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A Look at Transparency under the Paris Agreement
Assessment of the G20 Biennial Transparency Reports

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Sumário

1. Introduction

The adoption of the Paris Agreement in 2015, during the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC), represented a structural shift in the international climate regime. Breaking with the dichotomic logic between developed and developing countries—based on the division of Parties between the Convention's Annexes and which also guided the differentiation of obligations under the Kyoto Protocol—the Agreement established a universal system of climate commitments centered on Nationally Determined Contributions (NDCs) and guided by the principles of equity, common but differentiated responsibilities and respective capabilities (CBDR-RC), and progression.[1].

Within this new arrangement, the Enhanced Transparency Framework (ETF), established under Article 13 of the Paris Agreement, holds a strategic position. It is a mechanism designed to ensure clarity, traceability, and consistency in the information reported by Parties regarding their climate actions. Transparency, in this context, is not an end in itself but a necessary condition to foster mutual trust, enable international accountability, attract financial support, and stimulate upward cycles of ambition in the implementation of NDCs[2].

Before the ETF, transparency under the UNFCCC was governed by parallel systems. Annex I Parties (developed countries) were required to submit National Communications, annual greenhouse gas (GHG) inventories, and Biennial Reports (BRs)[3], which underwent detailed technical review and multilateral assessment, containing information on progress in mitigation and on financial support provided. Non-Annex I Parties (developing countries), in turn, had more flexible obligations: they were required to submit National Communications and, starting in 2014, Biennial Update Reports (BURs)[4], simplified version of the BRs subject to a lighter international consultation and analysis process.

Although relevant, these instruments had limitations. The heterogeneity in format, frequency, and content of the reports hindered comparability and compromised the aggregated assessment of global progress. In this context, the Biennial Transparency Reports (BTRs) were established as the new universal and mandatory reporting standard under the Paris Agreement,

[1] https://unfccc.int/process-and-meetings/the-paris-agreement

[2] https://unfccc.int/process-and-meetings/transparency-and-reporting/preparing-for-the-ETF

[3] https://unfccc.int/BR5

[4] https://unfccc.int/biennial-update-reports

starting in 2024. The BTRs represent a qualitative advancement by setting common minimum requirements for all Parties, while allowing justified flexibilities for developing countries with limited capacities, particularly Small Island Developing States (SIDS) and Least Developed Countries (LDCs) [5].

As the main operational instrument of the ETF, the BTRs are meant to present, in a standardized and systematic manner, the progress made by Parties in implementing their NDCs. This includes GHG inventories, information on mitigation and adaptation actions, financial support provided or received, and needs related to finance, capacity building, and technology transfer[6].

BTRs are to be submitted every two years and undergo two core review processes: the Technical Expert Review (TER)[7] and the Facilitative Multilateral Consideration of Progress (FMCP)[8], a collective and public stage of assessment among Parties.

To ensure comparability and coherence, BTRs use the Common Tabular Formats (CTFs)—a set of standardized electronic tables that include data on emission inventories, mitigation targets, future projections, financial flows, and other relevant variables. Based on the information reported through the CTFs, it becomes possible to identify gaps, assess the consistency of efforts, and guide the enhancement of ambition.

The link between BTRs and NDCs is direct and foundational: the reports must demonstrate each Party's actual progress in implementing its commitments. By converting nationally determined pledges into measurable and verifiable data, BTRs strengthen the credibility of NDCs, create conditions for their evidence-based reassessment, and enable both international and domestic scrutiny—including by civil society and other stakeholders.

The data compiled in the BTRs also feed into the Global Stocktake (GST), established under Article 14 of the Paris Agreement and conducted every five years. The GST is the main collective mechanism for assessing global climate ambition, whose effectiveness depends, among other factors—but crucially—on the quality, completeness, and timeliness of the information contained in the BTRs[9].

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[5] https://transparency-partnership.net/system/files/document/Accessible%20Version%20-%20GIZ_Climate%20Action_EN%20BF%20230616_0.pdf

[6] https://unfccc.int/sites/default/files/resource/UNFCCC_BTR_Outline_key%20sections.pdf

[7] https://unfccc.int/technical-expert-review

[8] https://unfccc.int/facilitative-multilateral-consideration-of-progress

[9] https://transparency-partnership.net/system/files/document/Accessible%20Version%20-%20GIZ_Climate%20Action_EN%20BF%20230616_0.pdf

Thus, the BTRs, together with the GST, serve as a bridge between the national and international levels. By transforming national information into global diagnostics, they support the review and strengthening of NDCs, contributing to the enhancement of both individual and collective ambition—thereby forming the cycle of ambition, transparency, and stocktake, one of the fundamental pillars of the Paris Agreement.

More than mere technical reports, BTRs are strategic instruments of international climate governance. They reinforce the principle of mutual accountability, enabling international assessment of Parties' performance. Moreover, they promote transparency in climate finance through the requirement for disaggregated data by type and channel of support and continuously feed cycles of reporting, review, and ambition, creating an enabling environment for the progressive improvement of national commitments. Their standardization facilitates comparability, identification of best practices, and correction of asymmetries; their periodicity enables trend monitoring and coherence assessment between targets and actions; and their integration with other ETF instruments and the GST consolidates them as a cornerstone of the Paris Agreement architecture.

In summary, BTRs transcend their technical function and stand as central instruments for the integrity, effectiveness, and legitimacy of the global climate regime. Based on data made available by Parties up to May 2025, this report analyzes information presented in the BTRs submitted by G20 countries, focusing on mitigation targets, ambition gaps regarding future commitments, and climate finance flows provided. It thus seeks to contribute to the enhancement of climate transparency, the strengthening of international accountability, and the advancement of collective ambition in response to the climate emergency.

2. Metodology

The G20, composed of the world's major economies, is responsible for a significant share of global greenhouse gas (GHG) emissions, accounting for approximately 77% of global emissions in 2023, according to the Emissions Gap Report 2024 of the United Nations Environment Programme (UNEP). This considerable weight makes the G20 an essential analytical focus for studying global climate dynamics, as it concentrates both the largest emitting capacity and decisive responsibilities and potential for mitigation and the implementation of effective climate policies[10].

Considering this analytical scope, the present assessment relies primarily on data made available by Parties through the Common Tabular Format (CTF) forms, which constitute an integral part of the submitted Biennial Transparency Reports (BTRs). The CTF forms are structured in accordance with the guidelines adopted by the Conference of the Parties serving as the meeting of the Parties to the Paris Agreement (CMA) and are intended to ensure comparability, standardization, and completeness of data related to GHG emissions, mitigation targets, and climate finance flows.

For this analysis, only official documents made publicly available on the UNFCCC platform up to May 22, 2025, were considered. This date corresponds to the latest update of the database available at the time of systematization and is therefore treated as the empirical cut-off point for this study.

The final sample included the following countries: Argentina, Australia, Brazil, Canada, China, France, Germany, Indonesia, Italy, Japan, Mexico, the Republic of Korea, the Russian Federation, Saudi Arabia, South Africa, Turkey, the United Kingdom, the United States, and the European Union. India was excluded from the analysis for not having submitted its BTR or any supplementary document by the cut-off date.

Countries with incomplete datasets were partially analyzed, being included only in the criteria for which sufficient information was available. The specific limitations of each case are indicated throughout the report.

Within the sample, China stands out for not having presented an absolute emissions target for 2030 but rather an intensity-based target, expressed as a reduction in carbon intensity relative to gross domestic product (GDP). For comparability with

[10] United Nations Environment Programme (2024). Executive summary. In Emissions Gap Report 2024: No more hot air ... please! With a massive gap between rhetoric and reality, countries draft new climate commitments. Nairobi. https://doi.org/10.59117/20.500.11822/46404.

other countries, China's absolute values were estimated based on its projected 2030 GDP according to the International Monetary Fund (IMF).

The analysis focused on the following technical criteria:

- GHG emissions in the base year, as established in each NDC;
- GHG emissions for 2021 and 2022, as reported in the CTFs;
- Emission targets for 2030, whether absolute (total permitted emissions) or relative (percentage reductions from a base year);
- Progress toward the target, calculated based on the reduction already achieved by 2022 relative to the base year, considering the 2030 target;
- Remaining effort, measured as the additional emission reduction required between 2022 and the 2030 target; and
- Climate finance provided by developed countries in 2021 and 2022, disaggregated by modality (bilateral, regional, multilateral, or mobilized through public interventions) and by type of activity (mitigation, adaptation, or cross-cutting), based on data available in the specific CTF fields.

During data compilation, significant variations were identified in the level of completeness and granularity among countries. These differences partly reflect the diverse institutional capacities of Parties, as well as the justified flexibilities permitted under Article 13.2 of the Paris Agreement. Under the ETF, developing countries with limited capacities may apply flexibilities such as:

- Reduced reporting frequency;
- Narrower scope of indicators;
- Simplified format for specific CTF tables; and
- Use of national methodologies, provided they are duly justified.

These flexibilities are intended to ensure equity and operational feasibility, accommodating national circumstances without compromising the integrity of the system. However, as a result, full comparability across all Parties' data may be affected.

It is important to emphasize that this study is limited to a technical and quantitative evaluation of the information reported in the BTRs and does not constitute a normative judgment on NDC compliance or the effectiveness of national policies. Furthermore, as the data used are self-reported by Parties, they are subject to varying interpretations, omissions, and levels of accuracy.

All data used in this study are public, official, and available on the UNFCCC website. No manipulation of information or interference in Parties' reporting processes occurred at any stage.

3. Methodological Challenges

During the analysis of the BTRs submitted by G20 countries, several methodological limitations were identified that affected both data comparability and the consistency of results. Identifying these challenges is essential to qualify the findings, clarify the boundaries of the analysis, and guide future interpretations.

First, it is important to note that several countries used the acronyms “NA” (Not Available) or “UA” (Unavailable) in certain CTF fields, which compromised the completeness of information and hindered the calculation of aggregated values and direct cross-country comparisons. In some cases, these omissions reflect the flexibilities provided under Article 13.2 of the Paris Agreement, which allow developing countries with limited reporting capacities to adopt simplified formats.

In addition, specific inconsistencies were observed among the countries analyzed. The Republic of Korea, for instance, did not submit its CTF, preventing its inclusion in quantitative analyses. Australia provided only financial data in grant equivalent format and presented rounded figures, which limits the precision of the assessment.

France reported financial data exclusively in euros; for standardization purposes, these amounts were converted into U.S. dollars using the exchange rate of 1 EUR = 1.0423 USD, corresponding to the BTR submission date (24 December 2024). Furthermore, the values related to mobilization through public interventions did not specify their allocation (mitigation, adaptation, or cross-cutting), which made categorization difficult.

In Japan’s case, the only data available under the field for mobilization through public interventions was labeled “amount of resources used to mobilize the support c.” Since the methodology adopted in this study was based on face value analysis, this figure was not included in the consolidated dataset. The United Kingdom showed variation in the naming of financing categories, alternating between “mitigation” and “mitigation and adaptation”; for systematization purposes, the latter was allocated under “adaptation.” The Russian Federation, in turn, did not submit its CTF on support, making it impossible to analyze its climate finance data.

Additionally, many countries did not submit complete sets of CTFs. In such cases, when feasible, the narrative sections of the BTRs themselves, as well as the most recent NDCs, were used to fill information gaps and enable the inclusion of those countries in the analysis. However, it was not always possible to perform this triangulation, which resulted in the exclusion of certain data or in more limited analyses for some countries. Nevertheless, every effort

was made to ensure consistency through standardized procedures and analytical criteria.

Finally, it is worth noting that countries in the sample adopted different base years for defining their emission reduction targets—that is, each selected a reference year from which relative GHG variation will be measured through 2030. In general, given the upward trend in emissions in recent decades, the more distant the base year from 2030, the more ambitious the commitment tends to be. This occurs because, as a rule, a country's emissions in 1990 were lower than in 2005; therefore, a target calculated from a 1990 base year tends to require more substantial absolute reductions by 2030 than one defined from a 2005 base year, for example. Accordingly, it is necessary to pay close attention to the base year chosen by each Party when interpreting and comparing the level of climate ambition assumed by different Parties.

4. Results and Assessment

4.1 GHG Emissions in 2022, Base Year, 2030 Targets, and Mitigation Gaps in Relation to Future Commitments

The following sections present individualized tables for G20 countries that reported sufficient data, allowing for a comparative view across four key aspects:

- Absolute GHG emissions in 2022,
- The base year adopted by each country in its climate targets,
- Emissions in the respective base year, and
- The targets established for 2030.

Based on these data, the following calculations were carried out:

- Variation in emissions relative to the base year and the most recent reporting year;
- Progress already achieved toward meeting the target; and
- Remaining effort required for the country to fulfill its 2030 target, considering emissions in the latest year reported.

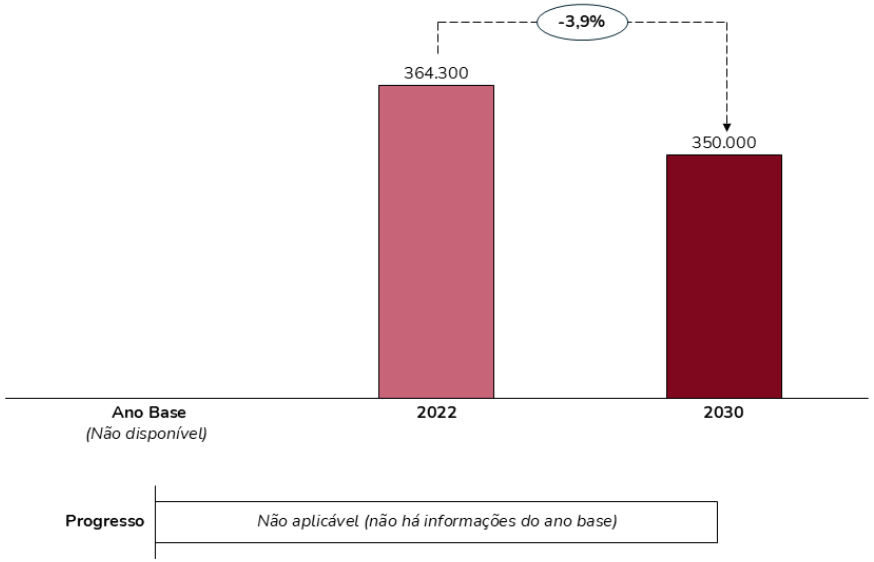
Each table is followed by a brief interpretative analysis, taking into account both the ambition of the targets and their consistency with the observed emission trajectories. The approach seeks to provide a comprehensive understanding of the disparities between international commitments and the actual policies and outcomes reported at the national level.

