaptation Plan (Climate Adaptation Plan 2024-2035)

→ **Adaptation Subcommittee** is formally established

→ Brazil begins to develop the **IndicaClima Platform**, a new system to monitor the implementation of the Climate Plan



Photo: Fernando Donasci/MMA

Source: Prepared by the authors.

To effectively implement the Belém Adaptation Indicators, countries will need to translate global goals into their national contexts, select and adapt relevant indicators, establish baselines, and integrate GGA-related metrics into existing planning, monitoring, and accountability systems. This will require practical testing of the indicators to identify feasible approaches, uncover implementation barriers, and build a shared understanding of good practices.

It was in this context that Brazil conducted a technical assessment to **examine data availability for reporting on the BAI and identify pathways for their operationalization**. The assessment was guided by four complementary premises:

1

STRONG FOUNDATION

Brazil already has national goals, targets, indicators, monitoring systems, and institutional processes that can provide a strong foundation for implementing the BAI.

2

ALIGNMENT

Aligning the BAI with national goals and indicators is desirable because it strengthens policy coherence, avoids duplication of effort, and helps bridge the gap between global ambition and national implementation.

3

ADAPTATION

Monitoring global progress on adaptation is urgent. It is both possible and necessary to begin testing the BAI while its accuracy is refined through the Belém-Addis Vision, gaps are identified, and the systems and capacities needed for more robust measurement are developed.

4

IN PRACTICE

The best way to improve the BAI is to test them in practice. The success of the Belém-Addis Vision will depend on an evidence-based, country-led learning process that identifies what works, what needs improvement, and how the framework can accommodate different national circumstances. Brazil's experience can therefore contribute not only to tracking its own adaptation progress, but also to making the BAI more useful, practical, and robust for countries worldwide.

This report **presents the findings of this preliminary assessment**, addressing three key questions:



What is Brazil's current capacity to report on the 59 Belém Adaptation indicators?



What data are already available to support this process, and where are the main information gaps?



Which methodological interpretations still need to be aligned within the UNFCCC framework to support effective implementation?

It is important to emphasize that this document is not a report on Brazil's performance on the BAI indicators themselves, but rather a preliminary assessment that may inform such a report in the future by identifying opportunities and challenges for its implementation.

Aerial view of the Itaipu Hydroelectric Plant, Foz do Iguaçu, Paraná. Photo: tifoniimages via Getty Images

2. METHODOLOGICAL APPROACH

The assessment of Brazil's preliminary capacity to report on the BAI followed seven steps:

1 → 

Translation and tabulation of the 59 indicators listed in Decision 12/CMA.7 (Annex - Belém Adaptation Indicators for measuring progress achieved toward the goals referred to in paragraphs 9–10 of Decision 2/CMA.5) (UNFCCC, 2025a);

2 → 

Comparison with the original proposal of 100 indicators developed by experts from the GGA working group, identifying links between the final indicators and the initially proposed guidelines and metadata (UNFCCC, 2025b);

3 → 

Alignment of each indicator with relevant national and international frameworks (e.g., National Adaptation Goals and Targets, actions from Sectoral and Thematic Adaptation Plans, the Sustainable Development Goals, and the Sendai Framework);

4 → 

Mapping of available data sources for reporting on each indicator (including relevant variables, units of measurement, update frequency, time series, and levels of disaggregation);

5 → 

Assessment of data availability: Based on available sources, classification of data availability into three levels:

- → **Advanced:** Available data provide a sufficient basis for reporting on Brazil's performance against the indicator, with little or no additional preparation required.
- → **Moderate:** The available data would allow for partial reporting on the indicator, covering some of the requested variables, or requiring standardization/refinement efforts.
- → **Limited:** No suitable data sources were identified to support reporting on Brazil's performance against the indicator.

