SUSTAINABLE
BUSINESS
COP30

Legacy for Brazil and the Amazon

SB COP LEGACY REPORT

TABLE OF CONTENTS

MESSAGE FROM LEADERSHIP

Ricardo Mussa – Chair of SBCOP

It is with great honor that we present the Legacy Report of SB COP30, a milestone not only for Brazil, but for the global climate agenda. The decision to host COP 30 in Belém, at the heart of the Amazon, carries profound symbolic and strategic significance. It reflects Brazil's growing leadership in shaping the future of climate action and sustainable development, and it places the Amazon, our greatest natural asset, at the center of global attention.

This report is more than a retrospective. It is a forward-looking blueprint for transformation. COP30 has the potential to be a turning point for Brazil and the Amazon, catalyzing inclusive growth, low-carbon innovation, and nature-positive development. It is a call to reimagine our relationship with the forest, its people, and its ecosystems, not as obstacles to progress, but as essential partners in building a resilient future.

The private sector has a critical role to play in this journey. Our ability to mobilize capital, scale innovation, and forge cross-sector partnerships will determine the pace and depth of change. Business leadership must rise to the challenge, not only to mitigate risk, but to unlock new opportunities for socio-environmental impact and long-term value creation.

The Amazon is approaching a tipping point. Climate change threatens its integrity, yet it also offers a unique opportunity to lead by example. Protecting biodiversity, empowering local communities, and investing in climate resilience are not optional, they are imperative. The Legacy Report consolidates real cases, insights and pathways for action. It is a resource for all stakeholders, public, private, and civil society, to engage, collaborate, and act.

Let this be a moment of convergence. A moment where ambition meets action, and where the legacy of SB COP30 becomes a lasting contribution to Brazil, the Amazon, and the world.

Antonio Ricardo Alvarez Alban, President of the Brazilian National Confederation of Industry (CNI)

The 30th United Nations Climate Change Conference (COP30), in Belém, consolidates Brazil's role as a global leader in the sustainable development agenda. This leadership is reflected not only in multilateral negotiations but also in the country's ability to mobilize companies, investors, and institutions toward concrete actions with real impact and can be replicated in other environments.

The Sustainable Business COP (SB COP), an international coalition led by the National Confederation of Industry (CNI), represents more than 40 million companies from 61 countries and demonstrates the private sector's commitment to a climate agenda driven by results, competitiveness, and sustainable development.

Throughout 2025, we prepared and delivered a document to the COP30 Presidency outlining 23 priorities to accelerate the achievement of climate goals and strengthen the role of the private sector in global negotiations. In addition, we built a portfolio of 670 initiatives from different continents that demonstrate, in practice, how the transition to a low-carbon economy is underway. Brazil leads this movement with 19 successful experiences.

These cases represent billions of dollars in investment, millions of tons of greenhouse gas emissions avoided or reduced, thousands of skilled jobs created, and, above all, entire communities integrated into the green economy. They are innovative industrial solutions, advanced bioeconomy models, clean technologies, regenerative production chains, and inclusive territorial development programs.

We present this SB COP30 Legacy Report with the conviction that Brazil has the real conditions to lead the global climate agenda, with a special focus on the Amazon Region. The private sector is not just participating it is at the forefront of the transformation. We have the ability to mobilize capital, accelerate technology adoption, and build partnerships that deliver scale. We are doing this with responsibility, ambition, and a forward-looking vision.

The legacy of SB COP30 is clear: Brazil can and must unite production and conservation, innovation and development, sustainability and economic growth. Thus, Brazilian industry reiterates its conviction that a better world is entirely possible and reinforces its actions to make it a concrete reality.

Enjoy your reading.

MESSAGE FROM CHAIRS

Foreword by the Chair of the Energy Transition Working Group

Daniela Rattis Manique, CEO Solvay Latin America - President COATIS GBU

The Energy Transition team has identified three strategic priorities — Energy Efficiency, Renewable Energy, and Sustainable Fuels — accompanied by practical, targeted recommendations capable of transforming the economy while preserving the Amazon and the planet's natural reserves. These priorities align innovation, investment, and socio-environmental justice to drive meaningful change.

Real-world examples demonstrate that the private sector can accelerate this energy transition by mobilizing capital, deploying technology, and building sustainable value chains. This approach fosters green jobs, significantly reduces the carbon intensity of products, and enables scalable business models. Brazil stands out as a global reference, showcasing leadership through numerous impactful initiatives.

We achieved consensus among a highly representative group — including major multinational and local companies, industry associations, and other stakeholders — to present negotiators with key insights essential for rapidly transforming industries and consumer markets. Our focus is not only on long-term outcomes but also on delivering immediate, tangible results.

The legacy of SBCOP30 will serve as a practical and inspiring compass for public policy, corporate commitments, and community engagement. It will help translate climate goals into concrete, measurable projects. Together — governments, businesses, and civil society — we can build an inclusive, competitive, and resilient low-carbon economy that benefits Brazil and protects the Amazon.

Foreword by the Chair of the Circular Economy Working Group

Dr. Tercio Borlenghi Junior, CEO Ambipar

As CEO of Ambipar, a pioneering company in the transition to a circular economy, I proudly chaired the Circular Economy and Materials Working Group of the Sustainable Business COP. Our recommendations are designed to overcome the main barriers to optimized resource use—reducing waste generation, alleviating pressure on ecosystems, and addressing climate change.

In addition, we proposed concrete actions to support decarbonization, financing for forest conservation and restoration, and improvements in agricultural management through carbon credit mechanisms. These measures aim to unlock the potential of nature-based solutions and sustainable land use as key pillars of a low-carbon economy.

One of the most significant contributions from the private sector to COP30 is the proposal of innovative, feasible, and inclusive actions—such as the establishment of an International Materials Agency and the development of a global taxonomy for the circular economy. These initiatives have the potential to accelerate circularity on a global scale and represent a lasting legacy of private sector leadership in advancing sustainability.

Foreword by the Chair of the Bioeconomy Working Group

João Paulo Ferreira, CEO Natura

The Bioeconomy Working Group of the Sustainable Business COP advanced a shared global vision of bioeconomy as a transformative model—one that promotes nature-based solutions and replaces fossil-based materials and inputs, while ensuring the sustainable use of ecosystems, fostering circularity, and generating positive social impact.

In Brazil, home to the planet's greatest biodiversity and especially in the Amazon region, the bioeconomy presents a unique opportunity to accelerate socioeconomic development and generate local income, all

while preserving forests and contributing to climate mitigation. The private sector plays a central role in structuring, financing, driving technological innovation, and integrating bioeconomic value chains.

The legacy of the Sustainable Business COP is to position bioeconomy as a cross-cutting solution for climate, biodiversity, and people. It also provides a structured roadmap showing how collaboration among governments, businesses, and civil society is essential to remove barriers and unlock its full potential.

Foreword by the Chair of the Food Systems Working Group

Gilberto Tomazoni, JBS Global CEO

Food connects everything: the economy, the environment, and the wellbeing of people and communities. Across continents, producers, companies, and governments are proving that it is possible to grow more and better while protecting nature. From Africa to Asia, from North and South America to Europe, sustainable practices and innovation are reshaping the way we feed the world.

Advancing the economic productivity and environmental sustainability of food systems is our opportunity to lift millions out of poverty, strengthen rural livelihoods, and help farmers address climate change. Through the SBCOP collaborative, we have identified and shared scalable cases that show how productivity, inclusion, and environmental stewardship can achieve environmental health and food security goals.

SBCOP30 is a collective call to action to connect science, collaboration, and finance to turn ambition into adoption and scale into impact. Together, the private and public sectors have the potential to transform the innovative into mainstream, the uncommon into conventional. Countries, companies, and citizens all have a role in making sustainable food systems the norm worldwide.

Foreword by the Chair of the Nature-based Solutions Working Group

Marcelo Medeiros, Chairman Re-Green

The climate crisis is inseparable from nature. On one hand, deforestation and land use together represent the second-largest source of greenhouse gas emissions globally. On the other, terrestrial and marine ecosystems absorb nearly half of human-generated CO_2 emissions, while Nature-Based Solutions (NbS) remove an additional 3 gigatons of CO_2 annually. Given nature's central role in the climate challenge, Belém is not merely the host city of COP30—it is part of the message. Its selection carries both symbolic weight and a call to action. In Belém, we witness the coexistence of two realities: the evidence of one of humanity's greatest challenges — our unresolved relationship with nature — and the signs of the work and opportunities that lie ahead.

In this context, the contribution of NbS goes far beyond carbon mitigation. The conservation and restoration of ecosystems strengthen biodiversity, regulate rainfall patterns and microclimates, and can help reestablish a balanced and sustainable relationship between human civilization and the natural world. As highlighted in the SB COP30 preface on NbS, these solutions are "effective, scalable, and ready for implementation," integrating climate goals with biodiversity, ecosystem services, and, critically, community engagement mechanisms.

Understanding this relationship and laying the groundwork for large-scale adoption of Nature-Based Solutions may be one of COP30's most enduring legacies. At the heart of the Amazon, Belém offers the world a unique combination of realities: the history of unchecked ecosystem degradation, and the possibility of a future where wealth creation is inseparable from the preservation and restoration of nature.

Foreword by the Chair of the Sustainable Cities Solutions Working Group

Rubens Menin, Chair, Chairman of the Board of Directors at MRV
Renato Correia, Deputy Chair, President of CBIC
Nilson Sarti, Deputy Chair, Vice President for Environment and Sustainability at CBIC

The Legacy Report reaffirms that sustainable urban development is essential to Brazil's and the Amazon's transition toward a low-carbon, inclusive, and resilient economy. Across the country, 87% of Brazilians live in urban areas — and in the Legal Amazon, this share reaches 76%, across 772 municipalities that reveal both the region's challenges and its potential. Cities concentrate the greatest challenges in sanitation, mobility, and housing — yet also the greatest opportunities for innovation, employment, and improved quality of life. This report translates the legacy of COP30 into concrete recommendations and case studies — from universal sanitation and e-mobility to sustainable housing — showing how partnerships among government, business, and society can generate real impact. The private sector plays a decisive role in leading investment, innovation, and cooperation models capable of unlocking projects and turning ambition into results. May this report inspire continued, collective action to make our cities — and the Amazon's future — synonymous with prosperity, inclusion, and environmental balance.

Foreword by the Chair of the Transition Finance and Investment Working Group

Luciana Ribeiro, Founding Partner da EB Capital

The Transition Finance & Investment WG advanced innovative financial mechanisms, advocated for convergence of carbon markets and solutions for hard-to-abate sectors, taking a pragmatic approach and proposing blueprints and scalable instruments. These are especially relevant for emerging economies such as Brazil and the Amazon, which both face structural barriers to accessing international capital despite their immense potential to deliver climate solutions. By fostering collaboration across sectors and engaging entire value chains, the SBCOP30 legacy stands as a private sector contribution to mobilizing capital, de-risking investment, and driving sustainable transformation — turning ambition into action toward a low-carbon economy.

Foreword by the Chair of the Green Jobs & Skills Working Group

Rafael Segrera, President of Schneider Electric for South America

From industrial centers to the heart of the Amazon, Brazil's green transition depends on people: their skills, access, and opportunity. With only one in ten young Brazilians in technical education, expanding training and inclusion is essential. This Legacy Report highlights the urgency of financing inclusive training and integrating vulnerable communities into value chains.

Brazil has a historic opportunity to lead a people-centered energy transition - one that creates jobs, strengthens resilience, and inspires the world. A successful business transformation also relies on the ability of its workforce to adopt and apply new technologies. Upskilling and reskilling are not just social imperatives; they are strategic drivers of modernization and competitiveness. To realize this promise, investments must go beyond technology and infrastructure to include education, innovation, and capacity building at every level of society. The private sector plays a decisive role in this agenda, uniting performance with purpose to deliver sustainable solutions that work for both people and the planet. One example is the community of Três Unidos in the Amazon Rainforest that Schneider Electric is building local capacity and empowering communities to work in renewable energies, while expanding access to knowledge and opportunity. These actions show that inclusion and innovation can advance together. We invite all stakeholders to join forces and enable the Amazon to become the global symbol of a just and sustainable transition.

Foreword by the Health Complementary Theme Group Chair

Guilherme Maradei, Board Member, Sindusfarma

Health is essential to Brazil's climate leadership and to building a resilient and inclusive future for the Amazon. Brazil has one of the largest public health care systems in the world, serving over 190 million people. The private sector plays a decisive role in driving low-carbon and climate-resilient healthcare, through stronger coordination with the public health system, circular economy, and digital innovation solutions, including telemedicine to reach remote communities. The SB COP30 legacy aims to guide future action by governments, companies, and society, ensuring that climate progress translates into better health, equity, and sustainable development for all communities.

Foreword by the Carbon Accounting Integrated Theme Chair

Paula Kovarsky, Deputy Chair of SB COP

You can't manage what you can't measure." This principle, often attributed to Peter Drucker, underpins every management effort — and nowhere is it more vital than in tackling climate change. Managing carbon emissions starts with measuring them accurately, a prerequisite for achieving COP30's highest ambitions. Over the past 30 years, global frameworks have improved awareness and reporting of Greenhouse Gas (GHG) emissions. Urgency demands we move one step further. Carbon accounting must evolve into a shared language that turns climate ambition into measurable, comparable, and actionable outcomes. Just as financial accounting brings transparency to markets, carbon accounting should do to decarbonization, guiding investment, trade, and innovation through verified emissions[1] data.

SB COP supports the Technical Expert Panel on Carbon Accounting, launched by Carbon Measures and the International Chamber of Commerce, to design a framework grounded in financial accounting principles and deliver concrete results within two years[2].

COP30 is a pivotal chance for Brazil and its partners to lead global convergence on carbon accounting - linking climate goals to sustainable economic growth. For Brazil, the "Lung and the Barn of the world," fair and transparent measurement of forest contributions - strategic biomes for carbon sinks and climate stability - and climate-smart agricultural production remains essential to valuing our true role in shaping the planet's future.

[1] EFI Foundation — Carbon Accounting: Framework for a Comprehensive New Product- and Entity-Level, Ledger-Based Carbon Accounting System (June 2025).
[2] Carbon Measures & ICC — coalition announcement/TEP

EXECUTIVE SUMMARY

The Legacy of SB COP for Brazil and the Amazon

The Sustainable Business COP (SB COP) initiative was launched at COP29 in Azerbaijan and is led by the Brazilian National Confederation of Industry (CNI). Its primary objective is to involve the private sector in climate discussions, fostering scalable solutions across various industries to help drive and accelerate the shift toward a low-carbon economy. With COP30 set to take place in Belém (PA) in 2025, global attention is turning toward Brazil. The country, while currently confronting climate challenges, also possesses opportunities for reducing emissions, with the Amazon rainforest playing an important role in global climate stability.

From this perspective, the SB COP Legacy Report recognizes the opportunity to bring together the outcomes of work carried out by organizations from multiple sectors across its working groups, and to translate the universal challenges of the global decarbonization into strategic recommendations for Brazil and the Amazon. These recommendations are organized across eight working groups – Bioeconomy; Circular Economy and Materials; Energy Transition; Food Systems; Green Jobs and Skills; Nature-based Solutions; Sustainable Cities and Transition Finance and Investment – and two complementary themes - Health and Carbon Accounting-, embedded into the report due to the relevance of the topics.[3]

Therefore, the report highlights Brazil's climate challenges, the Amazon's global ecological importance, and the role of private sector engagement in helping to address key sustainability themes. The priorities formulated in this context aim not only at reducing emissions and negative environmental impacts, but also at fostering socioeconomic gains by promoting the local economy and social inclusion, especially for Amazonian communities.

In this regard, insights drawn from the eight working groups highlight five key and interconnected pillars important for the development of the Amazon: defining public policies, providing financing and incentives, strengthening value chains, delivering essential services, and promoting green jobs and skills.

These pillars have several critical success factors that should be considered to achieve the desired impact, especially given the unique characteristics of the Amazon. Enablers such as financing mechanisms and regulations and frameworks should be adapted to the regional reality, and it is important to help ensure integrated governance across sectors so that this adaptation occurs inclusively. Additionally, scalable models with metrics for impact and replication are also important to support this development.

Furthermore, active engagement from government, civil society, and the private sector is important to unlock the potential that Brazil and the Amazon offer to the world, while also driving growth within the region itself. In the Amazon, this may require fostering community engagement and investing in capacity development. According to the study "New Economy for the Amazon" by WRI Brazil, adopting a decarbonization-oriented pathway could, by 2050, enable the region to achieve a GDP BRL 40 billion higher than the baseline, create 312,000 additional jobs, conserve 81 million hectares of forest, and increase carbon stocks by 19%.[4]

Path Forward: Collective Impact Overview

Scaling the initiatives and actions necessary for Brazil and the Amazon to transition toward a high-biodiversity, low-carbon economy requires drawing from transformative real-world examples that already demonstrate positive change across national value chains. The Legal Amazon region, encompassing vast

[3] CNI. COP30: Entrepreneurs focus on successful green agenda solutions (2025). ; SB COP
[4] WRI Brazil. New Economy for the Amazon (2023)

biodiversity and water resources, stands as a global environmental asset and a strategic socio-economic platform for Brazil, with 61.8% of its territory on the country – region known as Legal Amazon.[5]

The region's economic potential is anchored in four main sectors — bioeconomy, mining, energy, and agribusiness. When these sectors are coordinated and promoted, they can drive additional environmental and social impacts in the area. Beyond these economic vocations, Legal Amazon can also benefit from carbon markets, which, under Law No. 15.042/2024,[6] may serve as a financial mechanism to generate carbon credits with the potential to reach USD 320 billion over the next 30 years.[7]

This potential, however, is already being leveraged by companies operating in the Legal Amazon, which have been proving that it is possible to rethink their operations and value chains, particularly in sectors such as cosmetics, agribusiness, and natural products. These sectors are actively leveraging local biodiversity to develop hubs, build new value chains that engage communities, generate income, and preserve forests. Notably, the Natura &Co model exemplifies the successful integration of innovation with traditional knowledge. Through its approach, Natura &Co has fostered community development and utilized blended finance, creating a replicable blueprint for other biomes in Brazil.[8] [9]

Similarly, sustainable calf production programs have demonstrated how agricultural practices can be aligned with environmental stewardship, while renewable energy initiatives in remote Amazonian communities showcase solutions for energy security and emissions reduction. Resource-intensive industries such as mining are also making significant strides: Vale's Waste to Value program in Carajás highlights circular mining by reusing tailings, reducing waste, and producing sustainable products like construction sand.[10] These projects not only support local employment and socioeconomic development but also maximize resource efficiency and contribute to broader environmental conservation goals.

Additionally, for this type of initiative to thrive, it is necessary to unlock the flow of capital, which can be illustrated by ReInvest+ an Inter-American Development Bank initiative, in partnership with SB COP and the Brazilian COP30 presidency, which connects global financial markets to mitigation projects, especially in developing countries that urgently need to unlock financial resources to carry out their respective transformations.[11]

These cases demonstrate the significant momentum already present to position Brazil and the Amazon as drivers of global sustainable development, harnessing the country's unique natural assets alongside the innovative leadership of the private sector. Private sector engagement acts as a catalyst, accelerating the sustainability agenda and fostering inclusive growth. Therefore, the legacy of SB COP is rooted in sharing knowledge of local opportunities, formulating targeted recommendations with meaningful socioeconomic and environmental impacts, defining strategic actions for fair and inclusive transformation, and presenting concrete, scalable examples of sustainable development throughout Brazil and the Legal Amazon region – and requiring a continuous mission, with long-term vision and strong collaboration.

[5] Amazon 2030. Amazon Facts (2025)
[6] Ministry of Finance. Law establishing the basis for a regulated carbon market in Brazil has been approved. (2024)
[7] Amazon 2030. Carbon and the fate of the Amazon (2023)
[8] Exame. With a new financing mechanism, Natura aims to stimulate the bioeconomy and avoid middlemen (2024).
[9] Exame. With IFC and IDB, Natura raises BRL 1.33 billion to expand the use of bioingredients from the Amazon (2024).
[10] Vale. Circular Mining.
[11] IDB. IDB Group Launches ReInvest+: Going Where the Money Is to Unlock Private Climate Finance (2025).

1. Introduction

SB COP Legacy Report

Born during COP29 in Azerbaijan, the Sustainable Business (SB) COP is a global initiative led by the Brazilian National Confederation of Industry (CNI) with the mission of engaging the private sector in climate discussions and accelerating the transition to a low-carbon economy. More than a space for discussion, it highlights and promotes practical solutions that can be implemented effectively.[12]

The SB COP model aims to set an international precedent for business engagement in COPs. It represents a paradigm shift in how Brazil helps address the climate agenda, positioning the private sector as a key driver in implementing solutions.

Recognizing the complexity and interconnected nature of the climate agenda, companies from multiple sectors have aligned under the SB COP framework to pursue priority actions. Their efforts are organized into eight Working Groups (WG), each addressing a strategic theme: energy transition; circular economy and materials; bioeconomy; food systems; nature-based solutions; sustainable cities; transition finance and investment; and green jobs and skills.

SB COP has mobilized more than 40 million companies across 60 countries, creating a channel for business contributions to climate conferences. [13] Over 600 successful cases that demonstrate how sustainability solutions are being implemented in practice, have been submitted across the initiative's eight strategic themes.[14]

With COP30 being hosted in Belém, Brazil has a historic opportunity to demonstrate global leadership in the transition to a low-carbon economy. With the world's eyes turned to the country, this moment offers a chance to transform global visibility into local priorities and advance initiatives that can deliver tangible impact for Brazilian society, economy, and environment.

Figure 1. SB COP Structure and Mobilization

Source(s): Developed by Deloitte Brazil for the SB COP Legacy Report (2025)

This opportunity is significant given the relevance of the climate agenda. According to the Planetary Health Check 2025 report[15], seven of the nine planetary boundaries have been exceeded, including climate change and biodiversity loss. Ocean acidification has surpassed safe limits, threatening essential marine ecosystems and increasing the risk of irreversible changes to Earth systems, such as ice sheet collapse and Amazon forest degradation. These interconnected boundaries indicate that global environmental stability could be at risk, demanding action to prevent consequences.

This context underscores the strategic importance of Brazil and the Amazon for the world. Brazil is facing an important moment in climate history: 2024 was the hottest year ever recorded, with an average temperature of 25°C, surpassing the historical average by 0.79°C.[16] Between 2020 and 2023, the country experienced an annual average of four thousand climate-related disasters, nearly doubling the number recorded in the previous two decades.[17]

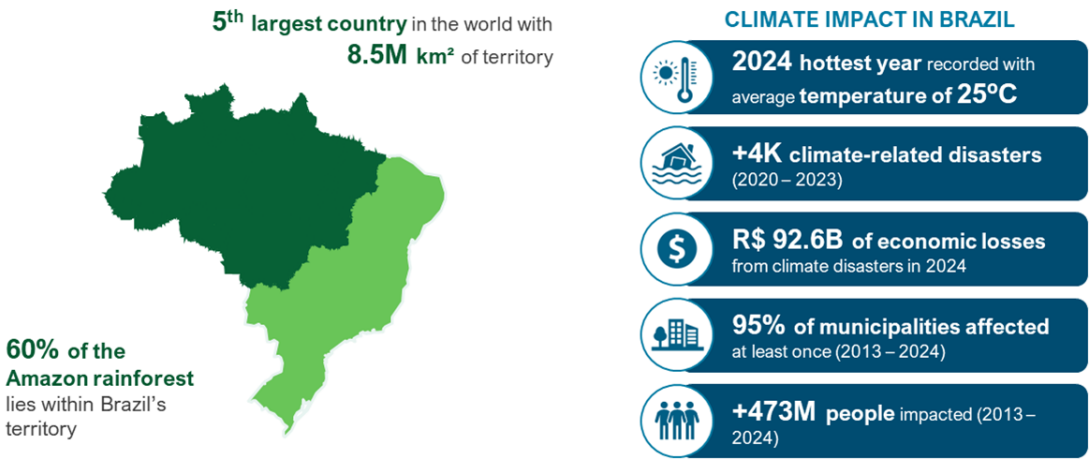
Economic losses from climate disasters exceeded BRL 732.2 billion over 12 years (2013–2024), with BRL 92.6 billion incurred in 2024 alone.[18] During this period, 95% of Brazilian municipalities have been affected at least once by some type of disaster, impacting over 473.2 million people.[18]

Scientific studies show that all Brazilian macro regions will continue to experience changes in climate patterns, even if the Paris Agreement targets are met.[19] Trends include rising temperatures and heat waves across regions, increased droughts in the Northeast, Central-West, and Southeast, and more extreme rainfall in the North, Southeast, and South.[19]

[12] SB COP. About SB COP (2025)
[13] Agência Brasil. Industry creates platform to promote sustainable practices at COP30 (2025).
[14] CNI. COP30: Entrepreneurs focus on successful green agenda solutions (2025).
[15] PBSCience. Planetary Health Check Report (2025).
[16] CNI. Brazil experiences hottest year since 1961 in 2024 (2025).
[17] Brazilian Alliance for Ocean Culture. 2024: The hottest year in history (2025).
[18] Brazilian National Confederation of Municipalities (CNM). Panorama of Disasters in Brazil – 2013 a 2024 (2025).
[19] Brazilian Ministry of Science. Technology and Innovation (MCTI). (2025).

