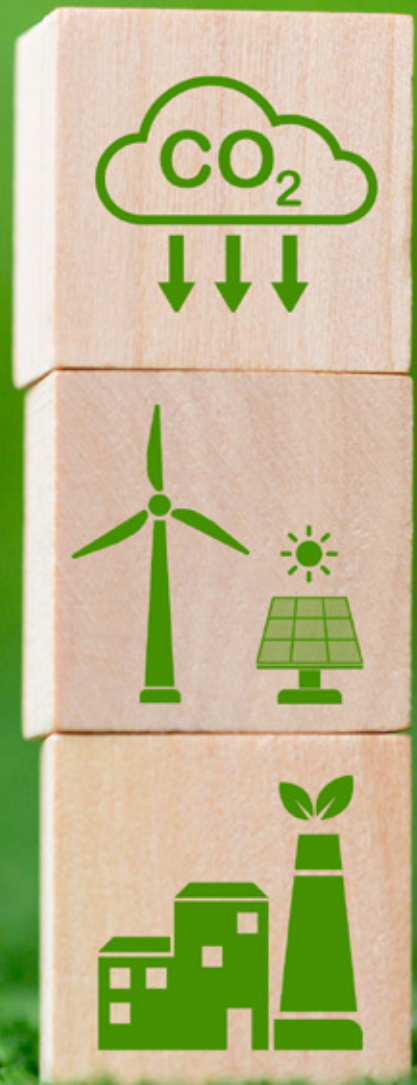




CLIMATE FINANCE AND MINING

The Climate Finance
Ecosystem for
the Mining Sector





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Ecosystem for
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Table of Contents

1. WHAT IS CLIMATE FINANCE?	5
2. CLIMATE FINANCE IN THE GLOBAL CONTEXT: KEY DEVELOPMENTS RELATED TO QUANTITATIVE TARGETS	6
3. MAIN GLOBAL FUNDS FOR CLIMATE FINANCE	8
3.1 Green Climate Fund (GCF)	8
3.2 Global Environment Facility (GEF)	9
3.3 Climate Investment Funds (CIFs)	9
3.4 Multilateral Investment Fund (MIF) – IDB Lab	11
3.5 International Climate Initiative (IKI)	11
3.6 Adaptation Fund (AF)	12
4. CLIMATE FINANCE FOR BRAZIL	16
5. THE RELEVANCE OF CLIMATE FINANCE FOR THE MINING SECTOR	19
6. INTERNATIONAL INITIATIVES	24
6.1 European Commission	24
6.2 European Investment Bank (EIB) in Partnership with BNDES	24
7. NATIONAL INITIATIVES	27
7.1 Sources of Financing and Initiatives for Mining	29
 GREEN PAPER	
1. CLIMATE FINANCE FOR MINING AND ITS CHALLENGES	38
2. MINERAL SECTOR DEMANDS	39
3. CONCLUSION	42



1. WHAT IS CLIMATE FINANCE?

Climate finance refers to the set of financial resources mobilized to support actions aimed at mitigating greenhouse gas emissions and adapting societies to the impacts of climate change.

This concept also encompasses initiatives focused on integrating mitigation and adaptation actions into public policies, promoting innovation, and enabling the transition to a low-carbon economy.

These resources may come from public, private, bilateral, multilateral, national, or international sources, and include a range of instruments – from grants and donations to concessional investments and market-based mechanisms. In the international context, climate finance

is understood as funding directed toward supporting the implementation of climate actions in developing countries. These resources play a key role in enabling climate policies that address climate challenges through the advancement of low-carbon technologies, the protection of vulnerable ecosystems, and the strengthening of institutional and community capacities in these countries.

The Paris Agreement (2015) addresses climate finance primarily in its Articles 2 and 9, recognizing its importance for the effective implementation of climate actions, particularly in developing nations. Article 2 highlights the need to align the global financial system with climate goals, while Article 9 is entirely dedicated to climate finance.

PARIS AGREEMENT – ARTICLE 9 (CLIMATE FINANCE)

Main Guidelines:

- **Developed countries shall provide financial resources to assist developing countries with respect to both mitigation and adaptation, in continuation of their existing obligations under the Convention.**
- **Other Parties are encouraged to provide or continue to provide such support on a voluntary basis.**
- **Developed countries should continue to take the lead in mobilizing climate finance from a wide variety of sources, instruments, and channels, to support country-driven strategies, taking into account the needs and priorities of developing countries.**
- **The provision of scaled-up financial resources should aim to achieve a balance between adaptation and mitigation.**

2. CLIMATE FINANCE IN THE GLOBAL CONTEXT: KEY DEVELOPMENTS RELATED TO QUANTITATIVE TARGETS

1ST AGREEMENT - COP 15 (COPENHAGEN, 2009)

Developed countries agreed to establish a target for mobilizing financial resources to support climate actions in developing coun-

tries. The target was set at USD 100 billion per year by 2020, with developed countries expected to lead the mobilization of funds.

2ND AGREEMENT - COP 21 (PARIS, 2015)

It was decided that developed countries would continue their existing collective mobilization goal through 2025, and that, before 2025, countries would set a new collective quantified goal — above the USD 100 billion per

year target. According to the Organisation for Economic Co-operation and Development (OECD), the USD 100 billion target was reached in 2022, considering multiple sources of climate finance.

3RD AGREEMENT - COP29 (BAKU, 2024)

Countries adopted the New Collective Quantified Goal on Climate Finance (NCQG) — a new global financial objective under Article 9 of the Paris Agreement, aimed at mobilizing resources to support developing countries in mitigating and adapting to climate change.

The financial target agreed upon was at least USD 300 billion annually by 2035, with developed countries taking the lead.

Despite this progress, the NCQG has faced criticism, as the amount is considered insufficient. The assessment conducted at COP 28 (Dubai, 2023) through the Global Stocktake estimated that between USD 5.8

and 5.9 trillion would be required to support developing countries in implementing their Nationally Determined Contributions (NDCs) by 2030.

In response to this need, COP 29 established a strategic plan to significantly scale up climate finance for developing countries by 2035. Known as the “Baku-to-Belém Roadmap to USD 1.3 Trillion”, the plan seeks to raise the goal to USD 1.3 trillion per year.

Resources should come from both public and private sources, including grants, concessional instruments, and innovative financing mechanisms. It is also understood that there is a

need for a reform of the multilateral financial architecture and to address the challenges that developing countries face in accessing

these resources, such as fiscal constraints, high capital costs, and high debt levels.

COP 30 (BELÉM, 2025)

As the host country of the upcoming climate conference, COP 30, Brazil plays a central role in the execution and implementation of the Baku-to-Belém Roadmap. Together with Azerbaijan, Brazil is responsible for developing and presenting a detailed plan that defines the strategy to significantly scale up climate finance resources, aiming to reach USD 1.3 trillion per year.

This plan should include mechanisms for the reform of the multilateral financial system, expanded access to climate finance, strengthening of domestic capacities, and unlocking large-scale investment opportunities.

The roadmap is scheduled to be published in October 2025 and launched at a high-level event during COP 30 in November 2025. The conceptual definition of climate finance and the diversification of sources (loans, blended finance, grants) will be central in negotiations, particularly to increase ambition through a new target.

Among the various proposals presented during negotiations, some countries argue that resources should be new, predictable, accessible, climate-specific, and additional to Official Development Assistance (ODA).

Other countries advocate for concessional finance, excluding market-rate loans, private finance with market returns, ODA, or finance that is not climate-specific.

Some countries that support new sources of finance — such as public-private partnerships, payments for ecosystem services, blended finance¹, guarantees, and debt-for-climate² swaps — may complement public and subsidy-based finance.

1 Blended finance, also called mixed finance, is a form of investment that combines public, development, or philanthropic funds with private capital to finance projects with positive social, environmental, or economic impact.

Source: ANBIMA. See article by Rodrigo Lauria, Director of Climate Change at Vale, and Gustavo Luz, Director at Fundo Vale — Read more

2 Debt-for-climate swaps are agreements in which a creditor forgives or reduces part of a country's debt in exchange for commitments or investments in climate mitigation and adaptation actions by that country. In other words, part of the country's external debt is forgiven or renegotiated under more favorable terms, and the freed-up or saved resources are used to fund projects addressing climate change or environmental protection.

3. MAIN GLOBAL FUNDS FOR CLIMATE FINANCE

3.1 Green Climate Fund (GCF)

The Green Climate Fund (GCF) was established in 2010 by the United Nations Framework Convention on Climate Change (UNFCCC) to serve as the financial mechanism of the Convention, as well as of the Paris Agreement. Targeting developing countries, the Fund supports more than 200 projects worldwide, including 13 in Brazil.