6 → 

Development of recommendations: Identification of next steps for operationalizing BAI reporting and of methodological issues requiring further alignment within the UNFCCC framework;

7 → 

Dialogue and consultations with federal agencies: Review and refinement of the assessment based on input from key stakeholders, including the identification of additional data sources and the definition of next steps.



Solar panels in Tubarão, Santa Catarina. Photo: Anderson Coelho via Getty Images

3. RESULTS

3.1 Correlation with the Climate Adaptation Plan

The preliminary assessment found **strong conceptual and structural alignment between the Climate Adaptation Plan, the global adaptation targets, and the Belém Adaptation Indicators (BAI)**. Aligning these instruments is essential to ensuring policy coherence and efficiency, assessing the extent to which international priorities are reflected in national strategies and objectives, and determining whether these objectives translate into concrete, measurable actions. Greater alignment across these levels can reduce fragmentation and overlap, facilitate institutional coordination, and enable existing information and monitoring systems to serve multiple purposes.

8 of 9

National Adaptation Goals directly aligned with a global adaptation target



The first level of alignment concerns Brazil's National Adaptation Goals and the global adaptation targets. From its inception, the Climate Adaptation Plan has sought to align its development with global adaptation targets. **Of Brazil's nine National Adaptation Goals, eight are directly aligned with the global adaptation targets** (Table 1). The only exception is the sixth National Adaptation Goal, which addresses energy security - a topic for which no specific global adaptation target has been established.

Table 1 – Alignment between Brazil's National Adaptation Goals and the global adaptation targets

NATIONAL ADAPTATION GOAL		CORRESPONDING GLOBAL ADAPTATION TARGET	
 Increase the resilience of populations, cities, territories and infrastructure to the climate emergency	▶	9e	Increasing the resilience of infrastructure and human settlements to climate change impacts to ensure basic and continuous essential services for all, and minimizing climate-related impacts on infrastructure and human settlements

(continued on next page)

(continued)

NATIONAL ADAPTATION GOAL	CORRESPONDING GLOBAL ADAPTATION TARGET
 Promote sustainable and resilient production and regular access of the population to healthy food of adequate quality and quantity	9b Attaining climate-resilient food and agricultural production and supply and distribution of food, as well as increasing sustainable and regenerative production and equitable access to adequate food and nutrition for all
 Promote water security by ensuring the availability of water, in both sufficient quality and quantity, for multiple uses, such as supply, production, energy and ecosystems	9a Significantly reducing climate induced water scarcity and enhancing climate resilience to water-related hazards towards a climate-resilient water supply, climate-resilient sanitation and access to safe and affordable potable water for all
 Protect, conserve, restore and strengthen ecosystems and biodiversity, while ensuring the provision of ecosystem services.	9d Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems
 Promote, protect and recover the health and well-being of populations, while respecting the ways of life of traditional peoples and communities	9c Attaining resilience against climate change related health impacts, promoting climate-resilient health services and significantly reducing climate-related morbidity and mortality, particularly in the most vulnerable communities
 Ensure energy security in a sustainable and accessible manner	Not applicable — No dedicated global target. Cross-cutting links exist with target 9e (infrastructure resilience and continuity of essential basic services) and target 9a (multiple uses of water, including hydropower generation).

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(continued)

NATIONAL ADAPTATION GOAL		CORRESPONDING GLOBAL ADAPTATION TARGET	
Promote socioeconomic development and reduce inequalities	▶	9f	Substantially reducing the adverse effects of climate change on poverty eradication and livelihoods, in particular by promoting the use of adaptive social protection measures for all
Protect cultural heritage and preserve cultural practices and heritage sites in the face of climate change-related risks	▶	9g	Protecting cultural heritage from the impacts of climate-related risks by developing adaptive strategies for preserving cultural practices and heritage sites and by designing climate-resilient infrastructure, guided by traditional knowledge, Indigenous Peoples' knowledge and local knowledge systems
Strengthen the vital role of the ocean and coastal zones in tackling climate change	▶	9d	Reducing climate impacts on ecosystems and biodiversity, and accelerating the use of ecosystem-based adaptation and nature-based solutions, including through their management, enhancement, restoration and conservation and the protection of terrestrial, inland water, mountain, marine and coastal ecosystems

Source: Prepared by the authors.