Brazil is the 5th largest country in the world, with over 8.5 million square kilometers of territory and home to approximately 60% of the Amazon rainforest.[20] [21] [22] The Amazon is not only one of the most important ecosystems for the planet's climate stability, serving as a powerful symbol of the responsibility and potential that Brazil carries on the global stage, but its significance is also evident in how it reflects broader global challenges such as deforestation, illegal mining, and unplanned urbanization that are directly linked to systemic matters like poverty, lack of infrastructure, and insufficient access to sustainable finance.[23]

Figure 2. Brazil's Landscape: Understanding the Impacts of Climate Change



Source(s): Brazilian Ministry of Foreign Affair; Agência Brasil; Brazilian Alliance for Ocean Culture; CNM

Addressing these challenges will likely require coordinated action that combines strong public policies, private investment, technological innovation, and local community engagement, which raises a central question:

1.1 What legacy can SB COP leave for Brazil, especially for the Amazon?

The answer lies in helping to ensure that the mobilization around COP30 transcends international discussions and becomes a driver of lasting transformations for the country. The Legacy Report is designed to achieve this. Its purpose is to translate global ambition into local action, helping to ensure that the outcomes of SB COP foster solutions and pathways that generate benefits for Brazil and strengthen the protection and resilience of the Amazon region.

This report aims to highlight the legacy that SB COP hopes to leave, especially for the socioeconomic development potential of Brazil and the Brazilian Amazon region, by providing examples of how global recommendations can be effectively applied in the national context. Based on outstanding case studies that showcase leading practices and tangible results, the document presents a robust development plan focused on social inclusion, environmental preservation, and sustainable economic growth.

By analyzing the impact on Brazil and the Amazon region, the report reinforces the strategic importance of the region as a key player in the global climate agenda and as a driving force for transformation toward a more just and resilient future. From this perspective, the document positions itself as a strategic call to action for building a sustainable development pathway for Brazil and the Amazon region.

[20] Brazilian Ministry of Foreign Affairs. About Brazil (2024).
[21] GEO Brazil. Water Resources (2007)
[22] WWF. The Amazon
[23] WRI. Indigenous Forests Are Some of the Amazon's Last Carbon Sinks (2023)

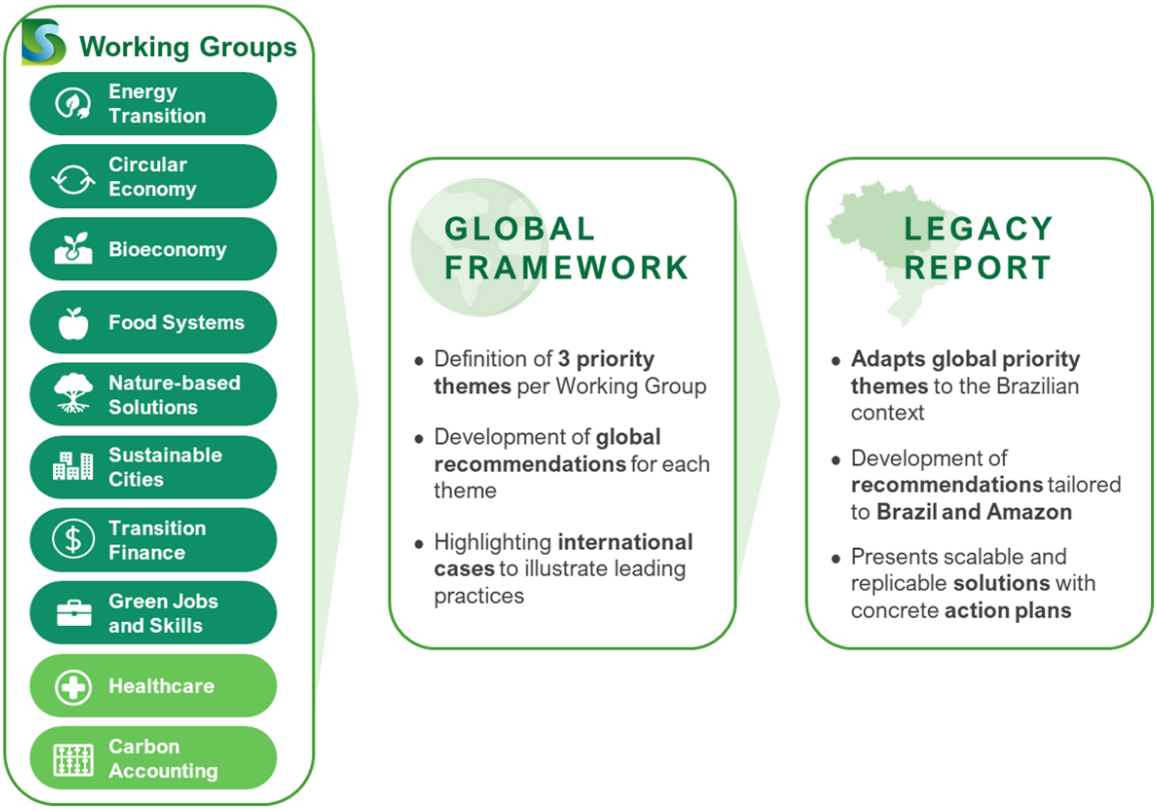
2. The Legacy of SB COP for Brazil and the Amazon

SB COP Legacy Report

SB COP's 8 thematic Working Groups bring together recognized private-sector executives, led by a Chair and supported by knowledge partners, alongside Deputy Chairs, Co-Chairs and Members from private sector, to define three priority areas that will help guide discussions at COP30 and develop practical recommendations to advance sustainable solutions.

In this chapter, the Legacy Report will leverage this structure, acting as a bridge between the global priorities of each SB COP working group and the Brazilian reality, with a particular focus on the Amazon region. In addition to the eight thematic working groups, the report will also help address the topics of healthcare and carbon accounting, recognizing its critical role in advancing climate resilience and sustainable development. The goal is to explore how each priority area can be applied in Brazil and the Amazon region, identifying specific recommendations for the country, as well as key opportunities and challenges that arise in this process.

Figure 3. SB COP Legacy Report Framework



Source(s): Developed by Deloitte Brazil for the SB COP Legacy Report (2025)

To actualize this vision, the report will showcase examples for each theme, illustrating how to advance or unlock the application of these recommendations on the ground (Brazil). These examples will demonstrate not only what is possible but also how it can be done.

For each working group or thematic area, the report will:

- Examine the **relevance and applicability** of global recommendations in the Brazilian and Amazonian context;
- Identify **opportunities** that can accelerate implementation and generate impact;
- Identify **challenges** that could hinder progress, providing insights on how to help address them;
- Present **examples** that illustrate concrete ways to advance or unlock the recommendation on the ground (Brazil).

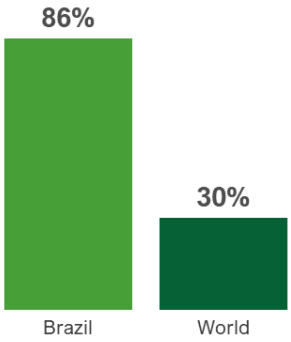
2.1 Energy Transition

2.1.1 Overview

2.1.1.1 Global to local

The private sector has the potential to address approximately 30–40% of total emissions by 2030, equivalent to ~13 Gt CO2e, through three key levers: renewable energy (7–11 Gt CO2e), energy efficiency (3–4 Gt CO2e), and sustainable fuels (0.5–1.5 Gt CO2e).[24] Meeting the rising demand for clean energy and advancing climate targets depends on mobilizing these solutions at scale. This working group aims to highlight key priorities to enable the advancement of private sector contributions to scale up and accelerate the energy transition in the short term (2030) and highlight the critical need to start addressing the decarbonization of hard-to-abate sectors (such as chemicals, steel and cement) early to enable a transition by 2050.

Figure 4. Renewable Share in Electricity Generation: Brazil vs. World (2022)



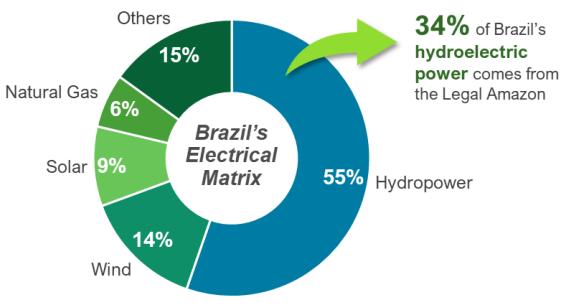
Source(s): EPE

Brazil can be a key stakeholder to leverage the energy transition worldwide, as the country can capitalize on its privileged energy conditions: about 50% of Brazil's energy matrix[25] comes from renewable sources,[26] the country is a pioneer in the use of ethanol as fuel, and Brazilian soil is rich in critical and strategic minerals, which are important to develop effective clean energy solutions.[27] In this way, Brazil can strengthen its strategic position in the global energy transition through different approaches, including the use of clean energy to decarbonize its industry, the export of clean energy and the supply of inputs for clean technologies. **To accelerate the energy transition and unlock Brazil's leadership position, solutions such as investments in infrastructure (including the Amazon region), financial incentives, and regulatory review should be implemented.**

2.1.1.2 Challenges for Brazil

Despite Brazil's favorable conditions in energy matters, there are still structural challenges, mainly related to infrastructure and regulatory environment, that should be addressed to leverage the potential the country has to offer, as the energy transition should be sustainable and maintain energy security amid rising demand.[28] To achieve this, measures such as regulatory certainty are essential, since investors seek a secure and stable environment. Additionally, international partnerships such as those for exporting sustainable fuel require regulations.[29]

Figure 5. Brazil's Electrical Matrix (2024)

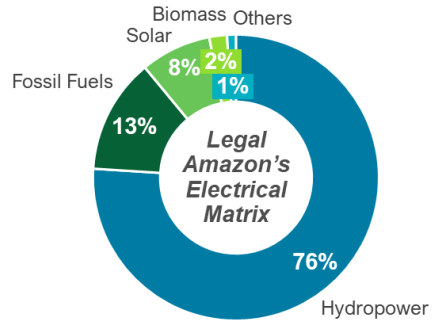


Source(s): EPE; Climate Policy Initiative, Legal Amazon Definition

Strengthening investment attraction by fostering foreign partnerships and improving the regulatory framework is also important for Brazil to maximize energy grid infrastructure through expansion and modernization, as such initiatives are cost-intensive and might find regulatory barriers, especially related to obtaining licenses.

[24] IPCCAR. Mitigation of Climate Change (2022).
[25] The energy matrix represents the set of energy sources used to power vehicles, cook food, and generate electricity. It differs from the electrical matrix, which consists exclusively of energy sources used to produce electrical energy (EPE Definition).
[26] EPE. Energy and Electrical Matrix (2023).
[27] Brazilian Ministry of Mines and Energy. Brazil, World Leader in Energy Transition (2025).
[28] ICAT. Assessment of the policy framework impact on the renewable energy generation expansion in the Brazilian power grid (2024).
[29] Federation of Industries of the State of Pará (FIEPA). Energy transition: Brazil can be a leader in a global movement (2025).

Figure 6. Legal Amazon's Electrical Matrix (2024)



Source(s): Amazon 2030

2.1.1.3 Challenges for Amazon

The Amazon plays an important role in Brazil's energy transition. In 2021, the states of the Legal Amazon [30] accounted for over 27% of the country's electricity generation but only 11% of its total consumption.[31] [32] Despite being an energy-exporting region, over 14% of its population still lacks access to the electricity generated within the National Interconnected System (SIN)[33] and depends on isolated grids powered mainly by non-renewable energy thermal plants, especially diesel. [34] [31]Nearly one million people still lack consistent access to electricity, relying on generators for only a few hours a day.[35]

Centralized planning, logistical barriers, and the small scale of many communities make infrastructure deployment costly and complex. And national strategies often don't adequately address regional needs and community participation, resulting in plans and decisions that frequently overlook local specificities and hinder the universalization of energy access with quality and sustainability.[36] Reinforcing energy policies for the Amazon, together with attracting investors and entrepreneurs who are willing to assume the costs associated with local solutions, is essential to unlocking the region's full potential.

2.1.2 Energy Transition Recommendations for Brazil and Amazon

PRIORITY 1

Increase average annual rate of energy efficiency improvements by 2030

2.1.2.1 National Perspective: Brazil

A. Revision of Standards and Mandates: Update minimum energy performance standards for household appliances, companies, motors and air conditioning and lighting systems to help ensure greater efficiency in the national market, as well as expand certification programs. Motivate companies to monitor their energy use and efficiency improvements, for example by leveraging the reduction of Scope 2 emissions and the implementation of Brazil's new regulated carbon market pretext, as well as through awareness campaigns about effective energy efficiency initiatives.

B. New Green Financing Lines: Facilitate access to credit for projects that demonstrably increase energy efficiency and for technology acquisition, especially in energy-intensive industries. Effective public-private collaboration is essential to unlocking the potential of energy efficiency.

2.1.2.2 Regional Perspective: The Amazon

A. Adaptation of Efficiency Programs: Customize energy efficiency initiatives to the local reality of the Amazon, considering the region's socio-economic and environmental characteristics, prioritizing technologies that are easier to maintain. Intelligent micro networks, which combine solar energy, battery storage and digital management, are efficient and scalable solutions that could be leveraged in the region, especially in isolated communities as it requires low logistic effort. Additionally, involving local communities

[30] A geographic and political-administrative region of Brazil, established to promote the socioeconomic development, encompassing the entirety of 9 states (Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima, Tocantins) and part of Maranhão.
[31] Climate Policy Initiative (CPI). Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[32] Amazon 2030. Pathways to Energy Transition in the Amazon.
[33] National Interconnected System (SIN) – Nationwide production and transmission network that connects power plants to consumers across Brazil.
[34] Climate Policy Initiative (CPI). Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[35] Climate Policy Initiative (CPI). Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[36] Regulatory Assistance Project (RAP). Roadmap for Electricity Access as a Development Driver in the Legal Amazon (2024).

to obtain traditional knowledge and specific inputs to meet regional needs is important to the success of adaptation.

B. Partnership with Technology Stakeholders: Foster ongoing dialogue and collaboration among government entities, local communities, energy efficiency technology providers, and regional energy operators to help streamline the deployment of effective solutions. Additionally, prioritize the implementation of remote management systems, which enhance operational efficiency by proactively identifying and addressing potential failures.

PRIORITY 2

Enhance renewable energy capacity by 2030

2.1.2.3 National Perspective: Brazil

A. Infrastructure Development: Support the development of grid infrastructure and interconnections by expanding and modernizing energy distribution networks to close the gap between major energy-consuming centers and more isolated areas of the country, while sustaining a competitive, efficient, and reliable scale-up of renewable energy. Elaborate and diversify green financing mechanisms by creating accessible credit lines and guarantees that attract private and international capital, to accelerate the deployment of renewable energy projects across different scales and regions in Brazil.

B. Market Stability Mechanisms: Update pricing schemes enabled by digitalization to enhance system efficiency and better match supply and demand for renewable energy, while developing complementary mechanisms, such as long-term contracts, to provide revenue stability and mitigate investment risks.

2.1.2.4 Regional Perspective: The Amazon

A. Customized Renewable Energy Plan: Develop a specific local renewable plan for the Amazon region, with targets and deadlines, as well as local communities' participation, to leverage the renewable energy potential that the region has to offer in a sustainable way, by preserving local biodiversity and preventing deforestation of new areas. Focus on resilient and low-impact renewable energy infrastructure, to help ensure that the diversity of the region is being contemplated and that the renewable energy produced in the Amazon can reach broader markets efficiently, reducing losses and integrating the region more fully into Brazil's clean energy transition.[37]

B. Improved Access: Enhance renewable energy access for isolated Amazonian communities. Engage the private sector. especially energy companies, in collaborative initiatives that facilitate energy access, following examples such as Schneider Electric's Access to Energy Program. This program benefited approximately 2,600 people in the Amazon region by delivering 520 kits for solar energy generation.[38] [39]

C. Regulatory Optimization: Reduce potential regulatory barriers (such as the timeframe and excessive bureaucracy to obtain project licensing) that might hinder the development of the Amazon region in terms of building renewable energy technical capacity.

D. Local Training and Development: Train and empower local professionals to operate and maintain renewable energy systems, strengthening communities by developing local talents who understand the region's unique characteristics and maintain direct connections with the communities they serve. Foster investment in educational initiatives, technical training courses and partnerships with regional universities and institutions to help ensure that workforce development is tailored to local needs and maximizes community benefits.

[37] Invest Amazon. Brazil's Energy Transition in 2025: Advancements, Challenges and the Role of Amazon (2025).
[38] Schneider Electric. Access to Energy Program.
[39] Third Sector Observatory. Schneider Electric Delivers Clean Energy to Indigenous Communities in the Amazon (2025).

PRIORITY 3

Accelerate decarbonization utilizing fact-based use of sustainable fuels

2.1.2.5 National Perspective: Brazil

A. Improvement of Local Mandates: Broaden the scope of Brazil's National Biofuels Policy (RenovaBio) and strengthen regulatory frameworks for sustainable fuels, ensuring that local mandates provide broad coverage and establish clear, ambitious targets and standards for fuels across various modes of transportation.

B. Production and Technology Incentives: Establish targeted incentives to scale up the production of biogas and biomethane from waste, promote the development of second-generation ethanol, and invest in pilot plants for clean hydrogen and sustainable aviation fuel (SAF). Implement technology-agnostic incentives based on carbon intensity certification schemes, helping to ensure viable technologies and solutions can compete on equal terms. This approach encourages innovation and supports a diverse range of pathways for advancing Brazil's energy transition.

C. Foreign Partnerships: Position Brazil as a global hub for the production and export of biofuels by attracting foreign investment through green bonds and climate finance and strengthening international relations. Foster regional collaborations with neighboring countries to accelerate the development and scaling of sustainable fuels, supporting Brazil's leadership in clean energy and promoting cross-border value chains for renewable resources.

2.1.2.6 Regional Perspective: The Amazon

A. Utilization of Local Resources: Enable favorable environment for production of biofuels from Amazonian raw materials, such as dendê oil, palm oil, açaí and biomethane, which is already being produced in Pará, drawing on traditional knowledge and the unique potential of the Amazon biome. Guarantee that the region's biodiversity is preserved in the process, ensuring the responsible use of resources and mitigating the risk of inappropriate exploitation.[40]

B. Development of Value Chains: Integrate small-scale producers, including local communities, into emerging biofuel production value chains, providing technical assistance and capacity-building programs to help ensure their meaningful participation. Productive chains based on Amazon resources such as açaí, Brazil nuts and copaiba, have already shown viability for generating bioenergy, biogas and bio-oil. [41] Additionally, prioritize fair compensation mechanisms to generate local income while ensuring the cultural and land rights of local communities.

2.1.3 LEGACY INITIATIVES

2.1.3.1 Engie – Jirau Hydropower Plant

What is the initiative: Jirau Hydroelectric Power Plant (HPP) is the fourth largest power generation facility in Brazil in installed capacity.[42] Located in Rondônia, it demonstrates that it is possible to implement infrastructure in the Amazon in a responsible way, following leading social, economic and environmental standards.[42]

Main Impact: Jirau **provides renewable and clean energy with social and environmental sustainability**.[42] Aiming a sustainable development, it also

Figure 7. Key achievements of Jirau's initiative[42]

Source(s): Jirau Energia (1); Jirau Energia (2)

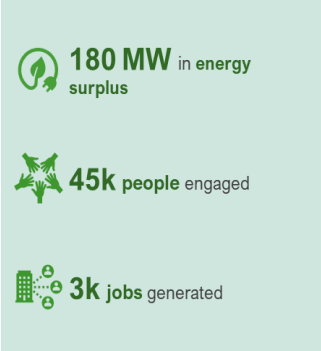
[40] FIEPA. Industry in Pará advocates for responsible oil exploration and the strengthening of biofuels (2025).
[41] Invest Amazon. Amazon and energy transition: Opportunities for a green development model (2025).
[42] Jirau Energia. The Structure of Jirau Hydroelectric Power Plant.

provides preservation of the environment and better quality of life for its citizens, generating direct and indirect jobs with extensive use of the local labor force.[42] [43]

Why this case reinforces the recommendations and priorities: This case shows how it is feasible to **leverage Amazon's potential to enhance Brazil's renewable energy capacity in sustainable a way**, promoting the socioeconomic development of the region while helping the country to reduce emissions and meet its Nationally Determined Contribution (NDC) goals.

2.1.3.2 Suzano – Biomass Gasification Plant

Figure 8. Key Achievements Suzano's Initiative Erro! Marcador não



Source(s): Suzano (1); Suzano (2)

What is the initiative: This initiative consists of Suzano's new plant in Ribas do Rio Pardo, Mato Grosso do Sul, designed to replace fossil fuels in lime kins by gas produced from wood chips, or biomass (syngas).[44] It is almost entirely powered by clean energy produced from by-products of the pulp manufacturing process, generating a surplus of clean energy back into the national electricity grid.[44]

Main Impact: In addition to operating with a **97% reduction in emissions from the lime kilns, it will also generate a surplus of 180 MW,** which will supply the factory's satellite providers and be exported to the SIN – enough energy to power a city of over 2 million inhabitants each month.[44] In addition to being self-sufficient in the production of sulfuric acid, hydrogen peroxide, and green energy, this new structure **minimizes logistical costs and the environmental impact** associated with pulp transportation. The construction of the plant also fostered workforce development through the engagement of thousands of people and job creation.[45]

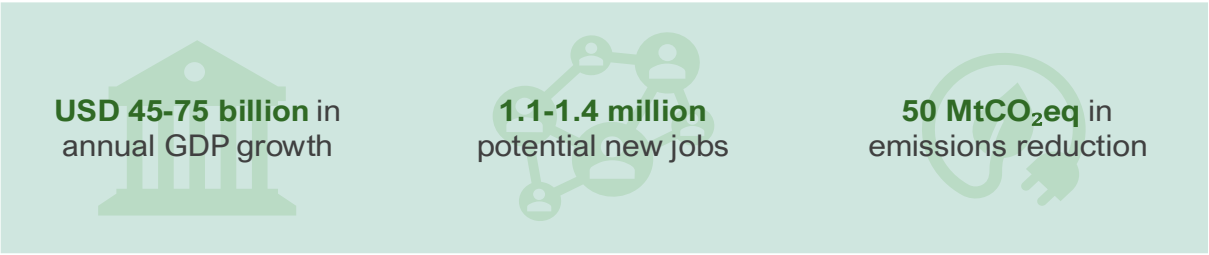
Why this case reinforces the recommendations and priorities: Suzano's biomass gasification plant presents a **cross-cutting solution that reduces emissions and promotes energy efficiency**, addressing simultaneously different priorities and reinforcing that technology-agnostic incentives are important as diverse innovative solutions can be viable and obtain certified impact. The biomass gasification model is also scalable to other industrial units, being adaptable to regions with biomass availability, such as the Amazon region.

2.1.4 Potential Opportunities and Impact

Brazil has an opportunity to expand energy generation from renewable sources and to position itself competitively in terms of power shoring. The potential benefits include socioeconomic and environmental advantages — the energy transition can help the country reduce emissions, enabling companies to achieve their reduction targets and trade carbon credits.

With investment to capture such opportunities, Brazil can capitalize on the energy transition, with the potential to generate significant benefits for the country until 2030:[46]

Figure 9. Brazil's Opportunities in the Energy Transition[46]

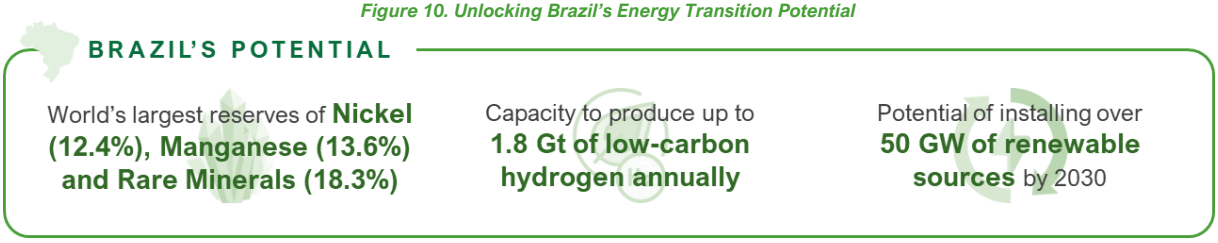


Source(s): Instituto AYA & Systemiq

[43] Jirau Energia. Socio-Environmental, Economic-Financial Report (2024).
[44] Suzano. Sustainability Center (2024).
[45] Suzano. Sustainability Center (2024).
[46] Instituto AYA & Systemiq. Pathways to Brazil's Ecological Transformation Plan (2023).

Pathways to leverage Brazil's position in the global energy transition include supplying domestic critical minerals, exporting sustainable fuels (such as green hydrogen) and expanding renewable energy installations.

Figure 10. Unlocking Brazil's Energy Transition Potential



Source(s): GOV.BR; GOV.BR MME; Click Petroleo e Gas

2.1.5 Implementation and Scalability Levers

To successfully implement and expand the energy transition in Brazil, it is important to upgrade energy infrastructure, establish a financial framework that makes the transition feasible, and adapt solutions to help ensure energy security.