With a blended finance structure, combining resources from developed countries and attracting private capital, the Fund focuses on projects aimed at reducing greenhouse gas emissions and promoting climate change adaptation, aligned with the Nationally Determined Contributions (NDCs) of each country where it operates.


In Brazil, the GCF operates under the Country Programme, an instrument that translates the nation's strategic priorities into the allocation of GCF resources. The National Designated Authority (NDA) is responsible for selecting

proposals and ensuring their alignment with national climate priorities and policies.

The GCF provides four types of financial instruments available in Brazil: concessional loans, grant financing, guarantees, and equity investments.

Although there are currently no GCF projects in Brazil specifically directed at the mining sector, the Fund has financed mining-related projects in other regions³.


To access these resources, applicants must first contact the Ministry of Finance (Brazil's NDA) to verify whether the Country Programme allows for the proposed project's alignment. After this stage, the applicant must complete introductory documentation describing the project's objectives and, subsequently, prepare a Funding Proposal for submission to the Authority. Further information on these procedures can be found on the dedicated website of the Ministry of Finance.



HOW TO ACCESS?

**FUNDOS INTERNACIONAIS DE DESENVOLVIMENTO
GREEN CLIMATE FUND**

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



³ GCF Project No. FP140 – High Impact Programme for the Corporate Sector. GCF Watch. Countries: Kazakhstan, Uzbekistan, Jordan, Morocco, Tunisia, Serbia, Armenia. Available at: <https://www.gcfwatch.org/project-tracker/fp140-high-impact-programme-for-the-corporate-sector>

3.2 Global Environment Facility (GEF)


Operating within a broader environmental scope—covering projects related to biodiversity, climate change, international waters (transboundary cooperation in shared aquatic ecosystems), land degradation, chemicals and waste—the Global Environment Facility (GEF) serves as a financial mechanism for the implementation of international environmental conventions, including the UNFCCC.

Brazil formalized its participation through Decree No. 7,992 of April 24, 2013⁴, which promulgated the Instrument for the Establishment of the Reconstituted Global Environment Facility. The country is one of the main beneficiaries of the Facility in Latin America.

To access GEF resources, proposals must be submitted through an Implementing Agen-

cy, such as the Development Bank of Latin America (CAF), UNDP, UNEP, UNIDO, World Bank, IDB, FUNBIO, among others⁵. These agencies submit project proposals to the Operational Focal Point (Ministry of Finance in Brazil), which then undergo technical and policy review by the GEF for funding approval.


In the mining sector, the Facility provides opportunities to support projects aligned with its thematic areas. The GEF has endorsed the Global Mercury Programme in Artisanal and Small-scale Gold Mining (ASGM)⁶—including initiatives in Brazil—focused exclusively on small-scale mining activities. The Facility has also enabled the financing of projects aimed at the remediation of mining-degraded areas, such as the one implemented in Belarus⁷, as an illustrative example.



HOW TO ACCESS?

FUNDO GLOBAL PARA O MEIO AMBIENTE
(GLOBAL ENVIRONMENT FACILITY – GEF)

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



3.3 Climate Investment Funds (CIFs)

Structured into thematic programs and implemented in partnership with national governments, Multilateral Development Banks (such as the World Bank and the IDB), civil society, and the private sector, the mech-

anism aims to mobilize private capital and enhance investor confidence.

Access to CIF resources is channeled through the Multilateral Development Banks, beginning

⁴ Decree No. 7,992 of April 24, 2013. Promulgates the Instrument for the Establishment of the Reconstituted Global Environment Facility. https://www.planalto.gov.br/ccivil_03/_ato2011-2014/2013/decreto/d7992.htm

⁵ GEF Implementing Agencies. <https://www.thegef.org/partners/gef-agencies>

⁶ Zero Mercury. <https://www.zeromercury.org/>

⁷ GEF SGP Belarus supports the remediation of open pits and landfills in the Minsk region. <https://www.thegef.org/news-room/news/gef-sgp-belarus-supports-remediation-open-pits-and-landfills-minsk-region>

with an Expression of Interest submitted by the national government under an open call for a specific Investment Program⁸.

The CIFs include a dedicated program for the decarbonization of heavy industry, including the mining sector, and also support energy transition⁹ and efficiency initiatives.

For the mining sector, the Fund recognizes the role it can play in environmental restoration and energy transition. In 2025, the CIFs provided USD 250 million to Brazil for the Industrial Decarbonization Program¹⁰, which forms part of the National Industrial Decarbonization Strategy, a pillar of the New Industry Brazil (NIB)¹¹ Program. However, the mining sector is not explicitly identified as a beneficiary under this initiative.

HOW TO ACCESS?



CLIMATE INVESTMENT FUNDS (CIF)
MINISTÉRIO DA FAZENDA

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



CLIMATE INVESTMENT FUNDS (CIF)
[HTTPS://WWW.CIF.ORG/COUNTRY/BRAZIL](https://www.cif.org/country/brazil)

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



The CIFs are composed of two funds (or programs):

a. Strategic Climate Fund (SCF)

Focused on pilot projects designed to foster innovative approaches to climate challenges such as mitigation and adaptation, and to promote transformational actions. It concentrates on more specific and smaller-scale initiatives aimed at generating pilot projects that can serve as models for larger-scale programs.

b. Clean Technology Fund (CTF)

Focused on large-scale projects to demonstrate and deploy low-carbon technologies that reduce greenhouse gas (GHG) emissions. It encompasses a range of financial instruments, including grants, concessional loans, equity, and guarantees¹².

⁸ How to Access the CIF? Ministry of Finance. <https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundos-de-investimento-climatico-climate-investment-funds-cif/como-acessar-o-cif>

⁹ Meeting of the SCF Trust Fund Committee. Climate Investment Funds. https://cif.org/sites/cif_enc/files/2025-04/scf_tfc_19_02_npc_investmentplan_brazil_01272025_0.pdf

¹⁰ Industrial Decarbonization Program. Ministry of Finance. <https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundos-de-investimento-climatico-climate-investment-funds-cif/projetos-e-programas/idp>

¹¹ Brazil Receives USD 250 Million to Decarbonize Industry. Poder 360. <https://www.poder360.com.br/poder-sustentavel/brasil-ganha-us-250-mi-para-descarbonizar-industria/#:~:text=O%20projeto%20do%20governo%20brasileiro,2025>

¹² How the CIF Operates? Ministry of Finance. <https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundos-de-investimento-climatico-climate-investment-funds-cif/sobre-o-cif>


3.4 Multilateral Investment Fund (MIF) – IDB Lab

The Multilateral Investment Fund (MIF), or IDB Lab, is an innovative unit of the Inter-American Development Bank that acts as a catalyst for solutions to the most pressing challenges in Latin America and the Caribbean.

It is an independent innovation grant fund focused on objectives such as inclusion, green and resilient economies, and business innovation in Latin America and the Ca-

ribbean. Beyond financing, it also provides technical assistance¹³.


To apply, there are specific calls for innovative, scalable, and replicable projects, organized by thematic areas. While the Fund does not have a specific line for the mining sector, this does not preclude the inclusion of mining-related initiatives that meet its innovation criteria. The Fund primarily focuses on small-scale enterprises and initiatives.



HOW TO ACCESS?

IDB LAB
MULTILATERAL INVESTMENT FUND (MIF)

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



3.5 International Climate Initiative (IKI)

The International Climate Initiative (IKI) is a German government financing instrument focused on climate protection and biodiversity in emerging and developing countries.

Grounded in both the Paris Agreement and the Convention on Biological Diversity, it covers four main funding areas: mitigation, adaptation, carbon sink preservation and restoration, and biodiversity conservation¹⁴.

Its 2030¹⁵ Strategy includes industrial decarbonization as one of its priority objectives.

Through the IKI, organizations and business consortia can access funding to develop projects aligned with these objectives.

Financing is available through thematic and country-specific calls, as well as small and medium-sized grants (IKI Medium Grants, IKI Small Grants), administered by a variety of organizations (governmental or non-governmental)¹⁶.

The IKI website provides dedicated pages for each type of public call for project proposals¹⁷.

¹³ BID Lab. <https://bidlab.org/en/about-us>

¹⁴ The International Climate Initiative (IKI). <https://www.international-climate-initiative.com/en/about-iki/>


¹⁵ The Strategy of the International Climate Initiative up to 2030. <https://www.international-climate-initiative.com/en/iki-media/publication/the-strategy-of-the-international-climate-initiative-up-to-2030-1812/>

¹⁶ Find Funding. <https://www.international-climate-initiative.com/en/find-funding/>

¹⁷ Country Call Brazil. <https://www.international-climate-initiative.com/en/find-funding/country-call/country-call-brazil/#68>

An example of a mining project was “**Raw Materials and Climate Change: Promotion of Low-Carbon, Environmentally Sustainable, and Resource-Efficient Methods in Raw Material Production**,” implemented in Chile and Colombia. The project particularly


emphasized mitigation objectives, including energy efficiency, the development of communication networks among sector professionals, and support for the formulation of long-term mining strategies¹⁸.