The second level of alignment examined the relationship between the 810 actions included in the 16 Sectoral and Thematic Plans under the Climate Adaptation Plan and the 59 BAI. The analysis found that **250 actions (approximately 30% of the total) are directly linked to at least one of the BAIs**.

These actions are not evenly distributed across the plans (Figure 2). The Family Farming Plan has the highest absolute number of correlated actions (38), followed by the Health, Risk and Disaster Risk Reduction and Management, and Biodiversity Plans, with 31 actions each. The Water Resources and Cities Plans also account for substantial numbers, with 26 and 27 actions, respectively. Together, these six plans account for **184 of the 250 correlated actions (74%)**, indicating that most of the direct links between the Climate Adaptation

250

Climate Adaptation Plan actions (approximately 30%) directly linked to at least one of the 59 BAI

of 810 actions

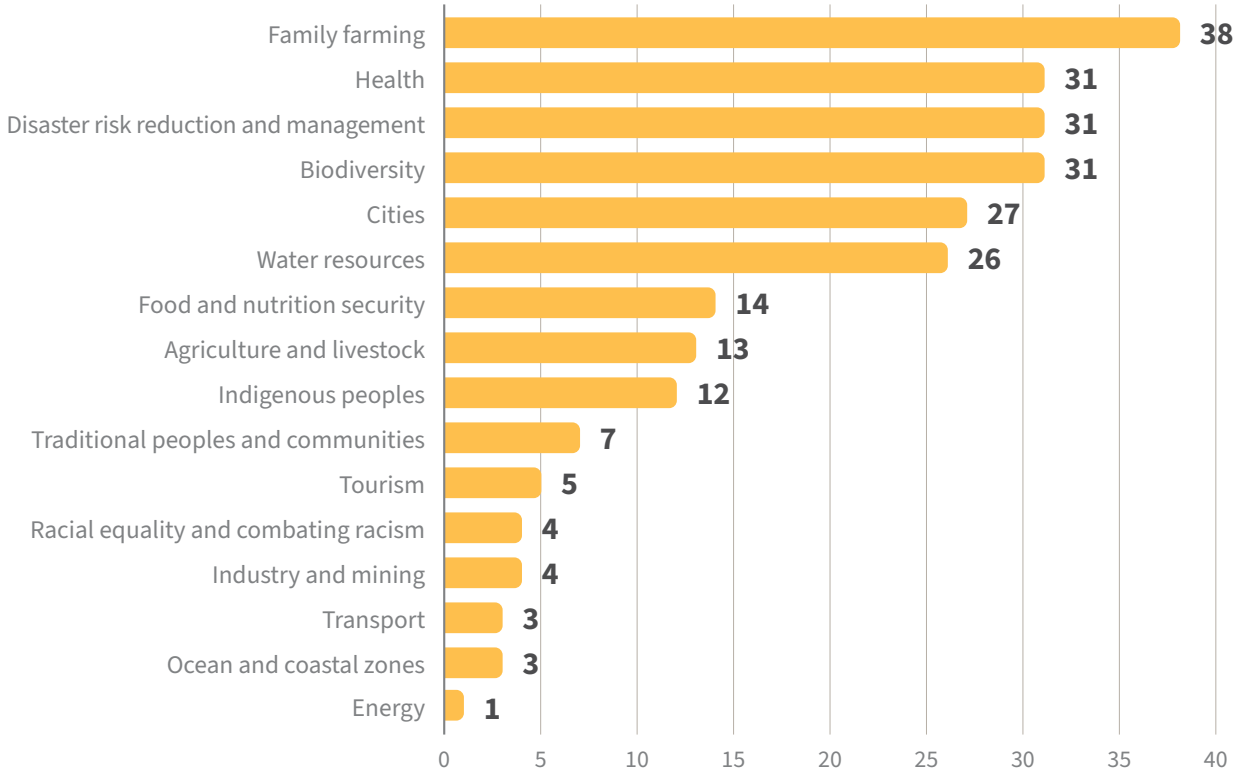
Highest proportion of actions linked to at least one BAI