2.1.5.1 Potential Actions to implement and scale in Brazil

1. Adapt regulations and policies by improving existing measures and creating new ones if necessary to establish a regulatory framework that facilitates the energy transition, including sectoral-based approaches that set specific tailored targets and recommendations for each energy-intensive sector.
2. Develop sector-specific progressive mandates through tailored and phased recommendations that comprehend the unique demands and challenges that each sector faces, while allowing gradual adoption and adaptation, helping to ensure an effective transition without affordability concerns.
3. Oversee monitoring of the country's progress in energy efficiency and the adoption of renewable energy, requiring reports, such as sustainability disclosures, energy audits, and sectoral performance reviews, especially from companies in energy-intensive sectors.
4. Establish international partnerships through financial cooperation agreements and export contracts to position Brazil as a leader in the energy transition.
5. Expand investment in Research & Development (R&D) and innovation to improve current energy solutions and develop new technologies, as well as raise awareness on new solutions to foster adoption.
6. Facilitate access to financing and credit lines for solutions and projects that support the energy transition.
7. Promote dialogue among stakeholders such as government, startups, universities, technology companies, and energy operators to leverage necessary actions in a collaborative way.

2.1.5.2 Potential Actions to implement and scale in Amazon region

1. Develop an integrated sustainable energy plan aligned with bioeconomy and tailored specifically for the Amazon region, setting targets, respecting the area's territorial diversity and varied energy consumption profiles, leveraging traditional knowledge to realize the region's potential, and help ensure local communities are actively involved in decision-making processes.
2. Strengthen workforce development through specialized courses and expanded training programs, with a strong emphasis on building technical capacity within local communities, generating green jobs, and empowering the regional workforce.
3. Launch educational campaigns to raise awareness of renewable energy benefits and sustainable practices, helping to ensure that information reaches remote and traditional communities.

4. **Invest in research centers** focused on renewable energy and sustainable fuels within the Amazon, harnessing the region's unique potential to drive the energy transition.
5. **Foster partnerships with universities, technology institutes, and international organizations** to enhance knowledge exchange, innovation, and access to cutting-edge solutions.
6. **Accelerate the expansion and modernization of energy infrastructure**, prioritizing efficient solutions that help address the logistical and connectivity challenges unique to the Amazon region.
7. **Establish transparent monitoring and evaluation mechanisms** to track progress, help ensure accountability, and adjust strategies as needed for continuous improvements.
8. **Create and promote dedicated funds for the Amazon** with adaptive and realistic conditions that reflect local realities and needs.

2.2 Circular Economy And Materials

2.2.1 Overview

2.2.1.1 Global to local

The circular economy is becoming established as a strategic model important to help address the limits of the current linear system of production and consumption. Globally, this paradigm seeks to keep resources in use for as long as possible, regenerate natural systems, and reduce dependence on virgin raw materials. More than environmental practice, it has become a driver of competitiveness and business resilience, supported by frameworks such as ISO 59000 (2024), which establish guidelines for circular material flows. [47]

In Brazil, the transition toward circularity combines opportunities and challenges. As the holder of vast natural resources and the world's largest tropical forest, the country plays a strategic role in biodiversity conservation and global climate balance.[48] [49]The country also holds significant socioeconomic potential, as advances in the national circular economy could inject BRL 11 billion yearly and create 240 thousand new jobs by 2040. [50]

However, structural bottlenecks persist, such as fragmented waste management, informality in the recycling sector, and regulatory complexity. Initiatives such as the National Circular Economy Strategy (ENEC) and the National Circular Economy Plan (Planec) signal progress, while experiences in reverse logistics and Amazonian bioeconomy demonstrate the potential to integrate economic development with environmental preservation. [51]

2.2.1.2 Challenges for Brazil

Brazil faces significant barriers to advance in circular economy as the country has a Circularity Metric of 1.3%, meaning that a small amount of the materials used in Brazil's economy are reused, recycled or remanufactured. [52] This presents an opportunity to explore circular economy nationwide, but regulatory complexity and the lack of tax incentives can make recycled material more expensive than virgin material, discouraging companies and consumers from embedding circularity practices. In addition, fragmented waste management infrastructure and the limited reach of selective collection, present in only a quarter of municipalities, restrict material recovery. [53] [54]

Figure 11. The Gap of Urban Recycling in Brazil [54]

Source(s): ABREMA

Informal waste pickers account for around 281 thousand workers in Brazil and are essential to recycling systems, but they still lack fair compensation and full integration into production chains.[53] For circularity to move forward, it is necessary to align packaging legislation, reduce taxes on recycled materials, and strengthen policies that balance competitiveness, social gains, and environmental preservation.

2.2.1.3 Challenges for Amazon

The Amazon faces critical challenges in implementing circular economy, requiring coordinated action among government, industry, and local communities. Challenges such as deforestation, illegal extraction

[47] Industry Portal. Implementation Guide According to the ABNT NBR ISO 5900 Series (2024).
[48] WWF. Amazon (2025).
[49] ACTO. The Amazon
[50] CCN Brazil. Circular Economy Can Generate BRL 11 billion and Create 240 thousand Jobs (2025).
[51] National Circular Economy Plan (2025 – 2034).
[52] The Circularity Gap Report (2025).
[53] WIEGO. Waste Pickers in Brazil: A Statistical Profile (2021).
[54] Brazilian Association of Waste and Environment (ABREMA). Waste Recycling Reaches 8% In Country with Informal Work (2024)

and unsustainable land use can reduce the viability of bioeconomy-based value chains, while poor infrastructure, vast territory, and limited transport raise costs and hinder recyclable waste integration.[55]

Figure 12. The Contrast of Garbage Collection in the state of Amazonas (2018)

Source(s): NPJ Nature

The lack of attention to remote areas also presents a challenge. Although there is solid waste collection in the Amazon region, the separation at source for recyclable materials is still a challenge, especially in isolated communities.[56] Furthermore, the local population, essential to recycling, experiences poor compensation and regulatory exclusion.

However, there is potential to be leveraged, as around 90% of local waste is organic and can be reused through composting, mulching, or biogas production.[56] Circular economy models integrated with urban planning and agro-extractive activities are needed to help preserve biodiversity.

2.2.2 Circular Economy Recommendations for Brazil and Amazon

PRIORITY 1

Strengthen regulatory frameworks and incentives to accelerate the circular economy transition

2.2.2.1 National Perspective: Brazil

A. Implementation of Policy Frameworks: Help to ensure the appropriate implementation of the ENEC and the planec, which are structured to articulate federal agencies, local governments, private sector representatives, and waste picker cooperatives to leverage leading solutions for the circular economy. Additionally, target value chains within resource-intensive and bio-based sectors to foster resilience throughout the transition, facilitating industry symbiosis.

B. Data Collection and Monitoring: Standardize methodologies and indicators for tracking material flows across sectors and consolidate data to help obtain reliable information on the extraction, processing, trade, (re)use and disposal of materials. Support statistical offices and companies to improve the quality of material-related data.

C. Economic Instruments: Encourage tax incentives, subsidies and green finance tools that prioritize low carbon footprint products and material-efficient and circular business models, fostering the scalability of the circular economy and facilitating a sustainable and affordable transition.

D. International Alignment: Support local policies through previous international experiences related to leading practices, circular taxonomy and effective incentives, to provide clarity on how to effectively postulate and implement regulatory frameworks related to circular economy and materials.

E. Labor Recognition and Inclusion: Enhance the formal recognition of informal workers such as recyclers and waste pickers by extending labor rights and protections, integrating them into circular value chains. Include compensation standards and create safe working conditions in national frameworks.

2.2.2.2 Regional Perspective: The Amazon

A. Inclusive Frameworks: Guarantee national policies on circular economy are inclusive of the Amazon's socioeconomic and ecological diversity, explicitly incorporating informal sectors and seeking active participation from local communities. Engage local stakeholders in policy development to foster dialogue

[55] Engineering Institute. Amazon and Bioeconomy (2022).
[56] Nature Portfolio. Integrating Circular Economy in Urban Amazon (2021).

and integration. Expand current circular initiatives included in national policies to guarantee it reaches isolated communities and municipalities in the region.

B. Natural Resource Conservation: Postulate regulatory frameworks to foster ecosystem regeneration and mitigate prejudicial environmental practices such as deforestation, illegal extraction and inappropriate land use, which compromise the feasibility of circular supply chains as local biodiversity resources are degraded and lost in both short and long-term.

C. Customized Incentives: Design financial mechanisms that help address the unique needs of Amazonian communities, such as subsidies for decentralized waste management solutions and support for bio-based enterprises and sustainable supply chains, such as açaí, copaiba oil and Brazil nuts. Prioritize solutions that add value locally, facilitate the design of new products, encourage socioenvironmental certification and enable income generation for extractive.

PRIORITY 2

Foster material innovation, waste management and supply chain circularity to reduce emissions

2.2.2.3 National Perspective: Brazil

A. R&D and Innovation: Prioritize research & development, technology innovation and market access for low-carbon circular materials, through strategies such as eco-design, repair, process optimization, the use of renewable raw materials and carbon capture utilization.

B. Public-private Financing Tools: Invest in redesigning products, integrating reverse-logistics systems, scale recycling of key materials and enablers to material flows, such as startups and digital platforms. Combine public grants, guarantees and subordinated debt lower risk for circular projects with private mechanisms to provide scale.

C. Cross-sector Collaboration: Promote integration between sectors, industries and organizations to mitigate a fragmented industrial environment and facilitate resource sharing and innovation, building a competitive ecosystem and fostering industry symbiosis. Establish agreements and engage associations to form those connections, allowing the waste generated by a determined organization or sector to become the raw materials for another.

D. Circular Economy Technologies: Enable technologies that allow traceability, as well as technologies focused on recycling and repairing materials, allowing companies to unlock new revenue streams, transform business models and reduce operational costs while meeting their sustainability targets.

2.2.2.4 Regional Perspective: The Amazon

A. Amazon Bio-based Materials: Support R&D and scaling of bio-based alternatives derived from Amazonian biodiversity, helping to ensure that extraction follows benefit-sharing and conservation principles. Encourage local industry symbiosis and circular business models, integrating byproducts, such as açaí seeds and Brazil nut shells, into value-added products, integrating into the bioeconomy ecosystem. Furthermore, structure local value chains to enable the sustainable flow and distribution of both materials and products.

B. Waste Management Systems: Develop decentralized waste collection, sorting and recycling infrastructure in isolated Amazonian communities and remote municipalities, as well as promote composting in the case of organic materials. In addition, expand reverse logistics solutions for the Amazon, leveraging the waste out of remote areas to bring new products in.

PRIORITY 3

Drive behavioral change with education, raising awareness, research funding and workforce training

2.2.2.5 National Perspective: Brazil

A. Awareness Strategy: Integrate circular economy principles into national schools and universities' curriculums to promote a cultural transformation in consumption patterns and help to ensure that circularity is embedded as a core aspect of future jobs and skills. Develop awareness campaigns and offer targeted training to organizations from different industries and sectors, empowering them to play an active and skilled role in circular value chains.

B. Circularity Practices Training: Train workers engaged in collecting, repairing, sorting and recovering materials, providing sector-specific knowledge, applied skills and technical instructions. Provide workers with literacy, health and safety awareness, entrepreneurship skills and digital access, to properly prepare and support the workforce.

2.2.2.6 Regional Perspective: The Amazon

A. Amazon-Specific Campaigns: Develop culturally relevant awareness and educational initiatives that highlight the impacts of deforestation and waste mismanagement, encouraging local communities to strengthen their role as key stakeholders of the local circular economy.

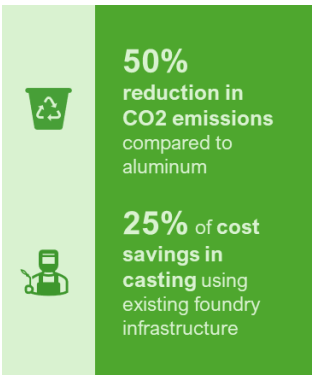
B. Local Workforce Training: Build vocational training programs for local populations focused on developing skills for circular supply chain management, helping to ensure formal integration and appropriate work conditions for regional workers.

2.2.3 LEGACY INITIATIVES

2.2.3.1 Tupy S.A. – Ultra Light Iron (ULI)

What is the initiative: The Ultra-Light Iron (ULI) initiative by Tupy S.A. consists of the development of **ultra-light, high-strength iron components to replace aluminum,** reducing emissions, costs, and resource use, advancing circular economy and energy transition goals. It demonstrates how advanced materials innovation can drive circularity, support sustainable engine design and leverage existing foundry infrastructure, aligning with Brazil's broader goals for circular supply chains. [57]

Figure 13. Key achievements of Tupy's Initiative



Source(s): Tupy; Noticenter

Main Impact: This project applies advanced thin-wall casting technology to produce high-strength iron components to achieve aluminum-like weight, **enabling a 25% reduction in costs and reduction of 50% of emissions.**[58][57] The initiative also leveraged a blended funding approach through self-funding and a reimbursable loan from FINEP (Funding Authority for Studies and Projects), a Brazilian public agency that promotes innovation.[57]

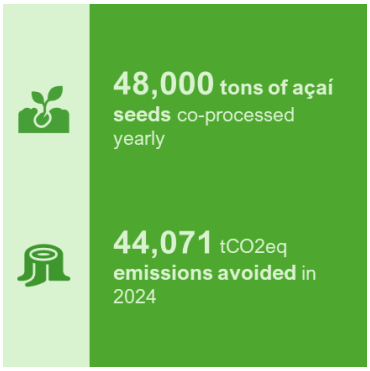
Why this case reinforces the recommendations and priorities: The ULI case relies on **technology to replace raw materials, reducing waste and cutting emissions across the value chain**. By engineering lighter and more durable iron components that compete with aluminum in efficiency, Tupy is **minimizing resource extraction and extending iron's lifecycle**, fostering supply chain circularity.

[57] Tupy. Tupy Gains International Recognition for Innovative Technology (2023).
[58] Noticenter. Tupy has international recognition for its innovative technology(2023)

2.2.3.2 Votorantim Cimentos – Açaí Seed Co-processing

What is the initiative: Votorantim Cimentos uses **açaí seeds to replace fossil fuel in the cement production in Brazil,** leveraging the initiative in their plant in Primavera, Pará. [59] The use of waste and biomass in co-processing reduces carbon emissions, as it replaces petroleum coke in cement production, promoting circular economy by transforming waste into energy.[59]

FIGURE 14. Key achievements of Votorantim's Initiative



Source(s): Folha de São Paulo

Main Impact: This initiative reuses açaí seeds (which represent 80% of the fruit's weight) that were previously discarded and now are serving a new purpose to replace fossil fuels, **feeding into a circular economy and supporting the creation of more jobs.** [60] The cost of açaí seeds is also lower than the cost of the petroleum coke, previously used as fuel in the cement production, therefore **bringing additional economic benefits to Votorantim.**

Why this case reinforces the recommendations and priorities: Votorantim Cimento's açaí seed co-processing demonstrates the **possibility of developing tailored and sustainable solutions to the Amazon region through significant impact in waste management and material innovation, leveraging local biodiversity** and resources to create new circular supply chains.

2.2.4 POTENTIAL OPPORTUNITIES AND IMPACT

Currently, Brazil sends 30 million tons of waste that could be properly disposed of and recycled to landfills and controlled dumps. [61] Poor waste management, which is inconsistent with the National Solid Waste Policy (Law 12.305/10), results in the loss of significant economic opportunities for the country.[61] It's especially important to help address this concern in the Legal Amazon region, where states have the highest rates of landfill usage nationwide, in order to capture the potential economic impact of the circular economy.[62]

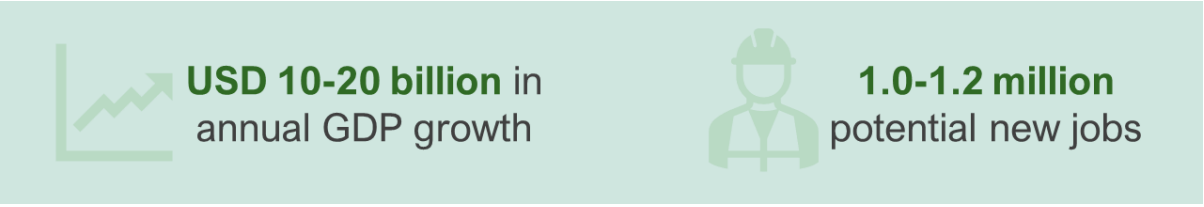
Figure 15: Unlocking Brazil's Potential in Circular Economy [61]

Source(s): CNN Brazil

In addition to savings in indirect costs of the current waste treatment model, adopting a circular economy approach could provide Brazil with substantial socioeconomic benefits, as it creates new value chains and improves current ones. By 2030, the national circular economy is expected to achieve:

Figure 16: Brazil's Opportunities in Circular Economy

[59] Votorantim Cimentos. Açaí, the fruit of our Energy (2024).
[60] Folha de São Paulo. Açaí seed is an energy source in cement production (2025).
[61] CNN Brazil. Brazil Could Waste BRL130 Billion in 2050 Due to Poor Waste Management (2024).
[62] Brazilian Association of Waste and Environment (ABREMA). Amazonas, Maranhão, Roraima and Pará Have the Highest Percentage of Municipalities with Landfills (2024).



Source(s): Instituto AYA & Systemiq

2.2.5 Implementation and Scalability Levers

Advancing the circular economy in Brazil requires actions aiming to create a proper scenario to enable reusing, recycling and redesigning materials. To achieve that in a scalable and sustainable way, it is necessary to strengthen key enablers such as a stable and inclusive regulatory environment, a facilitated flow of capital and a structured agenda for education and capacity-building.

2.2.5.1 Potential Actions to implement and scale in Brazil

1. Monitor the implementation of the ENEC and the NCEP through data and metrics, ensuring effectiveness
2. Define a structured plan to properly educate, integrate and compensate informal workers potentially involved in circular value chains, such as recyclers, waste pickers and repair technicians and mechanics
3. Stimulate circular economy demand through embedding minimum recycled and low carbon content into public and corporate procurement policies, setting frameworks for timelines and volume
4. Implement economic and financial incentives, considering both public and private entities, to foster the redesign of products, reverse logistic systems and circular business models
5. Improve local circular economy leading practices by exchanging knowledge with international governments and private sector actors, leveraging highlighted cases from other countries that might be applicable to Brazil's reality
6. Bring R&D labs, pilot lines and investors to foster R&D, innovation and technology, as well as connect startups, academia and corporates to co-develop prototypes, licensing breakthroughs and spin-out new ventures, aiming to reduce the utilization of virgin raw material
7. Establish governance with forums and hubs that create connections between companies and institutions from different sectors, promoting collaboration agreements and the sharing of resources and knowledge
8. Expand National Circular Economy Plan's educational initiatives to support circular economy principles, including circular training working with waste picker cooperatives aiming to integrate informal workers into formal value chains

2.2.5.2 Potential Actions to implement and scale in Amazon region

1. Engage local communities to participate in discussions regarding regulatory frameworks and decision-making on Amazon's circular economy
2. Ensure national policies help to address the heavily dependance of Amazon's economy on extractive industries, promoting actions to mitigate deforestation and degradation of local biodiversity
3. Strengthen public-private cooperation to invest in infrastructure for reverse logistics in the Amazon and provide tailored incentives and subsidies to foster circular practices in the region
4. Develop local recycling hubs to collect, sort and repurpose waste and byproducts from the Amazon, creating jobs in remote communities

5. **Fund research partnerships between universities, startups and local cooperatives** to innovate new uses of Amazonian biodiversity and byproducts and potentially create regional hubs and eco-industrial parks focused on eco-design
6. **Train community members in green jobs** such as sustainable forestry and bio-based product development, supporting local knowledge systems, and integrating circular practices.

2.3 BIOECONOMY

2.3.1 OVERVIEW

2.3.1.1 Global to local

The Bioeconomy Working Group has advanced a shared vision of the bioeconomy – aligned with the G20 principles[63] – as a model that enables bio-based solutions and the replacement of fossil-based materials, while ensuring sustainable ecosystem use, fostering circularity, and creating positive social impact. It is conceived as a pathway, a multidimensional transition to regenerative land use, to circular production systems, and to community-centered value creation, being already valued at USD 4 trillion annually.[64]

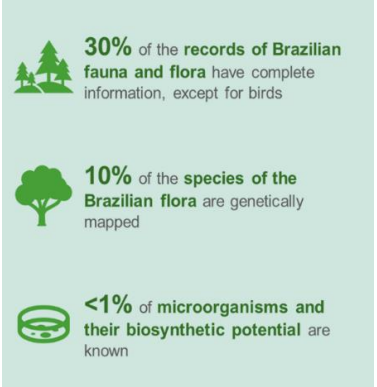
Brazil has the greatest biodiversity on the planet, accounting for around 24% of global biodiversity across different classes of living organisms, which could represent a strategic growth opportunity for the country, with an estimated potential to generate between USD 100-140 billion in revenues by 2032.[65] This prospect is particularly evident in sectors that offer opportunities throughout their value chains, such as agribusiness, health, and cosmetics, for example. The Amazon holds an important economic potential to feed value chains, as bioeconomy activities in the region can achieve profitability up to 9 times greater per area than traditional livestock farming.[66] To unlock the potential of the bioeconomy, it is important that Brazil and the Amazon focus on systematically helping address the critical gaps that persist across finance, infrastructure, workforce development, and technology, by fostering stronger coordination among stakeholders.

2.3.1.2 Challenges for Brazil

Brazil's bioeconomy market is highly fragmented, with numerous small players operating in niche segments and complex value chains, which makes large-scale implementation challenging. This fragmentation is related to the lack of a skilled workforce and technology. Despite its vast biodiversity, Brazil still faces a significant knowledge gap about its own potential and struggles to translate its knowledge into innovation.

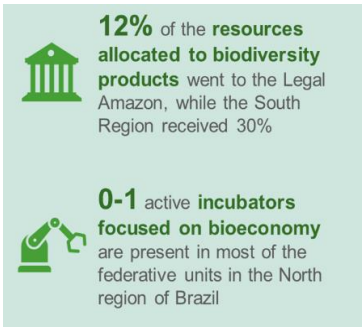
There are also challenges regarding the legal framework for biodiversity in Brazil, which although is advanced in its principles, faces bottlenecks in implementation. Requirements to collect, study or use biodiversity resources, data, and traditional knowledge, are often complex and not intuitive. The National System for the Management of Genetic Heritage and Associated Traditional Knowledge (SisGen), the main tool for registering access to traditional knowledge, currently presents gaps: 48% of registrations do not indicate results, 37% do not specify the purpose of access and 25% do not register the biome of origin.[67][65]

Figure 17. Brazil's Biodiversity Data



Source(s): ICC Brazil

Figure 18. Amazon's Data on Bioeconomy



Source(s): ICC Brazil

2.3.1.3 Challenges for Amazon

Bioeconomy could represent the main opportunity of accelerating the socioeconomic development of the Amazon region. For example, the Amazon has the potential to structure value chains for the bioeconomy that is underused from the perspective of green skills. Communities possess extensive knowledge on local biodiversity that is not fully

[63] G20 reaches consensus and establishes High-Level principles on Bioeconomy
[64] Nature Finance. The Global Bioeconomy (2024).
[65] ICC Brazil. Brazil's Potential on Bioeconomy (2025).
[66] Inter-American Development Bank (IDB). Amazon Restoration Bioeconomy (2024).
[67] ICC Brazil. Brazil's Potential on Bioeconomy (2025).

leveraged due to distance, land insecurity, work informality, low school connectivity and limited access to basic services.[68] Fostering local development is important to unlocking the potential of the bioeconomy. And, in turn, the bioeconomy itself is a powerful driver of local development, creating green jobs and strengthening community resilience.

Challenges related to **access to capital also hinder the effective implementation of the bioeconomy**. There are currently some tailored financial instruments, such as the Amazônia Viva Financing Mechanism (created by Natura, VERT, FUNBIO and IFC) which has disbursed BRL 13 million to 15 cooperatives.[69] Another example is the Amazon Bioeconomy Fund managed by the Inter-American Development Bank (IDB).[70] However, there are still critical gaps in small and mid-scale financing, guarantees and patient capital, which could be bridged through blended finance, risk-sharing and linkages with compliance frameworks to mobilize climate finance for the bioeconomy at scale.

In addition, there is limited infrastructure to enable scaling – in the Amazon, dearth of storage and processing facilities forces producers to sell their products at low prices to brokers with transportation. Combined with logistic challenges and the **lack of innovation infrastructure in the region**, this scenario can stunt the territorial development capacity of the bioeconomy in the region.

2.3.2 BIOECONOMY RECOMMENDATIONS FOR BRAZIL AND AMAZON

PRIORITY 1

Foster convergence across the three Rio Conventions (UNFCCC, CBD and UNCCD) and International Covenant on Civil and Political Rights (ICCPR) & promote the G20 High level principles on Bioeconomy

2.3.2.1 National Perspective: Brazil

A. National Integration of Policies: Promote coordination among sectoral policies (environment, agriculture, science, technology, and innovation) and the agendas of the three Rio Conventions by establishing inter-ministerial forums that guarantee the mainstreaming of the bioeconomy throughout Brazil. Help to ensure that traditional Brazilian communities are included in the policies as knowledge and service providers for the bioeconomy.

B. National Certification Systems: Develop and strengthen national systems for certification and traceability of bioeconomy products, helping to ensure globally recognized sustainability standards and facilitating access to international markets.

C. Local Governance Commitment: Support the structuring of local bioeconomy councils and forums that empower communities and traditional populations, valuing local knowledge and practices, as well as economic development committees and commercial and industrial associations, to foster regional businesses and institutions.

2.3.2.2 Regional Perspective: The Amazon

A. Definition of Certification Frameworks: Establish harmonized and Amazon-focused certification frameworks to enhance access to Amazonian products to both national and international markets.