It should be noted that, in some cases, the lack of data or inconsistencies in self-reported information limited the inclusion of certain countries in this analysis. This was the case for China, which did not specify a 2030 target value in any of its documents, and for India, which had not submitted its BTR by the cut-off date established for this research.

4.1.1 South Africa

Indicator	Value
Base year emissions	Not available
2022 emissions	364,300 $ktCO_2e$

2030 target	350,000 $ktCO_2e$
Target variation (base year → 2030)	Not applicable
2022 variation (vs. base year)	Not applicable
Progress toward the target	Not applicable
Remaining effort (2022 → 2030)	-3.9%



The table for South Africa presents the emissions reported for 2022 and the projected target for 2030, with no information available regarding the base year. In 2022, reported emissions totaled 364,300 $ktCO_2e$, while the 2030 target is set at 350,000 $ktCO_2e$. This implies the need for an absolute reduction of 14,300 $ktCO_2e$ over the decade, equivalent to approximately 3.9% relative to 2022 levels.

Although this represents a moderate mitigation effort, the absence of a base-year emissions value prevents the assessment of the target's relative ambition. Without this reference, it is not possible to determine whether the commitment signals a turning point in the historical trajectory or merely a stabilization around recent levels.

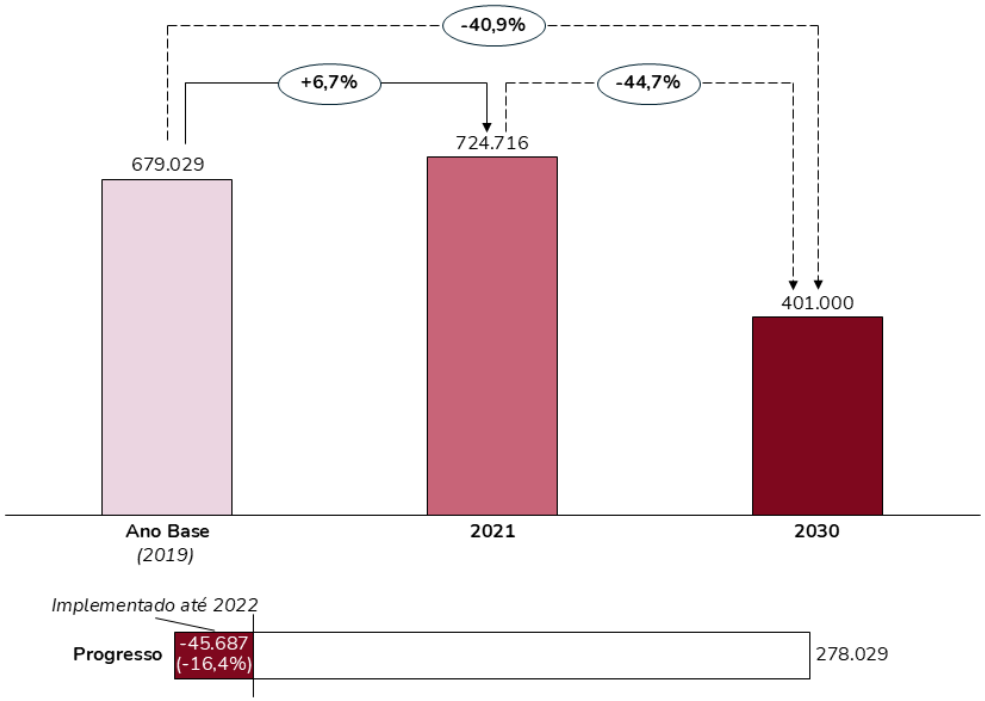
From a technical standpoint, the data reported follow the basic CTF format; however, the lack of a base year and of supplementary information on historical trends limits comparability with other Parties. This gap also prevents a more robust consistency assessment between the communicated target and the commitments set out in the NDC or other transparency instruments.

Thus, while it is possible to identify the gap between current emissions and the future target, the absence of a historical reference compromises the evaluation of ambition and hinders an accurate assessment of whether the trajectory toward 2030 is aligned with the expected level of effort under the Paris Agreement framework.

4.1.2 Arábia Saudita

Indicator	Value
Base year emissions (2019)	679,029 $ktCO_2e$
2021 emissions	724,716 $ktCO_2e$
2030 target	401,000 $ktCO_2e$
Target variation (base year → 2030)	-40.9%
2021 variation (vs. base year)	+6.7%
Progress toward the target	–16.4%
Remaining effort (2021 → 2030)	-44.7%

The table presents the emissions reported for the base year (2019), for 2021—the most recent year available—and the projected 2030 target, as well as the corresponding reduction commitment. In 2019, the base year, Saudi Arabia's emissions totaled 679,029 $ktCO_2e$. In 2021, reported emissions rose to 724,716 $ktCO_2e$, marking a 6.7% increase compared to the base year. The absolute 2030 target is set at 401,000 $ktCO_2e$, representing a 40.9% reduction relative to 2019 levels.



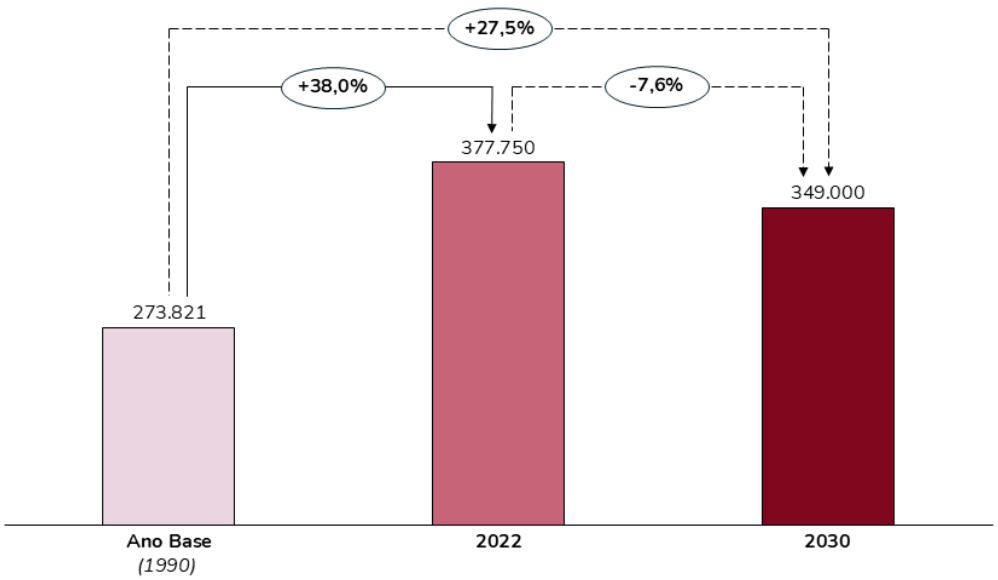
Unidade de medida do gráfico: $ktCO_2e$

The progress indicator of –16.4% shows that, as of 2021, the country had moved further away from the trajectory required to achieve its climate target. Instead of initiating a downward trend, emissions have increased since the base year, widening the distance to the target. This pattern indicates a substantial mitigation gap and raises doubts about the feasibility of fully meeting the commitment,

even though the 2030 target itself is numerically clear and technically comparable. Accordingly, to reach its 2030 target, Saudi Arabia will need to reduce its emissions by 44.7% relative to 2021 levels.

From a procedural transparency standpoint, Saudi Arabia's BTR provides the absolute value of its target, the base year, and the reduction rate, which enables a more objective assessment of its stated ambition. However, the absence of 2022 data limits the analysis of more recent progress and reinforces the perception of misalignment between the formal commitment and the observed trajectory.

Historically, the country has maintained a conservative stance in international climate negotiations, and its economy remains heavily reliant on fossil fuel extraction and exports. These structural factors cast doubt on the feasibility of achieving the established 2030 target in full.



4.1.3 Argentina

Indicator	Value
Base year emissions (1990)	273,821 $ktCO_2e$
2022 emissions	377,750 $ktCO_2e$
2030 target	349,000 $ktCO_2e$
Target variation (base year → 2030)	+27.5%
2022 variation (vs. base year)	+38.0%
Progress toward the target	N/A
Remaining effort (2022 → 2030)	-7.6%

The table for Argentina presents the national emissions reported for the base year (1990), for 2022, and the absolute target set for 2030, illustrating the scale of the remaining effort required to meet the 2030 goal. In 1990, the base year, emissions totaled 273,821 $ktCO_2e$. By 2022, reported emissions had reached 377,750 $ktCO_2e$—an increase of 38% compared to the base year. The 2030 target was set at 349,000 $ktCO_2e$, implying a variation of +27.5% relative to 1990 but only about 8% compared to current levels. In absolute terms, the country will need to reduce 28,750 $ktCO_2e$ by the end of the decade.

The trajectory analysis shows that, although the 2030 target represents a reduction compared to 2022 levels, it remains higher than the base-year figure. The progress indicator is not applicable in this case, as Argentina had already surpassed the 2030 planned emissions level by 2022. Thus, the ambition of the target can be considered low for a G20 country, as it essentially limits the increase in emissions rather than aiming for an absolute reduction — a limit that has already been exceeded. To meet its 2030 target, Argentina must therefore achieve a 7.6% reduction relative to its 2022 emissions.

From a procedural transparency standpoint, Argentina provided in its CTF both the 2022 emissions data and the absolute 2030 target, allowing for the calculation of the remaining effort required to achieve the goal. However, the 1990 reference value was obtained from the BTR, since it was not directly reported in the CTF. This limitation does not undermine the overall assessment but highlights a minor inconsistency in the reporting format.

In summary, Argentina's 2030 target is clear and verifiable but grounded in a trajectory of increasing emissions relative to the 1990 baseline, which diminishes its overall ambition and underscores the challenge of aligning the country with a more robust and long-term mitigation pathway.

4.1.4 Australia

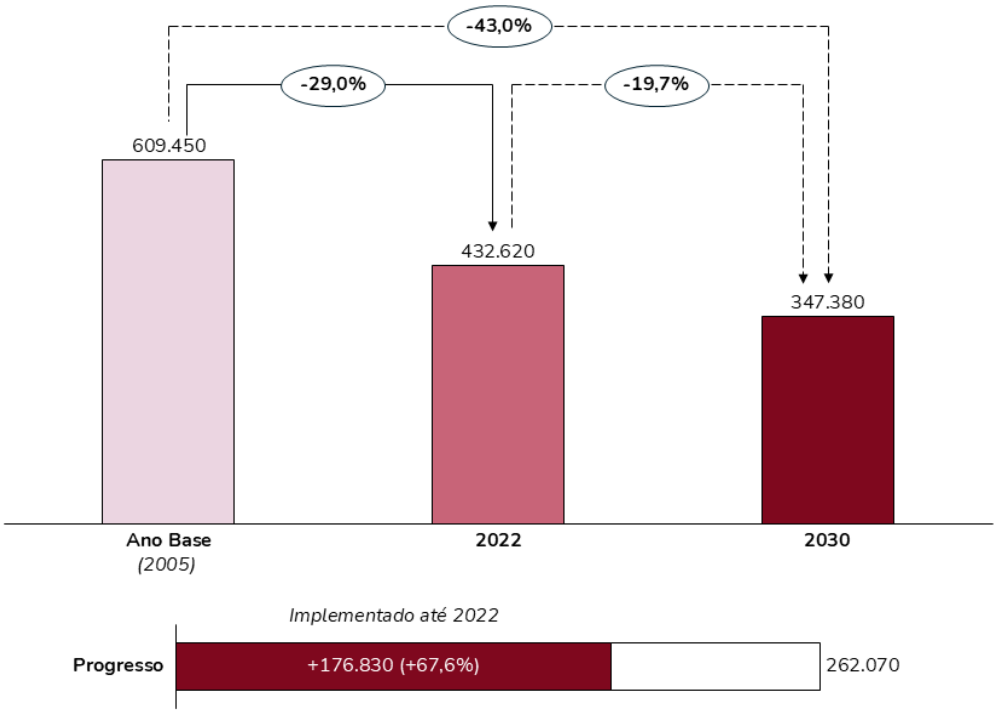
Indicator	Value
Base year emissions (2005)	609,450 $ktCO_2e$
2022 emissions	432,620 $ktCO_2e$
2030 target	347,380 $ktCO_2e$
Target variation (base year → 2030)	-43.0%
2022 variation (vs. base year)	-29.0%
Progress toward the target	+67.6%
Remaining effort (2022 → 2030)	-19.7%

The table for Australia presents the national emissions reported for the base year (2005), for 2022, and the absolute target for 2030, providing a clear view of the country's mitigation trajectory. In 2005, the base year considered, emissions totaled 609,450 $ktCO_2e$. By 2022, this figure had declined to 432,620 $ktCO_2e$ — a 29% reduction from the baseline level. The target set for 2030 is 347,380 $ktCO_2e$, corresponding to a 43% reduction relative to 2005. To meet this goal, Australia must achieve an additional reduction of 19.7% from its 2022 emissions.

The progress indicator of 67.6% shows that Australia has already covered a substantial portion of the path toward its 2030 target. This performance reflects consistent progress but also underscores the need to intensify mitigation measures throughout the remainder of the decade to ensure full delivery of the commitment by 2030.

It is worth noting that, although the 43% reduction relative to the base year is numerically significant, the choice of 2005 as a reference year moderates the relative ambition of the target. In comparison, countries that adopted earlier base years—such as 1990—face more substantial absolute reductions.

From a procedural transparency perspective, Australia clearly reported both its 2022 emissions and its 2030 target in the CTF. However, the base year data were obtained from the BTR, which ensures the consistency of the assessment, though it requires cross-referencing multiple official documents.



4.1.5 Brazil

Indicator	Value
Base year emissions (2005)	2,561,246 $ktCO_2e$
2022 emissions	2,040,000 $ktCO_2e$
2030 target	1,200,000 $ktCO_2e$

Target variation (base year → 2030)	-53.1%
2022 variation (vs. base year)	-20.3%
Progress toward the target	+38.3%
Remaining effort (2022 → 2030)	-41.2%

The table for Brazil presents the national emissions reported for the base year (2005), for 2022, and the absolute target established for 2030, allowing an overview of the country's mitigation trajectory. In 2005, the base year considered, Brazil recorded emissions of 2,561,246 $ktCO_2e$. By 2022, this figure had fallen to 2,040,000 $ktCO_2e$—a 20.3% reduction from the baseline level. The 2030 target is set at 1,200,000 $ktCO_2e$, representing a 53.1% decrease relative to 2005 and a 41% decrease compared to 2022, implying the need to cut 840,000 $ktCO_2e$ by the end of the decade.