HOW TO ACCESS?

(INTERNATIONAL CLIMATE INITIATIVE – IKI)

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



There is no specific website for Brazil, but the IKI operates in partnership with Brazilian organizations.

3.6 Adaptation Fund (AF)

The Adaptation Fund is aimed at developing countries that are particularly vulnerable to the adverse effects of climate change and is part of the Kyoto Protocol. Its resources come from the Clean Development Mechanism (CDM).

Projects and programs seeking funding must be submitted by the country where they will be implemented through an accredited institution (National, Regional, or Multilateral Implementing Entities)¹⁹. In Brazil, these institutions are the Brazilian Biodiversity Fund (FUNBIO)²⁰ and the Institute for Society, Population, and Nature (ISPN)²⁰. The adaptation project or program must be aligned with national priorities considered by the Fund’s Board²¹.

Expressions of interest can be submitted even in the absence of a public call and are accepted at any time.

Due to its focus on community resilience, protection of vulnerable ecosystems, and strengthening adaptive infrastructure, this Fund has limited direct connections with mining sector activities.

However, access cannot be ruled out, provided that projects are clearly aligned with the Fund’s objectives and demonstrate tangible adaptation benefits, including positive impacts on infrastructure, communities, and ecosystems.

¹⁸ Raw Materials and Climate Change: Promotion of low-carbon, environmentally sustainable, and resource-efficient methods in raw material production. International Climate Initiative (IKI). Available at: <https://www.international-climate-initiative.com/PROJECT1365-1>

¹⁹ Apply for Funding. Adaptation Fund (AF). Available at: <https://www.adaptation-fund.org/apply-funding/>

²⁰ MMA publishes the final list of entities nominated to serve as implementing entities of the Adaptation Fund. Ministry of the Environment (MMA), Government of Brazil. Available at: <https://www.gov.br/mma/pt-br/noticias/mma-divulga-re-sultado-final-das-entidades-a-serem-indicadas-como-implementadoras-do-fundo-de-adaptacao>

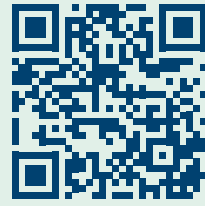
²¹ Project Funding. Adaptation Fund (AF). Available at: <https://www.adaptation-fund.org/apply-funding/project-funding/>



HOW TO ACCESS?

FUNDO DE ADAPTAÇÃO
(ADAPTATION FUND – AF)

CLICK [HERE](#) OR SCAN THE QR CODE BESIDE.



There is no specific website for Brazil.

The funds mentioned above have shown alignment and applicability to climate-related projects, including those linked to the mining sector.

Some, such as the Adaptation Fund (AF), address only a fraction of activities related to this sector and indicate that, to access these resources, projects must deliver mutual benefits for both communities and ecosystems.

Another determining factor is the maturity level of the project itself. Pilot projects stand out for their innovative potential, particularly under the Multilateral Investment Fund (MIF) – BID Lab, which is relevant in contexts such

as the development of disruptive technologies that can later be scaled up.

It is also worth noting the existing gap in climate funds that are either specifically designed for, or more closely aligned with, mineral resource extraction activities, given the sector's mitigation and adaptation needs.

Furthermore, there is a noticeable scarcity of Brazilian mining companies that have accessed these funds for sectoral development projects. In fact, research has not identified concrete initiatives or direct relationships between the mining sector and funds such as the Adaptation Fund or BID Lab.



Table 1: Fundos Climáticos (resumo)

Fund	Objective	Designated Authority / Representative in Brazil (DA)
Green Climate Fund (GCF)	Invest in projects for emission reduction and climate adaptation in developing countries	Ministry of Finance (DA)
Global Environment Facility (GEF)	Projects related to biodiversity, climate change, international waters (shared aquatic ecosystems), land degradation, chemicals, and waste	Ministry of Finance acts as Operational Focal Point (OFFP)
Strategic Climate Fund (SCF) – part of CIF	Pilot projects with innovative approaches	Ministry of Finance acts as Focal Point
Clean Technology Fund (CTF)	Large-scale projects for emission mitigation	
Multilateral Investment Fund (MIF) / BID Lab	Innovation in solutions for inclusion, green and resilient economy in Latin America and the Caribbean	Inter-American Development Bank (IDB)
International Climate Initiative (IKI)	Climate and biodiversity protection in developing and emerging countries	German implementing agencies in Brazil: GIZ Brazil, KfW Development Bank. Other multilateral organizations may also act as implementers
Adaptation Fund (AF)	Projects or programs focused on climate adaptation aligned with national priorities	Brazilian Biodiversity Fund (FUNBIO) and Institute for Society, Population, and Nature (ISPN)

Applicability to the Mining Sector

Main Fund Page in Brazil

No projects of this type in Brazil, but the fund has made investments in the sector in other regions

<https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundo-verde-do-clima>

Has developed projects in this area and is applicable to mining

<https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundo-global-para-o-meio-ambiente-gef>

Applicable to environmental restoration and energy transition in mining

<https://www.gov.br/fazenda/pt-br/assuntos/fundos-internacionais-de-desenvolvimento/fundos-de-investimento-climatico-climate-investment-funds-cif>

Possible application in projects aligned with objectives of mitigation, adaptation, habitat preservation and restoration, and biodiversity conservation

<https://bidlab.org/en>

Strictly focused on adaptation projects with synergistic benefits for infrastructure, communities, and ecosystems

<https://www.international-climate-initiative.com/en/>

Estreitamente voltado a projetos de escopo de adaptação com benefícios sinérgicos com infraestrutura, comunidades e ecossistemas

<https://www.adaptation-fund.org/>

4. CLIMATE FINANCE FOR BRAZIL

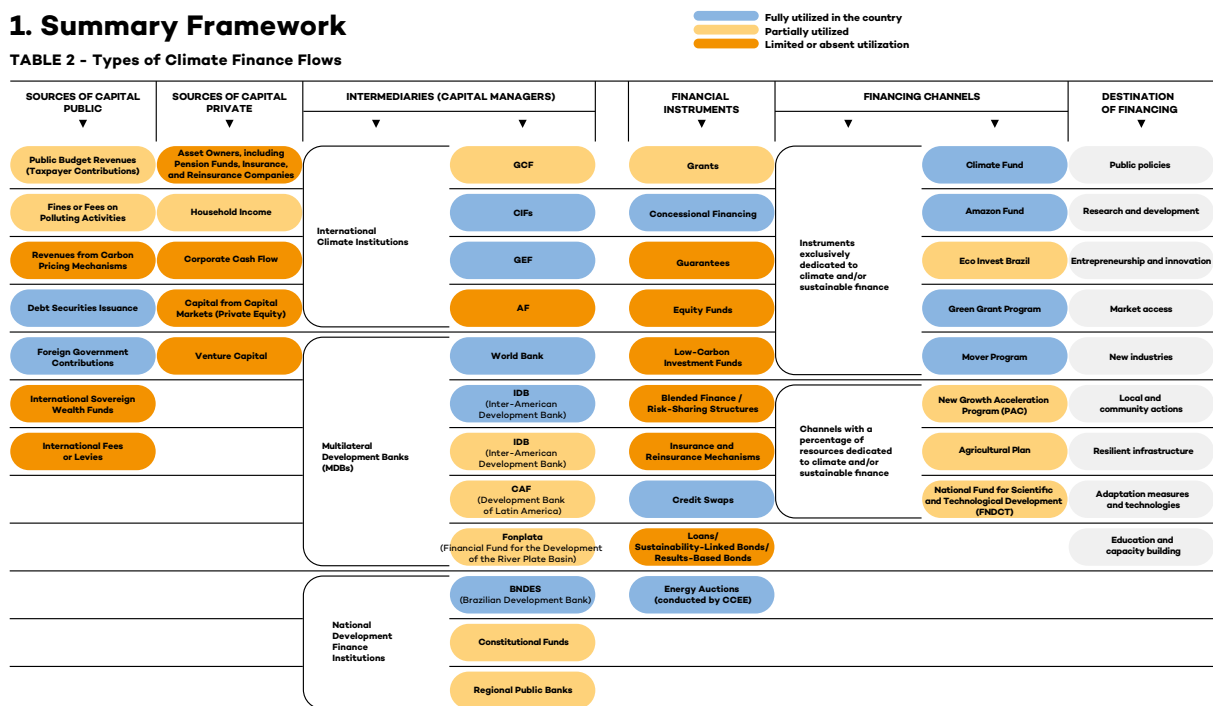
The World Economic Forum estimates that Brazil will need to mobilize approximately BRL 1 trillion in investments by 2030 to achieve its greenhouse gas (GHG) reduction targets, as established in the previous Nationally Determined Contribution (NDC) (GHG reduction of 37% by 2025 and 50% by 2030). This amount is expected to be even higher, considering the increased climate ambition outlined in the most recent versions of the

NDC (GHG reduction of 48% by 2025 and 53% by 2030).