B. Data Infrastructure: Advocate capacity-building and technical support to strengthen statistical and institutional infrastructure in the Amazon states and traditional communities. Focus on enhancing the ability of cooperatives, organizations, and subnational environmental secretariats to collect, manage, and report integrated data on restoration, forest products, biodiversity, and social impacts.

[68] Science Panel for the Amazon. The role of Indigenous Territories and Protected Areas in Amazon Connectivity (2025).
[69] FunBio. GEF approves $6.2 million for Amazon Viva to invest in cooperatives in the Amazon (2025).
[70] IDB. Amazon Bioeconomy Fund.

PRIORITY 2

Position the bioeconomy as a strategic pillar within the climate solutions agenda of COP, mobilizing finance and technology

2.3.2.3 National Perspective: Brazil

A. Integration of Financial Mechanisms: Design and align a set of financial mechanisms, including economic subsidies, credit lines, equity investments, public procurement, and tax incentives, to help address the diverse risks and stages of bioeconomy projects, while strengthening value chains and unlocking long-term growth.

B. Regulatory and Legal Framework Alignment: Standardize the implementation of Brazil's Biodiversity Law (Law 13,123/2015)[71] through protocols that provide legal certainty and develop a dedicated bioeconomy taxonomy with well-defined criteria for products and processes linked to biodiversity, enabling consistent monitoring of investments and financing flows, supporting transparency and scalability in the sector.

C. Enablement of Market Conditions: Create the conditions for a thriving bioeconomy by embedding bio-based solutions into public procurement to help secure minimum demand and de-risk investments. Encourage the private sector to replace synthetic inputs with alternatives based on Brazilian biodiversity through targeted tax incentives and other market signals. Strengthen international cooperation to harmonize regulatory standards with consumer preferences, while establishing a stable and predictable framework to lower compliance costs and build confidence among investors and users.

D. Promotion of Research and Innovation: Establish national research programs to develop value chains based on biological resources, supporting universities, technical institutes, startups, innovation centers and local communities, focusing on leveraging qualified human capital. Expand research on the bioeconomy's potential across other Brazilian biomes, fostering an integrated and synergistic strategy for sustainable development across Brazil's diverse landscapes.

2.3.2.4 Regional Perspective: The Amazon

A. Regional Risk Management: Develop and implement integrated risk management strategies for the Amazon by aligning risk evaluation methodologies with project-specific data from restoration efforts, agroforestry systems, and seed networks. Utilize regional benchmarks and AI-driven analytics to reduce excessive risk premiums that hinder small-scale and early-stage investments. In parallel, expand guarantee and insurance instruments for cooperatives, indigenous associations, and community-led projects, while adapting and scaling existing risk transfer mechanisms to suit the unique realities of the Amazon.

B. Catalytic Capital: Promote the catalytic use of concessional capital within Amazon-focused blended finance vehicles. Mobilize public and philanthropic actors, including the Amazon Fund, Fundo Vale, and international climate funds, to provide large-scale first-loss tranches, reducing risk perceptions for private investors and channeling resources into Amazonian restoration and socio-biodiversity value chains.

C. Project Preparation and Matchmaking: Strengthen regional platforms within the Amazon that connect local communities, cooperatives, anchor companies, universities, and financial providers, thereby facilitating the development, structuring, and financing of innovative projects with positive socio-environmental impacts.

D. Innovation Advancement: Foster the creation and expansion of regional innovation hubs on the Amazon by encouraging partnerships with CTCN (Climate Technology Centre and Network) and multilateral agencies. These efforts should accelerate technology transfer and scale up domestic manufacturing capacity in bio-based industries.

[71] Brazil's Biodiversity Law (13.123/2015)

2.3.3 LEGACY INITIATIVES

2.3.3.1 Natura – Structuring Value Chains

Figure 19. Natura's Initiative Impact Data

Source(s): Trellis; Fator Brazil

What is the initiative: Through mutually beneficial partnerships with 45 communities spanning the breadth of the Amazon, from the coast of Maranhão state to the foothills of the Andes in Ecuador, **Natura has structured profitable, sustainable value chains that benefit families and protect 2 million hectares of forest, while generating wealth and growth. Natura's Eco Park is an innovation and production center that brings together science, technology, communities, and the market.**[72] This hub is responsible for organizing the value chain: from the collection of ingredients in the forest to their transformation into bioactive and final products, advancing innovation in the region.[72]

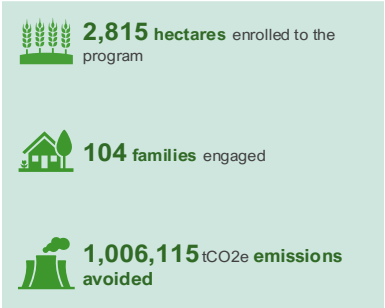
Main Impact: This model is **designed so that the customer recognizes the product's value, which is later returned to reward not only the supply of the ingredients, but also the genetic and cultural knowledge of the communities involved in the process.**[73] It is a business model that helps preserve the forests by generating economic value and mobilizes catalytic capital as it's **financed through blended finance mechanisms**. An example is the involvement of the IFC (International Finance Corporation), **supporting value chains from both the supply and demand sides.** It also embraces a collaborative approach matchmaking diverse agents and bringing together the private, public, and third sectors, as well as academia, to build a robust ecosystem that strengthens the bioeconomy landscape in Brazil.

Why this case reinforces the recommendations and priorities: Natura's example embodies several important elements for advancing bioeconomy priorities in the Amazon, including **innovation, technological advancement, capital mobilization, customer engagement, and empowerment of local communities**. By structuring comprehensive value chains and facilitating collaboration among a wide range of stakeholders, Natura contributes to lasting positive change. This integrated approach not only enhances the resilience and sustainability of the region but also **firmly positions the bioeconomy as a strategic focus for the COP 30 agenda.**

2.3.3.2 Dengo Chocolates – Credits for Life

What is the initiative: The initiative aims to incorporate regenerative agriculture, technology, and social impact into the cocoa and chocolate industry, which has historically been linked to unsustainable practices.[74] In partnership with ReSeed, **Dengo is implementing a results-based scheme to remunerate environmental services in cabruca cocoa systems, with continuous Measurement, Reporting and Verification (MRV) and outcome-based financing**, resulting in social, environmental and economic benefits.[74]

Figure 20. Dengo's Initiative Impact Data



Source(s): Bioeconomia.eng.br

Main Impact: Dengo is mobilizing climate finance to conserve the Atlantic Forest and promote cabruca agroforests, improving rural livelihoods and fostering biodiversity and carbon credits. It directs around 80% of the economic returns to the producers through direct payments and technical assistance, strengthening local communities and the cocoa value chain.[74] This initiative **has potential to scale, as it is replicable across other cocoa/agroforestry landscapes using the same MRV and payment logic**, and it

[72] Trellis. Natura's formula for cultivating Indigenous relationships in the Amazon rainforest (2024).
[73] Fator Brazil. Natura celebrates 10 years of its industrial park in Benevides (2024).
[74] Bioeconomia.eng.br. Dengo Chocolates and ReSeed Form Pioneering Partnership to Promote Sustainable Agriculture through Carbon Credits.

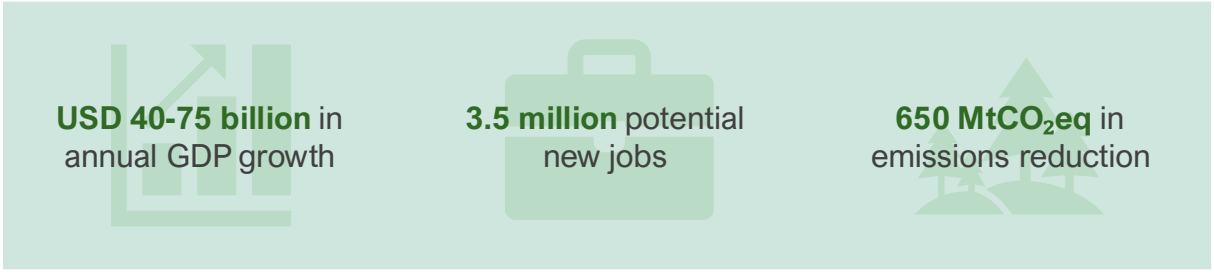
pursues reaching a total of ~10 MtCO2e of avoidance and removals over 20 years with the continuation of the program.[75][74]

Why this case reinforces the recommendations and priorities: Dengo's initiative to mobilize climate finance and foster socio-economic development stands as an example for Brazil, demonstrating how **resources can be leveraged to reduce emissions, stimulate economic growth, and deliver positive social impact**. Situated in the Atlantic Forest and possessing considerable scalability potential, this case also illustrates that Brazil's advantages are not confined solely to the Amazon. It can serve as a model for other value chains across the country, offering valuable lessons for broader sustainable development.

2.3.4 Potential Opportunities and Impact

The bioeconomy holds the potential for comprehensive impact, requiring investments in infrastructure, mobility, logistics, science, and technology. However, by prioritizing innovation and the responsible and sustainable use of regional biological resources, significant progress can be achieved by 2030.

Figure 21. Brazil's Opportunities in Bioeconomy



Source(s): Instituto AYA & Systemiq

With an ongoing focus, these benefits can be even more enduring. According to a study by ABBI (Brazilian Association of Bioinnovation), a scenario that embraces investment in diverse technological pathways and bioeconomy products can lead to substantial changes in Brazil's economy compared to the baseline scenario, which reflects current policies in the country.[76]

Figure 22. Unlocking Brazil's Bioeconomy Potential

Source(s): ABBI

2.3.5 Implementation and Scalability Levers

Accelerating the bioeconomy in Brazil and the Amazon requires coordinated action across four main strategic levers: enabling the production of biological assets, advancing technology and innovation,

[75] Information submitted via CNI platform
[76] Bioeconomy's Impact in Brazil (ABBI)

mobilizing finance and trade, and establishing comprehensive policy frameworks and metrics. Helping to address these critical areas is important to effectively implement and scale the bioeconomy.

2.3.5.1 Potential Actions to implement and scale in Brazil

1. Promote knowledge-sharing with other industrialized and developing countries on strategic bioeconomy topics, such as coordination of value chains, regulatory and financial practices, and infrastructure expansion.
2. Promote international trade harmonization (e.g., eliminate market-distorting barriers in accordance with World Trade Organization – WTO - rules).
3. Mobilize finance for bioeconomy, promoting financial incentives (e.g., tax incentive) for bioeconomy, and improving access to capital for bioeconomy companies and initiatives, as well as facilitated and democratized access for small producers and farmers.
4. Advance on standards and labels on a product's impact (e.g., carbon footprint); and align policy framework for bioeconomy and bio-based products.
5. Improve data collection and access regarding Brazilian biodiversity, including species, metrics, leading practices, and policy development.
6. Enable value chains through the development of productive models, processing facilities, and production distribution for small producers, helping to ensure sustainable and long-lasting results.
7. Foster innovative applications for biological resources, to gradually enhance production efficiency and replace synthetic fossil-based materials and non-renewables energy sources.
8. Engage the stakeholders involved to build an active and efficient bioeconomy ecosystem, such as governments, farmers and producers, financial institutions and insurers, corporate actors, civil society groups, knowledge creators, Development Finance Institutions (DFIs) and Multilateral Development Banks (MDBs), philanthropic actors and coalitions of supply chains.

2.3.5.2 Potential Actions to implement and scale in Amazon region

1. Empower communities, rural producers and companies to sustainably manage their biodiversity assets.
2. Help to address concerns that affect local remote communities, such as poor infrastructure, basic services and access to technology, connectivity and education related to bioeconomy skills.
3. Establish hubs and networks to identify biodiversity potential of the Amazon region, facilitate knowledge and technology transfer, promote traditional sustainable practices, reinforce the integration among stakeholders, improve the market access of local biodiversity products and create opportunities, such as new businesses and green jobs.
4. Develop incentive models for producers and equitable benefit-sharing mechanisms that reward sustainable practices, strengthen local livelihoods, and foster long-term dedication to the bioeconomy.
5. Create capacity-building and educational programs, as qualified professionals and socioeconomic development are key enablers.
6. Boost logistics infrastructure in the Amazon to enhance the value chain, enabling bioeconomy products to reach markets competitively and stimulating supply and demand.
7. Oversee local governance structures to coordinate and manage key elements of the Amazon bioeconomy, considering its unique local characteristics.

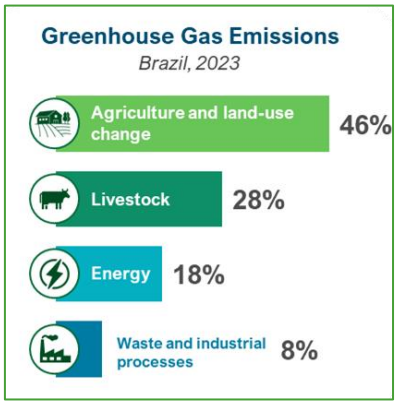
2.4 Food Systems

2.4.1 Overview

2.4.1.1 Global to local

Food systems are one of the backbones of society, generating around 35% of jobs and 10% of global gross domestic product (GDP).[77] However, they also account for approximately 30% of greenhouse gas emissions.[78] In Brazil, agriculture, land-use change and livestock are responsible for 74% of total emissions, highlighting a significant opportunity for transition.[79] The country already adopts mature and scalable climate-smart practices, such as no-till farming, used in about 95% of crop production, and integrated crop-livestock-forestry systems (ILPF), covering between 15 and 17.4 million hectares.[80] These regenerative practices remove around 30 million tons of carbon annually, enabling climate finance through Monitoring, Reporting, and Verification results.[80] With collaborative leadership among government, the private sector, and local communities, Brazil has the opportunity to become a global reference in resilient, inclusive, and sustainable food systems.

Figure 23. Greenhouse Gas Emissions in Brazil

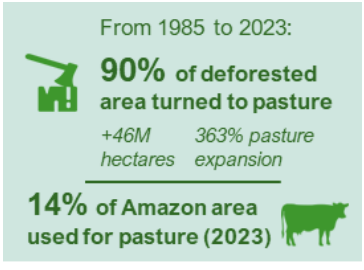


Source(s): SEEG Brasil

2.4.1.2 Challenges for Brazil

The Rural Environmental Registry (CAR)[81] is a critical tool for mapping and monitoring vegetation, helping to ensure compliance with environmental laws, and enabling access to credit and climate finance for rural properties. Despite its progress, unresolved concerns still hinder land regularization and access to investment, making the implementation of the Environmental Regularization Program (PRA) important.[82] Informality in rural areas and the lack of calibrated tropical parameters for sustainable practices complicate traceability and climate finance efforts.[83] Additionally, global frameworks remain fragmented and poorly adapted to Brazil's reality, excluding smallholders from the energy transition.[83] An added challenge is the disconnection between rural credit and verified outcomes. Programs like Plano Safra and ABC+ are not yet systematically linked to performance indicators, limiting the use of financial instruments that reward verified social and environmental results, such as sustainable practices, carbon reduction, and biodiversity conservation.[84] [85]Overcoming these barriers can require collaborative leadership, institutional innovation, and alignment among tropical science, public policy, and investment.

Figure 24. Deforestation and Grazing in the Amazon



Source(s): Dialogue Earth

2.4.1.3 Challenges for Amazon

The Amazon region faces complex challenges in balancing environmental conservation with productive development, requiring context-specific solutions. Since 1985, deforestation has been largely associated with the expansion of pastures for cattle ranching.[86] Although deforestation fell by 30.6% in 2024, there is a growing risk of pressure shifting to the Cerrado

[77] World Economic Forum. Transforming Food Systems with Farmers: A Pathway for the EU (2022).
[78] Eat Forum. New landmark EAT-Lancet Commission warns food systems breach planetary limits (2025).
[79] SEEG Brazil. Analysis of GHG emissions 1970-2023 (2024).
[80] Arapyaú Institute. Climate and Nature Solutions in Brazil (2022); Rede ILPF. ILPF in Numbers.
[81] Federal Government. Rural Environmental Registry.
[82] Climate Policy Initiative. Where Does Brazil Stand with the Implementation of the Forest Code? (2024).
[83] Climate Policy Initiative (CPI). Brazilian Agricultural Mitigation and Adaptation Policies: Towards Just Transition (2023).
[84] ABC+. Plan for Adaptation and Low Carbon Emission in Agriculture (2021); Safra Plan 2024/25;
[85] Information submitted via CNI platform
[86] Dialogue Earth. Why cattle ranching is the biggest deforestation driver in the Amazon (2022).

biome, highlighting the need for integrated strategies across biomes.[87] The implementation of the Environmental Services Payment Law (Law 14,119/2021)[88] should advance to benefit small farmers and vulnerable municipalities, rewarding outcomes in soil, water, and biodiversity, in addition to carbon. The financing architecture remains fragmented, hindering the connection between rural credit and performance indicators.[89] The region's low representation in global governance processes limits the inclusion of local and Indigenous producers.[90] Overcoming these obstacles could require innovation, equity, and mechanisms to foster Amazonian leadership.

2.4.2 Food Systems Recommendations for Brazil and Amazon

PRIORITY 1

A global minimum viable framework, science-based and results-oriented, to transform food systems and mobilize capital for effective and scalable practices

2.4.2.1 National Perspective: Brazil

A. Define a Brazilian outcome-based Minimum Viable Framework (MVF): Define a national framework based on core outcomes to guide the transformation of food systems toward climate-smart food production, with the participation of leading national research institutions, public agencies, and agricultural and livestock industries. Global frameworks remain heterogeneous and complex for smallholders, and many are not farmer centric.[91][83] In Brazil, this requires adapting them to emerging contexts by developing low-cost, farmer-centric MRV solutions that reduce complexity, increase accessibility, and prevent the exclusion of small and medium producers.[92]

B. Embed outcomes in public programs: Map MVF indicators to national instruments so access to public capital reflects verified performance, with ABC+ targets and Plano Safra credit conditions used as the policy "hooks". [93] Adopt an MRV system that integrates desired outcomes and key metrics into Brazilian agricultural policy goals, aligning access to public capital with credible performance measurement systems.

C. Help ensure equitable and inclusive adoption and deployment of MRV: Allocate funding to help ensure the widespread, equitable rollout of inclusive MRV systems that do not create barriers to farmer uptake or access to finance, especially for smallholders.

2.4.2.2 Regional Perspective: The Amazon

A. Help ensure Brazil-fit outcome-based MVF with Amazon representation: Co-author Minimum Viable Framework Guidelines around core outcomes with Amazon-region participation from research institutions such as Brazilian Agricultural Research Corporation (Embrapa) and state institutes, producer organizations and Indigenous Peoples and Local Communities (IPLC) leaders.

B. Design and deploy shared and tiered MRV: Leverage existing tools such as the National Institute for Space Research (INPE)'s Project for Monitoring Deforestation in the Legal Amazon (PRODES) for baselines and Real-Time System for Detection of Deforestation (DETER) for rapid alerts, complemented by farmer-reported data and periodic field sampling to keep costs manageable while sustaining credibility in Amazon municipalities.

[87] INPE. Estimated deforestation in the Legal Amazon (2024).
[88] Law 14.119/2021. National Payments for Environmental Services.
[89] World Bank. A Balancing Act for Brazil's Amazonian States (2023).
[90] International IDEA. Indigenous inclusion in UN climate talks – What progress ahead of COP30? (2025).
[91] Climate Policy Initiative (CPI). Brazilian Agricultural Mitigation and Adaptation Policies: Towards Just Transition (2023).
[92] Reagen10. Outcomes-Based Framework overview (2023).
[93] MAPA. ABC+ Plan For adaptation and Low Carbon Emission in Agriculture (2021); Safra Plan 2024/25 Official Page.

PRIORITY 2

Foster productivity growth through the development and scaling of advanced, sustainable and resilient technologies as well as agronomic technical assistance to producers that combined tackle the nexus issues related to environment, resilience, food security and affordability/access, securing the inclusion of least developed countries

2.4.2.3 National Perspective: Brazil

A. Foster farmer-centric, inclusive delivery at scale: Expand agronomy and digital advisory through research-extension networks led by institutions such as Embrapa and public–private partnerships such as ICLFS Network (*Integrated Crop-Livestock-Forestry Systems*), enabling adoption of integrated and regenerative packages in tropical systems.

B. Incentivize Technology & Technical Assistance (TA) hubs: Co-invest with the private sector and research/extension networks to deliver integrated technology bundles paired with continuous agronomic technical assistance. Embed simple, farmer-centric data capture in the TA workflow so operations are MRV-ready without adding reporting burden to smallholders.

2.4.2.4 Regional Perspective: The Amazon

A. Tropical Fast-Track & Innovation-oriented Public Procurement: Create a regulatory and applied R&D sandbox to test, adapt, and validate high-impact technologies for tropical systems (biotechnologies/ biologicals, digital tools, climate-smart practices), with priority deployment in Amazon-relevant value chains and territories.

B. Develop local practice packages: Prioritize climate-smart agronomy suited to Amazon and Cerrado conditions, with iterative learning cycles documented in Embrapa/Rede ILPF guidance.

PRIORITY 3

Build breakthrough models for financing and collaboration to support farmers' transition to resilient and sustainable food systems

2.4.2.5 National Perspective: Brazil

A. Link finance to verified outcomes: Progressively tie concessional terms in Plano Safra and ABC+ to MVF indicators so MRV becomes an enabler of better rates and access rather than a barrier. Climate and rural credit lines are large but not yet systematically linked to verified outcomes, requiring integration of mechanisms such as the National Bank for Economic and Social Development (BNDES) Eco Invest and the Brazil Investment Platform with MVF/MRV standards.[94]

2.4.2.6 Regional Perspective: The Amazon

A. Foster blended vehicles for transition: Use BNDES Eco Invest and the Brazil Investment Platform to help crowd in private capital with guarantees and first-loss, financing producer transitions in Amazon supply chains.

B. Pay for ecosystem services beyond carbon: Implement the National Payment Ecosystem Services (PES) Law to reward verified soil, water and biodiversity outcomes alongside carbon, with priority to smallholders and vulnerable Amazon municipalities.Erro! Marcador não definido.

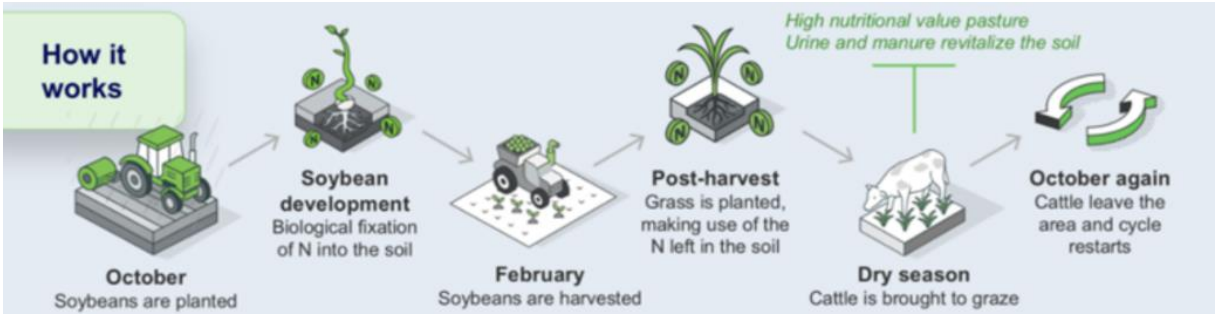
[94] BNDES. Eco Invest Brazil Blended Finance Program; Brazilian Ministry of Finance. Brazil Climate & Ecological Transformation Investment Platform (BIP).

2.4.3 LEGACY INITIATIVES

2.4.3.1 Amazon Transition Zone Transformation: The Roncador Regenerative Farming System

What is the initiative: a large-scale regenerative agriculture initiative that has integrated crop and livestock production since 2008, across more than 53,000 hectares in the transition zone between the Cerrado and the Amazon.[95] [96]Its goal is to transform conventional farming practices into a sustainable, productive, and low-impact model, enabled by data-driven decision making and results verified by independent audits.[95]

Figure 25. Functioning of the Regenerative Farming System

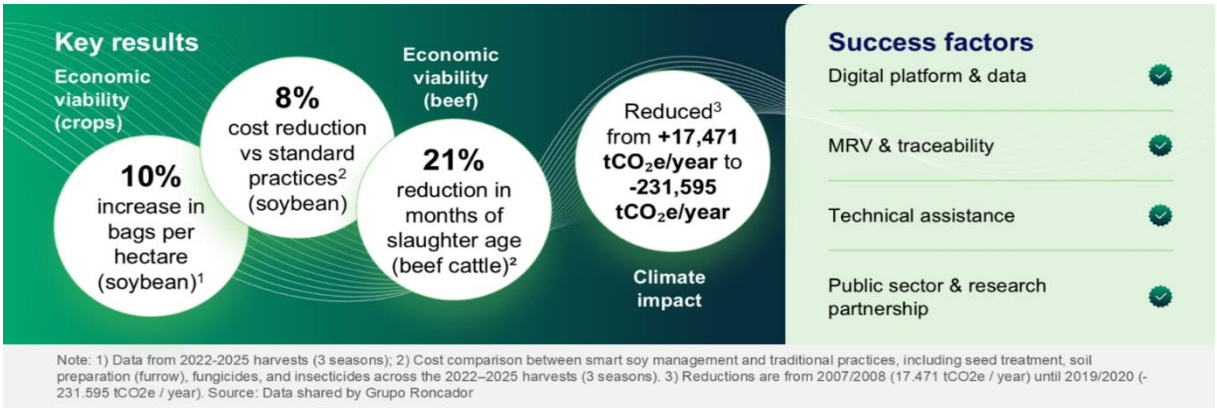


95 *Source(s):* Information and image provided by Grupo Roncador

Main Impact: To help address declining soil fertility, biological regeneration was implemented using calcium silicate, native microbial inoculants, and manure composting, reversing degradation and reducing input dependency. Synchronized rotations of soybeans, corn, forage, and timed cattle grazing enable year-round land use without expansion. Roncador Farm went from being a net emitter to a net absorber of greenhouse gas emissions, soybean productivity increased while costs fell, and beef production became more efficient with reduced slaughter age.