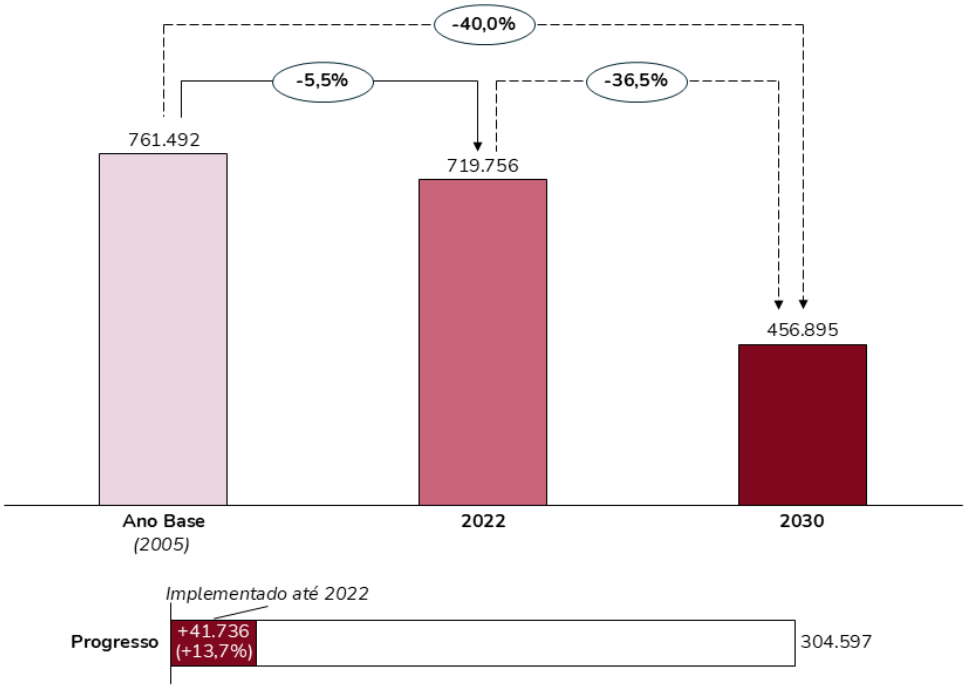
Although the formal target is ambitious, the data show that the country remains far from achieving it, having reached only 38.3% of the required progress. The need to reduce 840,000 $ktCO_2e$ by 2030 highlights the scale of the challenge involved in implementing consistent, large-scale mitigation policies. In this regard, strengthening mechanisms to curb deforestation and land-use change—Brazil's main sources of emissions—will be crucial.

From a procedural transparency standpoint, all the values used in this assessment were made available in the CTF, ensuring clarity and comparability with other G20 countries. The standardized format of the data presentation supports an objective reading of Brazil's ambition and progress, while also underscoring the magnitude of the effort still required to align the country's trajectory with its 2030 target.

4.1.6 Canada

Indicator	Value
Base year emissions (2005)	761,492 $ktCO_2e$
2022 emissions	719,756 $ktCO_2e$
2030 target	456,895 $ktCO_2e$
Target variation (base year → 2030)	-40.0%
2022 variation (vs. base year)	-5.5%
Progress toward the target	+13.7%
Remaining effort (2022 → 2030)	-36.5%

The table for Canada presents the national emissions reported for the base year (2005), for 2022, and the absolute target established for 2030, highlighting the mitigation trajectory. In 2005, the chosen base year, emissions totaled 761,492 $ktCO_2e$. In 2022, the country reported 719,756 $ktCO_2e$, corresponding to a 5.5% reduction compared to the reference level. The 2030 target is set at 456,895 $ktCO_2e$, representing a 40% decrease relative to 2005 and a 36.5% reduction compared to current levels. To meet this target, Canada must cut 262,861 $ktCO_2e$ by the end of the decade.



Although the target is numerically clear and relatively ambitious, progress achieved by 2022 has been limited: only 13.7% of the necessary path has been covered. This indicates that Canada will need to significantly accelerate the implementation of mitigation policies to close the gap of over 260 thousand $ktCO_2e$ in less than ten years.

The choice of 2005 as the base year also contextualizes the ambition of the commitment when compared to countries using

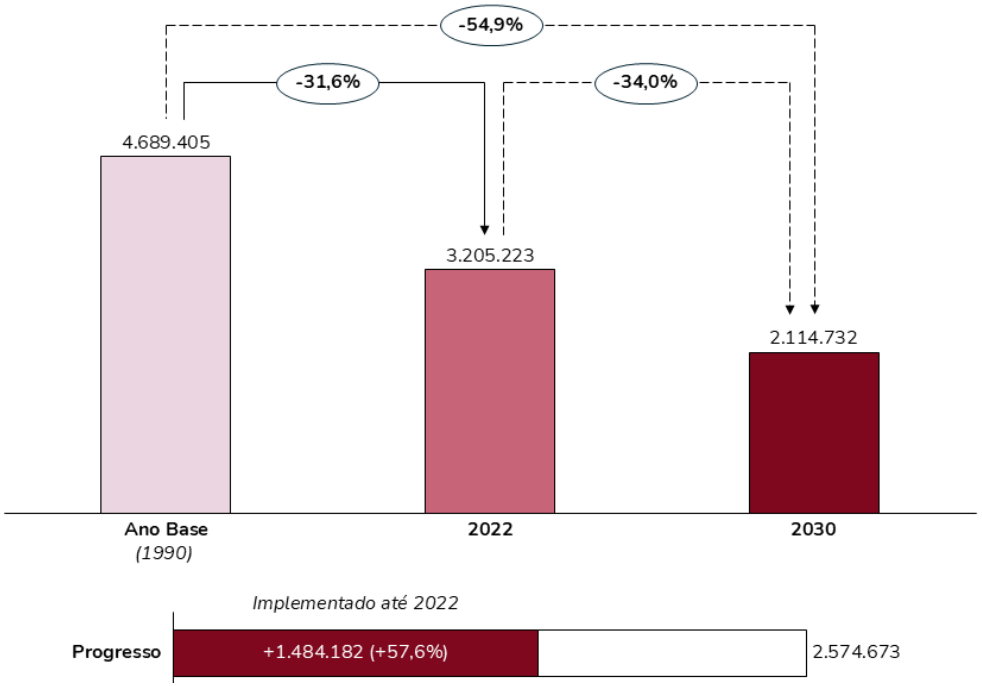
1990 as a reference. Nonetheless, the absolute volume of reduction required underscores the magnitude of the expected effort from a developed country with broad institutional capacity.

From a procedural transparency perspective, Canada consistently presented the 2022 data, the 2030 target, and the base year, all derived from the CTF. This clarity facilitates international comparability but simultaneously highlights the significant distance between the recent trajectory and the level of mitigation required to achieve the target.

4.1.7 European Union

Indicator	Valor
Base year emissions (2005)	4.689.405 $ktCO_2e$
2022 emissions	3.205.223 $ktCO_2e$
2030 target	2.114.732 $ktCO_2e$
Target variation (base year → 2030)	**-54,9%**
2022 variation (vs. base year)	**–31,6%**
Progress toward the target	**+57,6%**
Remaining effort (2022 → 2030)	**-34,0%**

The table for the European Union presents the bloc's total emissions reported for the base year (1990), for 2022, the target established for 2030, and the remaining effort required to meet that target. In 2022, the EU's consolidated emissions amounted to 3,205,223 $ktCO_2e$. The 2030 target is set at 2,114,732 $ktCO_2e$, implying the need to reduce 1,090,491 $ktCO_2e$, or approximately 34% relative to current levels. The base year adopted by the bloc is 1990, when emissions totaled 4,689,405 $ktCO_2e$.



The collective target represents a reduction of roughly 55% compared to the base year, aligning with the commitments made by the European Union under the Paris Agreement and the European Green Deal. The use of 1990 as a reference follows the bloc's historical practice and facilitates international comparability.

The data show that, by 2022, the European Union had already reduced its emissions by 31.6% relative to 1990.

Unidade de medida do gráfico: $ktCO_2e$

Nonetheless, a remaining effort of about 34% still needs to be achieved by 2030, compared to 2022 levels.

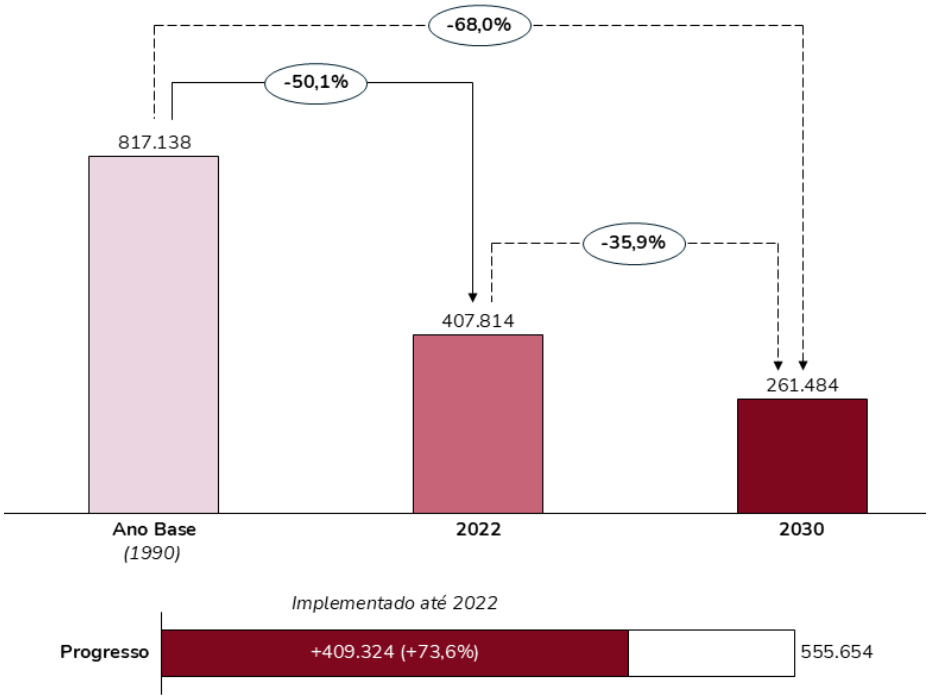
Within the bloc, the G20 member states are France, Germany, and Italy. Internally, there are notable differences among member states. This internal contrast highlights that, although the target is collective, the pathways toward achieving it vary across countries, requiring strong political coordination and solidarity mechanisms within the bloc.

All figures used were obtained directly from the CTF, ensuring consistency and comparability with other countries analyzed.

4.1.8 United Kingdom

Indicator	Valor
Base year emissions (2005)	817.138 $ktCO_2e$
2022 emissions	407.814 $ktCO_2e$
2030 target	261.484 $ktCO_2e$
Target variation (base year → 2030)	**-68,0%**
2022 variation (vs. base year)	**–50,1%**
Progress toward the target	**+73,6%**
Remaining effort (2022 → 2030)	**-35,9%**

The table for the United Kingdom presents national emissions reported for the base year (1990), for 2022, and the absolute target for 2030, highlighting both the mitigation trajectory and the remaining effort required. In 1990, the adopted base year, the country recorded emissions of 817,138 $ktCO_2e$. By 2022, this figure had fallen to 407,814 $ktCO_2e$, representing a 50.1% reduction compared to the reference level. The 2030 target is set at 261,484 $ktCO_2e$, equivalent to a 68% reduction relative to 1990, requiring an additional decrease of 146,330 $ktCO_2e$ from 2022 levels—around 36%.



The target's level of ambition ranks among the highest globally and is aligned with the legally binding commitment to achieve carbon neutrality by 2050, as established under the Climate Change Act. The United Kingdom also employs governance instruments such as Carbon Budgets, which serve as binding intermediate milestones to ensure a consistent mitigation pathway.

In terms of progress, the country has already achieved 73.6% of the trajectory required to meet the 2030 target, showing significant advancement. However, the remaining 36% gap still represents a considerable challenge, demanding continued action.

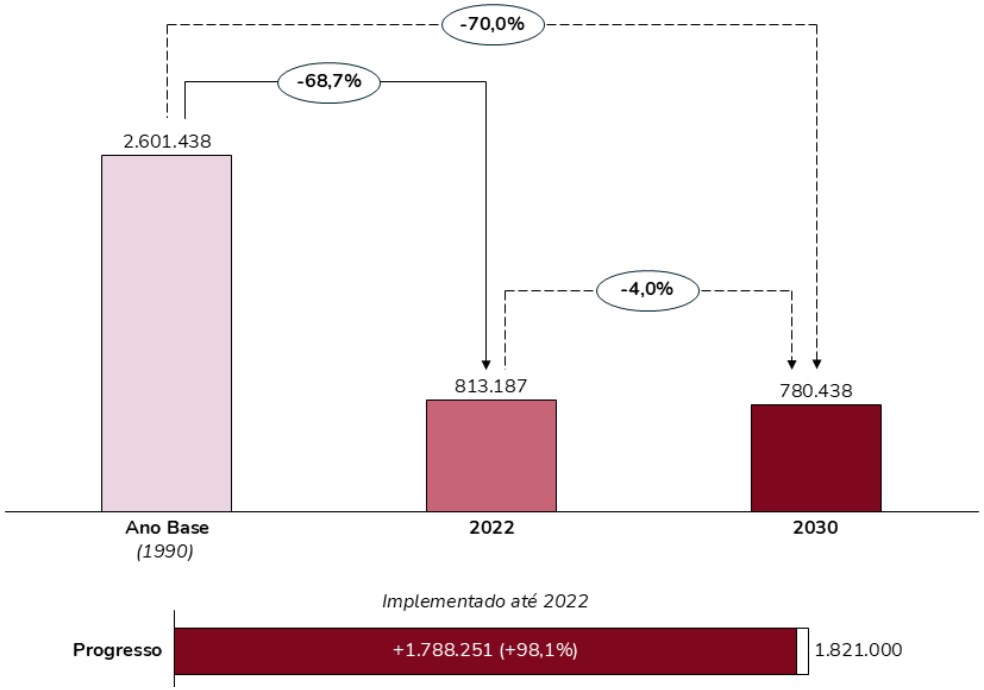
From a procedural transparency standpoint, all values were reported directly in the CTF, ensuring methodological consistency and comparability with the other countries analyzed. Thus, while the trajectory is promising, full delivery of the target will depend on maintaining ambitious policies and overcoming internal political and economic challenges in the coming years.