A survey conducted by the Climate Policy Initiative (CPI), in partnership with PUC-Rio (2025), indicates that international climate finance grew by 28% across all regions of the world, increasing from USD 158 billion in 2019/2020 to USD 203 billion in 2021/2022.

1. Summary Framework

TABLE 2 - Types of Climate Finance Flows



Source: Talanoa Institute, 2024

In Brazil, the average annual flow of international climate finance reached **BRL 26.6 billion** in the 2021/2022 period — an 84% increase compared to 2019/2020. Of this amount, **58% originated from international public institutions**, while the **international private sector** accounted for 42% (BRL 11.2 billion/year). The volume mobilized by the private sector was four times higher than in the

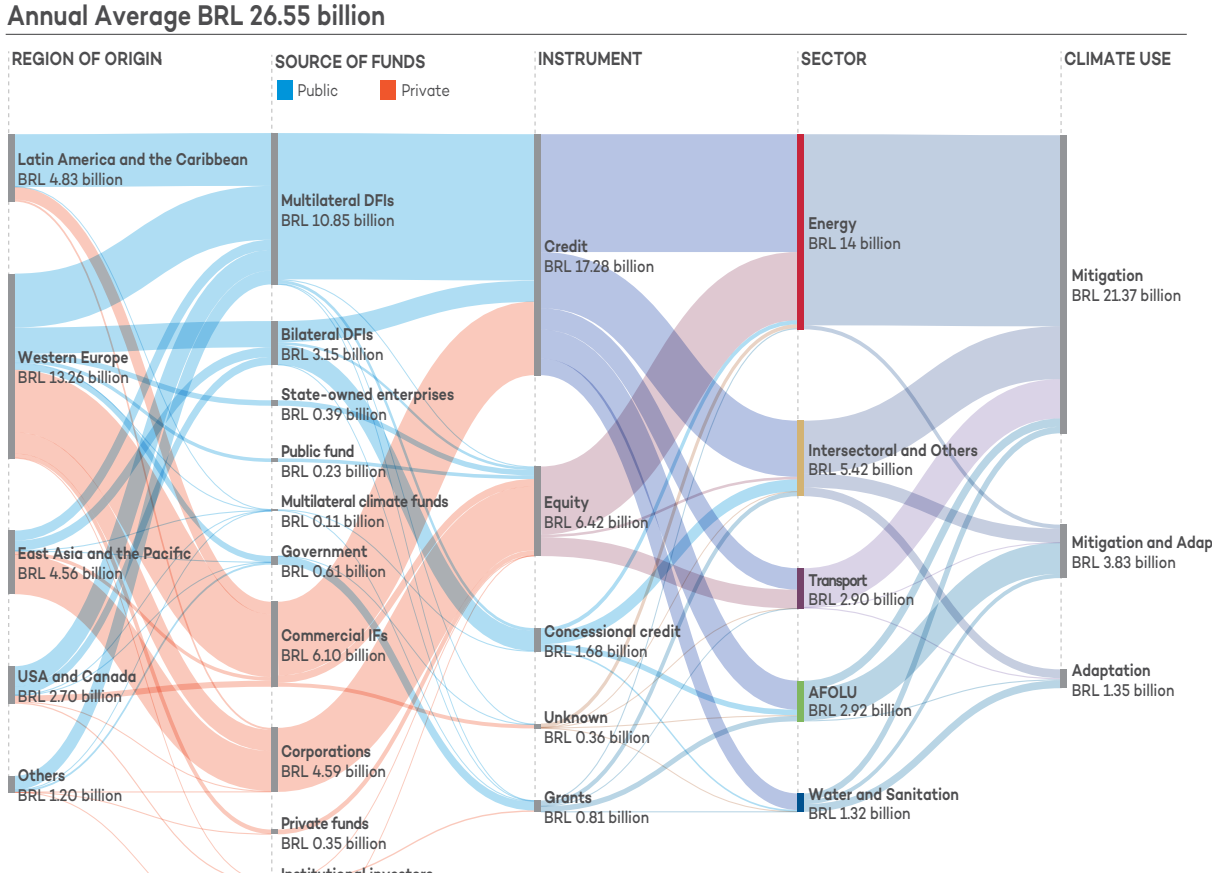
previous two-year period, with **commercial financial institutions responsible for 55%** of this total (CPI/PUC-Rio, 2025).

Finance exclusively dedicated to climate mitigation represented 80% of the mapped amount during the period, equivalent to BRL 21.4 billion/year.

The energy sector concentrated 53% of the mapped resources in 2021/2022, with a strong emphasis on renewable energy generation, which led the investments. Solar

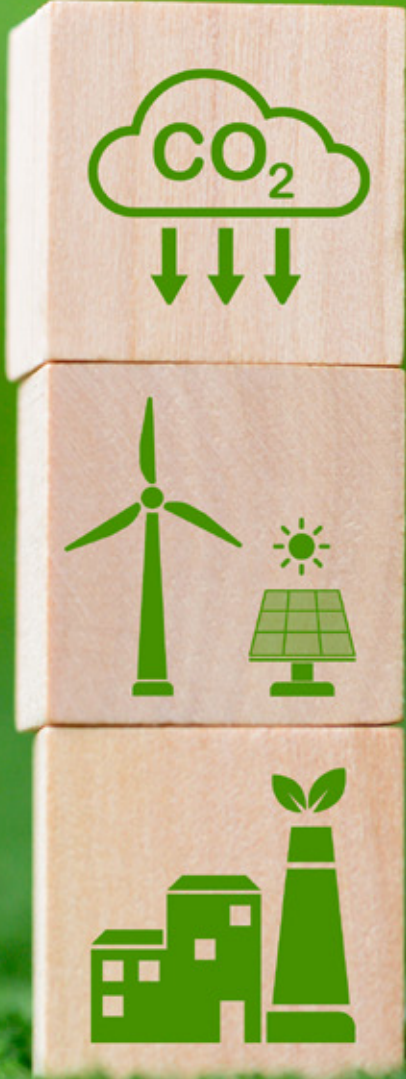
power generation accounted for 57% of the sector's financing (BRL 7.9 billion/year), while wind power represented 24% (BRL 3.3 billion/year) (CPI/PUC-Rio, 2025).

Figure 1: International Climate Finance for Brazil, 2021–2022



Note: Values classified as "Unknown" refer to financing flows for which it was not possible to identify the responsible financial actor and/or the financial instrument used due to limitations or absence of information in the available data.
 Source: CPI/PUC-Rio based on data from BNEF (2024), Climate Funds Update via ODI/HBF (2024) and IJ Global (2024), OECD-DAC Creditor Reporting System (2024), World Bank – PPI (2024), and surveys with DFIs¹² and IDFC members (CPI 2024), 2025.

12 These institutions share detailed information about their portfolios with the CPI, on the condition that it will be used exclusively for aggregate analyses and reporting. Data ownership remains with the institutions that provided it, and the CPI is not authorized to publicly disclose institution- or project-specific data.



5. THE RELEVANCE OF CLIMATE FINANCE FOR THE MINING SECTOR

Mining is a cornerstone of the Brazilian economy. In 2024, the sector generated BRL 271 billion in revenue, contributed approximately BRL 93.4 billion in taxes, and directly employed over 221,000 people, in addition to supporting a value chain of 2.2 million workers (IBRAM, 2025). Mineral exports accounted for roughly 47% of Brazil's trade balance, with iron ore representing about 68% of total mineral exports in 2024 (IBRAM, 2025).

This economic significance underscores the strategic urgency of transitioning the sector toward a low-carbon energy matrix.

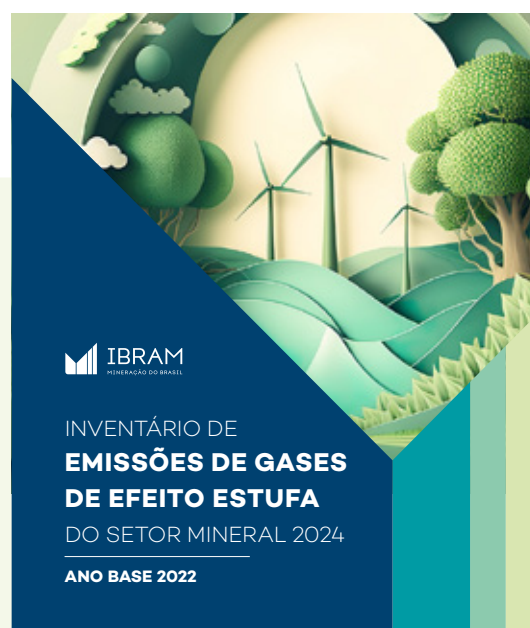
Although the mining sector currently represents only 0.5% of Brazil's total emissions (IBRAM, 2024), it is actively expanding its emissions monitoring across scopes 1, 2, and 3, aiming to identify effective and efficient decarbonization pathways.