100%	Biodiversity
72.2%	Agriculture and Livestock
60.5%	Water Resources

Plan and the BAI are concentrated in these areas. In relative terms, the Biodiversity Plan has the highest proportion of actions linked to at least one BAI (100%), followed by the Agriculture and Livestock Plan (72.2%) and the Water Resources Plan (60.5%). These findings help identify opportunities to connect monitoring under the Climate Adaptation Plan with BAI reporting, including the potential use of data generated through the plan's periodic monitoring reports.

This distribution should, however, be interpreted with caution. **The number of correlated actions does not indicate that some sectors are more relevant to adaptation or contribute more to the BAI than others**. Climate adaptation is inherently crosscutting, and its outcomes depend on coordinated action across sectors and levels of government. Plans with relatively few actions directly linked to the BAI can therefore still make important contributions to adaptation and its monitoring. The distribution instead highlights **where the links between the Climate Adaptation Plan's actions and the BAI are most readily identifiable**, rather than establishing a hierarchy of sectoral relevance. It is also important to distinguish between the number of actions linked to an indicator and the availability of data for reporting on it. An indicator may have a strong data foundation even when relatively few actions under the Climate Adaptation Plan are directly associated with it, and vice versa.

Figure 2 – Number of adaptation actions in each Sectoral or Thematic Plan that are directly correlated with at least one BAI



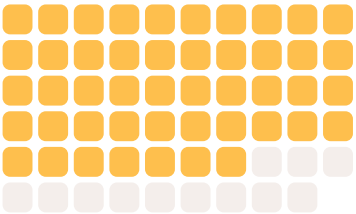
Source: Prepared by the authors

The relatively small number of actions linked to the BAI in the Energy Sectoral Plan, for example, does not mean that energy is less relevant to adaptation. Rather, it reflects the absence of indicators specifically addressing the energy sector among the 59 BAI. Also worthy of note are the plans focused on groups in situations of greater vulnerability, such as Indigenous Peoples, Traditional Peoples and Communities, and Racial Equality and Combating Racism, which present, respectively, 12, 7, and 4 related actions. Although these numbers are relatively small, these plans are essential to connect the BAI with territories and populations most exposed to climate change impacts. This equity dimension is also reflected in the provision for social disaggregation in several BAI, which can help identify differences in impacts, exposure, and access to adaptation measures across population groups. Adaptation monitoring must therefore capture not only aggregate national progress, but also the extent to which its benefits reach the most vulnerable populations equitably.

Finally, it is worth noting that the **250 directly correlated actions cover 47 of the 59 BAI (80%)**. In other words, although approximately one-third of the actions analyzed are directly linked to the indicators, they span the vast majority of the BAI set. Coverage is particularly comprehensive for global targets 9a, 9b, 9c, 9d, 9e, 9f, 9g, and 10b, for which there is at least one action associated with each indicator. The main gaps are concentrated in targets 10a, 10c, and 10d, related, respectively, to impact assessment, vulnerability, and risks; implementation; and monitoring, evaluation, and learning.