4.1.9 Russia

Indicator	Valor
Base year emissions (2005)	2.601.438 $ktCO_2e$
2022 emissions	813.187 $ktCO_2e$
2030 target	780.438 $ktCO_2e$
Target variation (base year → 2030)	**-70,0%**
2022 variation (vs. base year)	**–68,7%**
Progress toward the target	**+98,1%**
Remaining effort (2022 → 2030)	**-4,0%**

The table for Russia presents national emissions reported for the base year (1990), for 2022, and the target set for 2030, highlighting the small remaining effort required to meet the commitment. In 1990, the adopted base year, the country recorded 2,601,438 $ktCO_2e$. By 2022, this figure had fallen to 813,187 $ktCO_2e$, representing a 68.7% reduction relative to the reference level. The 2030 target is set at 780,438 $ktCO_2e$, corresponding to a 70% reduction compared to 1990 and requiring only an additional 32,749 $ktCO_2e$ cut from 2022 levels—around 4%.

Although numerically significant, the reported reduction from



1990 does not necessarily reflect a consistent trajectory of climate policies, but rather the effects of the economic and industrial collapse of the Soviet Union in the early 1990s, when emissions dropped sharply. Since then, levels have remained relatively stable, without substantial structural changes.

The interpretation of the target's low level of ambition is reinforced by the fact that the country has already achieved 98.1% of the pathway toward 2030. This means that formal compliance with the commitment could occur passively, without the need for

robust mitigation efforts or sectoral transformation. Such a configuration is misaligned with the expectations of deep emission reductions compatible with the Paris Agreement and reflects more a weakness in the target's design than real progress in decarbonization.

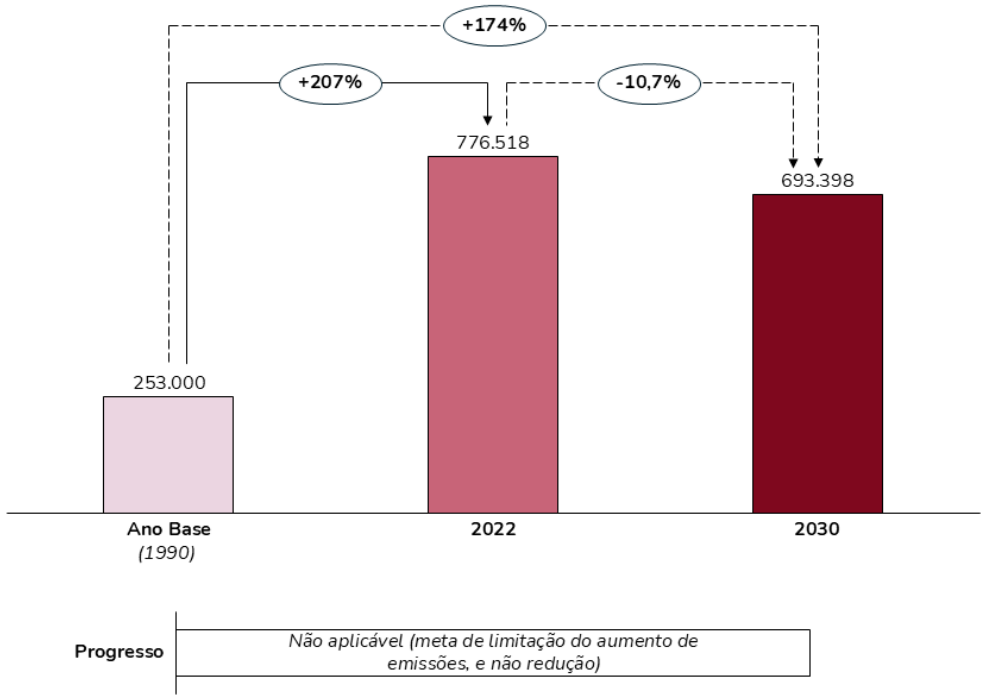
From a procedural transparency standpoint, the data for 1990 were obtained from the BTR, published in Russian—one of the official UN languages—but requiring translation for analysis. The information related to 2022 and the 2030 target was sourced from the CTF, ensuring comparability with the other countries analyzed.

In summary, while Russia is virtually on track to meet its climate target, this proximity reflects the low ambition of the commitment rather than the effectiveness of mitigation policies.

4.1.10 Mexico

Indicator	Valor
Base year emissions (2005)	253.000 $ktCO_2e$
2022 emissions	776.518 $ktCO_2e$
2030 target	693.398 $ktCO_2e$
Target variation (base year → 2030)	**+174,0%**
2022 variation (vs. base year)	**+206,9%**
Progress toward the target	**N/A**
Remaining effort (2022 → 2030)	**-10,7%**

The table referring to Mexico presents the reported emissions for the base year (1990), for 2022, and the target set for 2030, allowing a clear view of the distance remaining to meet the commitment. In 1990, the adopted base year, the country recorded 253,000 $ktCO_2e$. By 2022, this figure had reached 776,518 $ktCO_2e$—an increase of 206.9% compared to the initial level. The climate target for 2030 is 693,398 $ktCO_2e$, which requires an additional reduction of 83,120 $ktCO_2e$, or about 11%, compared to the 2022 level. The progress indicator toward the target is not applicable in this case, as the country has not only failed to advance



but has moved further away from the trajectory required to meet its commitment.

Although the 2030 target represents a relative decrease compared to 2022, it still remains far above the base year level—implying emissions that are 174% higher than in 1990, even if the target is achieved. This highlights that the upward emissions trend has not been structurally reversed, and that the established commitment does not represent a meaningful inflection toward deeper absolute reductions.

The analysis indicates that the level of ambition of the target is low. The country would need to significantly strengthen its mitigation policies to approach the ambition level expected under the Paris Agreement.

On the other hand, the relatively small gap between current emissions and the 2030 target suggests that, with effective measures and political will, the country has the technical capacity to meet it. However, this does not necessarily translate into a strong contribution to the global mitigation effort, since the final target still reflects a historically high emissions level

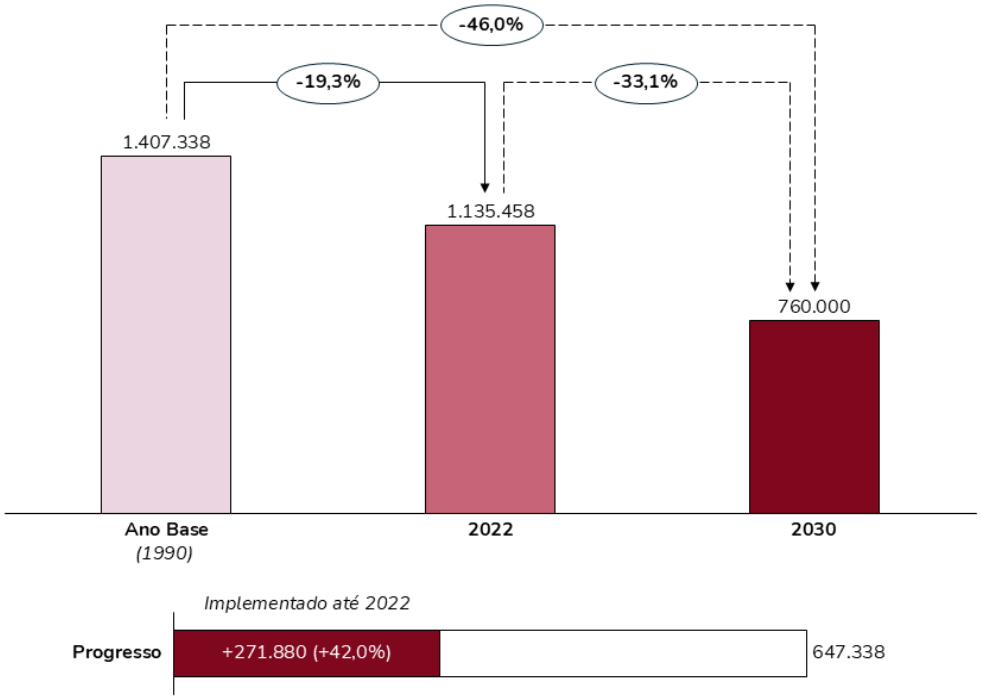
All values used in this analysis were obtained from the CTF, ensuring methodological consistency and comparability with the other countries evaluated.

4.1.11 Japan

Indicator	Valor
Base year emissions (2005)	1.407.338 $ktCO_2e$
2022 emissions	1.135.458 $ktCO_2e$
2030 target	760.000 $ktCO_2e$
Target variation (base year → 2030)	**-46,0%**
2022 variation (vs. base year)	**–19,3%**
Progress toward the target	**+42,0%**
Remaining effort (2022 → 2030)	**-33,1%**

The table for Japan presents the emissions for the base year (2013), the value reported in 2022, and the target set for 2030, allowing a clear view of the level of effort required to meet the commitment. In 2013, the adopted base year, the country recorded 1,407,338 $ktCO_2e$. By 2022, this total had been reduced to 1,135,458 $ktCO_2e$, representing a 19.3% decrease compared to the initial level. The 2030 climate target sets a limit of 760,000 $ktCO_2e$, requiring an additional 33% reduction compared to the 2022 level.

The commitment represents a 46% decrease relative to the base year, placing Japan among the G20 countries with the most ambitious targets, despite the relatively recent baseline. Even so,



Unidade de medida do gráfico: $ktCO_2e$

achieving this goal will require a strong acceleration of mitigation efforts.

In this context, the target can be classified as ambitious yet technically achievable, provided it is supported by consistent policies that ensure continuity in the emissions reduction process.

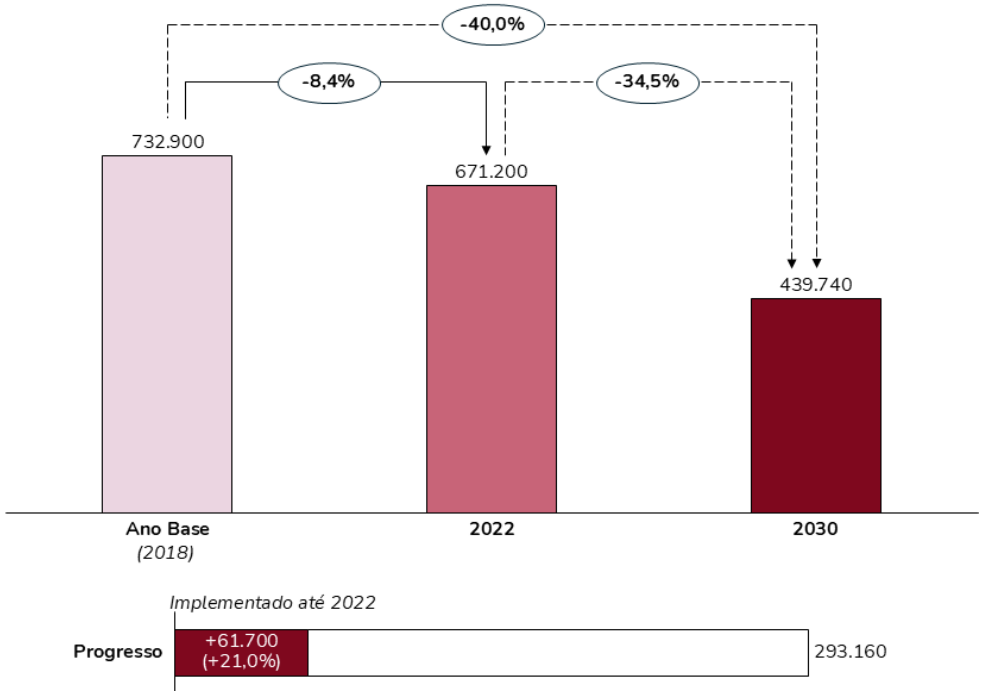
All values used were obtained directly from the CTF, ensuring methodological consistency and international comparability.

4.1.12 South Korea

Indicator	Valor
Base year emissions (2005)	732.900 $ktCO_2e$
2022 emissions	671.200 $ktCO_2e$
2030 target	439.740 $ktCO_2e$
Target variation (base year → 2030)	**-40,0%**
2022 variation (vs. base year)	**–8,4%**
Progress toward the target	**+21,0%**
Remaining effort (2022 → 2030)	**-34,5%**

The table for South Korea presents the reported emissions for the base year (2018), the value recorded in 2022, and the target established for 2030. In 2018, the adopted base year, the country emitted 732,900 $ktCO_2e$. By 2022, this total had fallen to 671,200 $ktCO_2e$, representing an 8.4% decrease compared to the initial level. The 2030 climate target sets a cap of 439,740 $ktCO_2e$, which implies the need for an additional 34% reduction relative to current emissions.

The commitment corresponds to a 40% reduction compared to the base year, placing South Korea among the G20 countries with relatively ambitious targets—especially considering that its base year is the most recent among the group's members.

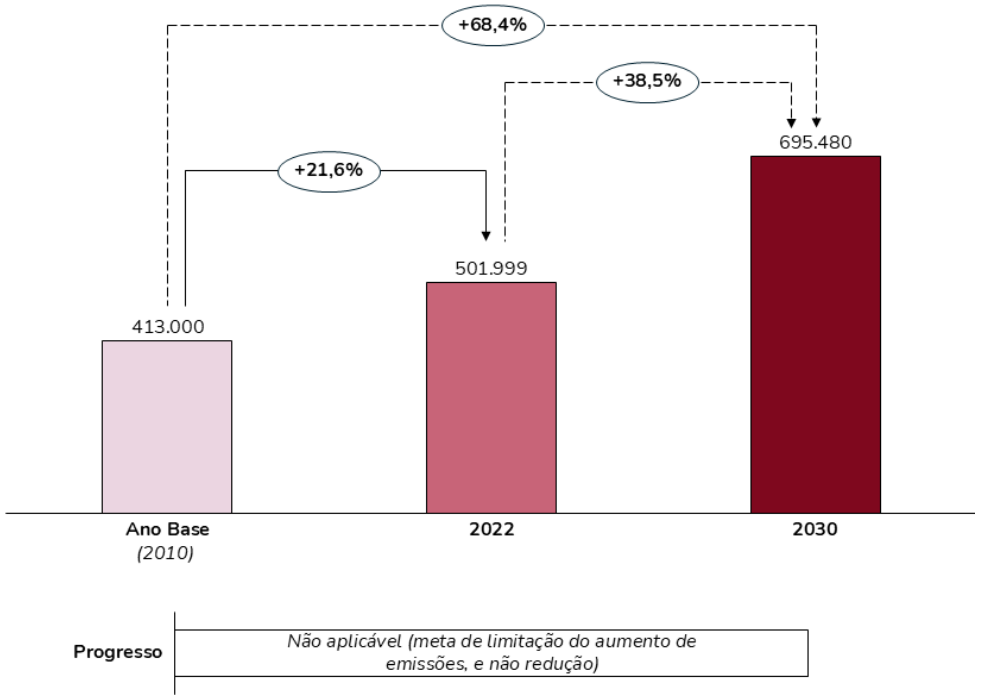


Given the scale of reduction still required and the limited timeframe, the target can be considered ambitious yet achievable, provided it is accompanied by consistent policies, investments, and long-term planning.