As the representative body of the Brazilian mining sector, IBRAM has undertaken efforts to provide a comprehensive assessment of sectoral decarbonization potential through initiatives such as the **2024 Mineral Sector Greenhouse Gas Emissions Inventory** (base year 2022), the Marginal Abatement Cost Curve (MACC), the study "The Essential Minerals Coalition", coordinated under the Global Taskforce convened by the COP30 Presidency, and ZeroCarbon Mining — a pioneering initiative led by the Mining Hub in partnership with IBRAM, the UK Government, 11 mining companies, and research institutions, aimed at developing a robust sectoral plan for mining decarbonization in Brazil.

These initiatives have identified a range of technological pathways with significant

emission reduction potential, including expanded biofuel use, fleet electrification, renewable energy integration, automation, and energy recovery.

However, the large-scale deployment of these technologies remains constrained by factors such as cost. Consequently, access to targeted climate finance is essential to implement mitigation measures that are both technically effective and economically viable.



For further information, scan the QR Code beside



THE ROLE OF BIOFUELS IN MINING DECARBONIZATION

One of the most promising pathways for short- and medium-term decarbonization in the mining sector is the use of biofuels — such as biodiesel, ethanol, and biomethane — particularly given the technological and economic barriers that still limit large-scale electrification.

Off-road trucks, heavy machinery, auxiliary equipment, and remote power generation systems can operate on biodiesel, biomethane, or renewable diesel blends, significantly reducing CO₂ emissions without requiring major mechanical modifications.

To enable large-scale adoption, the sector identifies the need for regulatory improvements and logistical infrastructure, factors that could enhance climate finance opportunities in this sector.

Key challenges to be addressed include:

- **Availability and logistics:** ensuring a stable, competitive, and sustainable supply of biofuels in remote mining regions.
- **Standardization and quality:** ensuring technical specifications that guarantee equipment performance and durability.



Furthermore, it is important to highlight that the Brazilian mining sector will also face potentially significant impacts from climate change:

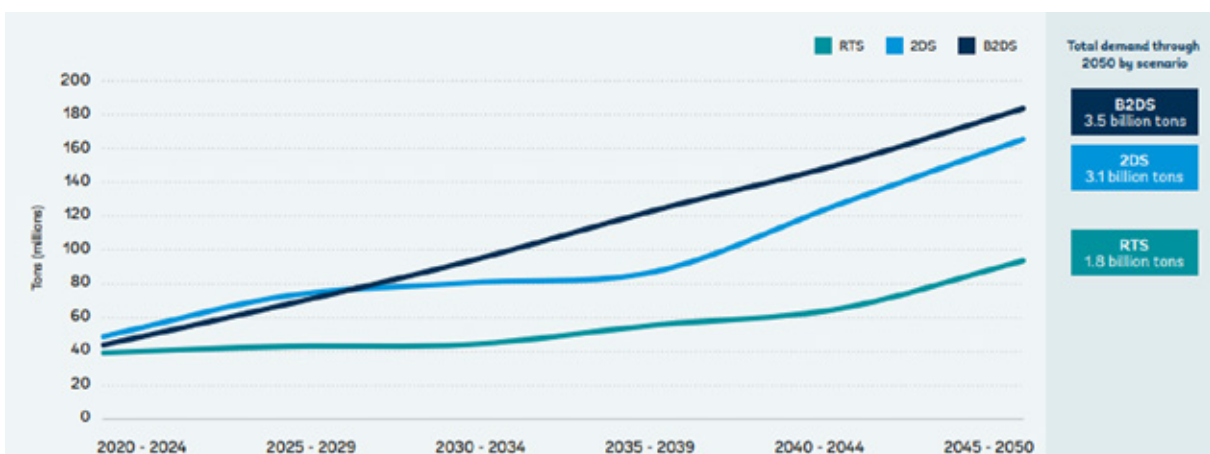
- i. damage to operational infrastructure;
- ii. challenges in the supply of energy, water, and raw materials; and
- iii. issues in logistics and production outflow.

Therefore, the use of climate-targeted resources for adaptation measures, both at the

sectoral and broader levels, is also necessary. In addition, the sector is considered strategic in supporting the decarbonization of other economic sectors through the supply of essential minerals for low-carbon technologies.

Sectors such as transport, construction, and renewable energy rely on mineral-intensive infrastructure. Without the adequate and sustainable provision of these inputs, electrification and the energy transition cannot progress (Figure 2).

Figure 2: Average Annual Mineral Demand up to 2050 – IEA Energy Technology Perspectives Scenarios



Note: 2DS = 2-Degree Scenario; B2DS = Beyond 2 Degrees Scenario; RTS = Reference Technology Scenario.

“Minerals” refers to the 17 minerals included in this analysis plus steel, but excluding concrete. Steel was included due to the magnitude of demand for the alloy driven by energy technologies.

The higher mineral demand under the 2DS, compared to the B2DS before 2030, can be explained by the greater generation capacity projected by the IEA as required under the 2DS relative to the B2DS. This is particularly true for solar photovoltaic energy in the 2DS during those time periods. Subsequently, the plateau in mineral demand under the 2DS is caused by a relatively slower penetration of renewable generation, followed by a rapid increase in storage capacity from 2035 onward.

Source: World Bank, 2020

Domestic production of strategic minerals reduces dependence on imports and enhances the resilience of green value chains — an

CENÁRIO 2DS (IEA)

- Solar photovoltaic energy will account for the largest share of aluminum demand from energy technologies (87%);
- Solar photovoltaic and wind energy combined account for 74.2% of total copper demand;
- Batteries are responsible for all graphite and lithium demand in this analysis (World Bank, 2020).

increasingly relevant factor in international industrial and trade policies (Table 1).

Table 2: Produção e reservas brasileiras de minerais estratégicos

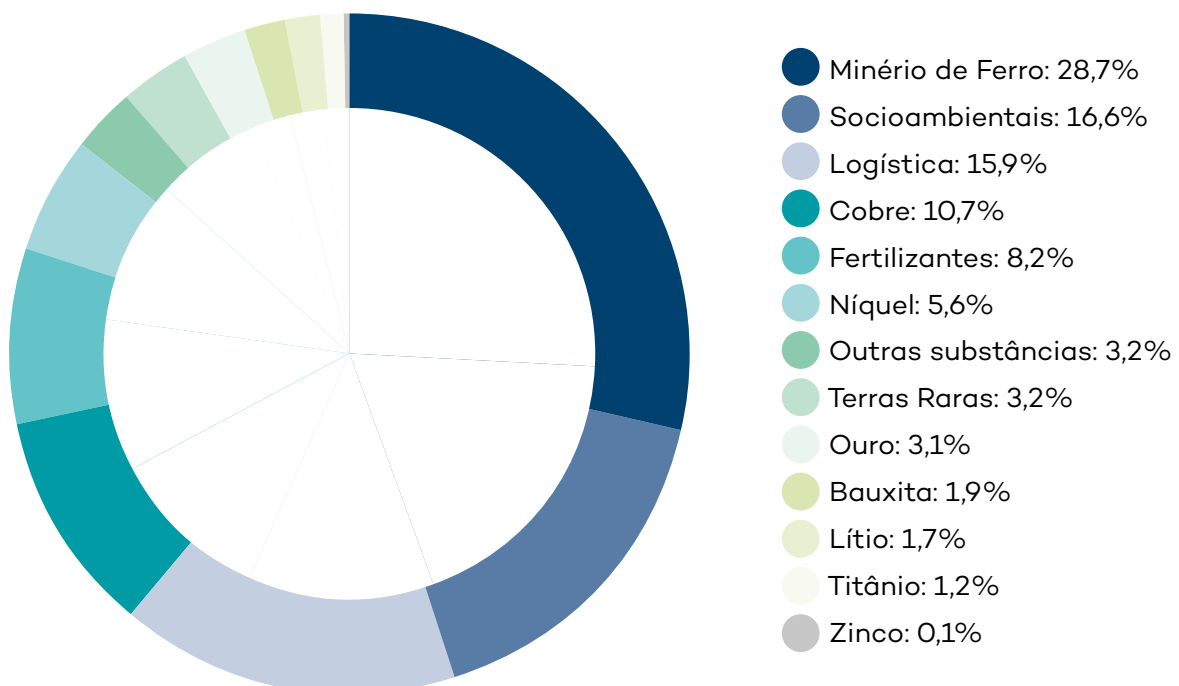
Mineral	Reserves 2024 (t)	World (t)	Share (%)	Ranking
Lithium	1.370.000*	28.000.000	4,89%	7º
Copper	11.200.000	1.000.000.000	1,12%	14
Nickel	16.000.000	130.000.000	12,31%	9
Niobium	16.000.000	17.000.000	94,12%	1
Rare Earth Elements	21.000.000	110.000.000	19,09%	10
Cobalt	70.000	11.000.000	0,64%	—
Vanadium	120.000	19.000.000	0,63%	4
Graphite	74.000.000	280.000.000	26,43%	4
Silicon	390.000 (2023)	9.000.000 (2023)	4,33% (2023)	4
Manganese	270.000.000	1.900.000.000	14,21%	7
Aluminum (Bauxite)	2.700.000.000	30.000.000.000	9%	4

Source: Ministry of Mines and Energy. Guide for Foreign Investors in Critical Minerals for the Energy Transition in Brazil, 2024.