47 of 59

BAI (80%) covered by the 250 directly correlated actions



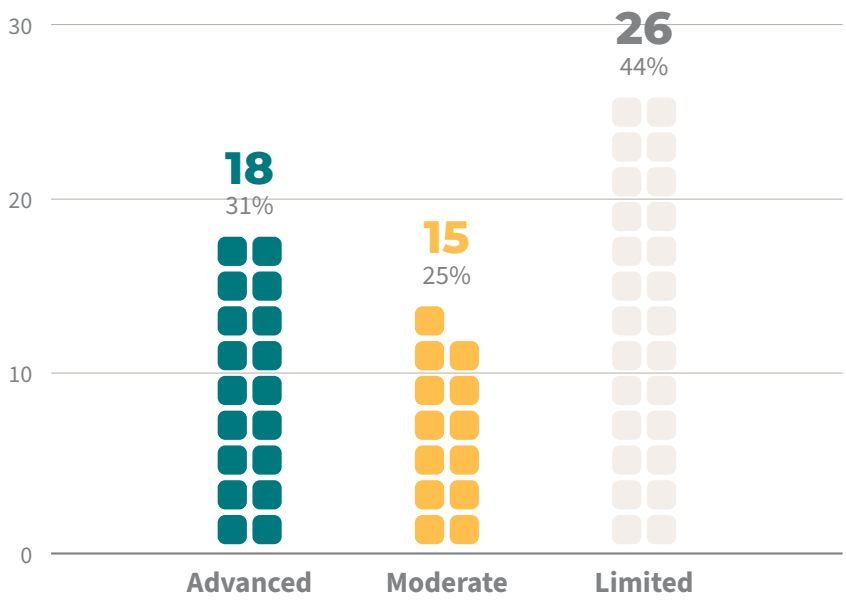
These findings suggest that the main challenge is not necessarily a lack of adaptation-related actions, but rather ensuring that existing actions are appropriately linked to the indicators, their results are monitored, and information systems can demonstrate progress over time. The analysis, therefore, points to an opportunity to strengthen the integration between planning, implementation, and monitoring, leveraging existing policies and actions to progressively structure the BAI reporting process.

3.2 Data availability for reporting

The assessment found that Brazil has a substantial, although still uneven, data foundation for reporting on the 59 BAI. Data availability was classified as advanced for 18 indicators (31%), moderate for 15 (25%), and limited for 26 (44%) (Figure 3). Despite the remaining gaps, the findings show that Brazil already has informa-

tion to support reporting on a significant share of the indicators, **providing a basis for an initial report on 18 indicators**.

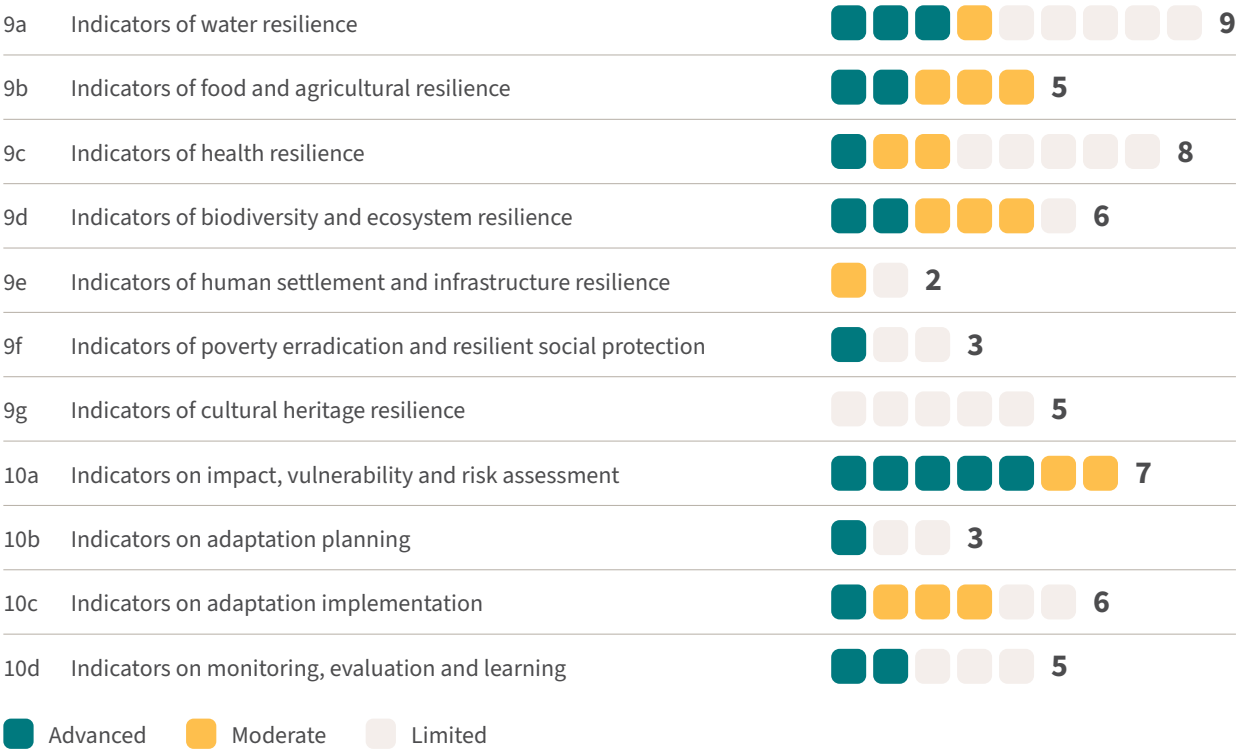
Figure 3 – Number of indicators (BAI) by level of data availability