The target was not detailed in the CTF but is included in South Korea's BTR as a 40% reduction relative to 2018 emissions. The absolute value for 2030 was calculated based on officially reported data, ensuring methodological coherence and international comparability.

4.1.13 Turkey

Indicator	Valor
Base year emissions (2005)	413.000 $ktCO_2e$
2022 emissions	501.999 $ktCO_2e$
2030 target	695.480 $ktCO_2e$
Target variation (base year → 2030)	**+68,4%**
2022 variation (vs. base year)	**+21,6%**
Progress toward the target	**N/A**
Remaining effort (2022 → 2030)	**+38,5%**



The table for Turkey presents the reported emissions for the base year (2012), the value recorded in 2022, and the target established for 2030. In 2012, the adopted base year, the country emitted 413,000 $ktCO_2e$. By 2022, this figure had risen to 501,999 $ktCO_2e$, representing a 21.6% increase compared to the initial level. For 2030, the target sets emissions at 695,480 $ktCO_2e$, resulting in a 68.4% increase compared to the base year.

The target therefore represents an absolute increase in emissions through 2030, placing Turkey among the few G20 countries to adopt this type of trajectory. The official justification is linked to the pace of economic growth, ongoing industrialization, and the demands arising from demographic and urban expansion. In this context, the target can be understood as aligned with national development priorities, but it is largely incompatible with the level of ambition required to keep global warming below 1.5°C.

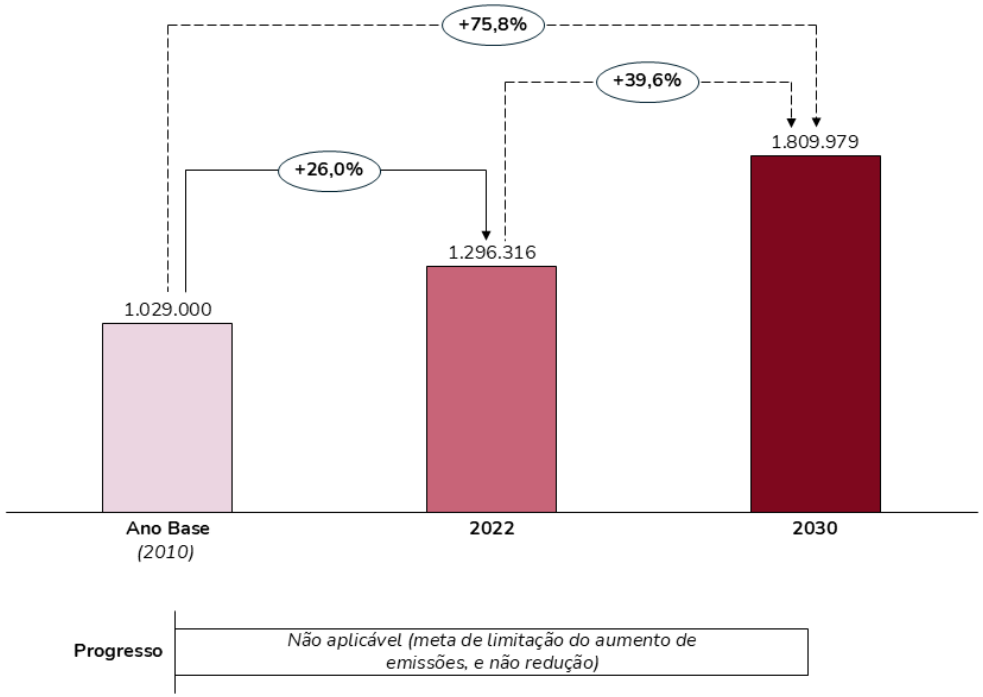
In this case, the indicator of progress toward the target was considered not applicable, as it cannot be interpreted in the same way as for countries that have adopted emission reduction targets relative to a base year. For Turkey, this is a target to limit the increase in emissions—the commitment holds as long as emissions remain

below the defined cap. Thus, paradoxically, “failing” to reach the target—meaning not reaching the projected level—would actually be a positive outcome. Considering the 2022 data, Turkey could still increase its emissions by up to 38.5% and would nonetheless remain in compliance with the 2030 target.

The target was presented in the BTR and reported in the CTF, maintaining methodological consistency, although it stands out for allowing an expansion of emissions through 2030.

4.1.14 Indonesia

Indicator	Valor
Base year emissions (2005)	1.029.000 $ktCO_2e$
2022 emissions	1.296.316 $ktCO_2e$
2030 target	1.809.979 $ktCO_2e$
Target variation (base year → 2030)	**+75,8%**
2022 variation (vs. base year)	**+26,0%**
Progress toward the target	**N/A**
Remaining effort (2022 → 2030)	**+39,6%**



The table for Indonesia presents the reported emissions for the base year (2010), the value recorded in 2022, and the target established for 2030. In 2010, the adopted base year, the country emitted 1,029,000 $ktCO_2e$. By 2022, this figure had reached 1,296,316 $ktCO_2e$, representing a 26% increase compared to the initial level. The 2030 target is set at 1,809,979 $ktCO_2e$, which represents a 76% increase compared to the base year and a 34.2% increase relative to the 2022 emissions.

As in the case of Turkey, the indicator of progress toward the target was considered not applicable. Based on 2022 data, Indonesia could still increase its emissions by up to 39.6% and would nonetheless remain in compliance with its 2030 target.

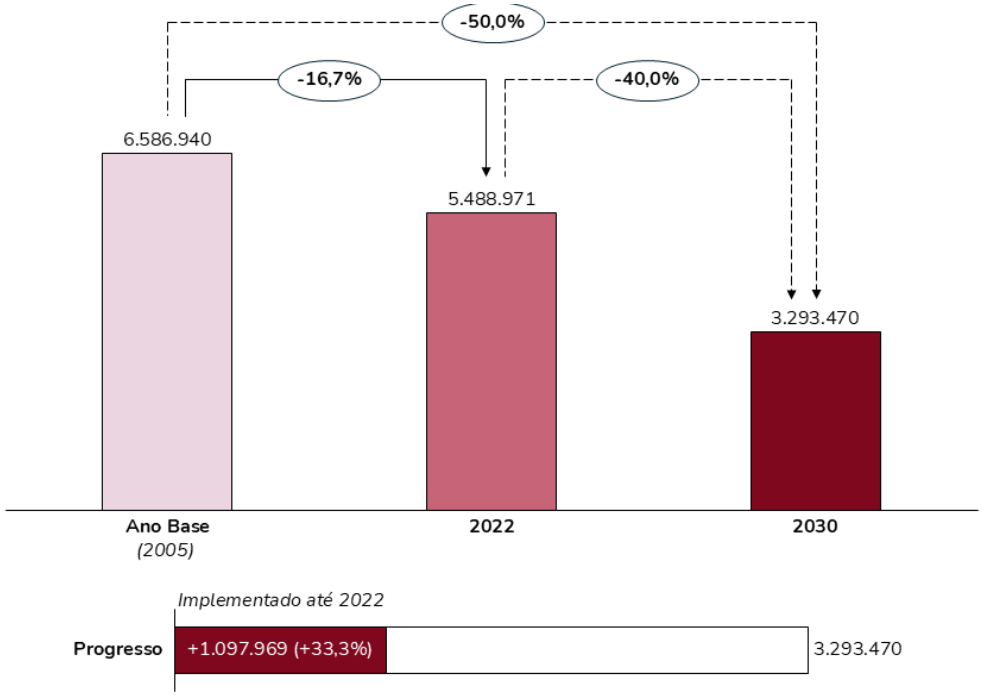
The target was presented in the BTR and reflects an approach based on reductions relative to projected growth scenarios. Indonesia commits to a conditional reduction, but in absolute terms, the result is still a rising trajectory through 2030. This design illustrates an attempt to balance climate commitments with the country's development, infrastructure, and social inclusion needs—particularly relevant in a large, rapidly growing economy.

From a climate standpoint, the target can be considered low in ambition, as it does not imply an absolute emissions cut. Nonetheless, it may be interpreted as an intermediate step that could evolve into stronger long-term commitments, especially if supported by international cooperation, technology transfer, and adequate climate financing.

4.1.15 United States

Indicator	Valor
Base year emissions (2005)	6.586.940 $ktCO_2e$
2022 emissions	5.488.971 $ktCO_2e$
2030 target	3.293.470 $ktCO_2e$
Target variation (base year → 2030)	**-50,0%**
2022 variation (vs. base year)	**–16,7%**
Progress toward the target	**+33,3%**
Remaining effort (2022 → 2030)	**-40,0%**

The table for the United States presents the emissions for the base year (2005), the value recorded in 2022, and the target set for 2030. In 2005, the adopted base year, the country emitted 6,586,940 $ktCO_2e$. By 2022, this figure had fallen to 5,488,971 $ktCO_2e$, representing a 16.7% reduction compared to the initial level. The 2030 target is set at 3,293,470 $ktCO_2e$, corresponding to an absolute reduction of 50% relative to the base year and approximately 40% compared to the 2022 emissions. Progress so far amounts to 33.4% of the target, indicating that the country still needs to reduce around 2.2 million $ktCO_2e$ by 2030.



The political context, however, introduces uncertainty. In January 2025, the United States announced its decision to withdraw from the Paris Agreement—a withdrawal that will only become effective in 2026, as stipulated in Article 28 of the treaty. This development signals potential instability in the implementation of climate policies and could jeopardize progress toward the target if regulatory continuity or institutional coordination is disrupted.

Despite these uncertainties, the 50% reduction target by 2030 is considered ambitious within the G20 context and remains technically achievable. Its success, however, will depend on maintaining strong domestic policies, ensuring adequate financing, and fostering coordination across different levels of government.

All information was taken directly from the CTF tables, ensuring methodological consistency and comparability across countries.

4.1.16 China[11]

Indicador	Valor
Base year emissions (2005)	8.355.000 $ktCO_2e$
2021 emissions	11.619.026,61 $ktCO_2e$
2030 target (absolute — estimated via 65% intensity reduction + 2030 GDP = US$ 23.1 trillion)	29.549.508 $ktCO_2e$
Promised variation (2005 → 2030)	+253,7%
Variation in 2021 (vs. 2005)	+39,07%
Progress toward the target	N/A
Remaining reduction effort (2021 → 2030)	+ 17.930.000 $ktCO_2e$ (absolut); +154,32% relativo a 2021

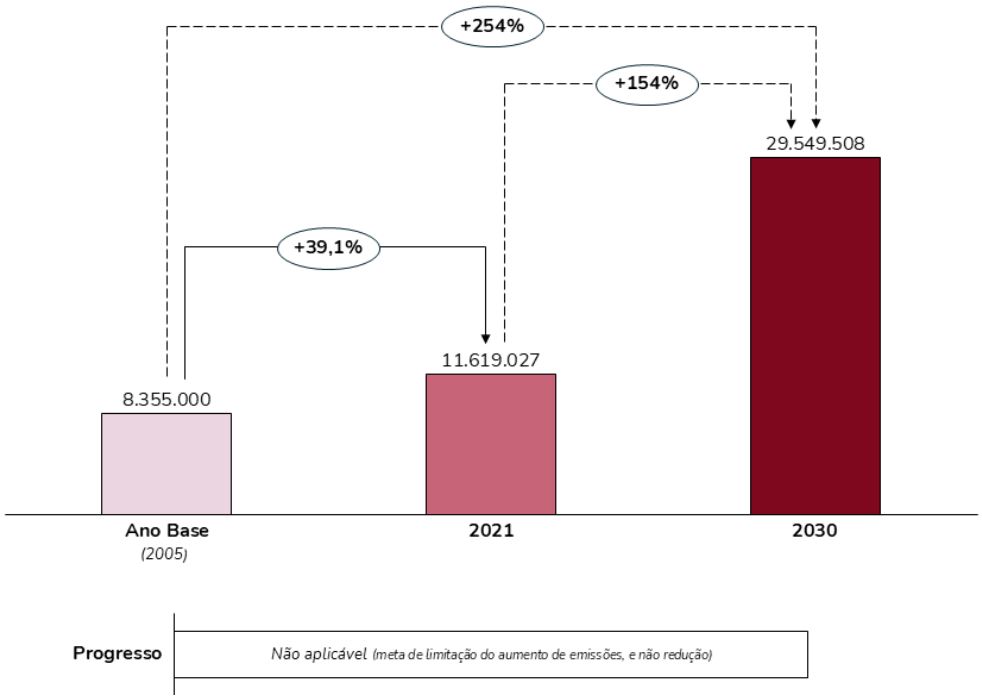
To estimate an absolute emissions target for China in 2030 based on its carbon intensity reduction goal, the base year of 2005 was adopted, as indicated in the country's CTF (Table 4.2) and BTR (p.1). The value of 8,355,000 $ktCO_2e$ was used for total greenhouse gas emissions in 2005, consistent with the scope applied in the NDC for intensity targets. For the most recent years, official data submitted to the UNFCCC through the CTF were used, showing total emissions of 11,619,026.61 $ktCO_2e$ in 2021 — consistent with the same coverage used for the base year.

China's target establishes a percentage reduction in carbon intensity, defined as the ratio between emissions and GDP, relative to the level observed in 2005. According to Dai et al. (2019), this approach reflects a strategy aimed at reconciling economic growth and climate mitigation, allowing the country to reduce emissions per unit of GDP without compromising its development process. The authors argue that, in this context, China's targets should be understood as part of a gradual decoupling effort between GDP and emissions, rather than as commitments to absolute reductions.

To convert this intensity target into an estimated absolute target for 2030, the announced reduction percentage was applied—assuming a 65% reduction, corresponding to the upper limit of China's stated range—and this ratio was applied to the projected

Unidade de medida do gráfico: $ktCO_2e$

[11] DAI, Chunyan; et al. Are China's Nationally Determined Contributions (NDCs) so bad? [S.l.]: [s.n.], 2019. Disponível em: https://www.researchgate.net/profile/Chunyan-Dai/.../Are-China's-Nationally-Determined-Contributions-NDCs-so-bad.pdf. Acesso em: 28 de agosto de 2025.



GDP for 2030. The GDP projection used was that of the International Monetary Fund (IMF), April 2025 scenario, which estimates China's GDP in 2030 at approximately USD 23.1 trillion. Based on this, an intensity target for 2030 was calculated and multiplied by the projected GDP, yielding an estimated absolute emissions level for that year.