The mineral sector projects investments of US\$ 68.4 billion by 2029, of which 23.2%* are directed toward minerals essential for

the energy transition, reinforcing Brazil's strategic role in this context.

Figure 3: Breakdown of Projected Investments between 2025 and 2029 by Area or Mineral Type



ESSENTIAL RAW MATERIALS FOR ECONOMIC DECARBONIZATION

- **Copper:** for electrical grids, electric motors, and solar panels.
- **Lithium, Nickel, Cobalt, and Graphite:** for electric vehicle batteries and energy storage.
- **Rare Earths:** for wind turbines, motors, and efficient electronics.
- **Aluminum:** for lightweight structures in transportation and renewable energy.
- **Silicon:** for solar panels.
- **Iron Ore:** directly linked to steel production, which is an essential input for virtually all technologies and infrastructure required for a cleaner energy system.



6. INTERNATIONAL INITIATIVES

6.1 European Commission

In June 2025, the European Commission published a decision recognizing **13 projects located outside the European Union** as “Strategic Projects” under the **Critical Raw Materials Act (CRMA)**. These projects were identified as relevant to strengthening the security of the supply chain for critical raw materials for the EU and are expected to benefit from facilitated access to financing, among other regulatory and institutional advantages. These initiatives complement the **47 projects already selected within European territory**.

Among the 13 recognized international projects, the **only Brazilian project** was the **São Miguel Paulista (SMP) Nickel and Cobalt Refinery Restart Project**, focused on supplying nickel (with specifications suitable for battery applications) and cobalt.

The process for submitting projects for recognition as “Strategic Projects” and access to associated benefits remains open, with a **new evaluation round scheduled for 2025**.

Inclusion in this select group grants projects **priority access to financing**, including dedicated meetings with the CRMA financial subgroup — which brings together the **European Investment Bank**, the **European Bank for Reconstruction and Development**, **national banks**, and **private investors** — with the goal of structuring investment packages.

These supports are coordinated with **Global Gateway**, an EU initiative aimed at promoting **intelligent, sustainable, and secure connections** in areas such as energy, transport, digitalization, health, education, and research on a global scale.

Selection criteria reflect alignment with EU policies and sustainability standards, including the facilitation of contracts with European buyers. Inclusion of a project on the European Commission’s official list enhances its visibility among investors and policymakers, contributing to its attractiveness and viability.

6.2 European Investment Bank (EIB) in Partnership with BNDES

The European Union is highly dependent on **critical and strategic minerals** to ensure its security and to enable the continent’s **green transition**.

The EU has shown growing concern over **China’s dominance** of strategic supply chains, such as **rare earths supply and lithium processing**. In this context, the EU’s priority has been to diversify its supply sources and **mitigate**

geopolitical risks, with particular focus on **Latin American countries**, such as Brazil.

In this effort, the EIB announced a new financial and advisory support strategy targeting critical raw materials projects — including critical and strategic minerals — with planned investments of approximately €2 billion in 2025, both in European countries and international partners.

This strategy aims to ensure preferential access to strategic resources and reduce European dependence on competitors such as China in the global critical minerals market.

In 2024, BNDES and the European Investment Bank (EIB) began discussions on the potential participation of the European financial institution in the Brazilian fund focused on critical minerals²².



22 BNDES News Agency. BNDES and EIB conclude new €300 million line and discuss green hydrogen investments.



7. NATIONAL INITIATIVES

Brazil has intensified the mobilization of international resources for the **climate agenda through the Ecological Transformation Plan (PTE)**, recognizing that external capital plays a strategic role in complementing domestic resources — both public and private — needed for the transition to a low-carbon economy.

The PTE aims to restructure the economy to promote sustainable development and support the implementation of the Climate Plan. To this end, it prioritizes financial, regulatory, and fiscal mechanisms across the axes of sustainable finance, bioeconomy, agri-food, technology, energy transition, circular economy, and green adaptation infrastructure.

PTE instruments aimed at promoting the implementation of the Climate Plan include:

1. **Sustainable Sovereign Bonds:** Debt instruments issued by governments in the international market to finance projects that generate positive environmental and/or social impacts. With annual issuance prospects, Brazil has already issued two sustainable sovereign bonds: in November 2023 and June 2024, both valued at USD 2 billion. Part of the proceeds will be allocated to the National Climate Fund (Fundo Clima), focusing on renewable energy and clean transportation.
2. **Climate Fund (Law No. 12,114/2009):** Considered one of the main instruments for financing Brazil's ecological transformation, the fund operates in two modalities: (a) non-reimbursable (managed by MMA) and (b) reimbursable (operated by BNDES).

The Fund was restructured in 2023 to expand new financing lines aimed at accelerating renewable energy, promoting sustainable urban mobility, encouraging

energy efficiency in strategic sectors, developing clean technologies, and protecting biodiversity. In 2024, approved resources for the fund totaled BRL 10.2 billion.

3. **Eco Invest Brazil Program:** Seeks to attract long-term external private investments and reduce the cost of capital for ecological transformation. Coordinated by the Ministry of Finance, Ministry of the Environment, and Central Bank, it operates through auctions for qualified financial institutions, which assume all operational risks.

The program also foresees that BNDES, with authorization from the National Monetary Council (CMN), provides financing lines aimed at liquidity and project structuring.

4. **Brazilian Sustainable Taxonomy:** will establish a classification system defining activities, assets, and project categories that contribute to climate, environmental, and social objectives through specific criteria, with the aim of providing a common terminology for companies, financial institutions, investors, regulators, governments, and other stakeholders. The goal is for this classification system to guide investors and companies in selecting investments that deliver tangible sustainability results in practice.

5. **Brazil Platform for Climate Investments for Ecological Transformation (BIP):** The BIP aims to boost financing for projects structured around three key sectors: a. Natural Climate Solutions; b. Industry and Mobility; and c. Energy.

Coordinated by the Ministry of Finance, in partnership with BNDES and other ministries, the platform will connect Brazilian projects to an extensive network of

financiers to help scale the mobilization of public and private resources, including the strategic and catalytic use of public capital to attract private investment.

In a preliminary analysis, 16 projects approved under the platform represent approximately USD 22.6 billion in potential investments (the table below lists these projects).

Table 3: List of Pre-Approved Projects Listed on the BIP Platform

Company	Area	Project	Potential Investment
Atlas Agro	Agricultural Bioinputs and Green Fertilizers	Brazil's first industrial-scale green fertilizer plant	USD 1.15B
Ambipar Group / IPE	Native Vegetation Restoration	Restoration of 6,000 hectares creating ecological corridors in the Atlantic Forest	USD 95M
Biomás	Native Vegetation Restoration	Restoration of 14,000 hectares of vegetation in the Amazon and Atlantic Forest	USD 136M
New Ag Natural Capital	Regenerative Agriculture	Cocoa plantation in the Cerrado region of Bahia aiming to recover native vegetation	USD 780M
Acelen	Sustainable Fuels	Project to produce HVO and SAF from macaúba	USD 3.5B
Serra Verde Mining	Strategic Minerals	Expansion of an ion clay mine for rare earth carbonate extraction	USD 1.05B
Centaurus Metals	Strategic Minerals	Production of high-grade Class 1 nickel in Pará	USD 370M
Meteoric Resources	Strategic Minerals	Development of low-emission extraction methods for rare earth elements	USD 425M
Vale / Green Energy Park	Low-Carbon Steel/ Aluminum	Construction of industrial hubs for green hydrogen and Hot-Briquetted Iron (HBI) production	USD 2.5B
Stegra	Low-Carbon Steel/ Aluminum	Production of Hot-Briquetted Iron (HBI) aimed at decarbonizing the steel industry	USD 2.9B
Fortescue	Low-Carbon Hydrogen	Establishment of a green hydrogen plant in Pecém, Ceará	USD 3.0B