Source: Prepared by the authors

Data availability varies across the eleven global adaptation targets (Figure 4). The strongest reporting capacity is found among the indicators for **impact, vulnerability, and risk assessment (10a)**: five of the seven indicators have advanced data availability, while the remaining two have moderate availability. This reflects a broad information base generated by public institutions, monitoring systems, and sectoral studies on climate risks, vulnerabilities, and impacts. The **water resilience indicators (9a)** also stand out, with three classified as advanced and one as moderate. Among the **food and agricultural resilience indicators (9b)**, two have advanced and three have moderate data availability. These findings suggest that sectors with more established information systems and a track record of monitoring environmental and socioeconomic variables are better positioned to meet reporting requirements.

Figure 4 – Number of indicators (BAI) by data availability level and global adaptation target



Source: Prepared by the authors

In contrast, significant gaps remain in the indicators for **cultural heritage (9g), health (9c), and human settlements and infrastructure (9e)**, particularly when considering the proportion classified as having limited or moderate data availability. For cultural heritage, all five indicators were classified as having limited data availability. Efforts to develop the necessary information are being discussed under the National Strategy for Cultural Heritage and Climate Action, announced by the National Institute of Historic and Artistic Heritage (Iphan) in July 2026. This initiative offers prospects for improving data availability in this area in the coming years.

In the case of the health sector, five of the eight indicators showed limited data availability. Although Brazil has well-established health information and surveillance systems, it is still making progress in systematically integrating this data with climate and environmental information and in defining specific methodologies to monitor adaptation outcomes. The development of *AdaptaSUS*, the health sectoral plan under the Climate Adaptation Plan, represents an important step toward incorporating climate change into the planning and monitoring of the Unified Health System (SUS), and can help progressively expand the availability of information relevant to adaptation. The Ministry of Health has also been working with subnational governments to develop their

own adaptation plans. This initiative can strengthen the database, facilitate the monitoring of actions, support local adaptation within the SUS, and build local capacity to respond to climate change. In this context, the limited classification of health indicators reflects less a complete absence of data than the need to transform an already substantial information base into systematic, comparable evidence for monitoring climate adaptation. Implementation of *AdaptaSUS*, together with greater alignment with international methodologies, is expected to support progress in this area.

Regarding infrastructure and human settlements, Brazil has moderate data availability for indicator 9e1 and limited data availability for 9e2, both of which focus on the upgrading and relocation of human settlements vulnerable to climate risks, respectively. For 9e1, Brazil has relevant data from programs such as *Periferia Viva*, Slope Stabilization, and Urban Drainage initiatives. However, a methodology is still needed to identify which projects in the programmes' contract databases incorporate adaptation measures and to calculate the proportion required by the indicator. For indicator 9e2, some specific information exists, but data on the relocation of settlements vulnerable to climate change have not yet been consolidated and systematized, justifying the limited classification.