The results indicate that, under these assumptions, the intensity-based target would allow China's absolute emissions to reach approximately 29,549,508 $ktCO_2e$ in 2030. This represents an increase of more than 250% compared to 2005, highlighting a structural feature of intensity-based targets: even with significant reductions in emissions per unit of GDP, economic growth can result in substantially higher absolute emission levels. By 2021, emissions were already 39% above the base-year level, meaning that under the estimated scenario, China could continue to increase its emissions substantially through 2030 without breaching its official target.

Thus, converting China's intensity target into absolute terms suggests that, even with the announced percentage reduction, the expected GDP growth allows for a substantial rise in total emissions by 2030. A direct reading of this outcome shows that China's determination does not constitute an absolute emissions reduction target, but rather an improvement in the carbon efficiency of its economy. Therefore, indicators of progress and remaining effort should be interpreted with caution, as they do not represent a need for net emission cuts, but rather the continuation of the decoupling process between GDP and emissions.

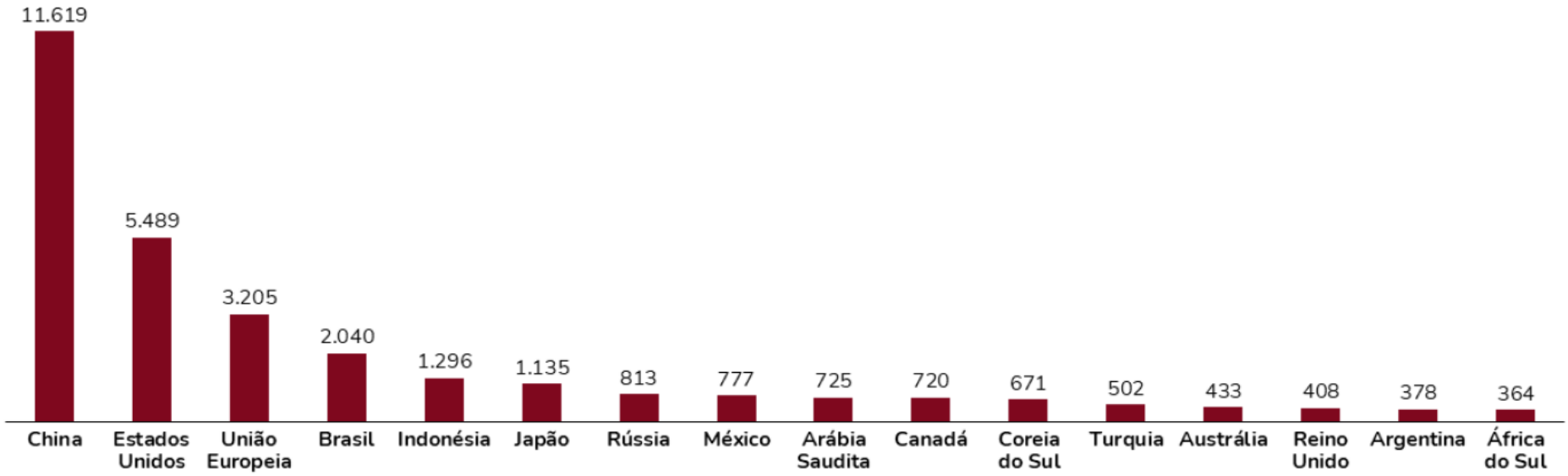
4.1.17 Comparative Analysis

Country	Base year ($ktCO_2$)	2022/2021* ($ktCO_2$)	Base year	2030 target ($ktCO_2$)	Promised variation (base year → 2030) (%)	2022 variation (%) (vs. base year)	Progress toward the target (%)	Target type (reduction or increase)	Remaining reduction or allowable increase
Rússia	2.601.438	813.187	1990	780.438	-70,0	-68,7	+98,1	Reduction	-4,0%
Reino Unido	817.138	407.814	1990	261.484	-68,0	-50,1	+73,6	Reduction	-35,9%
União Europeia	4.689.405	3.205.223	1990	2.114.732	-54,9	-31,6	+57,6	Reduction	-34,0%
Brasil	2.561.246	2.040.000	2005	1.200.000	-53,1	-20,3	+38,3	Reduction	-41,2%
Estados Unidos	6.586.940	5.488.971	2005	3.293.470	-50,0	-16,7	+33,4	Reduction	-40,0%
Japão	1.407.338	1.135.458	2013	760.000	-46,0	-19,3	+42,0	Reduction	-33,1%
Austrália	609.450.0	432.620	2005	347.380	-43,0	-29,0	+67,6	Reduction	-19,7%
Arábia Saudita	679.029.0	724.716*	2019	401.000	-40,9	+6,7	-16,4	Reduction	-44,7%
Coreia do Sul	732.900.0	671.200	2018	439.740	-40,0	-8,4	+21,0	Reduction	-34,5%
Canadá	761.492.0	719.756	2005	456.895	-40,0	-5,5	+13,7	Reduction	-36,5%
China	8.355.000	11.619.027	2005	29.549.508	+254,0	+39,1	N/A	Increase	+154%
Argentina	273.821.0	377.750	1990	349.000	+27,5	+38,0	N/A	Increase	-7,6%
Turquia	413.000	501.999	2012	695.480	+68,4	+21,6	N/A	Increase	+38,5%
Indonésia	1.029.000	1.296.316	2010	1.809.979	+75,8	+26,0	N/A	Increase	+39,6%
México	253.000	776.518	1990	693.398	+174,0	+206,9	N/A	Increase	-10,7%

África do Sul	Data unavailable	364.300	Data unavailable	350.000	-	-	-	Data unavailable	

* The data for Saudi Arabia and China refer exceptionally to the year 2021, as 2022 figures were not reported.

Comparative Analysis of Recently Reported Emissions by G20 Countries in Their BTRs



Unit of measurement: $ktCO_2e$

* The data refer to emissions reported for 2022, except for Saudi Arabia and China, whose most recent reports correspond to emissions from 2021.

The comparative analysis of emissions and targets reported in the BTRs shows that, although there is a core of convergence among the largest G20 economies regarding reduction goals, the distribution of ambition levels and the magnitude of the required effort remain highly uneven. The majority group — composed of Brazil, the United States, Japan, the European Union, Canada, and South Korea — despite adopting different base years, has set reduction commitments ranging between 40% and 55% by 2030, forming a mitigation pattern that seeks to cut roughly half of emissions relative to their baseline levels. The United Kingdom stands out as a more ambitious case, with a 68% reduction target. This alignment suggests the existence of shared technical and political benchmarks, even though the starting points in absolute emission volumes vary considerably.

Conversely, a subset of countries — including China, Argentina, Mexico, Turkey, and Indonesia — displays weaker or less ambitious commitments, with trajectories indicating rising emissions compared to both the base year and 2022 levels. This pattern reflects a low degree of convergence with the rest of the group. Notably, China — the world's largest greenhouse gas emitter — still projects a significant increase in absolute emissions. This characteristic, rare within the group analyzed, challenges the prevailing logic of contraction and underscores the importance of assessing not only nominal targets but also their relationship to recent emission trends.

Russia presents a formally ambitious target (-70% compared to the base year), yet its emission profile was drastically reduced due to economic factors not necessarily related to climate commitments under the Paris Agreement. As a result, the additional effort required to meet its 2030 target is relatively modest in terms of real mitigation.

A comparison of absolute emission volumes further highlights global asymmetries. Once again, China stands out as the largest emitter, having reported emissions exceeding the combined total of the United States, the European Union, and Brazil, which hold, respectively, the second, third, and fourth positions among G20 emitters.

In contrast, South Africa, Argentina, and the United Kingdom maintain lower levels in their inventories, ranking among the smallest emitters within the G20. This contrast illustrates that the real weight of a target cannot be measured

solely in percentage terms: a 40% cut in a massive volume has a far greater global impact than a modest reduction applied to a small base. In this sense, countries such as the United States, Brazil, and Japan face the dual challenge of achieving large proportional reductions from already high starting points, amplifying both the political cost and the technological and economic effort required.

One element that complicates cross-country comparisons is the varying choice of base year used for target calculations. This variation directly affects the reported percentage: the more distant and emission-heavy the base year, the greater the apparent percentage reduction — even if the recent mitigation effort is relatively smaller. This highlights the need to analyze targets in absolute rather than purely percentage terms to properly assess their real contribution to global goals.

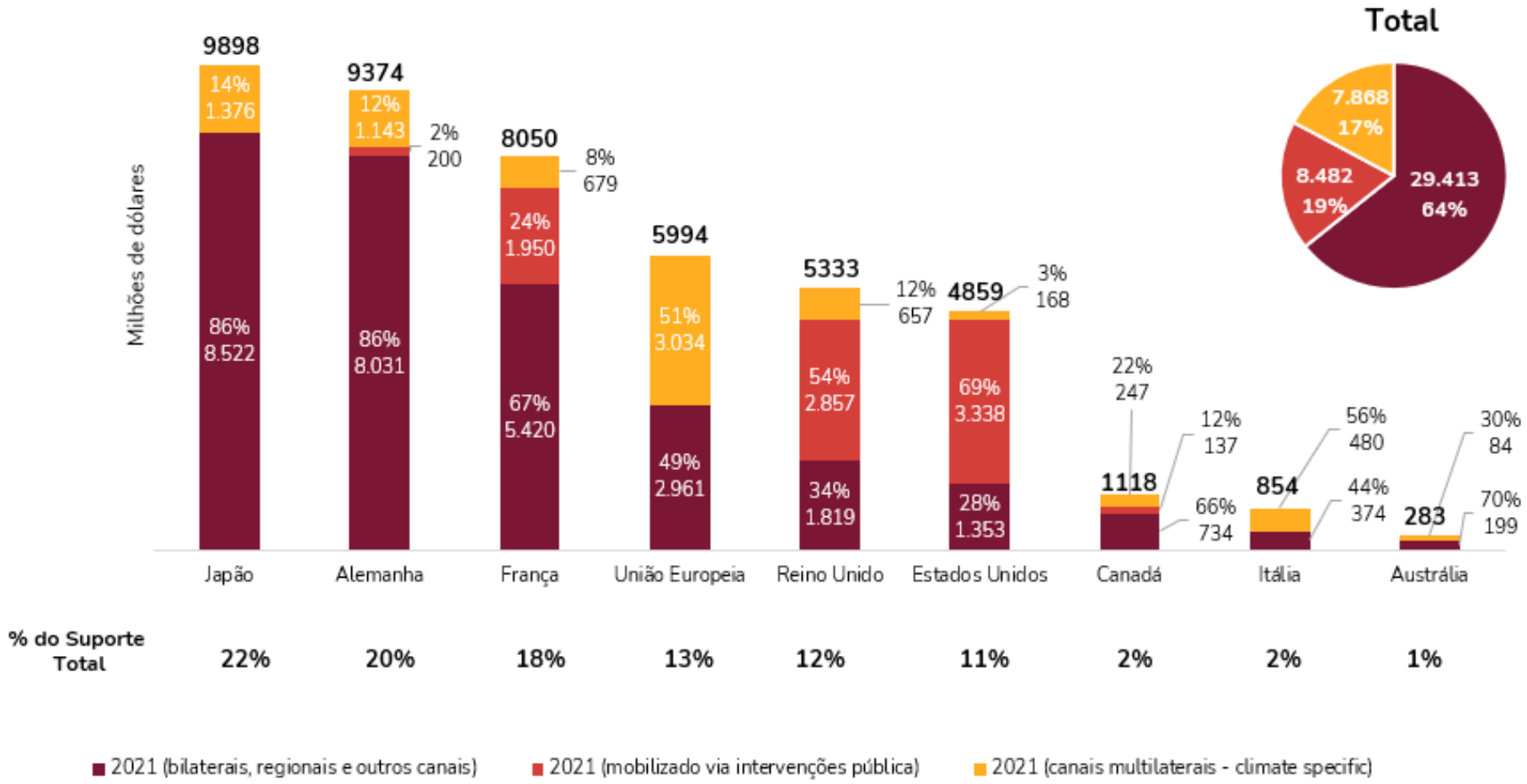
The absence of data from India, the world's most populous nation, represents a major gap in assessing the aggregate picture of the G20. Its inclusion would likely shift both the visual and numerical balance of the group, given its large absolute volume and relative ambition. It is also worth noting that the European Union reported its emissions in an aggregated form, providing a single figure for all member states within the G20. The only exception is France, whose reported total was slightly higher due to the inclusion of emissions from overseas territories not accounted for in the EU's consolidated total.

In summary, the picture drawn from the BTRs up to May 2025 confirms that, while there is partial convergence around certain ambition parameters, significant disparities persist regarding targets, absolute volumes, base years, and recent emission trajectories. This heterogeneity — compounded by the lack of data from India and the inclusion of countries whose targets still allow for emission growth — reinforces the complexity of assessing the G20's real level of climate commitment. It also demonstrates that percentage comparisons alone are insufficient to capture the full scope and effectiveness of mitigation pledges.

4.2 Support Provided by Developed Countries

An analysis of the BTRs submitted up to May 2025 reveals that, among the developed countries within the G20, climate support provided shows a significant concentration — both in terms of modality and purpose, as well as in the absolute volume of resources reported for the two years considered.

4.2.1 Support Provided in 2021 (USD) – By Modality



The data presented in the graph above show the volume of climate finance provided by developed G20 countries in 2021, broken down by modality: mobilized through public interventions, bilateral, regional, and other multilateral channels. The combined total across modalities reveals substantial heterogeneity in the scale of contributions among the countries analyzed.

Japan reported the largest volume of support, reaching USD 9.89 billion, with a strong concentration in bilateral contributions (USD 8.52 billion, or 86%) and a relevant share directed through multilateral climate channels (USD 1.37 billion, or 14%).

Germany ranked as the second-largest provider, exceeding USD 9.37 billion, primarily through bilateral, regional, and other channels (USD 8.03 billion, or 86%), complemented by multilateral climate contributions (USD 1.14 billion, or 12%) and a smaller share mobilized through public interventions (USD 200.1 million, or 2%).