Why does this case reinforce the recommendation and priority: This highlights the importance of long-term, data-driven focus on sustainability by demonstrating, in a concrete and large-scale way, that it is possible not only to reconcile but also to enhance agricultural productivity, climate mitigation, and social inclusion. [97] The Roncador Integrated Regenerative System shows that soil restoration based on biological processes reduces external dependencies and generates measurable economic, environmental, and social benefits. Efficient land use through synchronized crop-livestock rotations that maximize land use year-round, and data-driven management with robust traceability further contribute to these outcomes.

Figure 26. Results and Success Factors of The Roncador System



95 *Source(s):* Information and image provided by Grupo Roncador

[95] Grupo Roncador. Bridging Tradition and Technology in Farming (2023).
[96] Information submitted via the official CNI platform
[97] Information submitted via the official CNI platform

Social impact is clear, with around 350 employees, approximately 1,000 residents, and access to quality education for all children living on the farm.[97] Moreover, the MRV system, audited by third parties such as Embrapa, FAO and IBS, helps to ensure transparency of results and facilitates replicability, attracting investment and financing. This allows local results to be transformed into scalable models that help strengthen the sustainability agenda in Brazil and the Amazon. A digital platform, technical assistance, and partnerships with Embrapa and universities could enable the model's adaptation to other tropical contexts, further expanding its transformative potential.

2.4.4 Potential Opportunities and Impact

The implementation of food systems in Brazil presents a significant opportunity to deliver positive environmental impacts for the country, creating room for sustainable growth without further deforestation. This potential is reinforced by ABC+ Plan's considerable targets: [98] [99]

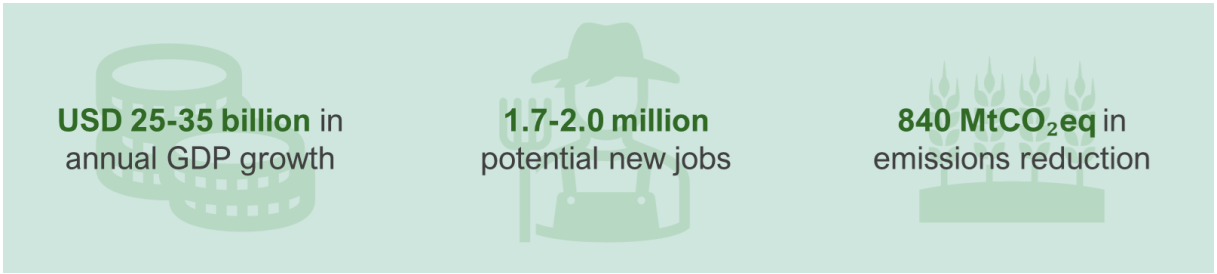
Figure 27. ABC+ Plan Environmental Targets

Source(s): Brazilian Ministry of Agriculture and Livestock

In addition to fostering a more favorable environmental scenario, significant national socioeconomic impact can also be achieved through food systems, benefiting the economy and rural workers by improving farm productivity and profitability. These advantages can be further enhanced through the formalization of data and the use of appropriate financial mechanisms.

Particularly by adopting sustainable agricultural practices, the following outcomes are also estimated by 2030:[100]

Figure 28. Brazil's Opportunities Within Sustainable Agriculture and Food Systems



Source(s): Instituto AYA & Systemiq

2.4.5 Implementation and Scalability Levers

To accelerate the adoption and scaling of climate-smart food systems practices in Brazil, particularly in regions such as the Amazon, a set of strategic actions may be required. These should encompass technical and agronomic support as well as financial and governance mechanisms. The proposed initiatives aim to strengthen institutional capacity, help to ensure inclusive access to technologies and services, and remove

[98] Embrapa. Brazil has 28M ha of degraded pastures with agricultural potential (2024).
[99] Brazilian Ministry of Agriculture and Livestock. ABC+ Targets.
[100] Instituto AYA & Systemiq. Pathways to Brazil's Ecological Transformation Plan (2023).

regulatory bottlenecks that might hinder the expansion of large-scale sustainable and regenerative agriculture.

2.4.5.1 Potential Actions to implement and scale in Brazil

1. Provide technical and agronomic support with equitable access: Scale technical assistance and digital advisory through research-extension networks and guarantee equitable access for smallholders and IPLCs, including training local MRV technicians across frontier municipalities.
2. Calibrate tropical factors: Establish long-term field plots and calibration networks led by research institutions such as Embrapa and public–private partnerships such as Rede ILPF to generate Tier 2/3 parameters for soil carbon, pasture recovery and methane, especially in the Amazon and Cerrado.[101]
3. Link finance to outcomes: Gradually tie agri-food public funding with verified positive outcomes so MRV becomes an enabler for better rates and access rather than a barrier.
4. Build shared, tiered MRV and deploy it inclusively: Allocate funding to help ensure the widespread, equitable rollout of inclusive MRV systems. Especially in Amazon contexts, with the aim to combine existing tools such as INPE's open satellite programs (PRODES and DETER) with farmer-reported data and periodic field sampling to reduce MRV cost and keep credibility.
5. Help address compliance bottlenecks: CAR (Rural Environmental Registry - Cadastro Ambiental Rural) analysis and PRA(Environmental Regularization Program - Programa de Regularização Ambiental) execution still face significant backlogs that delay bankability and slow the scale-up of outcomes-based finance in frontier regions; accelerate validation through streamlined processes, stronger institutional capacity, and digital tools to unlock credit and expand sustainable practices.[102]

2.4.5.2 Potential Actions to implement and scale in Amazon region

1. MVF governance and inclusion: Help to ensure Amazon-region representation in the MVF Guidelines process through research institutions such as Embrapa and state institutes, producer organizations and IPLC leaders, with public–private partnerships such as Rede ILPF as examples.
2. Mobilize blended vehicles: Use BNDES Eco Invest and the Brazil Investment Platform to provide guarantees and first-loss that de-risk farm-level loans and corporate offtakes in Amazon supply chains.
3. Pay for ecosystem services: Implement the National PES Law 14.119/2021 to reward verified soil, water and biodiversity outcomes alongside carbon, prioritizing smallholders and vulnerable Amazon municipalities.
4. Strengthen Local Value Chains: Enhance the integration of smallholders and traditional communities into Amazonian value chains by improving logistics and market access. This includes activities such as aquaculture of native fish species (e.g., tambaqui and pirarucu) as well as the cultivation of açaí, Brazil nuts, cupuaçu, and other regional products. Sustainable aquaculture and the production of local foods and forest-based products already contribute significantly to income, food security, and the cultural preservation of the region. Expanding support for these value chains can create more economic opportunities, promote forest conservation, and reinforce regional socio-economic development.

[101] ILPF reference and technical overview.
[102] Climate Policy Initiative (CPI) & PUC-Rio. Where Are We In Implementing The Forest Code? (2024).

2.5 NATURE-BASED SOLUTIONS

2.5.1 OVERVIEW

2.5.1.1 Global to local

Nature-based Solutions (NbS) are approaches that leverage the protection, sustainable management, and restoration of ecosystems to simultaneously tackle climate change, biodiversity loss, water security, food supply, and disaster risk, integrating conservation with economic and social objectives.[103] Even the most ambitious decarbonization scenarios show that emission reductions alone are not enough to stabilize global temperatures – carbon dioxide removal (CDR) will also be needed at scale.[103] NbS both avoid emissions and remove carbon, making them the most immediate, scalable, and affordable CDR option currently available.[103]

The Agriculture, Forestry and Other Land Use (AFOLU) sector can deliver up to 20–30% of the global mitigation required.[104] Further, protection, restoration, and improved management of ecosystems could deliver up to 54% of that.[104] Brazil occupies a central position in advancing this agenda as it holds the world's largest biodiversity with more than one-third of tropical forests, and 60% of the Amazon.[105] [106] Therefore, environmental preservation is important to the country's contribution to global mitigation and adaptation, and also an opportunity to pursue new development pathways through nature-based solutions and bioeconomy.

2.5.1.2 Challenges for Brazil

In addition to its unparalleled biodiversity, Brazil has over 28 million hectares of degraded pastures that could be restored and allocated to agriculture, livestock, energy, and reforestation, as outlined in the National Plan for the Conversion of Degraded Pastures, developed by BNDES and Banco do Brasil.[107] The country has the potential to account for up to 15% of global carbon removal opportunities through NbS.[108]

Brazil's emissions profile is also unique: around 70% of national emissions come from the Nature & Agriculture sector, according to the National Inventory of Anthropogenic Emissions (2022), making this sector key to meeting the country's greenhouse gases (GHG) reduction targets, particularly given the vast areas that must be protected to ensure permanence.

Figure 29. Brazil's Forestry Overview

Source(s): IRI; Embrapa; Brazil Alliance NBS; National Inventory

Institutionally, Brazil benefits from strong sectoral climate plans such as ABC+, Planaveg[109], and the *Nova Indústria Brasil* (NIB)[110]. On the regulatory front, instruments like the New Brazilian Forest Code (Law 12,651/2012)[111], National Plan for the Recovery of Native Vegetation (Planaveg), and the recently approved Bill for a Regulated Carbon Market provide enabling conditions and a competitive advantage in advancing NbS.[112] Finally, on the financial front, innovative mechanisms are emerging with notable examples including Eco Invest Brasil, a government and

[103] International Union for Conservation of Nature (IUCN). Nature-based Solutions.
[104] Intergovernmental Panel on Climate Change (IPCC). AR6 (2022).
[105] Interfaith Rainforest Initiative (2021).
[106] World Bank Group. Eight Amazonian Countries with the Power to Save the Planet (2023).
[107] Embrapa (2024).
[108] Brazil Alliance NbS. Scaling the Voluntary Carbon Market in Brazil Report (2023).
[109] Brazilian Government. ABC+ Planaveg (2020-2030).
[110] Brazilian Government. Nova Indústria Brasil (NIB).
[111] New Brazilian Forest Cod Law (12.651/2012)
[112] Planalto. President Lula signs law creating regulated carbon market in Brazil (2024).

BNDES-led initiative, and the Brazil Investment Platform (BIP), a national platform designed to facilitate financing for climate projects.[113]

2.5.1.3 Challenges for the Amazon Region

The Amazon adds a layer of complexity and importance to Brazil's NbS agenda, given that the region has approximately 50 million hectares of public forests without designated use, creating legal uncertainty and exposing them to illegal occupation, deforestation, and land speculation.[114] The advance of illegal activities such as mining, logging, and deforestation for cattle ranching also exerts direct pressure on territories with NbS potential as short-term gains from predatory use often outweigh sustainable alternatives.[115][114]

And despite its vast biodiversity, the Amazon also faces scientific and technological gaps that can hinder the creation of sustainable value chains. Weak connections between research, traditional communities, and the private sector can limit scalable solutions. Helping to address these challenges is important to unlock Nature-based Solutions in the Amazon and help ensure long-term environmental, social, and economic benefits.

2.5.2 NbS Recommendations for Brazil and the Amazon

PRIORITY 1

Clarify and disseminate the role of NbS in the global climate transition as an essential infrastructure to enable global net zero (both for the pathway and at the steady state)

Given that 70% of Brazil's emissions come from the Nature & Agriculture sector[116] [117], the country will likely not be able to meet its GHG reduction targets without valuing the role of nature and likely won't be able to secure proportional access to global climate finance unless this role is internationally recognized.

2.5.2.1 National Perspective: Brazil

A. Explicitly recognize NbS in national and international frameworks: Position NbS at the core of climate policies (NDCs, National Policy on Climate Change (PNMC)/Climate Plan, National Adaptation Plan (NAP) and Planaveg) recognizing it as an important lever in national plans and international negotiations, linking them to goals and budgets, and reinforcing public advocacy for their inclusion in international commitments and frameworks.

B. Communicate applied science: Systematically communicate the scientific basis of NbS through official campaigns and sectoral guidance linked to national plans such as NAP, Climate Plan, Planaveg and ABC+, while also framing NbS in the Amazon as a source of jobs, water security, and climate resilience.

C. Clarify selection and funding criteria that do not discriminate against NbS: Establish financing standards for carbon removal projects based on durability and scalability, ensuring that resources flow to NbS with scientifically proven, long-term mitigation potential. Incorporate this framework into Nationally Determined Contributions (NDCs), green finance taxonomies, and United Nations Framework Convention on Climate Change (UNFCCC)/Art. 6 protocols, to secure NbS' place in the climate solutions portfolio and avoid their exclusion under overly theoretical permanence criteria.

2.5.2.2 Regional Perspective: The Amazon

[113] Bloomberg. Brazil Climate and Ecological Transformation Investment Platform (2024).
[114] Forest Code Observatory. Forest Code in the Amazon and land regularization (2023).
[115] WRI. Organized Crime in The Amazon: A Growing Threat to the World's Greatest Tropical Rainforest(2025)
[116] Sumauma. Brazil's Climate Plan: An ugly reflection of agribusiness (2025)
[117] Brazil's Ministry of science, technology and innovation. (2022). National Inventory of Anthropogenic Emissions.

A. Embed NbS into state-level agendas: Incorporate NbS such as PlanBio in Pará, bioeconomy initiatives in Amazonas state and PPCDAm (Action Plan for the Prevention and Control of Deforestation in the Legal Amazon) into state-level strategies through portfolios of: (i) protection (e.g., The Amazon Region Protected Areas Program (ARPA)), (ii) restoration of legal liabilities (e.g., The Forest Code Law and Planaveg), and (iii) community-based forest management and concessions.

PRIORITY 2

Promote continuous improvement of integrated evaluation standards for NbS impacts, encompassing critical ecosystem services (e.g., carbon, water, biodiversity), while ensuring that regional realities and different biomes are adequately accounted for

Evidence shows that tropical forests and soils absorb more carbon than temperate forests, making NbS a competitive advantage for Brazil as a global provider of ecosystem services.[118] Developing parameters that reflect this potential will be key to positioning the country in a future where the value of nature is fully integrated into economic frameworks.

2.5.2.3 National Perspective: Brazil

A. Develop Tier 2 and 3 tropical parameters: Finance forest inventories, soil carbon assessments, and regeneration series by biome and state to reduce baseline error, leakage, and permanence risks, which are important for carbon credit eligibility under the Brazilian Emissions Trading System (SBCE). Leverage leading national institutions, such as Embrapa, to accelerate data collection and the development of local solutions.

B. Build a robust national data infrastructure: Establish a national NbS data hub integrating systems such as TerraBrasilis/INPE, CAR/SICAR, National Forest Information System (SNIF)/National Register of Public Forests (CNFP), biodiversity and protected areas inventories (ICMBio), and socioeconomic databases with open Application Programming Interfaces (APIs) for projects, verifiers, and regulators.

2.5.2.4 Regional Perspective: The Amazon

A. Link MRV and climate finance: Condition access to climate finance on the adoption of transparent and integrated MRV systems that are implemented broadly and inclusively, helping to ensure they serve as mechanisms of accountability rather than barriers to funding. For example, in the Amazon region, PRODES could be used for baselines and reversal monitoring; DETER for rapid response; MapBiomas for cross-check verification; and integration with CAR and CNFP to combat land grabbing.

B. Develop social indicators: Establish co-designed social metrics with local communities to measure participation, benefits, and impacts in a consistent and meaningful way.

PRIORITY 3

Include Nature-based Solutions carbon credits and offsets in national strategies and carbon pricing schemes

Brazil has the potential to become a leading exporter of NbS carbon credits, with vast areas of vegetation to preserve and millions of hectares of degraded land to restore. The operationalization of the SBCE will be a key accelerator, as the law already provides for Controlled Baseline Emission Certificates and Verified Emission Reduction Credits, recognizes market-based REDD+ (Reducing Emissions from Deforestation and Forest Degradation) with safeguards, and aligns with UNFCCC/Article 6. If properly designed and

[118] U.S. National Science Foundation (2019).

implemented, the SBCE could position Brazil as a global benchmark for integrating regulated and voluntary markets, including NbS, and inspire other countries to follow suit.

2.5.2.5 National Perspective: Brazil

A. Provide clarity on Article 6 and legal certainty for credit exports: Define clear rules for authorization, corresponding adjustments and registry interoperability, as the main potential market for credits will come from exports to international markets. Ensure transparency and traceability by creating national registries aligned with the UNFCCC and Article 6. Establish market infrastructure with legal, institutional, and MRV frameworks for Internationally Transferred Mitigation Outcomes, helping to ensure Brazil's NbS credits can compete globally with integrity and legal certainty.

B. Help to ensure progress in jurisdictional pilots aligned with the SBCE: Scale initiatives, such as System of incentives for Environmental Services of Acre (SISA/Acre) and REDD Early Movers Mato Grosso (REM/Mato Grosso), nesting projects into broader frameworks that enable ecosystem restoration, emissions reduction, and community benefit sharing, aligned with the NAP and Article 6 of the UNFCCC.

C. Engage in broad communication: Articulate Brazil's objectives publicly for credit exports, relevant policies, and financing needs, presenting a vision for the SBCE and its role in international climate markets to provide clarity and confidence among investors, project developers, and international allies.

2.5.2.6 Regional Perspective: The Amazon

A. Strengthen Land Governance and Legal Certainty: Resolve land tenure conflicts and create robust frameworks for land-use planning. This includes formalizing and scaling up the implementation of the Forestry Code Law and helping to ensure alignment with jurisdictional REDD+ strategies to improve legal certainty for investors and project developers, unlocking restoration and protection projects at scale and increasing credibility of carbon credits.

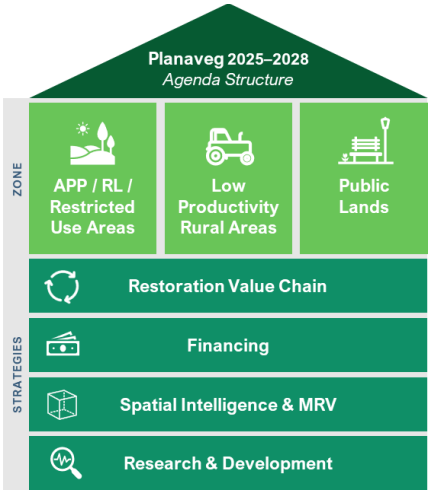
2.5.3 Legacy Initiatives

Through its Forestry Code Law and the Planaveg 2025–2028 initiative, which aims to accelerate its implementation, Brazil is creating a Legacy by establishing a transformative framework for nature-based solutions that enables ecosystem restoration, climate resilience, and sustainable development.[119]

2.5.3.1 Accelerated implementation of the Forestry Code Law through Planaveg 2025–2028

What is the initiative: Brazil's 2012 Forestry Code Law requires every rural property to map and maintain Permanent Preservation Areas (PPAs) and a Legal Reserve (LRs): up to 80% in forest areas of the Legal Amazon, 35% in Cerrado within the Legal Amazon, and 20% elsewhere.[120] Compliance runs through the georeferenced CAR and state PRAs, which diagnose deficits and enforce restoration or compensation. Where on-site restoration isn't feasible, landholders can use Environmental Reserve Quotas (CRAs) as tradable credits backed by conserved native vegetation. Together, these tools create enforceable, trackable demand for protection and restoration on private lands.

Figure 30. Planaveg 2025-2028 Agenda Structure



Source(s): Planaveg

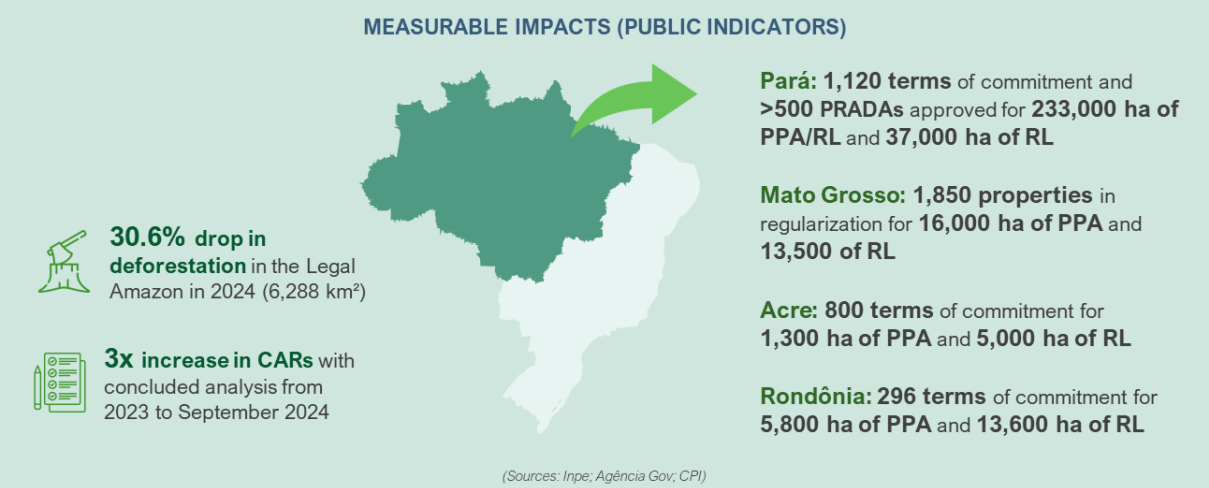
Planaveg 2025–2028 accelerates Forestry Code Law implementation by building the "supply side" for restoration: scaling seeds/seedlings and technical assistance, mobilizing public-private finance, improving spatial planning and

[119] National Plan for the Recovery of Native Vegetation (Planaveg).
[120] Planaveg National Vegetation Recovery Plan (2025-2028).

monitoring, and advancing R&D. It reaffirms the 12-million-hectare restoration target by 2030 and extends recovery to protected and Indigenous/collective territories.[120] Coupled with Brazil's regulated carbon market (SBCE) and its verified-emissions certificates (CRVEs), the Forestry Code Law + Planaveg form a coherent, finance-ready framework to unlock high-integrity NbS at scale.

Main impact: These instruments help tackle **deforestation and degradation,** particularly of PPAs and LRs, which are important for climate regulation and water security; **low environmental compliance,** corresponding to CARs not analyzed and liabilities not regularized. It also overcomes **institutional and financial fragmentation** in restoration efforts, reorganizing them under Planaveg 2025–2028.

Figure 31. Impacts of Planaveg 2025-2028



Source(s): Inpe; Agência Gov; CPI

Why this case reinforces the recommendation and priority: This pairing turns NbS into public-policy infrastructure: a law that defines obligations and a national plan that operationalizes them with coordinated MRV— the signal and structure Priority 1 calls for (clarify the role of NbS; align frameworks). It also advances Priority 2 by anchoring action in interoperable, geospatial evaluation and monitoring to measure outcomes consistently. The public sector create the enabling environment for private investment and economy activity: integrating NbS into national strategies and carbon pricing (Priority 3) reduces investor risk and unlocks project pipelines; Brazil's SBCE law (with CRVEs) exemplifies that path. This junction should crowd in capital and market services-nurseries, seeds, MRV providers-thereby scaling high-integrity restoration and protection consistent with the recommendations.

2.5.4 Potential Opportunities and Impact

To scale up Nature-based Solutions, accelerating the implementation of the Forest Code Law through Planaveg 2025–2028—combined with the operationalization of SBCE and standardized data/MRV—can help deliver environmental benefits. The resulting positive environmental impact can unlock significant economic opportunities through carbon credits, since NbS have potential to reduce emissions in Brazil over the next 30 years, based on a study led by the University of Oxford:[121]

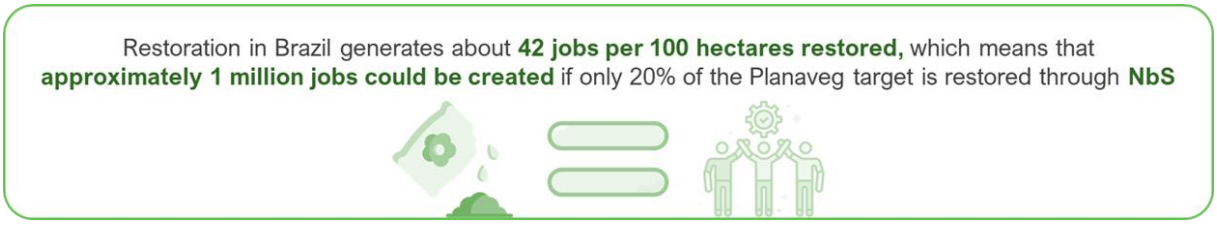
[121] Oxford. Nature-based Solutions are essential for Brazil to meet its NDC

Figure 32. Potential Environmental Impacts of NbS in Brazil

Source(s): Oxford

These integrated solutions have the potential not only to enable Brazil to meet its Planaveg goal of restoring 12 million hectares of native vegetation by 2030, but also to deliver social and economic benefits, particularly through job creation. According to a study supported by the World Resources Institute (WRI):[122]

Figure 33. Brazil's Opportunity to Create Jobs Through NbS



Source(s): WRI Brasil

2.5.5 IMPLEMENTATION AND SCALABILITY LEVERS

Given the relevance of this agenda in Brazil, its potential for the country, and the fact that several strong initiatives are already in place, it is important to build on these efforts and scale them up to expand their reach nationwide. With this in mind, outlined below is a set of priority actions to enable local implementation and amplify its impact in Brazil and the Amazon.