It is also important to note that the indicators currently defined under goal 9e focus primarily on human settlements and do not explicitly cover other types of infrastructure, such as transport and energy infrastructure. The moderate or limited data availability classifications therefore reflect the preliminary assessment conducted in this study and the current scope of these indicators (they do not imply an absence of relevant sectoral information on infrastructure resilience). In the transport sector, for example, Brazil's National Logistics Plan (PNL 2050) and the Sectoral Plan for Adaptation in the Transport Sector are particularly relevant. In the energy sector, established data sources could also inform future discussions, including the National Electric Energy Agency's (ANEEL) indicators on continuity of electricity supply, operational data from the National Electric System Operator (ONS), and planning studies produced by the Energy Research Company (EPE). These sources could be considered in future assessments if methodological discussions under the Belém-Addis Vision determine that the scope of infrastructure covered by goal 9e should be expanded.

Other areas requiring attention include **monitoring, evaluation, and learning (10d)**, for which three of the five indicators were classified as having limited data availability, and **planning (10b)**, for which two of the three indicators received the same

classification. In these areas, the challenge is less a complete lack of information than the availability of standardized, systematic data suitable for tracking adaptation over time. The relevant processes are being established following the publication of the Climate Adaptation Plan in 2026, and the publication of monitoring and impact assessment reports under the plan is expected to improve data availability for these indicators in the coming years.

Finally, the ability to disaggregate data across relevant territorial and demographic categories is essential to operationalizing the BAI. Depending on the indicator, this may include gender, race and ethnicity, age, disability status, geographical location, Indigenous Peoples, and family farmers, among other categories. Even when sufficient information is available for national-level reporting, aggregated data can obscure significant inequalities in exposure, vulnerability, and access to adaptation measures. Strengthening this dimension in future assessments will therefore be important to improving monitoring quality, identifying differences across territories and population groups, and guiding adaptation efforts more precisely and equitably.

Data disaggregation

- gender
- race and ethnicity
- age
- disability status
- geographical location
- Indigenous Peoples
- family farmers



Slope stabilization and restoration works on the highway to Angra dos Reis, Rio de Janeiro. Photo: FERNANDO MO via Getty Images

4. CONSIDERATIONS AND FUTURE PATHWAYS

The experience of applying the Belém Adaptation Indicators (BAI) in Brazil demonstrates the potential of a common framework for systematically tracking progress in adaptation implementation and strengthening the evidence base for climate policy evaluation. At the same time, the exercise highlights that establishing a robust monitoring framework will require integrating the indicators into existing national planning, monitoring, and reporting instruments and cycles, as well as clearly assigning institutional responsibilities to ensure continuity. Several sectoral mechanisms are already in place, providing an important foundation for implementing adaptation measures, fostering cross-sectoral coordination, and strengthening the adaptive capacity of systems and territories.

At the national level, the next step will be to **further assess the BAI in coordination with the Interministerial Committee on Climate Change (CIM), particularly its Monitoring and Evaluation Subcommittee and Adaptation Subcommittee**. This work should build on lessons learned from the initial exercise, refine methodological approaches, and improve data availability and quality. **Integrating the indicators into the Climate Plan Monitoring System (IndicaClima)** would help establish a continuous framework for tracking adaptation policy outcomes in alignment with the Climate Plan's monitoring and evaluation cycles. Efforts to consolidate data and reporting procedures under the Climate Plan could also strengthen the consideration of gender, race, and other intersecting dimensions when assessing data availability for individual indicators.