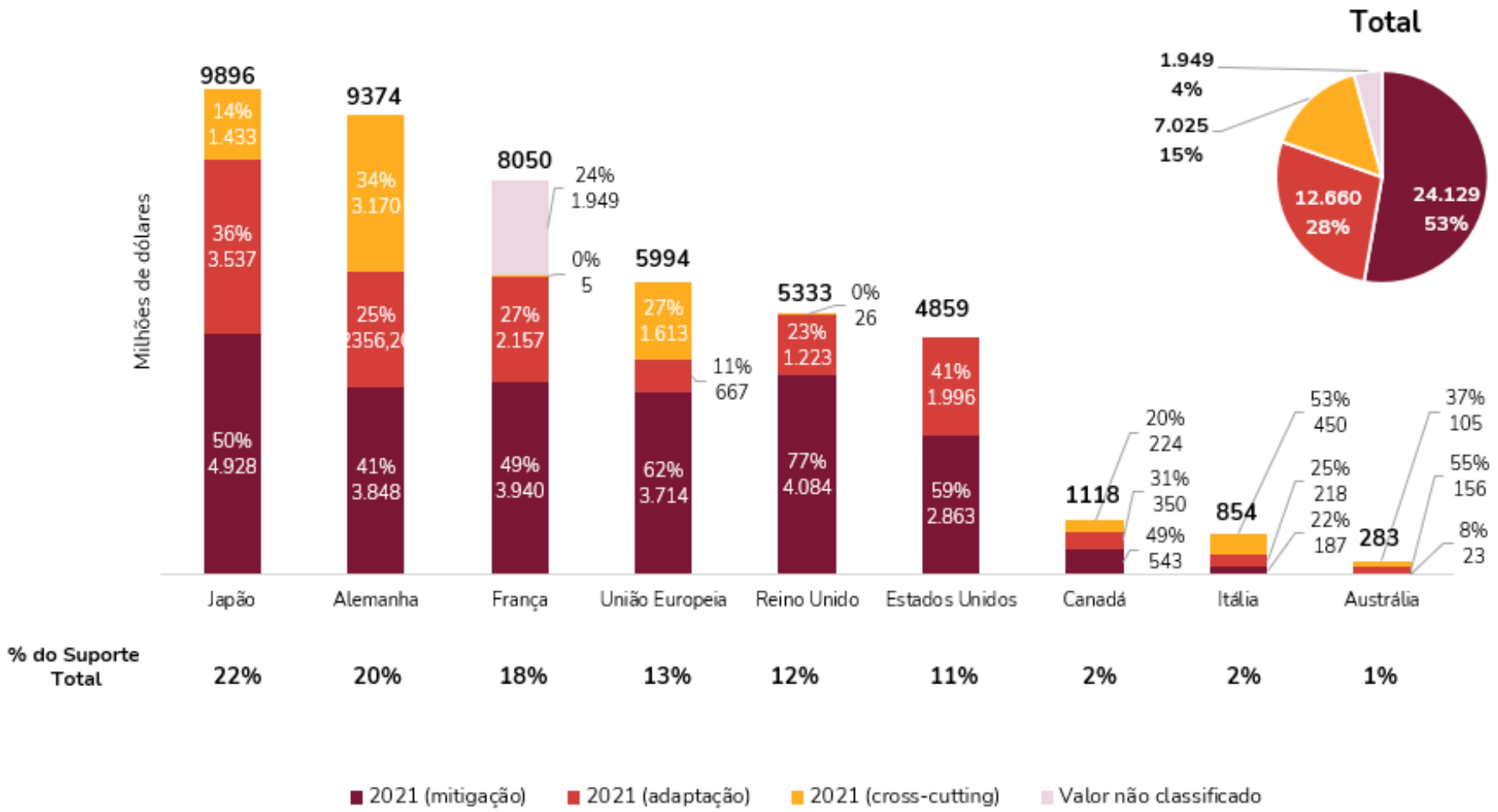
Among other major contributors, France (USD 8.05 billion), the United Kingdom (USD 5.33 billion), and the United States (USD 4.85 billion) stood out, though with distinct profiles: the U.S. reported a higher share of resources mobilized through public interventions (USD 3.33 billion, or 69%), whereas France concentrated most of its funding in bilateral, regional, and other channels (USD 5.4 billion, or 67%).

The European Union also emerged as a significant actor, providing USD 5.99 billion, with a balanced distribution between multilateral channels (USD 3.03 billion, or 51%) and public interventions (USD 2.96 billion, or 49%).

Other countries, including Canada, Italy, and Australia, contributed smaller amounts, under USD 1.2 billion, with varying combinations of modalities. The remaining developed G20 countries did not report climate support for 2021.

Overall, the data show that in 2021, bilateral, regional, and other channels accounted for the largest share of climate finance (64%), followed by public interventions (19%) and multilateral climate channels (17%). While public interventions played a significant role in countries such as the United States and the United Kingdom, their overall participation across the group was less uniform.

4.2.2 Support Provided in 2021 (USD) – By Purpose



The previous graph presents data on how developed G20 countries allocated their climate finance in 2021, according to purpose: mitigation, adaptation, and cross-cutting actions (integrating both dimensions).

Japan, the largest provider in absolute terms (USD 9.89 billion), allocated its support to mitigation (USD 4.92 billion, or 50%), adaptation (USD 3.53 billion, or 36%), and cross-cutting measures (USD 1.43 billion, or 14%). This relative balance between mitigation and adaptation reflects a more diversified climate finance strategy.

Germany, the second-largest provider (USD 9.37 billion), directed most of its funding to mitigation (USD 3.84 billion, or 41%) and cross-cutting actions (USD 3.17 billion, or 34%), with a smaller share allocated to adaptation (USD 2.36 billion, or 25%).

France distributed its support (USD 8.05 billion) mainly to mitigation (USD 3.94 billion, or 49%) and adaptation (USD 2.16 billion, or 27%). No cross-cutting measures were reported. Additionally, USD 1.95 billion (24%) of France's support had no specified purpose, which limits comparability.

The United Kingdom, with USD 5.33 billion, showed a clear predominance of resources directed toward mitigation (USD 4.08 billion, or 77%), followed by smaller contributions to adaptation (USD 1.22 billion, or 23%), and an almost residual share for cross-cutting actions (USD 26 million). This pattern indicates a strong concentration on mitigation, contrasting with other providers that display more diversified allocations.

In the United States, total support of USD 4.85 billion was divided between mitigation (USD 2.86 billion, or 59%) and adaptation (USD 1.99 billion, or 41%), with no reported funding for cross-cutting measures.

Among smaller contributors, different allocation profiles were observed. Canada distributed roughly half of its funding to mitigation, followed by adaptation and cross-cutting actions. Italy prioritized cross-cutting initiatives, followed by adaptation and mitigation, standing out for its emphasis on transversal approaches. Australia, in contrast, allocated the largest share to adaptation, followed by cross-cutting, with a marginal share for mitigation. Other developed G20 countries reported negligible or no data for 2021.

The European Union, with USD 5.99 billion, displayed a profile dominated by mitigation (USD 3.71 billion, or 62%), followed by cross-cutting actions (USD 1.61 billion, or 27%) and adaptation (USD 667 million, or 11%).

Overall, the analysis shows that in 2021, mitigation accounted for the largest share of climate finance (55%), followed by adaptation (29%) and cross-cutting actions (16%).

The total volume of climate support provided by developed G20 countries in 2021 reached USD 45.26 billion. Japan led as the largest individual provider, with USD 9.89 billion (22% of the total), followed by Germany (USD 9.37 billion, 20%) and France (USD 8.05 billion, 18%).

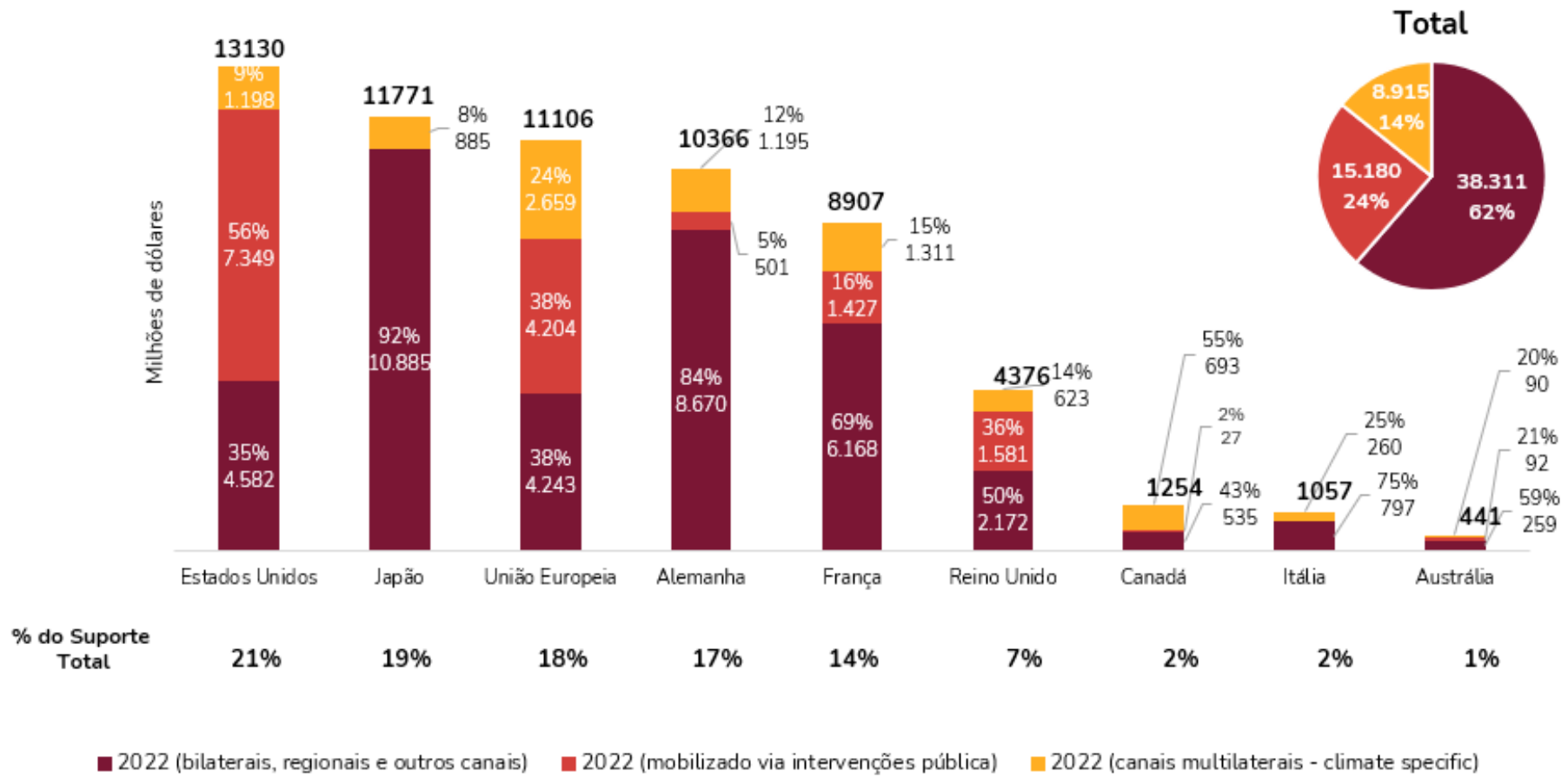
Next, the European Union accounted for USD 5.99 billion (13%), the United Kingdom for USD 5.83 billion (12%), and the United States for USD 4.85 billion (11%). Canada, Italy, and Australia contributed smaller amounts, each representing less than 3% of the total. Russia and Turkey did not report contributions for 2021.

The financial contribution is clearly concentrated: just six providers account for 96% of all reported support, indicating a high dependence on the financial leadership of a limited group within the G20. This concentration may influence the priorities and design of international climate policies, making it essential to continuously monitor how these resources are allocated and implemented.

An integrated examination of these dimensions shows that the climate support provided by developed G20 countries remains highly concentrated in terms of origin, format, and purpose. The predominance of loans and the emphasis on mitigation, combined with the concentration of resources channeled through bilateral and regional mechanisms, may restrict the reach of more inclusive and balanced climate policies. Moreover, the lack of reporting by some members highlights transparency gaps and undermines a comprehensive understanding of the collective effort.

These findings underscore the importance of robust monitoring mechanisms and strategies to diversify sources, instruments, and objectives of climate finance, in order to align financial flows more effectively with the actual needs of adaptation and mitigation in developing countries.

4.2.3 Support Provided 2022 (USD) – By Modality



The data presented in the previous chart indicate the volume of financial support provided by developed G20 countries in 2022, broken down by modality: mobilized through public interventions, bilateral, regional, and other channels, as well as climate-specific multilateral channels. The sum of these modalities reveals pronounced heterogeneity in the scale of contributions among the reporting countries, with significant concentration in a small group of providers.

In 2022, the United States ranked first among support providers within the group, with USD 13.13 billion, distributed mainly through public interventions (USD 7.35 billion, or 56%), followed by bilateral and regional contributions (USD 4.58 billion, or 35%), and, to a lesser extent, through climate-specific multilateral channels (USD 1.2 billion, or 9%).

Japan occupied the second position in total volume, reaching USD 11.77 billion, of which USD 10.88 billion were channeled through bilateral, regional, and other agreements, complemented by USD 885 million in climate-related multilateral contributions. No resources were reported as mobilized through public interventions.

The European Union also stood out, with USD 11.10 billion in total, composed of USD 4.2 billion in bilateral flows (38%), USD 2.65 billion via multilateral channels (24%), and USD 4.2 billion mobilized through public interventions (38%), demonstrating a balanced distribution across modalities. Germany maintained a prominent position, with USD 10.36 billion, predominantly bilateral (USD 8.67 billion, or 84%), followed by multilateral contributions (USD 1.19 billion, or 12%) and USD 501.2 million mobilized through public interventions (5%).

The United Kingdom reported a total of USD 4.37 billion, with USD 2.17 billion in bilateral contributions (50%), USD 623 million in multilateral channels (14%), and a significant share from public interventions (USD 1.5 billion, or 36%). France, in turn, recorded USD 8.90 billion, with a predominance of bilateral flows (USD 6.17 billion, or 69%), complemented by USD 1.42 billion mobilized through public interventions (16%) and USD 1.31 billion through multilateral channels (15%).

Among smaller-scale providers, Canada (USD 1.25 billion), Italy (USD 1.05 billion), and Australia (USD 441 million) showed varying combinations of modalities, with a predominance of bilateral flows. South Korea, Russia, and Turkey did not submit Climate Transparency Framework (CTF) support data, resulting in no reported values for 2022.

The 2022 overview shows that bilateral, regional, and other channels continued to represent the main avenue of climate support provided by developed G20 countries (62%), followed by public interventions (24%) and climate-specific multilateral contributions

(14%). Although the mobilization of resources remains concentrated among a few providers—particularly the United States, Japan, and the European Union—it plays a strategic role in expanding the reach of resources by attracting additional investment. The concentrated distribution of support reinforces the need to diversify both providers and modalities in order to strengthen predictability and resilience in global climate finance.