Company	Area	Project	Potential Investment
Casa dos Ventos / Total Energies	Low-Carbon Hydrogen	Establishment of a green hydrogen plant for green ammonia production	USD 5B
Circlua	Low-Carbon Cement	Production of activated clay as a cementitious supplement to replace clinker	USD 580M
Riograndense Oil Refinery	Sustainable Fuels	Hydrogen generation for the production of SAF and RD from winter oilseeds in crop rotation	USD 950M
The Green Branch	Nature-Based Solutions and Bioeconomy	Restoration of 5,000 hectares of the Atlantic Forest	USD 30M
Future Climate Group	Nature-Based Solutions and Bioeconomy	Restoration of at least 4,000 hectares of the Atlantic Forest and 1,000 hectares of Southern Amazon	USD 110M

Ministry of Finance, 2025 - <https://www.gov.br/fazenda/pt-br/acao-a-informacao/acoes-e-programas/transformacao-ecologica/bip>

7.1 Sources of Financing and Initiatives for Mining

7.1.1 BNDES Strategic Minerals Investment Fund

Launched in 2024, the **Strategic Minerals Investment Fund (FIP)** in Brazil will support mineral projects for **energy transition, decarbonization, and food security** (through minerals critical to the agri-food chain). These projects may involve **junior companies** (focused on the discovery and exploration of new mineral deposits) or companies in the development stage, with the fund serving as a means to advance them to the production phase.

It is estimated that the fund will support **15 to 20 investee companies**, with a minimum of **20% of its investments allocated to exploration-stage projects**, while the remainder may be directed toward assessment and development.

The BNDES states that strict ESG standards will be required to access the fund, including positive impacts on local communities, reforestation, efficient management of natural resources, and reduced GHG emissions.

The initial expectation was to attract national and international investors to reach a total of BRL 1 billion, with the fund already including up to BRL 250 million from BNDESPar, a subsidiary focused on the capital markets, and up to BRL 250 million contributed by Vale (with minimum investments of BRL 100 million from each). In July 2025, BNDES announced that it had leveraged BRL 3 billion for project implementation in the second half of 2025.

Structure: In the format of a Private Equity or Venture Capital Investment Fund (FIP), it will make equity investments in companies, acquiring ownership stakes and sharing the risks and returns of the projects. The fund will

be managed by a consortium of Ore Investments and JGP BB Asset, companies with established market experience (a selection criterion), which will be responsible for governance and risk mitigation²³.

Stakeholder	Role in the Strategic Minerals Fund
BNDESPAR	Anchor investor (subscription of shares), co-creator of the fund, catalyst for private investments, and guarantor of alignment with public policies and national development strategies.
Vale S.A.	Anchor investor (subscription of shares), co-creator of the fund, strategic partner with extensive expertise in the mining sector, aligned with the long-term vision of the relevance of critical minerals.
Ministry of Mines and Energy (MME)	Institutional and strategic support, ensuring the fund aligns with government priorities for the energy transition and food security in the mining sector.
Ore Investments and JGP BB Asset (Management Consortium)	Professional and operational management of the fund, responsible for selecting and investing in target companies, raising additional capital, and pursuing both profitability and strategic impact.

Source: Own elaboration.

Target companies: small and medium-sized enterprises with projects focused on research, development, and the implementation of new mines. Brazilian companies, with foreign companies required to have at least 90% of their operations in Brazil.

Private company investments were expected to begin in March 2025 according to the schedule, but there have been no announcements that the fund has started operations.

7.1.2 BNDES and FINEP Public Call

In addition to the Strategic Minerals FIP, BNDES also launched, together with FINEP, a public call to promote projects for the development of the strategic minerals value chain. Focused on Brazilian companies operating in productive chains for energy

transition and decarbonization, the call included companies engaged in research, technological development, and innovation related to the production and commercialization of materials. The call was carried out within the framework of the NIB Rein-

²³ BNDES and Vale announce the winner that will manage the Strategic Minerals Fund. <https://agenciadenoticias.bndes.gov.br/industria/BNDES-e-Vale-anunciam-vencedor-que-vai-gerir-o-fundo-de-minerais-estrategicos/>

dustrialization Policy, with attention to its Mission 5 – Bioeconomy, decarbonization, and energy transition and security to ensure resources for future generations.

A total of 56 business plans were selected for the next phase, the preparation of the Joint Support Plan, totaling BRL 45.8 billion in financing requests²⁴. Projects will be selected in subsequent phases. The budget is BRL 5 billion²⁵, meaning not all projects will have access to these resources. Furthermore, it was suggested that some projects could request additional funding sources, such

as the Climate Fund and financing through international cooperation agencies.

The submitted plans then undergo a selection process to identify the most suitable financial instruments available from BNDES and FINEP for each case, expected to be completed by August 2025. Available instruments include credit lines, equity participation, non-reimbursable funds (only for cooperative projects between companies and technological institutions), and economic grants.

7.1.3 Guide for Foreign Investors in Critical Minerals

In March 2025, the Ministry of Mines and Energy (MME) published the second edition of the Guide for Foreign Investors in Critical Minerals for the Energy Transition in Brazil, aiming to attract international investment in the mining sector. The guide highlights the attractive points of Brazil for investment²⁶.

Some of the strengths that foster foreign investor interest in Brazil include: types

of mineral reserves, ESG taxonomy under development to attract sustainable investments, a promising business environment, infrastructure, and government support for such initiatives.

The guide also describes the government entities involved in the sector, the administrative process related to mining activities, and environmental licensing procedures.

7.1.4 Infrastructure and Incentivized Debentures

Incentivized debentures, created by Law No. 12,431/2011, and infrastructure debentures, established by Law No. 14,801/2024, significantly expand the set of instruments available in the market to raise funds for a substantial volume of investments over short-, medium-, and long-term horizons.

In the mining sector, there is interest in revising the rules applicable to infrastructure incentivized debentures in order to expand the list of eligible minerals.

This measure could unlock significant investments in operational modernization, logistics,

24 Finep and BNDES complete evaluation of proposals from the call for the transformation of strategic minerals (56 projects – BRL 45.8 billion). <http://www.finep.gov.br/en/noticias/todas-noticias/6980-finep-e-bndesconcluem-avaliacao-de-propostas-da-chamada-de-projetos-de-transformacao-de-minerais-estrategicos-56-projetos-r-45-8-bi?-tFonte=0>

25 New public notice encourages the transformation of strategic minerals for energy transition and decarbonization. <https://www.gov.br/mcti/pt-br/acompanhe-o-mcti/noticias/2025/01/novo-edital-incentiva-a-transformacao-de-minerais-estrategicos-para-a-transicao-energetica-e-descarbonizacao>

26 MME publishes new edition of the Guide for Foreign Investors in Critical Minerals for Energy Transition. <https://www.gov.br/mme/pt-br/assuntos/noticias/mme-publica-nova-edicao-do-guia-do-investidor-em-minerais-criticos-para-transicao-energetica-1>

and sustainability, enabling more projects to access financing at reduced costs.

Expanding this access creates conditions for the adoption of low-carbon technologies,

such as ethanol, biodiesel, and biomethane, as well as for the implementation of more efficient transportation and processing systems — thereby contributing to competitiveness gains and emission reductions.



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CLIMATE FINANCE AND MINING

SECTOR POSITIONING



*G r e e n p a p e r **



Mining is one of the pillars of the Brazilian economy. In 2024, the sector recorded revenues of BRL 271 billion and generated over 221,000 direct jobs (IBRAM, 2025).

Mineral exports accounted for approximately 47% of the country's trade balance, with iron ore standing out, representing around 68% of Brazil's total mineral exports in 2024 (IBRAM, 2025).

Given its significant economic relevance, it is even more urgent to develop a climate strategy for the mining sector that integrates the pursuit of competitiveness with the re-

duction of greenhouse gas emissions and adaptation to the increasing risks associated with extreme weather events.

Moreover, the sector is considered strategic for supporting the decarbonization of other economic sectors through the supply of essential minerals for low-carbon technologies.

Sectors such as transportation, construction, and renewable energy depend on mineral-intensive infrastructure. Without adequate and sustainable supply of these inputs, electrification and the energy transition cannot progress.

MATÉRIAS-PRIMAS INDISPENSÁVEIS PARA DESCARBONIZAÇÃO DA ECONOMIA

- **Copper:** for electrical grids, electric motors, and solar panels.
- **Lithium, nickel, cobalt, and graphite:** for electric vehicle batteries and energy storage.
- **Rare earths:** for wind turbines, motors, and efficient electronics.
- **Aluminum:** for lightweight structures in transportation and renewable energy, batteries, energy transmission systems, and light construction.
- **Silicon:** for solar panels.
- **Iron ore:** directly linked to steel production, which is an essential input for virtually all technologies and infrastructures needed for a cleaner energy system.