Ensuring the sustainability of this process will also require **institutionalizing BAI monitoring** by designating an organization or body to coordinate the process, defining the responsibilities of the ministries and institutions that produce relevant data, and establishing procedures for updating, validating, and disseminating information. The monitoring framework itself will need further development, including decisions on its timeline and frequency, measures to foster ownership among participating institutions, and arrangements to ensure that data are collected and reported in a timely, consistent, and reliable manner. In this context, Brazil's Ministry of Science, Technology and Innovation (MCTI) could play an important role in aligning the indicator system with other national information, monitoring, reporting, and transparency instruments under the United Nations Framework Convention on Climate Change (UNFCCC). Such coordination would help avoid parallel processes and promote the integrated use of data.

This integration is particularly important because information generated through the BAI could **inform a range national and international processes, including the second Global Stocktake (GST), Biennial Transparency Reports (BTRs), and National Communications**, as well as the Climate Plan's own monitoring instruments. Building an evidence base for adaptation should therefore be understood as an investment in cross-cutting information infrastructure, rather than simply as a reporting exercise. This perspective further underscores the need to institutionalize adaptation monitoring and ensure its continuity, giving it a level of sustained attention comparable to that historically devoted to tracking greenhouse gas emissions.

At the international level, methodological lessons from Brazil's experience could **contribute to the implementation of the Belém-Addis Vision**, including through the exchange of experiences on

data availability, indicator application, and the integration of results into national monitoring systems. Brazil's experience also offers opportunities for peer learning and regional cooperation, allowing countries to compare approaches, identify common solutions to methodological challenges, and strengthen their capacity to track adaptation progress consistently over time.

One area in which Brazil could contribute to this broader effort is the interpretation of infrastructure under Goal 9e. This could involve broadening the understanding of infrastructure to encompass sector-specific considerations related to transportation and energy - areas that lack dedicated global indicators but are strategically important and could be reflected in the development of indicator metadata. Furthermore, in line with the Climate Plan's Cross-Cutting Strategy for Just Transition and Climate Justice, Brazil could help ensure that BAI methodologies recognize traditional knowledge, the knowledge of Indigenous Peoples, and local knowledge systems as complementary sources of information, consistent with paragraph 14 of Decision 2/CMA.5 under the United Arab Emirates Framework for Global Climate Resilience.

In summary, the main priority for the next phase is not simply to expand the number of indicators being monitored, but to **establish an institutional and methodological framework that makes adaptation information regularly available to guide public policy, assess progress, and support Brazil's international commitments**. The BAI exercise represents an initial step toward a more systematic, integrated, and sustained approach to adaptation monitoring in Brazil.

Within the CIM

- Monitoring and Evaluation Subcommittee
- Adaptation Subcommittee

BAI data as input for

- Second Global Stocktake (GST2)
- Biennial Transparency Reports (BTRs)
- National Communications

At the international level

- Belém-Addis Vision



Wind farm on Caburé beach, Barreirinhas, Maranhão. Photo: Gabriel Boieras via Getty Images

Aerial view of Barigui Park, Curitiba, Paraná. Photo: Pedro Moraes via Getty Images

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Aerial view of the Baniwa community of Tucumã-Rupitá on the Içana River, São Gabriel da Cachoeira, Amazonas. Photo: luoman via Getty Images

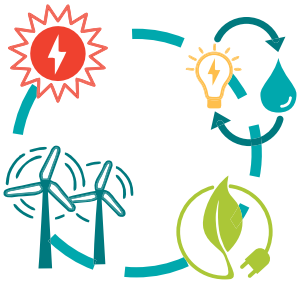


MINISTRY OF ENVIRONMENT AND CLIMATE CHANGE (MMA) · BRASÍLIA, DF · 2026



















On behalf of:

Federal Ministry for the Environment, Climate Action, Nature Conservation and Nuclear Safety of the Federal Republic of Germany

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PROADAPTA Adaptação à Mudança do Clima

MINISTRY OF THE ENVIRONMENT AND CLIMATE CHANGE

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