2.5.5.1 Potential Actions to implement and scale in Brazil

1. **Integrate NbS explicitly into national climate and environmental policies,** ensuring their inclusion in NDCs, the National Climate Change Plan (PNMC), the National Adaptation Plan (PNA), and sectoral strategies such as Planaveg 2025–2028 and ABC+.
2. **Design and deploy tailored financial mechanisms for NbS,** including blended finance, insurance products, targeted credit lines, PAGs, CRA, and CRVEs under SBCE to help ensure long-term, predictable funding while mobilizing private capital.
3. **Strengthen market mechanisms** by developing technical parameters and a national NbS data infrastructure, including Tier 2 and 3 carbon parameters, forest inventories, soil carbon assessments, and create certifications and standards to increase investor confidence in NbS projects.
4. **Operationalize the SBCE and scale jurisdictional pilots,** enabling regulatory frameworks, replicable models (e.g., SISA/Acre, REM/Mato Grosso), and integration with Article 6 to advance NbS at scale.
5. **Strengthen institutional capacity and streamline regulatory processes,** through automation (e.g., CAR Digital), expanded technical teams, regulatory adjustments, and capacity-building initiatives to accelerate compliance and implementation.

[122] WRI Brasil. Restauração já criou milhares de empregos no Brasil – e tem potencial para criar milhões (2022).

6. **Help ensure legal certainty and stable frameworks for NbS,** by establishing clear rules for LR (legal Reserve) compensation, CRA, CRVEs, and alignment with international mechanisms to build confidence and enable scale.
7. **Integrate risk management into implementation,** aligning restoration with fire prevention, degradation control, and resilience strategies, supported by continuous monitoring systems (e.g. DETER).

2.5.5.2 Potential Actions to implement and scale in Amazon region

1. **Promote state-level coordination and capacity building,** leveraging initiatives such as Planaveg 2025–2028 and Regulariza Pará to replicate leading practices, mobilize technical assistance, and align municipal and state-level action.
2. **Help ensure sustainable land use planning** by establishing priority conservation areas before land regularization, promoting ecological-economic zoning to reconcile development with conservation and regain control of areas with denied land requests to prevent future illegal occupations.
3. **Modernize territorial governance** strengthening initiatives such as the Terra Legal Program, with adequate resources to oversee land regularization and implement integrated registration systems using georeferencing, satellite imagery, and blockchain.

2.6 SUSTAINABLE CITIES

2.6.1 OVERVIEW

2.6.1.1 Global to local

Cities play an important role in the global climate agenda. According to the Sustainable Cities Working Group's document, they occupy only 2% of the Earth's surface, yet account for more than 70% of global GHG emissions and over 75% of natural resource use. [123] Brazil stands out in this context, with more than 85% of its vast population living in urban areas,[124] compared to a global average of 56–57%.[125][123]

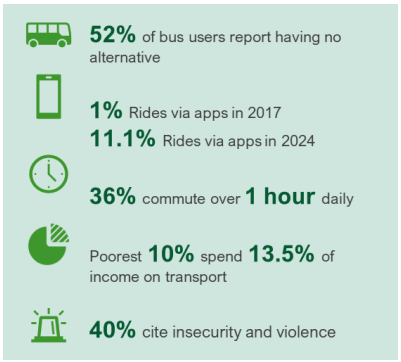
Brazilian cities have a comparatively resilient and low-carbon energy profile, positioning them favorably for advancing urban emission reductions. The country's electricity mix is among the cleanest globally, with 86% of electricity generation coming from renewable sources in 2024, primarily hydropower, wind, solar, and biomass, well above the global average of 30%. [126] However, gaps remain in water and sanitation infrastructure. Only 52.2% of wastewater is treated nationwide, below the global average of 60%.[127] **Its cities concentrate both the risks and the opportunities of transition, making them key not only to national progress but also to the broader global effort.**

2.6.1.2 Challenges for Brazil

Brazil's rapid urbanization has led to unplanned growth, informal settlements, and a housing deficit estimated at almost 6.0 million units (2023), particularly affecting low-income populations.[128] Access to electricity is nearly universal in urban areas (99.8% of the population), yet significant disparities remain in service quality and reliability, often relying on polluting or inadequate energy sources.[129] Water supply and sanitation still present major gaps. In 2023, approximately 15% of the urban population (32 million people) lacked access to safe drinking water, and 42.2% (90 million people) did not have sewer connections and only 52.2% of wastewater received treatment.[130]

Urban mobility also faces a complex set of challenges starting with limited and inefficient public transport coverage, where over 52% of bus users report having no alternative mode available.[131] Fragmented networks and poor integration between lines and systems hinder effective use, while reliance on informal and app-based transport has grown steadily, with rides via apps rising from 1% of trips in 2017 to 11.1% in 2024[132], contributing to release of carbon dioxide (CO2), a major component of car emissions. Congestion remains endemic, with 36% of residents of large cities spending more than one hour commuting daily, leading to substantial productivity losses. [133] Fare burdens disproportionately affect low-income households, with the poorest 10% spending about 13.5% of their income on public transport despite being the most dependent on it.[134]

Figure 34. Quantitative insights on the impact of urban mobility



Source(s): CNT

[123] UNEP. Resource efficiency & green economy (2022); United Nations. Sustainable Development Goal 11.
[124] IBGE. 87% of the Brazilian population lives in urban areas (2022).
[125] Trading Economics. World's urban population.
[126] EPE. Energy and Electrical Matrix (2023).
[127] Federal Government. National Energy Balance (2025); SINISA System (2023); UN. Progress on Wastewater Treatment (2024).
[128] Ministry of Cities Brazil records the smallest housing deficit in history (2025)
[129] Agência GOV. IBGE: Electricity reaches almost all households in the country (2025)
[130] João Pinheiro Foundation (2023); IBGE (2023).
[131] CNT Urban Population Mobility Survey (2024)
[132] CNT Urban Population Mobility Survey (2024)
[133] Industry News Agency. 36% of Brazilians in large cities spend more than 1 hour a day in traffic (2023)
[134] IPEA. Pricing and financing of urban public transportation (2013)

Insecurity is also a central concern, with 40% of users identifying insecurity and violence as one of the main problems of public transport use.[135] Urban planning and infrastructure also present challenges. Only 53.1% of municipalities have an official Master Plan[136], many outdated, constraining integrated governance and resilience.[137] Cities are additionally vulnerable to risks, such as floods, heat islands, and extreme weather, which can disproportionately impact marginalized communities.

2.6.1.3 Challenges for the Amazon

The Brazilian Amazon, home to just under 28 million people[138], is far from being a purely rural and forested region. It is shaped by a network of small and medium-sized cities that concentrate population flows, economic activity, and logistics vital for both the region and the country. Yet, this urbanization is relatively recent, intense, and often unplanned, resulting in heightened socio-environmental vulnerabilities. Energy access highlights a paradox for the Brazilian Amazon, although its states accounted for more than 27% of Brazil's electricity generation in 2021, over 14% of the local population remains outside the National Interconnected System.[139] Infrastructure gaps remain a defining challenge. Only 60% of the population has access to safe drinking water,[140] and 82% of the population is not connected to a sewage collection network,[141] exposing communities to serious health and environmental risks. Mobility and logistics are equally complex. The Amazon region depends heavily on fluvial transport, and for good reason: in 2017, only 13.6% of roads in the Legal Amazon were paved.[142] In 2021, over 924,000 people used intermunicipal water transport in Amazonas, nearly three times more than by road.[143] Despite the region's vast potential, infrastructure still falls short. Brazil has 41.7 thousand km of potentially navigable river, yet only 20.1 thousand km, about 48%, are actually used for cargo and passengers.[144] Even when investment isn't the main barrier, nature often is. The Amazon suffers from extreme seasonal droughts, which drastically reduce navigability. In 2023, over 80% of agricultural areas in several municipalities were affected, disrupting freight and logistics.[145] And in 2024, 59.5% of Amazonian municipalities experienced drought conditions, peaking at 98.3% in September.[146] These recurring disruptions not only limit the region's economic integration but also delay public services and weaken its climate resilience.

2.6.2 Sustainable Cities Recommendation for Brazil and Amazon

The Sustainable Cities WG employs a methodology that differentiates cities' realities and proposes solutions proportional to the complexity of the challenges and the institutional capacity to help address them. According to the group, a sustainable city is one that helps to ensure the well-being of its current and future residents by balancing social equity, economic viability, environmental protection, and institutional resilience.

PRIORITY 1

Energy, Water & Sanitation: Expand access, optimize networks, and adopt net-zero solutions with advanced energy and WASH (Water, Sanitation and Hygiene) services

2.6.2.1 National Perspective: Brazil

[135] CNT Urban Population Mobility Survey (2024)
[136] *The Municipal Master Plan is a mandatory instrument for cities with more than 20K inhabitants, guiding land use, zoning, and policies on housing, mobility, and the environment.*
[137] CNM. Half of Brazilian municipalities still do not have a Master Plan, survey shows (2025)
[138] Legal Amazon. Integrated view of the territory formed by the nine states of the Legal Amazon (2024).
[139] Climate Policy Initiative (CPI). Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[140] Liberal Amazon. The water paradox in Amazon (2023).
[141] Valor. Sanitation drive could yield BRL 561 bn gains in the Amazon (2025).
[142] Legal Amazon. Dashboard (2017).
[143] Arsepam. More than 924,000 people used intercity transport in Amazonas in 2021
[144] Brazil explores half of the waterways with potential for cargo and passenger transport (2025)
[145] Agência GOV. Drought in the Amazon: municipalities have more than 80% of their agricultural production areas affected (2023)
[146] Info Amazon.More than half of the municipalities in the Amazon spent the entire year of 2024 in drought (2025)

A. High complexity and low maturity cities: Help to universal and equitable access to clean energy, water, and sanitation, prioritizing solutions that are sustainable, financially viable, and socially accepted. Implementing decentralized approaches, such as distributed microgeneration through solar energy to expand access to energy in urban peripheries; compact treatment plants, constructed wetlands, and locally adapted technologies to provide reliable and context-appropriate water and sanitation solutions. Promoting water reuse and community behavioral practices to maximize efficiency.

B. Medium complexity and maturity cities: Promote optimization, loss reduction, and modernization of energy, water, and sanitation networks. Expanding regionally adapted treatment system to help ensure it meets local demand; reducing losses through network upgrades and smart metering, diversifying water sources through rainwater harvesting and reuse to minimize resource waste; and building redundancy in metropolitan supply systems to help ensure reliability and resilience.

C. Low complexity and high maturity cities: Promote an integrated and circular transition for energy and water systems. Integrate smart grid technologies and distributed generation, including storage and optimized management of renewable energy, to enhance efficiency and reduce urban emissions. Implement circular water and wastewater systems, promoting water reuse, nutrient recovery, and energy generation from wastewater.

2.6.2.2 Regional Perspective: The Amazon

A. Most cities fall into the high complexity and low maturity category, with the priority of help ensure universal and equitable access to clean energy, safe water, and sanitation, but with the necessity to adapt solutions to their biome and local communities. This includes implementing distributed solar energy, resilient hybrid systems, and sanitation solutions based on appropriate technologies and community practices, aligned with local climatic and hydrological conditions. These models should be financially viable, socially accepted, and scalable, promoting inclusion and autonomy for traditional and low-income populations. The private sector can act as a strategic catalyst by developing scalable solutions, supporting small local businesses, and enabling affordable products. To illustrate this regional perspective, it is important to highlight emblematic cities such as Santarém, Manaus, Belém, Macapá, and Porto Velho, which face challenges in basic infrastructure. Santarém (PA), for example, ranks among the worst-performing municipalities in Brazil in terms of sanitation. [147]

According to the 2025 Trata Brasil Sanitation Ranking, which analyzes the 100 most populous municipalities in the country, only 48.49% of Santarém's population has access to potable water, and a mere 3.77% is served by sewage collection.[148] The city treats just 8.61% of its sewage and loses 48.72% of treated water during distribution. Per capita investment in sanitation is only BRL 37.35, representing just 16.7% of the amount considered necessary for universalization in Brazil (BRL 223.82).[149] This scenario is representative of the broader Amazon region: nine of the twenty worst-ranked municipalities are in the Amazon, and nearly all state capitals in the region—except Boa Vista (RR)—are among the lowest performers. These figures underscore the structural and systemic nature of the challenge.

Helping to address these gaps can require tailored solutions such as decentralized sanitation systems, community-led water management, and hybrid energy models adapted to local realities. These approaches should be supported by investment strategies and inclusive governance mechanisms to help ensure long-term sustainability and resilience for Amazonian populations.

PRIORITY 2

Urban Mobility & Logistics: Promote accessible transport, expand clean mobility, and integrate multimodal systems

[147] Trata Brasil. Sanitation Ranking (2025)
[148] Trata Brasil. Sanitation Ranking (2025)
[149] Trata Brasil. Sanitation Ranking (2025)

2.6.2.3 National Perspective: Brazil

A. High complexity and low maturity cities: Expand accessible, safe, and low-emission public transport while promoting basic logistics solutions that help ensure equity and minimize environmental impacts. Predominant in many peripheral Brazilian municipalities, the use of electric Bus Rapid Transit (BRT) systems and digital integration should be supported by institutional strengthening, technical capacity building, and innovative financing, as demonstrated by successful experiences in developing countries and Brazilian initiatives.

B. Medium complexity and maturity cities: Accelerate the transition to zero-emission transport, expand micromobility (shared bicycles and scooters), and consolidate urban logistics hubs that optimize deliveries and minimize congestion. Brazil has made notable progress in deploying electric buses and bike lanes, but it still needs to consolidate integrated systems with unified ticketing and refined regulation to promote broader adoption.

C. Low complexity and high maturity cities: Integrate, operate, and innovate in advanced multimodal systems, low-emission zones, and smart logistics supported by artificial intelligence and the Internet of Things, following global examples that cities such as São Paulo and Curitiba are beginning to explore and implement.

2.6.2.4 Regional Perspective: The Amazon

A. Most cities are placed into the high complexity and low maturity category due to the reliance on fluvial transport, geographic isolation, lack of robust road infrastructure, and the seasonal variability of rivers. Priority actions include expanding accessible, safe, and low-emission public transport, such as mini fluvial lines, while incorporating fluvial-based logistics, promoting social inclusion in peripheral areas, and adapting to extreme climatic conditions. Emphasis should be placed on integrating formal and informal systems and helping to address Amazon's territorial specificities, such as the important role of river-terrestrial connectivity and adaptive management in response to abrupt climatic variations. To illustrate this regional perspective, in Manaus, for instance, fluvial transport remains the primary mode of moving both people and goods, especially between the capital and interior municipalities. According to the Logistics Commission of the Industry Center of the State of Amazonas (CIEAM), approximately 60% of cargo arriving in Manaus comes via river transport, with only 1% arriving by air.[150]

Despite its centrality, fluvial transport faces limitations, including poor infrastructure, safety concerns, and vulnerability to climate events such as extreme droughts. The 2024 drought, for example, disrupted navigation and led to surcharges of up to USD 5,500 per shipment, impacting the Manaus Industrial Hub and regional supply chains.[151]

In response to these challenges, innovative solutions are emerging. A notable example is the "Poraquê" project, an electric catamaran developed by the Federal University of Pará (UFPA) in partnership with Norte Energia. Powered by solar energy, the vessel can transport 25 passengers and has an autonomy of 8 hours without recharging. It is part of the Intelligent Multimodal System of the Amazon (SIMA), which also includes electric buses operating within UFPA's campus. Together, these modes are expected to transport up to 2,000 people daily and prevent the emission of 161 tons of CO_2 annually. This initiative exemplifies how sustainable technologies can be adapted to the Amazonian context, offering scalable models for low-emission mobility in riverine cities.[152] [153]

Expanding such initiatives across the region could significantly improve connectivity, reduce environmental impact, and enhance the quality of life for communities that depend on fluvial transport. Public-private partnerships, investment in resilient infrastructure, and inclusive planning are key to unlocking the potential of sustainable mobility in the Amazon.

---

[150] Simmmem. Extreme drought on Amazonian river roads demands infrastructure investment and poses challenges for transportation and logistics (2024)
[151] R7. The Challenge of Fluvial Transport in the Amazon (2025)
[152] UFPA. First electric and fully sustainable catamaran in the Amazon (2024)
[153] UFPA & Norte Energia. UFPA and Norte Energia develop the first sustainable electric boat in the Amazon (2024)

PRIORITY 3

Urban Planning & Infrastructure: help to ensure dignified housing, foster sustainable construction, and implement data-driven, and climate-resilient urban management

2.6.2.5 National Perspective: Brazil

A. High complexity and low maturity cities: Reduce the housing deficit and improve infrastructure quality in peripheral and unplanned areas. This includes expanding basic dignified living conditions within the city, promoting revitalization of informal neighborhoods through integrated retrofitting with sustainable and resilient infrastructure, including accessible and safe public spaces, and integrating land-use instruments with climate and social programs. Alignment with public financing mechanisms, active community participation, and relationships with the private sector become important to overcoming institutional and operational bottlenecks.

B. Medium complexity and maturity cities: Implement mixed-use zoning and transit-oriented densification, incorporate sustainable building standards, and connect urban planning, budgeting, and management through monitoring and transparency mechanisms. These cities generally have active planning instruments and guidance for densification and centralities, but they still face spatial fragmentation, urban voids, and inconsistent regulatory processes.

C. Low complexity and high maturity cities: Deepen the use of predictive digital technologies, integrate nature-based solutions for climate adaptation, and strengthen governance through open data and active citizen engagement. The emphasis should be on advanced urban governance, optimization of public service networks, and the implementation of sustainable infrastructure.

2.6.2.6 Regional Perspective: The Amazon

A. Most cities are placed into the high complexity and low maturity category, facing intense and recent urbanization, peripheral and poorly connected expansion, deficient infrastructure, and limited effectiveness of urban management instruments. Priority actions should focus on reducing the urban infrastructure deficit by promoting basic dignified conditions within cities, revitalizing informal neighborhoods through integrated retrofitting with sustainable and resilient infrastructure, and including safe and accessible public spaces. Territorial planning should integrate land-use instruments with climate and social programs while considering the region's ecological sensitivity, frequent floods, and high vulnerability to climate risks.

Access to dignified housing is one of the most pressing social challenges in the Amazon. The national housing deficit reached approximately 5.8 million units in 2022, according to IBGE and Fundação João Pinheiro, with the North region, particularly the state of Amazonas, among the most affected. In Amazonas alone, the housing deficit is estimated at over 120,000 units, reflecting widespread precarious conditions in both urban and rural areas. Families often live in homes without access to potable water, sanitation, reliable electricity, or structural safety. In cities like Manaus, Itacoatiara, and Parintins, neighborhoods face chronic vulnerability due to the absence of basic public services.[154]

Since 2019, the state government has sought to address this challenge through the "Amazonas Meu Lar" program, currently managed by the State Secretariat for Urban Development (Sedurb). The program focuses on housing construction, land regularization, and subsidies for low-income families.[155] However, the scale of the challenge demands broader strategies, including the upgrading of informal settlements, rehabilitation of vacant buildings, and integration of housing policies with climate resilience and cultural relevance.

[154] CAU BR. Social Housing in Amazonas (2025)
[155] Amazonas Meu Lar. Transforming Lives through decente housing.

Beyond its challenges, the Amazon region holds unique potential to lead in sustainable construction, as the region offers abundant renewable resources such as timber, which can serve as a low-carbon alternative to conventional materials like concrete and steel. Innovative local initiatives, such as the use of Amazonian plant-based foams to replace conventional Polystyrene Foam[156], further demonstrate the region's capacity to generate cutting-edge solutions rooted in its biodiversity. These technologies, often reserved for advanced urban centers, should be prioritized for implementation within the Amazon itself, leveraging local production and knowledge to deliver high-performance, climate-resilient infrastructure. By combining modern innovations with indigenous wisdom and local materials, the Amazon can pioneer a new paradigm of urban development that is both regenerative and inclusive.

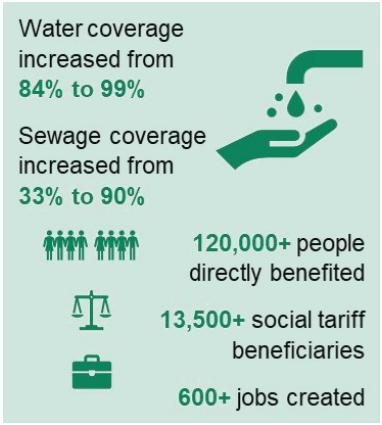
2.6.3 LEGACY INITIATIVES

2.6.3.1 Aegea Saneamento – Trata Bem Barcarena: Faster and broader access to treated water and sanitation

What is the initiative: Trata Bem Barcarena is an initiative led by Águas de São Francisco, a concessionaire under Aegea Saneamento, aiming to universalize access to clean water and basic sanitation in Barcarena (Pará) by the end of 2025 — nearly a decade ahead of Brazil's national target. The program seeks to achieve 99% coverage of treated water and 90% coverage of sewage collection and treatment by the end of 2033, challenging the historical narrative that Amazonian cities cannot receive formal sanitation services. [157] The initiative combines social tariff solutions, modern treatment technologies, and a sustainable private financing model, structured around a 40-year concession extension. [158][157]

Main Impact: The project has already delivered 78.4 km of water network and 138 km of sewage network, with projections to reach 116 km and 228 km, respectively, by November 2025, directly benefiting over 120,000 residents.[157] Aegea developed an innovative financial model based on private capital and the anticipation of investments originally planned for 2033, made viable through cash flow projections from the concession. The initiative also promotes social inclusion, with over 13,500 people benefiting from social tariffs, and has generated more than 600 local jobs. Additionally, it contributes to methane emission reductions associated with untreated sewage systems and improves water efficiency, reducing losses from 60% in 2014 to 37.1% in 2025. [157]

Figure 35. Main impacts of the Aegea initiative



Source(s): Information submitted via the official CNI platform

Why this case reinforces the recommendations and priorities: Trata Bem Barcarena demonstrates how it is possible to accelerate sanitation universalization in the Amazon through public-private partnerships, strategic planning, and financial innovation. The model is scalable, climate-resilient, and socially inclusive, aligning with priorities such as sustainable cities, public health, emissions mitigation, and sustainable infrastructure. The "institutional trinity" — granting authority, regulatory agency, and private operator — is central to the project's success and replicability, reinforcing the importance of collaborative governance.

2.6.3.2 YvY Capital – Building the Brazilian Electric Motorcycle Platform

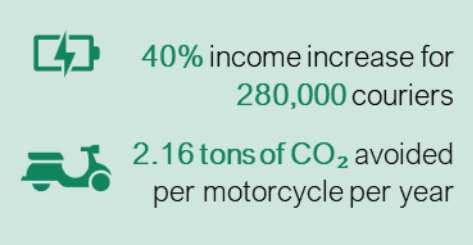
What is the initiative: Yvy Capital launched an initiative to structure a domestic electric motorcycle industry and ecosystem in Brazil, recognizing the urgent need to reduce emissions in urban logistics. Rather than supporting a single startup or manufacturer, the initiative treats the electric two-wheeler (E2W) value chain as the project itself. The platform integrates manufacturers, battery managers, swap station operators,

[156] ABRAINC. What is 'Amazon Styrofoam', a sustainable alternative to civil construction created by scientists (2024)
[157] GOV. Legal Framework for Sanitation
[158] Information submitted via the official CNI platform

utilities, rental companies, fintechs, insurers, repair shops, and recyclers.[159] Delivery riders access the system via an app that manages subscriptions, station locations, and support service. A centralized control by a Private Equity Investment Fund (FIP) committed capital over three years and aligned financial returns with strategic access to emerging technologies.[160]

Main Impact: The initiative reframes electrification as a neo-industrialization opportunity, positioning climate action as important for economic modernization and job creation. It enables companies to convert R&D into financial results and supports the development of a scalable, climate-resilient ecosystem. Electric motorcycles reduce urban noise and air pollution, with each unit avoiding an average of 2.16 tons of CO_2 initiative and also improves courier income, with estimated gains of up to 40% for 280,000 workers.[161] By stimulating demand for renewable energy and supporting local manufacturing, the platform creates a virtuous cycle between clean transport and clean power.

Figure 36. Main impacts of the Yvy Capital initiative



Source(s): Information submitted via the official CNI platform

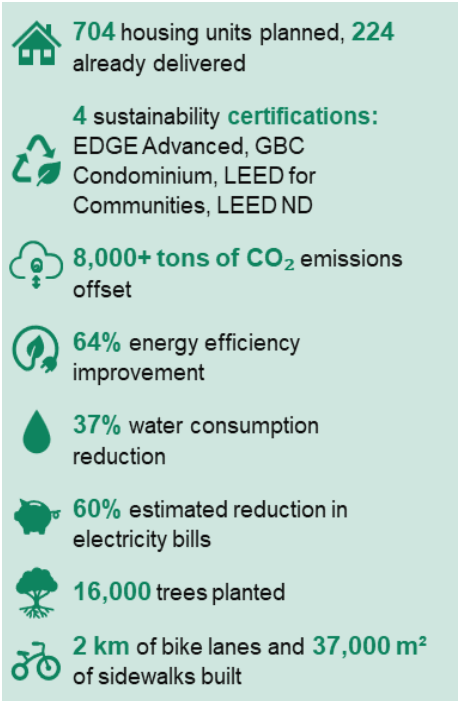
Why this case reinforces the recommendations and priorities: This case supports the sustainable cities agenda by helping to address urban transportation through clean, efficient, and inclusive solutions. It demonstrates how private-sector-led coalitions can drive systemic change, reduce emissions, and foster innovation. The initiative offers a replicable model for financing and scaling sustainable infrastructure, aligning with Brazil's broader goals for sustainable industrial development. It also highlights the importance of anchor demand, stakeholder coalitions, and patient capital in enabling transformative projects.