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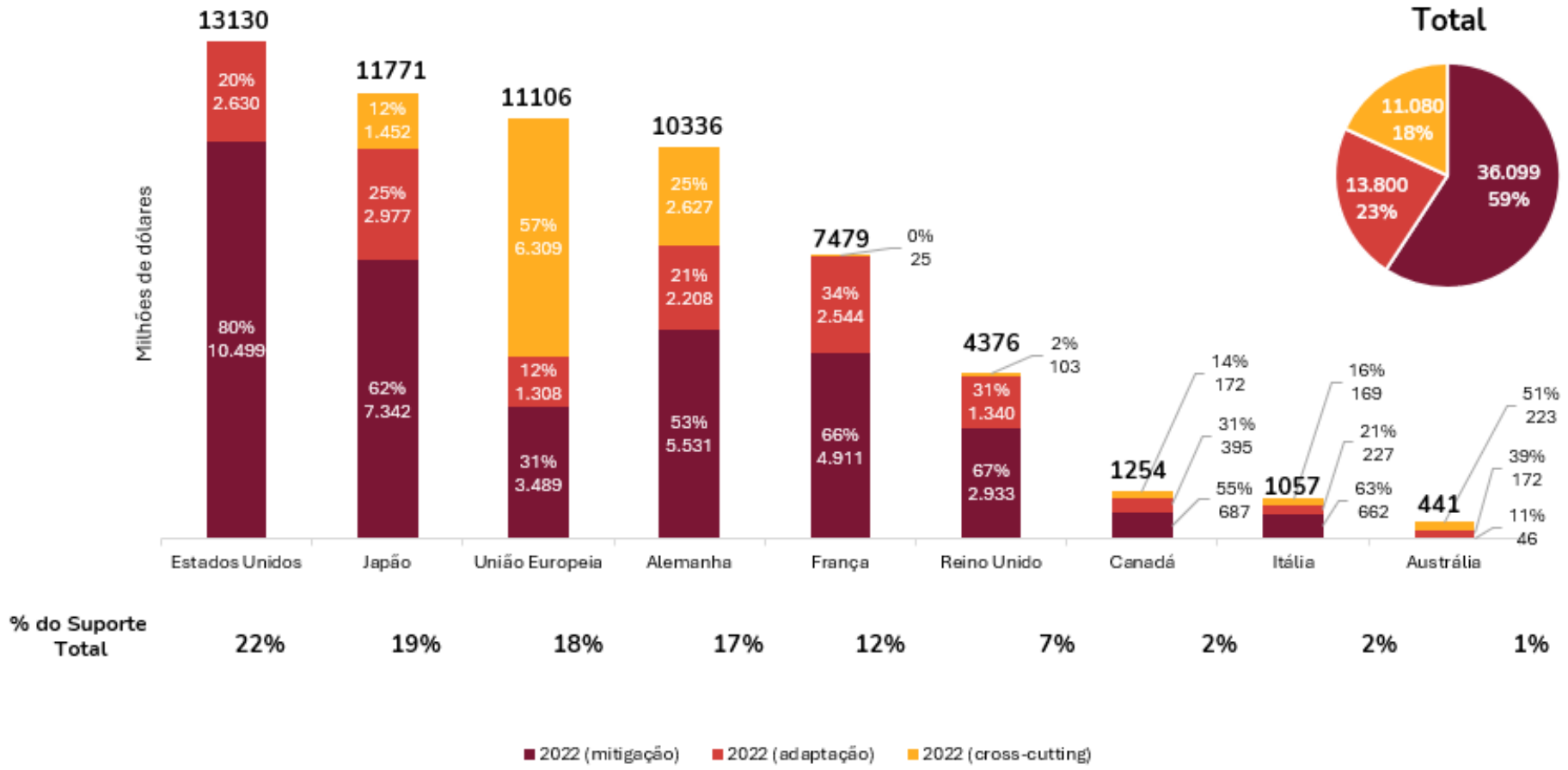
4.2.4 Support Provided 2022 (USD) – By Purpose



The 2022 data on the purpose of climate support provided by developed G20 countries highlight differences in the distribution among the categories of mitigation, adaptation, and cross-cutting (integrated) actions.

The United States, leading in total volume, provided USD 13.13 billion, most of which was directed toward mitigation (USD 10.49 billion, or 80%), followed by adaptation (USD 2.63 billion, or 20%). The Japan, the second-largest provider (USD 11.77 billion), allocated most of its resources to mitigation (USD 7.34 billion, or 62%), a significant share to adaptation (USD 2.98 billion, or 25%), and USD 1.45 billion to cross-cutting actions (12%).

The European Union ranked third, with USD 11.11 billion, distributed mainly among cross-cutting measures (USD 6.31 billion, or 57%), mitigation (USD 3.49 billion, or 31%), and adaptation (USD 1.31 billion, or 12%). Germany (USD 10.34 billion) allocated most of its resources to mitigation (USD 5.53 billion, or 53%), followed by cross-cutting actions (USD 2.63 billion, or 25%), and adaptation measures (USD 2.21 billion, or 21%).

France reported a distribution of USD 7.48 billion among the three categories established in the BTR. This amount differs from the total reported by modality, making it impossible to determine, based on the French BTR, the allocation of USD 1.43 billion. From the amounts reported by purpose, France allocated USD 4.91 billion to mitigation (55%) and USD 2.54 billion to adaptation (29%). No cross-cutting measures were reported. Furthermore, France did not specify the purpose of USD 1.42 billion, which represents 16% of its total reported support.

The United Kingdom provided USD 4.38 billion, with USD 2.93 billion for mitigation (67%) and USD 1.34 billion for adaptation (31%). Only 2% (USD 103 million) was directed to cross-cutting actions.

Among smaller-scale providers, Canada (USD 1.25 billion), Italy (USD 1.06 billion), and Australia (USD 441 million) showed varied combinations of modalities but maintained a stronger focus on mitigation. South Korea, Russia, and Turkey did not submit Climate Transparency Framework (CTF) support data, resulting in no reported values for 2022.

The overall picture indicates that in 2022, mitigation measures remained the main focus of funding across most countries. In total, 59% of resources (USD 36.1 billion) were directed to mitigation, 23% (USD 13.8 billion) to adaptation, and 18% (USD 11.1 billion) to cross-cutting actions.

In 2022, the total volume of climate support provided by developed G20 countries that reported data amounted to approximately USD 62.4 billion, with strong concentration among a few providers. The United States led in absolute terms, accounting

for 21% of the total (USD 13.13 billion), followed by Japan (19%, USD 11.77 billion), the European Union (18%, USD 11.10 billion), and Germany (17%, USD 10.36 billion). Together, these four actors represented over three-quarters of all reported climate support during the period.

France ranked fifth, with USD 8.90 billion (14%), followed by the United Kingdom, with USD 4.38 billion (7%). Other countries had residual participation: Canada (2%, USD 1.25 billion), Italy (2%, USD 1.05 billion), and Australia (1%, USD 441 million). South Korea, Russia, and Turkey did not submit CTF support data for 2022, resulting in no reported values.

The high concentration of total support in a few providers reflects a pattern observed in 2021, where a small core group of countries plays a dominant role in international climate finance. While this configuration ensures substantial volumes from these key actors, it may create vulnerability in the predictability and stability of financial flows, especially for developing countries that depend on such cooperation to implement mitigation and adaptation measures. The diversification of providers and greater engagement from members with marginal participation remain strategic factors for expanding the scale and reach of global climate support.

A combined analysis of the 2022 results shows that climate support from developed G20 countries remains characterized by strong asymmetry—both in terms of distribution among providers and in the form and purpose of resources. A small group—led by the United States, Japan, Germany, and the European Union—concentrated most of the contributions, while several members had marginal or no reporting. There is also a continued predominance of bilateral flows and a strong focus on mitigation actions, with limited variation in the combination of modalities and purposes. This configuration tends to reduce the geographic and thematic scope of financing, and limit the capacity to respond to urgent adaptation needs.

5. Final Considerations and Recommendations

The assessment of the BTRs submitted by G20 countries up to May 2025 provides a comprehensive diagnosis of the current state of transparency, ambition, and climate finance within the group. This analysis highlights both significant progress in the reporting and monitoring framework established under the Paris Agreement's Enhanced Transparency Framework (ETF) and persistent asymmetries and gaps that limit the G20's potential to exercise strong and coherent leadership in the international climate agenda.

First, regarding mitigation targets, a wide heterogeneity was observed among the countries analyzed. While a relevant subset — including Brazil, the European Union, the United Kingdom, Germany, France, and Japan — presents commitments formally aligned with absolute reduction trajectories consistent with limiting global warming to 1.5°C, other countries still adopt targets of limited scope or those that, in practice, allow for an increase in net emissions by 2030, such as China, Turkey, and Indonesia. This internal divergence, even if justified under the principle of common but differentiated responsibilities, weakens the group's political coherence and makes it difficult to send a unified collective signal in multilateral forums. The use of different base years, methodological criteria, and reporting formats also creates barriers to target comparability and integrated assessment.

Furthermore, in cases such as China, Mexico, Argentina, Turkey, and Indonesia, the targets focus primarily on limiting emission growth rather than achieving absolute reductions. Although these targets may be justified by specific economic, social, and structural contexts, they fall short of the level of effort required to align global emissions with the Paris Agreement's goals. Additionally, the absence of reporting by countries such as India by the cut-off date, and incomplete Climate Transparency Framework (CTF) submissions by others, generate gaps in aggregate evaluation.

In terms of support provided by developed countries, data from 2021 and 2022 indicate a consistent pattern of geographical and financial concentration. In both years, a small core of providers, the United States, Japan, Germany, the European Union, and France, accounted for nearly 90% of total reported volume. While this configuration ensures significant resources from a few key actors, it also increases the vulnerability of financial flows to shifts in domestic priorities and political instability, as evidenced by recent changes in foreign and climate policy among some of these countries.

The modalities of climate finance also reveal imbalances. Bilateral, regional, and other channels remain predominant, suggesting a pattern of allocation more directly controlled by the providers, while climate-specific multilateral channels play a smaller role. Mobilization through public interventions, though strategically important to attract private investment and expand the reach of resources — by reducing risk and signaling confidence through instruments such as guarantees, subsidies, or concessional loans — was concentrated in a few actors, notably the United States and the European Union. This concentration reduces the potential for financial innovation and the replication of best practices across the G20, as it limits the diversity of experiences and the diffusion of models that could be adapted by other countries.

The analysis of the purpose of climate support in 2022 shows a clear predominance of mitigation among major providers, though with notable national differences. The United States channeled 80% of its resources to mitigation, with the remainder to adaptation and no cross-cutting funding. France and the United Kingdom also concentrated over two-thirds of their support on mitigation, with smaller shares for adaptation. Japan, while maintaining mitigation as the main focus (62%), displayed greater relative diversification, with nearly a quarter of funds directed to adaptation and 12% to cross-cutting actions. Germany distributed its resources more evenly, while the European Union was the only actor to prioritize cross-cutting actions (57%). Among smaller providers, such as Canada, Italy, and Australia, variation exists among the three categories, but absolute amounts remain much lower.

This panorama suggests that, although mitigation remains the dominant priority within the G20, some actors are incorporating greater diversification into their portfolios, thereby expanding their ability to address different needs. Nonetheless, the predominance of mitigation contrasts with the recurring demand from developing countries for a more balanced approach between mitigation, adaptation, and integrated actions.

Regarding transparency and comparability, significant challenges persist. The use of distinct methodologies, lack of disaggregated data for certain flows, and the absence of reporting by some countries compromise the completeness and integrity of the collective effort. Cases such as the absence of CTF submissions from South Korea, Russia, and Turkey illustrate the need to strengthen consistent and harmonized reporting mechanisms. These gaps affect not only the technical evaluation but also the G20's credibility as a reference group in global climate governance.

In light of this panorama, a set of structural recommendations is proposed:

- **Methodological Harmonization and Strengthening of Comparability:**
  It is desirable to promote greater uniformity in the selection of base years, in the application of methodologies, and in the categorization of data within the CTFs. This can be achieved through more specific guidance from the CMA and enhanced technical cooperation among countries, ensuring that BTRs reflect minimum standards of consistency that allow for direct comparisons and integrated analyses.
- **Universalization of Complete and Timely Reporting:**
  The G20, as the group comprising the world's largest economies, should lead by example by submitting complete BTRs, with fully filled-out CTFs and coherent explanatory narratives. For developing countries to fully meet these requirements, it is essential that developed countries and multilateral climate funds intensify efforts to ensure adequate technical and financial support, while simplifying procedures for accessing available resources. Such support should prioritize the strengthening of institutional capacities and national monitoring, reporting, and verification (MRV) infrastructure, ensuring that the information provided is complete, comparable, and aligned with the requirements of the Enhanced Transparency Framework.
- **Diversification of Funding Sources and Modalities:**
  It is necessary to expand the number of active providers of climate support and promote greater balance between bilateral and multilateral flows. Moreover, the increased use of innovative instruments—such as guarantees, blended finance funds, and green bonds—can help mobilize private capital and reduce dependence on direct contributions from a small group of countries.
- **Balanced Allocation among Mitigation, Adaptation, and Cross-Cutting Actions:**
  The historical prioritization of mitigation, while consistent with the need to reduce emissions, should be complemented by greater attention to adaptation, given that climate impacts are already a reality for many vulnerable regions. Cross-cutting actions, in turn, should be encouraged as a means of maximizing synergies and optimizing resources.
- **Increasing Collective Ambition:** G20 members should work to align their targets with trajectories compatible with the 1.5°C goal, avoiding targets that allow for net emission increases and prioritizing absolute reductions. Such

alignment is essential for the group to maintain its relevance and legitimacy in global climate discussions.

- **IEffective Integration with the Global Stocktake (GST):** It is crucial that the data contained in the BTRs feed into the GST in a timely and comprehensive manner, ensuring that this mechanism fulfills its role in assessing collective progress and driving successive cycles of increased ambition.
- **Strengthening the Predictability and Resilience of Financial Flows:** Reducing excessive dependence on a small number of providers requires more robust multilateral mechanisms capable of maintaining the scale and continuity of financing even amid domestic political changes.

The G20 holds a unique position in climate governance: its economic and geopolitical significance places it in a privileged position to shape the course of global climate action. However, the effectiveness of this influence depends on the group's ability to overcome internal disparities, reinforce transparency, raise ambition, and diversify both the sources and destinations of climate support. Consolidating the BTRs as instruments of accountability and international coordination will be decisive for ensuring that the bloc contributes proportionally to its historical responsibility and to its capacity to respond to the climate emergency.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