* **Green papers** ou "livros verdes" são documentos publicados por uma instituição, destinados a promover uma reflexão sobre um assunto específico. Convidam, assim, as partes interessadas (organismos e particulares) a participar em um processo de consulta e debate, com base nas propostas que apresentam.

1. CLIMATE FINANCE FOR MINING AND ITS CHALLENGES

The World Economic Forum estimates that Brazil will need to mobilize approximately BRL 1 trillion in investments by 2030 to achieve its greenhouse gas (GHG) emission reduction targets (WEF, 2023).

Attracting these investments requires robust financing structures, including the development of new financial instruments such as green, social, sustainable, and sustainability-linked bonds.

In this regard, **the mining sector commends the Brazilian government for structuring the Ecological Transformation Plan (PTE)**, which seeks to establish a new sustainable development model aligned with Brazil's climate commitments.

The PTE provides relevant instruments to boost climate finance in Brazil, including the Brazilian Sustainable Taxonomy, the Eco Invest Brazil program, Sustainable Sovereign Bonds, the Climate Fund, the Brazilian Platform for Climate Investments for Ecological Transformation (BIP), and the SBCE – Brazilian Emissions Trading System.

However, **despite the government's efforts in developing instruments aimed at the transition to a low-carbon economy, significant challenges remain in attracting investments**, such as:

- Limited access to financing due to perceived high risk;
- High CAPEX and regulatory uncertainty, especially in light of the carbon market implementation;
- Difficulty in measuring climate impacts, requiring robust GHG measurement, reporting, and verification (MRV) systems;
- Simultaneous pressures to increase production and reduce emissions, demanding integrated technological and financial solutions.

Furthermore, **the expansion of mineral production and the adoption of renewable fuels face significant regulatory, logistical, and economic challenges.** On the regulatory front, obstacles such as costly and slow environmental licensing limit the progress of strategic projects. Overcoming these bottlenecks requires greater institutional capacity to modernize and enhance regulatory management.

Added to this is the socio-environmental complexity of mining activities, which demands the adoption of ESG criteria to ensure the viability and legitimacy of projects.

POTENTIAL AREAS FOR DECARBONIZATION AND USE OF CLIMATE FINANCE IN MINING:

- Replacement of diesel with biodiesel, including large-scale use beyond mandatory blends (e.g., B30 to B100).
- HVO, electrification, or hydrogen in fleets.
- Installation of renewable energy in operations (solar, wind, biomass).
- Energy efficiency in processes (milling, crushing, internal transportation).
- Carbon capture, utilization, and storage technologies (CCUS).
- Emission reduction in rail and maritime transport.
- Rehabilitation of degraded areas using nature-based solutions.
- Automation of ventilation and pumping systems.
- Optimization of electric motors.

2. MINERAL SECTOR DEMANDS

Given its strategic role, the sector advocates for an integrated approach that recognizes mining as a crucial activity for decarbonization and, therefore, eligible to access climate finance mechanisms — both nationally and internationally.

Access to Financial Instruments and Incentives

To enable the energy transition, it is essential to ensure access to credit lines with more attractive conditions. Funds dedicated to climate finance — whether focused on mitigation and/or adaptation — as well as green credit lines, guarantees, and blended finance instruments, should include mining projects in their portfolios.

Moreover, it is important to integrate the mining sector into public energy transition

policies, such as PATEN (Energy Transition Acceleration Program), which aims to promote the use of renewable sources and reduce dependence on fossil fuels through mechanisms that facilitate financing of sustainable development projects related to the energy transition.

Brazilian Sustainable Taxonomy

Mining is considered a strategic link in the transition to a low-carbon economy, provid-

ing critical minerals indispensable for clean technologies. However, for the sector to fully exercise its role, it is essential to recognize and promote its development.

The Brazilian Sustainable Taxonomy, as a strategic instrument to guide financing and investment flows toward economic activities aligned with the country's climate and development commitments, must adequately include the mining sector in the definition of its criteria.

By incorporating mining into the taxonomy, Brazil can not only drive modernization and decarbonization of the sector but also expand miners' access to green financial instruments, such as sustainable bonds, favorable credit lines, and climate guarantees. This inclusion will attract national and international capital to projects with high potential for positive impact, fostering competitiveness, innovation, and territorial development.

Integration with National Public Policies

The sector is still minimally incorporated into climate-focused public policies, limiting its contribution potential and access to suitable financing instruments and incentives. The absence of clear and specific guidelines for mining within national climate strategies may compromise efficient resource allocation, create regulatory asymmetries, and hinder the attraction of capital for decarbonization and adaptation projects.

An integrated approach — aligning the National Climate Plan, the Brazilian Emissions Trading System (SBCE), the Sustainable Taxonomy, climate funds, and industrial policies — is essential to ensure that investments are directed coherently.

Financing for Adaptation Actions

The mining sector acknowledges that addressing climate change requires an integrated approach that balances mitigation and adaptation measures. While climate discussions often focus on greenhouse gas emission reductions, the resilience of territories where mining operations are located is equally strategic. The increasing frequency of extreme events, water scarcity, and changing climate patterns already directly impact operational safety, productivity, and relationships with local communities and ecosystems.

In this context, climate finance is essential to enable investments in resilient infrastructure, climate risk management, environmental monitoring, and technologies that reduce emissions and promote efficient resource use.

Support for Innovation and Capacity Building

Transitioning to a low-carbon economy requires the Brazilian mining sector to innovate in its processes and continuously upskill its workforce. In this scenario, climate finance is strategic for enabling investments in research, development, and innovation (R&D&I), in addition to technical and institutional training programs focused on sustainability.

The modernization of the sector depends on technologies for

emission reduction, efficient resource use, waste reuse, and fleet electrification — advances that require long-term financing, often inaccessible through traditional channels. Therefore, the sector advocates for the expansion of mechanisms supporting innovation and capacity building, with special attention to small and medium-sized enterprises.

Regulatory Framework for Critical and Strategic Minerals

Considering Brazil's strategic role in the transition to a low-carbon economy, driven by its significant mineral wealth, productive capacity, and the importance of mining in this process, it is essential to create a specific regulatory framework for critical and strategic minerals. This instrument should recognize the particularities of these inputs, ensure legal certainty, attract investments, and streamline environmental licensing while preserving socio-environmental responsibility standards.

A clear, modern, and coordinated regulatory framework will **contribute to the systematic mapping** of reserves, the strengthening of local value chains, and the promotion of national content policies and value addition. Furthermore, it will enable greater alignment with international energy transition commitments, expanding access to climate finance opportunities, international cooperation, and Brazil's qualified integration into global low-carbon value chains.

Infrastructure Incentivized Debentures

Infrastructure incentivized debentures play a significant role in expanding the set of instruments available in the market to raise resources for investments across short-, medium-, and long-term horizons.

In this regard, the mining sector requests a review of the rules applicable to these debentures, aiming to expand the list of eligible minerals. This measure could unlock significant investments in operational modernization, logistics, and sustainability, facilitating access for more projects to financing at reduced cost.

Expanding this access creates conditions for adopting low-carbon technologies, such as ethanol, biodiesel, and biomethane, as well as implementing more efficient transport and processing systems — thereby contributing to competitiveness gains and emission reductions.

3. Conclusion

Brazilian mining is committed to expanding its strategic role as a driver of innovation and sustainability, contributing concretely to the transition to a low-carbon economy. The sector has advanced in greenhouse gas (GHG) mitigation, adaptation to extreme weather events, recycling of critical materials within a circular economy, and integration of renewable energy into its production processes.

For this momentum to be consolidated, it is essential that the country recognizes the strategic relevance of mining in the climate agenda, strengthening its capacity to attract green financing and foster technological innovation. Financial instruments—both public and private—must reflect this priority, ensuring the sector has access to more attractive credit lines, guarantees, and adequate incentives to support both mitigation and adaptation efforts.

In this context, COP30 represents a strategic opportunity to reposition Brazil at the center of global discussions on climate and sustainable development. As host country, Brazil will play a leading role in conducting the Baku-Belém Route, an initiative aimed at mobilizing climate financing at scale. In partnership with Azerbaijan, the country will be responsible for presenting a robust plan

to enable the annual allocation of USD 1.3 trillion by 2035, focusing on reforming the international financial system, expanding access to resources, and strengthening national capacities.

Thus, it is expected that the Brazilian mining sector will benefit from opportunities such as:

- Greater integration into global energy transition strategies, given the essential role of critical minerals such as nickel, lithium, copper, and rare earths;
- Expanded access to climate financing instruments, provided that projects are aligned with sustainable taxonomies and national plans, such as the Plano Clima;
- Participation in



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