2.6.3.3 Dimensional Engenharia – Comunidade do Aço

What is the initiative: Dimensional Engenharia is leading the development of 704 eco-certified housing units in Rio de Janeiro's Comunidade do Aço, marking Brazil's first certified low-income urbanization. [162] The project integrates social housing with sustainable infrastructure and has achieved four sustainability certifications: EDGE Advanced, GBC (Green Building Council) Condominium, LEED (Leadership in Energy & Environmental Design) for Communities (Design Stage), and LEED ND (Neighborhood Development). It is being implemented in collaboration with multiple private companies and technical institutions, and aims to demonstrate that large-scale, affordable housing can be both environmentally responsible and socially inclusive.[163]

Main Impact: The project combines energy efficiency, water savings, and carbon-neutral construction practices. Residential units are 64% more energy efficient and consume 37% less water than conventional ones. Over 8,000 tons of CO_2 emissions have been offset through UN Clean Development Mechanism (CDM) credits.[164] The initiative also enhances quality of life through on-site relocation, improved accessibility, and sustainable infrastructure: 224 units have already been delivered, 16,000 trees planted, 2 km of bike lanes built, and 37,000 m² of

Figure 37. Main impacts of the Dimensional Engenharia Initiative



Source(s): Information submitted via the official CNI platform

[159] Information submitted via the official CNI platform
[160] iFood. iFood e YvY Capital anunciam investimento milionário para impulsionar motos elétricas no Brasil (2025)
[161] Information submitted via the official CNI platform
[162] Information submitted via the official CNI platform
[163] GBC Brazil. The Steel Community shows that environmental certification is for all homes (2024)
[164] Information submitted via the official CNI platform

sidewalks installed. Solar energy and passive design strategies are expected to reduce electricity bills by up to 60%.[165]

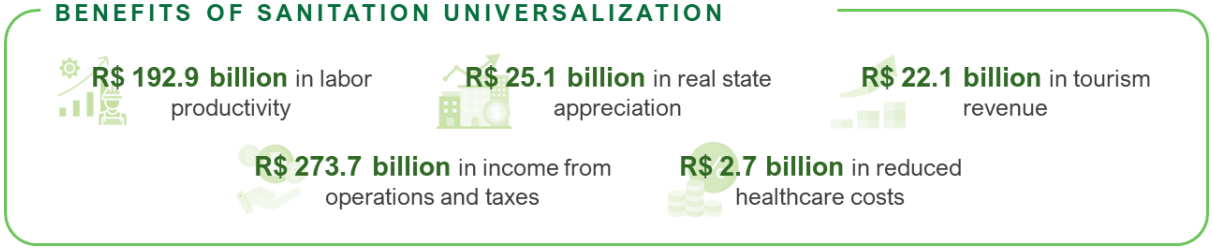
Why this case reinforces the recommendations and priorities: This case exemplifies how sustainable urban development can be achieved in low-income communities through innovation, certification, and strategic collaborations. It aligns with priorities for resilient cities, climate mitigation, and inclusive infrastructure. The use of Building Information Modeling (BIM) technology, carbon-neutral construction, and multi-stakeholder collaboration demonstrates a replicable model for sustainable housing that supports both environmental and social goals.

2.6.4 Potential Opportunities and Impact

Universal access to basic sanitation in Brazil's Amazon Region presents a powerful opportunity to drive sustainable development across social, economic, and environmental dimensions. With over 21 million people lacking sewage services and 9.4 million without clean water, investments in sanitation could transform public health, reduce absenteeism, and improve quality of life, especially for vulnerable and traditional communities.[166]

Economically, every BRL 1 invested yields BRL 5.10 in returns, totaling BRL 516.6 billion in benefits by 2040.[167] This includes benefits such as those listed in the figure below:

Figure 38. Benefits of universal sanitation in the Amazon region



Source(s): Trata Brasil

Additionally, universal sanitation could also prevent 851 million m³ of untreated sewage from entering rivers annually and reduce methane emissions, critical in a region responsible for up to 29% of global wetland methane output. These efforts support ecosystem restoration, climate resilience, and biodiversity conservation.[168] [169]

2.6.5 Implementation and Scalability Levers

This section highlights the enablers to accelerate the development of sustainable cities in Brazil and the Amazon, outlining conditions to scale successful initiatives, advance the country's leadership in sustainability, while helping to address infrastructural challenges and ensuring the transformation of its cities for the future.

2.6.5.1 Action Plan to implement and scale in Brazil

1. Categorize cities by complexity and maturity in each axis (energy, water and sanitation; urban mobility and logistics; urban planning and infrastructure), helping to ensure that actions are proportional to institutional capacity and local challenges.

[165] Information submitted via the official CNI platform
[166] Trata Brasil. Economic study in the Legal Amazon (2025)
[167] Trata Brasil. Economic study in the Legal Amazon (2025)
[168] Agência Brasil. Universalization of sanitation in the Amazon could generate BRL 330 billion (2025)
[169] Agência FAPESP. Climate change can alter methane emission and uptake in the Amazon (2025)

2. Connect policies on energy, water, mobility, and urban planning to promote integrated solutions, such as circular water and sanitation systems, sustainable infrastructure, and sustainable transportation.
3. Develop urban plans adapted to local realities, considering socio-environmental heterogeneity, extreme weather vulnerability, and territorial specificities (e.g., river-terrestrial integration in the Amazon).
4. Help ensure active involvement of communities, especially in peripheral cities, to validate socially accepted solutions and foster efficient resource use behaviors.
5. Mobilize public, private, and development resources (blended finance) to enable infrastructure, transport, and sanitation solutions, including subsidies and pay-as-you-go mechanisms in low-income areas.
6. Establish regulatory frameworks for microgeneration, sanitation, sustainable transport, and urban planning, combined with fiscal incentives and efficiency programs to foster adoption and replicability.

2.6.5.2 Action Plan to implement and scale in Amazon region

1. Develop urbanization and infrastructure strategies that consider climate risks (floods, seasonal variations), socio-environmental heterogeneity, and the cultural characteristics of traditional communities.
2. Articulate formal and informal transport and logistics systems, including fluvial-terrestrial integration, to overcome connectivity limitations and geographic isolation.
3. Implement solar microgeneration and resilient hybrid systems in urban peripheral communities and in isolated locations, expanding energy access in these localities.
4. Use compact treatment plants, wetlands, natural treatment systems, and community behavioral practices compatible with local weather, hydrology, and reality.

2.7 Transition Finance And Investment

2.7.1 Overview

2.7.1.1 Global to local

At global level, the Working Group highlights the need to mobilize USD 2.3–2.5 trillion per year of climate investment across emerging markets and developing countries (EMDCs) other than China by 2030.[170] For Brazil, the investment needed to achieve its climate transition goals by 2030 is estimated at USD 200 billion, a significant figure when compared to the size of the national economy.[171]

Emerging markets such as Brazil face structural barriers to accessing international capital, including heightened risk perceptions and foreign exchange volatility. In Brazil, international climate finance flows averaged USD 5.1 billion per year in 2021–2022,[172] out of a global goal of approximately USD 1.3 trillion.[173] Notably, 42% of this financing (USD 2.1 billion annually) originated from private sources, more than four times the volume recorded in 2019–2020, reflecting a positive trend in private sector engagement.[172] To attract and facilitate this investment, Brazil should establish robust financing structures, including the development of new financial instruments such as green, social, and sustainable bonds. Especially considering the country's potential to play a major role as a global supplier of biofuels to reduce emissions in aviation and shipping.

2.7.1.2 Challenges for Brazil

Brazil has been progressing in sustainable finance, with the federal government advancing a framework through the Ecological Transformation Plan. Among its key initiatives are Eco Invest Brasil, which provides foreign exchange protection for long-term sustainable investments, and the Brazilian Investment Platform for Climate and Ecological Transformation (BIP), which connects international investors with strategic sustainable projects.

Brazil is also advancing its regulatory framework through the proposed Carbon Market Law, which would establish the foundation for a national compliance market. And with initiatives such as the B3–ACX partnership, demonstrating that it is possible to integrate domestic infrastructure with international systems.[174]

Figure 39. Brazil's Climate Finance Overview

Source(s): IHLEG; WEF

Despite these advances and its comparative strengths such as a predominantly renewable electricity matrix, experience in sustainable agriculture and bioeconomy models, and abundant critical minerals, Brazil still reflects the broader challenges faced by EMDCs such as investment gaps, currency volatility, and the effective implementation of the Brazilian Sustainable Taxonomy.[175] That also translates into project-level constraints, with many initiatives facing high financing costs, heightened perceptions of political and macroeconomic risk, and limited access to long-term credit.

2.7.1.3 Challenges for the Amazon Region

The region has dedicated financial mechanisms such as the Amazon Fund, which in 2024 approved a record USD 154.9 million for conservation and reforestation projects, illustrating the growing capacity to channel

[170] IHLEG. Raising ambition and accelerating delivery of climate finance (2024).
[171] WEF. Finding Pathways, Financing Innovation: Tackling the Brazilian Transition Challenge (2023).
[172] CPI. Brazil surpasses global growth in climate finance, but international resources for forests still fall short of potential (2025).
[173] COP 30. Climate finance: who are the financiers and how to reach USD 1.3 trillion?
[174] B3. B3 partners with ACX to launch carbon credit trading platform in Brazil (2023).
[175] Brazilian Government. Committee approves final version of the Brazilian Sustainable Taxonomy (2025).

international capital directly to the region.[176] Carbon markets also represent a strategic opportunity, as Brazil combines the world's largest theoretical potential for nature-based solutions (NbS) with the potential for reforestation projects.[177]

However, the barriers faced across Brazil are **compounded by the region's remoteness, infrastructure gaps, and informality among small and medium enterprises (SMEs), which together constrain the effective flow of capital to local projects**. These challenges are particularly acute for smaller projects, which are important for cooperatives and community-led initiatives. Land tenure complexities also pose significant risks for investors, as 40% of the region is under protection.[178]

2.7.2 Finance Transition Recommendations for Brazil and the Amazon

PRIORITY 1

Financial Mechanisms: Scale solutions to help address high cost of capital and lower political, regulatory and FX risks deterring private investment in EMDCs, to attract capital into climate and nature projects, and closing the funding gap of USD 2.3-2.5 trillion investment needed per year through 2030 in EMDCs

2.7.2.1 National Perspective: Brazil

A. Securitization Vehicles: Release commercial bank balance sheets by securitizing seasoned, high-performing loans in Brazil, across sustainable sectors and topics, such as renewable energy, forestry, sustainable agriculture and other key sectors. Bundling these assets into diversified, investment-grade securities can attract mainstream institutional investors while expanding financing for climate and nature at scale through re-investment into sustainability projects.

B. Multilateral Guarantees: Expand relationships with institutions such as the Inter-American Development Bank, the World Bank, and other multilateral development banks to expand the use of guarantees to mitigate political and macroeconomic risks for private investments, thereby lowering the perceived risk premium and creating a favorable landscape for capital flows.

C. Favorable Regulatory Environment: Expand fiscal rebates for incentivized bonds supporting climate and nature projects across key sustainability themes – such as green industry, renewable energy, and sustainable agriculture and other vital topics – increasing project profitability and competitiveness. In parallel, streamline regulations reducing transaction costs and approval timelines.

2.7.2.2 Regional Perspective: The Amazon

A. Macro & FX Guarantee Facilities: Develop guarantee mechanisms tailored to mitigate macroeconomic and foreign exchange risks, unlocking large-scale investment in the Amazon. By providing risk coverage, these facilities would reduce the cost of capital, helping to address investor concerns about volatility.

B. Concessional credit: Establish long-term concessional credit lines to lower the cost of financing for cooperatives, SMEs, and companies engaged in the Amazon bioeconomy. Banks could for example on-lend under capped interest rates and minimum maturities, bundling technical assistance and risk coverage to help ensure productive use of capital. This would reduce financing costs, expand access to credit in under-served value chains, and anchor investment in sustainable production across the region.

C. Working Capital Platforms: Create working capital platforms that allow early payment to SMEs, unlocking liquidity, and enabling faster flows of capital through the real economy. In the Amazon, where remoteness

[176] Green Earth. Brazil's Amazon Fund reaches record $154.9 million (2024).
[177] High-Level Commission on Carbon Prices. Report of the High-Level Commission on Carbon Prices. (2017).
[178] Mongabay. 40% of Amazon region is potentially conserved (2024).

and informality constrain cash flows, such platforms can help reduce financing bottlenecks, lower costs for small businesses, and strengthen local value chains and increase economic and sustainability inclusion.

PRIORITY 2

Carbon Markets: Advance the convergence of global carbon markets as a key enabler for scaling cross-border climate finance. This includes advancing interoperability between Article 6 mechanisms, voluntary carbon markets (VCMs), and compliance systems — anchored in high-integrity standards, transparent infrastructure, and robust carbon accounting

2.7.2.3 National Perspective: Brazil

A. Scale high-integrity transactions: Advance the implementation of Article 6 mechanisms (MCUs and A6.4ERs), leveraging Brazil's nature-based solutions and Amazon-based projects as globally competitive sources of carbon credits. This can expand the volume of high-integrity transactions, attract greater flows of climate finance, and reduce transaction costs through scale.

B. Strengthen institutional readiness: Build robust national systems (registries, streamlined procedures, and authorization frameworks) to operationalize Art. 6 and help ensure environmental integrity, consistency and transparency. Reduce regulatory uncertainty to facilitate Brazil's engagement with global carbon markets through broad societal dialogue and a regulatory impact assessment, considering the potential to expand financing for the implementation of Brazil's NDC.

C. Promote credibility and confidence: Expand initiatives such as the B3–ACX platform to establish a structured, regulated, and transparent trading environment that connects with global carbon markets. This will provide a safer marketplace with reference prices, increasing confidence among international buyers and investors.

2.7.2.4 Regional Perspective: The Amazon

A. Project bundling / securitization: Bundle small-scale community and cooperative carbon projects in the Amazon into standardized, investable portfolios. Use securitization or pooled vehicles to overcome scale and bankability barriers, helping to enable these projects to meet investor due diligence requirements and become tradable carbon assets in voluntary or compliance markets.

PRIORITY 3

Hard-to-Abate Sectors: Unlock capital flows to accelerate decarbonization in hard-to-abate sectors by leveraging global regulatory frameworks, such as the IMO Net-Zero and CORSIA, to scale sustainable fuel adoption, while channeling existing climate finance facilities and mobilizing targeted financial instruments to support their transition

2.7.2.5 National Perspective: Brazil

A. Advocating for policy alignment: Ensure that Brazilian biofuels, such as biodiesel for shipping and sugarcane ethanol for sustainable aviation fuel (SAF), are formally recognized in global decarbonization frameworks including International Maritime Organization (IMO Net-zero) and Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)[179] with technology-neutral carbon intensity metrics to fairly reflect Brazil's competitive advantages of low cost and lower carbon intensity.

B. Promoting flexibility mechanisms (e.g., Book & Claim): Establish mechanisms that decouple sustainability attributes (emissions reductions, certifications) from the physical use of fuel, allowing

[179] IATA. Climate Regulatory Frameworks (2025).

international buyers to finance or purchase credits linked to Brazilian biofuel production without requiring physical delivery. This approach attracts international finance to scale local production and accelerates adoption of biofuels in hard-to-abate sectors.

2.7.2.6 Regional Perspective: The Amazon

C. Restore degraded land: Prioritize underutilized degraded lands within the Legal Amazon for cultivating sustainable biofuel feedstocks, such as macaúba palm or other low-impact energy crops. By restoring degraded lands through regenerative practices, providing technical assistance for sustainable agriculture, facilitating access to climate finance and targeted financial instruments, and aligning production with international frameworks such as IMO Net-Zero and CORSIA. This approach should help avoid deforestation, enhance carbon sequestration, and help ensure that scaling biofuel production generates positive environmental and socio-economic outcomes while supporting Brazil's decarbonization goals in hard-to-abate sectors.[180]

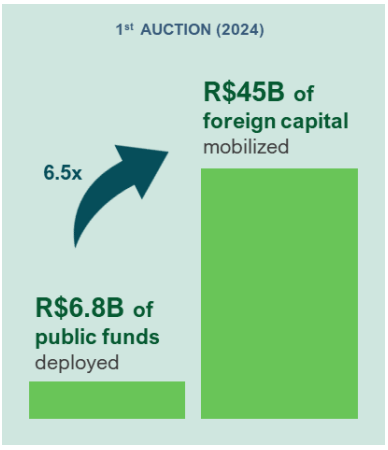
2.7.3 Legacy Initiatives

2.7.3.1 Eco Invest Brazil Program

What is the initiative: Coordinated by the Ministry of Finance with support from the National Treasury, MMA, MAPA, IDB, and the British Embassy in Brazil, is a pioneering blended finance initiative designed to attract external private capital for Brazil's ecological transition. By combining catalytic public funding with risk-mitigation tools, most notably a currency hedge, the program improves the risk–return profile for investors, enabling large-scale access to international capital.[181]

Main impact: Through public auctions, the program deploys limited public resources to catalyze much larger volumes of private and foreign capital. The first auction, held in 2024, achieved a leverage ratio of 6.5x, mobilizing BRL 45 billion in foreign capital for BRL 7 billion of public funds deployed. [182] The second auction aims to recover 1 million hectares of land, signaling the program's capacity to link financial innovation with tangible environmental outcomes. [183][183]

Figure 40. Eco Invest Auctions



Source(s): GOV SECOM

Why this case reinforces the recommendation and priority: It exemplifies how blended finance tools that help address macroeconomic, and FX risks can unlock significant flows of private and foreign capital for Brazil's ecological transition. It helps to address the high cost of capital and risk perceptions that hinder investment in Brazil reinforcing the recommendation to develop targeted mitigated risk instruments.

2.7.3.2 B3 – Brazilian Carbon Market Infrastructure

What is the initiative: The B3 & ACX initiative created an integrated, regulated carbon market infrastructure. B3 has operated a trade repository for carbon credits, tracking ownership, transactions, and retirements, and connected it to ACX's global trading platform.[184] This allows credits to be registered and transacted in a secure, real-time, regulated environment, bridging domestic regulation with international markets.

[180] BCG. Seizing Brazil's Potential for Low-Emission Marine Fuels (2025).
[181] BNDES. Eco Invest Brazil Blended Finance Program.
[182] Valor. BRL 45 billion leveraged through BRL 7 billion in Eco Invest auction (2024).
[183] Brazilian Social Communication Secretariat. Federal Government announces 2nd Eco Invest Auction, focused on restoring degraded lands (2025).
[184] B3. B3 partners with ACX to launch carbon credit trading platform in Brazil (2023).

Figure 41. B3 Carbon Market Impact Data

Source(s): CEBDS

Main impact: In its first year (2024), ~3.3 million tCO_2 were transacted.[185] The platform reduced settlement times by replacing slow bilateral processes with electronic transactions and built credibility by leveraging the tradable decarbonization credits under Brazil's RenovaBio program architecture (CBIO), setting the foundation for scalable and reliable carbon trading in Brazil.

Why this case reinforces the recommendation and priority: It demonstrates how embedding carbon credits into established financial infrastructure and ensuring regulatory clarity can accelerate market adoption and attract global demand reinforcing that the recommendation of consolidating Brazil's carbon market framework is key to position Brazil as a credible global supplier of high-integrity carbon credits.

2.7.3.3 1st Book & Claim in Latin America

What is the initiative: The first certified Book & Claim SAF transaction in Latin America, led by ABRA the holding company that controls Gol Linhas Aéreas (Scope 1 operator), Microsoft (Scope 3 buyer), SkyNRG (SAF supplier), Vibra Energia (fuel distributor), and RSB (certification and traceability).[186] The initiative decoupled the environmental attributes of SAF physically consumed in Spain, allowing Gol to retire Scope 1 emissions in Brazil while Microsoft co-financed the premium as part of its Scope 3 commitments.

Figure 42. Book & Claim Impact Data

Source(s): Information submitted via the official CNI platform.

Main impact: It avoided ~191 tCO_2eq with a 94.5% lifecycle reduction compared to non-renewable jet fuel, demonstrated the feasibility of Book & Claim transactions in Brazil, and reduced the SAF cost premium through cost-sharing mechanisms between airlines and corporates.[187] It also provided a blueprint for replication and fostered regulatory dialogue on the potential recognition of Book & Claim models in compliance and voluntary frameworks.

Why this case reinforces the recommendation and priority: It illustrates how flexibility mechanisms like Book & Claim can channel international finance into Brazil's SAF production, overcoming infrastructure and logistical barriers to physical fuel exports. This approach could make SAF adoption more viable, aligning Brazil's biofuel advantage with the global aviation decarbonization, and reinforcing the need for regulatory recognition of such mechanisms.

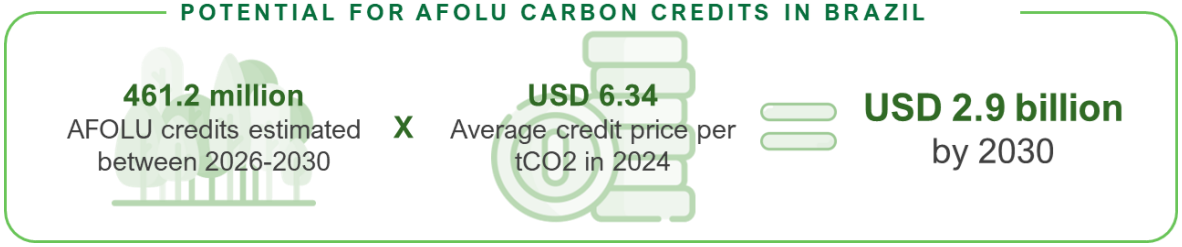
2.7.4 Potential Opportunities and Impact

Sustainable investments are the driving force behind all the impact that Brazil and the Amazon can generate. By mobilizing capital and leveraging financial mechanisms, it becomes possible to fund the projects and technologies that enable decarbonization, which can foster improved quality of life, job creation, and returns for the local economy. This pillar is therefore important for unlocking cross-sector opportunities and maximizing positive outcomes.

One example that highlights a major opportunity for Brazil is carbon markets, expected to reach a projected revenue of over USD 16.8 billion by 2030.[188] Brazil has a competitive advantage in supplying high-quality carbon credits – especially AFOLU carbon credits in the Amazon region – which can attract foreign investment to the country and generate significant revenue:

[185] Cebds. B3's role in the climate agenda (2025).
[186] Reuters. Brazil's Gol, Vibra complete first SAF 'book-and-claim' in Latin America (2024).
[187] Information submitted via the official CNI platform.
[188] Grand View Research. Brazil Carbon Credit Market Size & Outlook, 2023-2030

Figure 43: Potential for AFOLU Carbon Credits in Brazil



Source(s): IDESAM; Ecosystem Marketplace

It is important to note that this estimate accounts for projects that are already underway and the average value of voluntary carbon credits in 2024.[189] Considering the emergence of new projects and the fact that the price of credits can vary depending on the type of project and[190] its quality, the total value achieved could be even more significant.

2.7.5 IMPLEMENTATION AND SCALABILITY LEVERS

Integrating cross-cutting approaches across financial mechanisms, carbon markets, and hard-to-abate sectors, the proposed actions help address both national priorities and region-specific needs in the Amazon, seeking to mobilize capital, foster market confidence, and deliver impactful, scalable solutions that align with Brazil's climate goals and sustainable development ambitions.

2.7.5.1 Potential Actions to implement and scale in Brazil

1. **Strengthen regulatory and governance frameworks** to recognize sustainable assets, enable securitization, and help ensure transparent governance of carbon markets, aligned with national taxonomy and climate commitments.
2. **Mobilize private and institutional capital** by scaling proven financial solutions through commercial banks, pension funds, insurers, and blended finance mechanisms, supported by public development banks and relationships with multilateral development banks.
3. **Develop financial infrastructure** including de-risking tools (guarantees, first-loss equity, FX hedging), digital platforms for project pipeline development, and integrated trading, settlement, and registry systems to enhance liquidity and transparency.
4. **Create predictable demand signals** through long-term offtake agreements and commitments from corporate buyers, enabling bankable projects and attracting investment.
5. **Establish national strategies and improve financing mechanisms for national hard-to-abate sectors** such as sustainable fuels. This includes clear policy alignment with IMO and CORSIA, support for certification and measurement methodologies, and coordination of value chains to accelerate adoption.
6. **Enable international integration** by helping to ensure Brazilian mechanisms, credits, and projects meet global compliance frameworks, fostering access to international finance and recognition under Article 6.

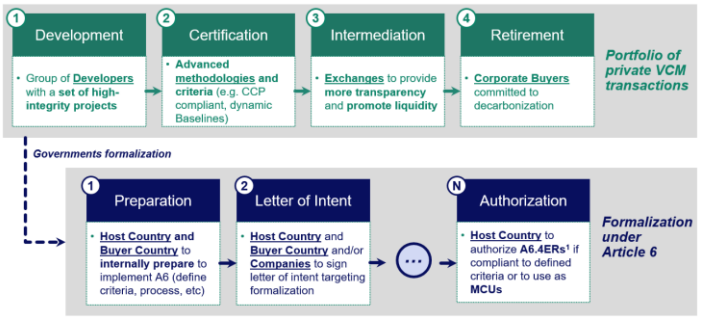
2.7.5.2 Potential Actions to implement and scale in Amazon region

1. **Design inclusive financial vehicles** that prioritize equitable access for SMEs, cooperatives, and communities, leveraging blended finance and capacity building to strengthen compliance and reporting.
2. **Develop region-specific project pipelines** linked to Brazil's NDC commitments, helping to ensure bankability of initiatives in bioeconomy, agroforestry, and sustainable logistics.

[189] Idesam. Mapping forest carbon projects in Brazil
[190] Ecosystem Marketplace. State of the Voluntary Market 2025

3. **Advance high-integrity carbon projects** by encouraging the use of benefit-sharing frameworks that promote community participation and alignment with sustainable development outcomes, where appropriate.
4. **Pilot sustainable fuel projects** in Amazonian transport systems (fluvial and regional aviation), embedding local employment, training, and economic inclusion.
5. **Secure policy and regulatory support** for Amazon-specific initiatives to help ensure eligibility in international compliance frameworks and attract targeted climate finance.

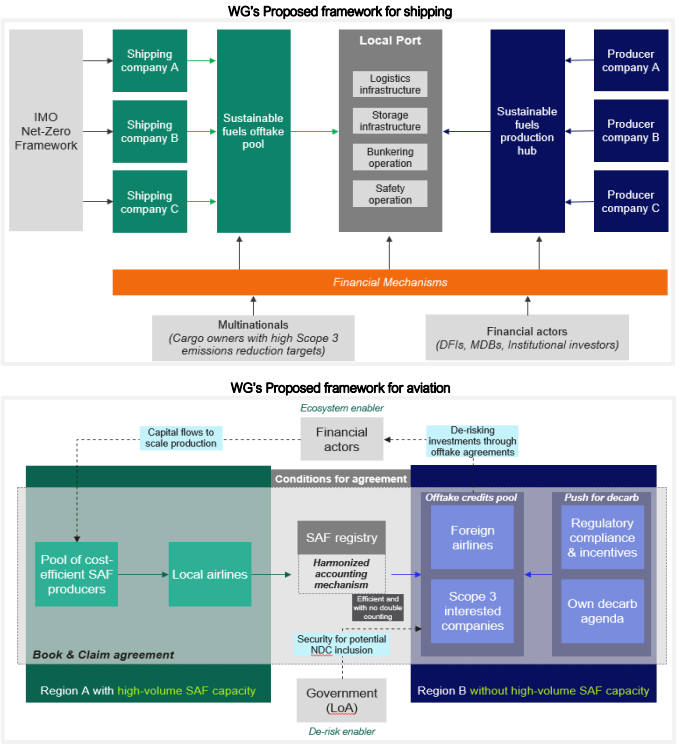
2.7.5.3 Carbon Markets Blueprint



Source(s): Blueprint developed by Finance Working Group (2025).

The Working Group's global blueprint for interoperability across Article 6, voluntary, and compliance markets can be leveraged to lay the foundations for a more connected global carbon market, while positioning Brazil as a hub for high-integrity credits. Within this framework, Mitigation Contribution Units (MCUs) can provide an immediate channel for voluntary contributions and early pipelines, while Article 6.4 Emission Reductions (A6.4ERs), when transferred as ITMOs, can serve as anchors for compliance and NDC-linked demand. Importantly, high-integrity projects can emerge under both Article 6 and the voluntary market and building interoperability between these channels is important to scaling liquidity.

2.7.5.4 Hard-to-Abate Sectors Blueprint



Source(s): Blueprint developed by Finance Working Group (2025).

The Working Group's global blueprint for shipping and aviation provide scalable models that could channel finance into Brazilian biofuels and position the country to potentially lead the decarbonization of hard-to-abate sectors.

For shipping, the blueprint seeks to aggregate Brazil's mature biofuels production capacity with both national and international demand, accelerating the creation of a more structured market for maritime decarbonization.

For aviation, the blueprint enables the redirection of international capital toward scaling SAF production in regions with cost-competitive potential, such as Brazil, while combining global financing flows and cost sharing structures to mitigate SAF cost gaps.

2.8 GREEN JOBS AND SKILLS

2.8.1 OVERVIEW

2.8.1.1 Global to local

According to global recommendations on green jobs, in 2025, only about 17% of the global workforce possessed green skills, and from 2023 to 2024, global demand for green talent (+11.6%) grew twice as fast as supply (+5.6%).[191] In line with this trend, Brazil has been expanding strategic sectors such as renewable energy, bioeconomy, agriculture, and the circular economy.[192] [193] [194] However, a gap remains between the growing demand for qualified professionals and the current training capacity.

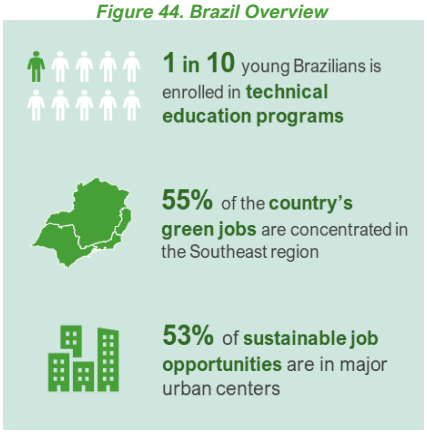
Brazil has around 6.8 million formal green jobs[195], representing about 9% of total employment.[196] At the same time, more than 40 million workers still operate in the informal sector, especially in remote regions, and some of them may be employed in sectors linked to green jobs, such as energy, agriculture, recycling, construction, and services.[197] **To advance in the green economy and establish global leadership in climate action, Brazil should invest in transforming its workforce by training informal workers, preparing professionals in strategic sectors, and upgrading decent jobs in local communities.**

2.8.1.2 Challenges for Brazil

Brazil's labor market remains largely informal and characterized by limited specialization, which makes the green transition particularly challenging.[198] To advance, it may require stronger alignment between environmental policies and workforce training strategies, along with greater efforts to expand social inclusion and promote quality, decent jobs.

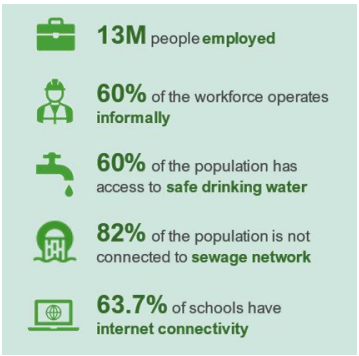
Access to education remains concentrated in large urban centers and is further constrained by inequality, with only 11% of the young population enrolled in technical courses.[199] Informality in sustainability sectors has risen to 40.6%[200], affecting both rural and remote workers as well as urban laborers, such as waste pickers, and creating barriers to professionalization, rights, benefits, and formal training.

Figure 44. Brazil Overview



Source(s): OECD

Figure 45. Amazon Overview



Source(s): Agência IBGE Notícias; IPEA

2.8.1.3 Challenges for the Amazon

In the Amazon, structural and social factors limit access to training, constraining opportunities for green skills development. Remote communities face poor infrastructure, low school internet connectivity, and limited access to basic services such as clean water and sanitation.[201]

[191] Linkedin. Global Green Skills Report 2024
[192] GOV.BR. Lula enacts Fuel of the Future law: "Brazil will drive the world's largest energy revolution" (2024)
[193] GOV.BR. President Lula signs Pact for Ecological Transformation between Three Branches of Government (2024)
[194] GOV.BR. President Lula announces BRL 546.6 billion to boost sustainable agro-industrial chains (2024)
[195] *According to ILO, "Green jobs are decent jobs that contribute to preserve or restore the environment, be they in traditional sectors such as manufacturing and construction, or in new, emerging green sectors such as renewable energy and energy efficiency*", more info: UN-ILO.
[196] UNICEF. Green Skills and Jobs for Adolescents and Youth in Brazil
[197] IPEA Gov. Unemployment, Informality, Underutilization and Inactivity
[198] IPEA Gov. Unemployment, Informality, Underutilization and Inactivity
[199] OECD. Education at a Glance (2023)
[200] DIEESE. Green and Sustainable Jobs in Brazil (2022)
[201] IPEA. Just Energy Transition in Amazon

Combined with high informality and low education levels, these barriers restrict workers' ability to adopt technologies, operate equipment, and move into higher value-added activities required to scale opportunities in bioeconomy. [202] It is important continuous learning, upskilling and reskilling projects reach vulnerable populations, providing the necessary infrastructure to do so. Indigenous, quilombo, and riverine populations face additional challenges such as distance, cultural barriers, and social exclusion, underscoring the need for inclusive policies and targeted investments in education, connectivity, and social innovation to enable a just and sustainable transition.

2.8.2 Green Jobs & Skill Recommendations for Brazil and Amazon

PRIORITY 1

Finance a human centered transition with green-skill employment targets, political commitment, NDC integration, and scalable finance models

2.8.2.1 National Perspective: Brazil

A. Targeted Green Credit and Incentives: direct public and private credit toward upskilling and reskilling in strategic green sectors, such as renewable energy, sustainable agriculture, circular economy, building and construction, bioeconomy, manufacturing, and mobility, among others. Create and/or expand fiscal incentives and tailored green credit lines for companies investing in workforce training, particularly outside major urban centers, and help ensure these instruments explicitly link financing to training and certification outcomes.

B. Innovative Financial Models: scale the use of green and social bonds to fund education and training (e.g., expand BNDES's green, social, and sustainability bonds to include workforce development). Develop performance-based contracts for technical schools, linking payments to outcomes such as employability, wages, and environmental impact. Mobilize impact-investment funds with returns tied to labor-market insertion in the sustainability economy.

C. Policy Integration and Political Commitment: consolidate education, environment, labor, and economic development policies under a unified green-skills agenda that aligns environmental ambition with human capital strategies. Help to ensure the federal government's "Pacto Nacional pela Transformação Ecológica" directly aligns with Brazil's NDCs, integrating workforce development alongside infrastructure and green-technology targets, with measurable targets for enrollment, and implementation timelines.

2.8.2.2 Regional Perspective: The Amazon

A. Build regional financial literacy and capacity for green finance: develop training for cooperatives, municipalities, and community associations to understand, access, and manage green finance (e.g., credit lines, guarantees, blended finance, payments for ecosystem services, carbon markets). Without this capacity, local actors remain excluded from funding opportunities.

B. Build Local Financial-Sector Capacity for Adaptive Instruments: train financial-sector professionals to design and manage instruments suited to Amazonian realities— high informality, low collateral, low digital literacy and infrastructure barriers, such as limited connectivity. Building this knowledge allows institutions to match the right tools to local conditions, simplify access for communities (simplified requirements + technical assistance), and reduce risk while keeping investments viable.

C. Inclusive Credit for Community Enterprises: expand access to credit and formalization for cooperatives, family farmers and small producers in the Amazon, aiming to enable community-based initiatives. Provide partial guarantees, technical assistance, and market access mechanisms to enable productive inclusion across remote communities.

[202] WEF. Future of Jobs Report 2025.

PRIORITY 2

Develop green and digital skills of the current workforce (formal and informal), validating and developing vulnerable groups' skills to provide inclusive access to value chains

2.8.2.3 National Perspective: Brazil

A. Define a National Strategy for Reskilling and Upskilling (with market access incentives): Adapt training programs to Brazil's territorial diversity and focus on strategic green job sectors (clean energy, agriculture, bioeconomy, construction). Co-design modular, flexible pathways with industry and local actors. Help to ensure that training is structured to prepare participants to become eligible suppliers under responsible sourcing schemes, via certification, traceability, and contract requirements. This helps vulnerable groups and others move from training into preferred vendor status in supply chains.

B. Green Entrepreneurship for Informal Workers: Foster decent work by leveraging local organizations, such as SEBRAE, private companies, and non-profits, to provide mentorship, business support, and technical assistance. Prioritize upskilling and reskilling for informal workers such as recyclers and waste collectors, construction workers, clean energy producers, and others, enabling their entry into formal circular and renewable value chains.

C. Certification and Formal Recognition: Implement hybrid certification protocols and formal recognition of micro-credentials in collaboration with the Ministry of Education (MEC) and the "S" System[203]. Help to ensure validated green and digital skills are officially recognized in hiring processes and public procurement.

2.8.2.4 Regional Perspective: The Amazon

A. Map and Recognize Local Productive Vocations and traditional ecological knowledge (TEK): Engage local governments, industries, civil society and educational institutions to map productive vocations and formally recognize TEK and local value-adding modalities. For example, the geographical indication protection granted to "Queijo do Marajó" helps prevent fraudulent imitations and gives legal leverage to authentic producers, increasing price premiums and cultural dignity.[204] Use such instruments to anchor vocational training, territorial branding, and inclusive sustainable value chains that reward authenticity.

B. Collaborations with platforms active in Amazonian territories: Work with SENAI, local universities and educational institutions, civil society organizations, and private-sector actors to co-create reskilling and upskilling programs tailored to Amazonian realities. Helping to ensure they reflect local vocations and integrate traditional knowledge, while aiming to develop inclusive and resilient value chains.

C. Implement enablers to support training and entrepreneurship in Amazonian communities: Promote investments in essential infrastructure, foster cooperative governance models for informal workers, expand access to digital tools and green energy systems, and deploy mobile education platforms such as river-based school boats, to reach remote areas – this could follow the example of the existing Amazonian Creative Labs[205]. These enablers are important to help ensure that training and entrepreneurship programs connect to actual green markets rather than remain isolated.

PRIORITY 3

Qualify a future, resilient workforce, innovating curriculum and deploying capability-building models

[203] Senado. What is the "S" system?
[204] EMBRAPA. Geographical Indication of Marajó Cheese intensifies research challenges (2021)
[205] Amazônia 4.0. Industry 4.0 within the forest: Socio-biodiversity bioeconomy

2.8.2.5 National Perspective: Brazil

A. Leverage existing platforms such as the "S" System (SENAI's platform) and corporate training networks: Deliver modular, market-aligned training programs for the formal workforce, facilitating transitions into strategic green job sectors. Focus on co-designing curricula based on labor market demands, integrating digital and green skills, and aligning with national qualification frameworks to help ensure scalability and long-term impact.

A. Strategic Relationships and Governance: Establish public-private partnerships and foster collaboration between universities, communities, and federal agencies (MEC – Ministry of Education, MTE – Ministry of Labor and Employment, MCTI – Ministry of Science, Technology and Innovation) to support curriculum innovation, certification, financing, and monitoring of capacity-building programs. These relationships should enable scalability, quality assurance, and alignment with national sustainability and workforce development strategies.

B. Integrated Technical and Socio-Emotional Training: Promote training programs that combine technical experience with socio-emotional skills such as collaboration, resilience, adaptability and problem-solving. Establish continuous learning cycles and periodic curriculum updates to keep pace with technological and environmental transitions, while reinforcing transversal competencies like community entrepreneurship and governance.

2.8.2.6 Regional Perspective: The Amazon

A. Localized and Sector-Aligned Curriculum: Engage community leaders, regional universities, and local actors to co-design curricula that integrate traditional knowledge with technological innovation. Tailor training programs to the region's economic and ecological realities, such as renewable energy, bioeconomy, sustainable agriculture, and waste management, to enhance workforce adaptability, resilience, and local ownership.

B. Participatory Skills Foresight: Implement participatory foresight processes (e.g. visioning workshops, scenario narratives, mapping exercises, etc.) that engage local communities, youth, traditional knowledge holders, and sector actors in co-creating future scenarios for sustainable value chains (e.g. bioeconomy, renewable energy, ecotourism). These locally grounded visions can bridge informal and formal economies, guiding curricular innovation, investment decisions, and priority directions for skills development in the Amazon.

C. Youth engagement and leadership development: Invest in programs that empower young people as agents of change, equipping them with leadership, entrepreneurship, and environmental stewardship skills. With Brazil's aging population and a declining influx of young workers, it is important to maximize the potential of the next generation.[206] In the Amazon, this means creating opportunities that reduce youth outmigration by anchoring training to viable sustainability livelihoods in bioeconomy, renewable energy, and community-based enterprise, helping to ensure young talent can thrive locally rather than seeking opportunities elsewhere.

2.8.3 Legacy Initiatives

2.8.3.1 Brazil's First Center of Excellence for Green Hydrogen Training[207]

What is the initiative: Inaugurated in 2024 at CTGAS-ER (Center for Gas and Renewable Energy Technologies) in Natal (RN) with support from the Brazilian and German governments, the Center of Excellence for Professional Training in Green Hydrogen is part of the H2Brasil Program to prepare the

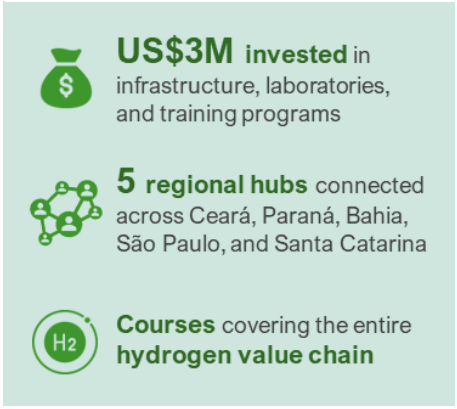
[206] IBGE projects Brazil's population will stop growing by 2041, with older adults reaching 37.8% by 2070. More info
[207] SENAI. Senai and GIZ inaugurate Brazil's first Center of Excellence for Vocational Training in Green Hydrogen, in Natal

workforce for the hydrogen economy. It offers **practical and theoretical training in specialized labs covering the hydrogen value chain**, from production and storage to applications and safety.[208]

Main Impact: This initiative helps to address a critical **skills gap in the green hydrogen value chain**, supporting Brazil's ambition to become a global leader in renewable energy and hydrogen exports. It strengthens local capacity, fosters technology transfer, and **creates future-proof green jobs** across production, logistics, and industrial applications. It also connects **five regional training hubs, expanding access nationwide.**

Why this case reinforces the recommendations and priorities: it supports the priority of developing a skilled workforce for emerging sustainability technologies. By providing hands-on and theoretical training across the hydrogen value chain, the initiative addresses critical skills gaps, facilitates technology transfer, and fosters the creation of future-proof green jobs.

Figure 46. Green Hydrogen Training Impact Data



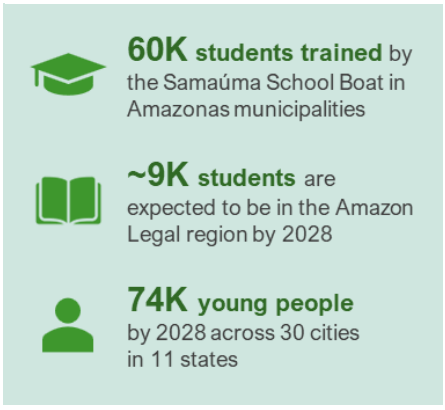
Source(s): SENAI

2.8.3.2 Partnership between Brazilian National Service for Industrial Training (SENAI) and Schneider Electric – the case of Samaúna School Boat [209]

What is the initiative: Operated by SENAI Amazonas since 1979, the Samaúma School Boat is a floating vocational training unit that brings professional education to riverside communities in remote municipalities across Brazil's Northern region, including Amazonas, Acre, Amapá, Rondônia, Roraima, and Pará.[210] **The boat received solar kits to modernize its training labs, especially in solar energy**. This partnership expanded access to vocational courses such as Residential Electrician and Solar System Installer, tailored to the needs of riverside Amazon populations.

Main Impact: Schneider Electric and SENAI have joined forces to expand access to energy-sector training across Brazil. **The initiative will qualify 74,000 young people in 30 cities by 2028, including areas in the Legal Amazon.**[211][210] Focused on energy transition and industrial digitalization, the program fosters a skilled workforce, promotes inclusion, and supports green job development.

Figure 47. Samaúna School Boat Impact Boat



Source(s): Samaúma School Boat; FIEAM

Why this case reinforces the recommendations and priorities: it exemplifies the priority of expanding equitable access to green skills and technical education in hard-to-reach regions. It also strengthens local capacity, promotes inclusion, and prepares a skilled workforce for green jobs, directly supporting recommendations to develop scalable, community-focused training models that enable sustainable economic development.

2.8.4 Potential Opportunities and Impact

The impact on green jobs in Brazil and the Amazon can be seen across multiple fronts that shape the country's path toward a more sustainable future. The increase in permanent and additional jobs within the Brazilian economy spans major sectors, including agriculture, livestock production, and mining, in addition to the bioeconomy.

[208] Senai. RN wins Brazil's 1st Center of Excellence in Professional Training for Green Hydrogen (2024)
[209] Arandanet. Schneider and SENAI bring vocational training to the Amazon (2025)
[210] Barreirinha City Hall. City Hall and Senai Samaúma II School Boat certify more than 800 students in Barreirinha
[211] Arandanet. Schneider and SENAI bring vocational training to the Amazon (2025)

Green investment can even generate more jobs in the near term than unsustainable investments, for example:[212]

Figure 48: Green Jobs and Skills Impact on Brazil

Source(s): WRI

[212]

In the case of the Amazon, promoting green jobs plays a key role in advancing social inclusion and sustainable development in the region, with opportunities to generate local employment. According to the CEO of Absolar, solar photovoltaic energy production generates 30 jobs for every megawatt of installed capacity.[213] This means that initiatives such as the "More Light to the Amazon" project — which aims to install 1.5 GW of off-grid solar systems by 2030 — [214] could create up to 45,000 new jobs in the Legal Amazon, primarily for the installation and maintenance of the 12 million new photovoltaic systems required.

2.8.5 IMPLEMENTATION AND SCALABILITY LEVERS

This section highlights the enablers to accelerate green jobs and skills in Brazil and the Amazon, outlining conditions to scale successful initiatives, advance the country's leadership in the green economy, while helping to address demographic challenges and ensuring the transformation of its workforce for the future.

2.8.5.1 Action Plan to implement and scale in Brazil

1. Direct public and private credit toward upskilling and reskilling in sectors vulnerable to the impacts of extreme weather, particularly in remote areas, and integrate sustainability training into existing financial instruments such as green bonds.
2. Align national policies across education, labor, and sustainability with measurable targets for green skill development under frameworks such as the *Pacto Nacional pela Transformação Ecológica*.[215]
3. Leverage existing platforms, such as "S" System (SENAI's platform) and corporate networks to deliver modular, market-aligned training programs that reflect local realities and labor demands.
4. Recognize and certify green skills, including micro-credentials, to help ensure formal validation in hiring and procurement processes.
5. Foster public-private partnerships to co-design and finance training programs, linking outcomes to employability and environmental impact.
6. Promote inclusive access for vulnerable groups through community-based sustainability entrepreneurship initiatives.

2.8.5.2 Action Plan to implement and scale in Amazon region

1. Develop vocational training plans for Amazonian communities focused on green skills and aligned with local value chains to promote sustainable livelihoods.
2. Promote public policies and regulatory frameworks that recognize and incentivize green jobs, including tax incentives, subsidies, and legal measures that support sustainable enterprises in the Amazon.

[212] WRI The Green jobs advantage: how climate friendly investments are better job creators (2021)
[213] CONFEA. The photovoltaic sector is expected to generate more than 281,600 new jobs in 2024 (2024)
[214] Portal Solar. More Light for the Amazon will require up to 12 million solar energy devices (2023)
[215] Agência GOV. Pact for Ecological Transformation between the Three Powers of the Brazilian State (2024)

3. Foster public-private partnerships to channel private social investment toward essential services in low-income regions, including infrastructure, logistics, sanitation, and internet access, to support the development of sustainable value chains in local communities.
4. Expand digital inclusion and connectivity by increasing access to digital infrastructure to enable remote learning, e-commerce, and participation in sustainability economy networks, especially for vulnerable groups, while leveraging technologies such as AI and 5G.
5. Strengthen technical and vocational education networks, such as Brazil's "S" System, to deliver green skills training in remote Amazon communities, in collaboration with the private sector, using innovative models like the Samaúma School Boat (from SENAI), which brings education directly to riverside populations.
6. Establish community-led innovation hubs that serve as local centers for experimentation and co-creation of sustainable technologies, enabling communities to adapt sustainable solutions to their specific realities and generate local intellectual capital.
7. Establish monitoring and evaluation frameworks to track the effectiveness of green skills programs, help to ensure continuous improvement, align with labor market demands, and support the country's overall growth strategy.

2.9 HEALTH *(COMPLEMENTARY THEME)*

2.9.1 OVERVIEW

2.9.1.1 Global to local

The healthcare sector is responsible for **4.4% to 5.2%** of global GHG emissions,[216] and if it were a country, it would rank among the **top five** emitters.[217] Over **70%** of this footprint is linked to Scope 3, which is the supply chain, while challenges such as excessive water usage, waste management, and a reliance on single-use plastics underscore the urgency for sustainable solutions.[218]

Brazil's healthcare sector reflects this global scenario. It is the sixth-largest healthcare emitter of GHG globally, with **44 $MtCO_2e$ annually** (**4.4%** of national emissions). While most emissions come from Scope 3 (**73%**), the country has higher direct emissions than the global average (**21%** versus **17%**).[219]

Additionally, the climate crisis is not just related to an environmental concern but a health one as well: extreme weather events, pollution, and changes in disease cycles affect vulnerable populations. In 2024, floods in Brazilian state of Rio Grande do Sul caused **+USD 290 million** in damage to the health system, while heatwaves and wildfires intensify respiratory and cardiovascular diseases.[220]

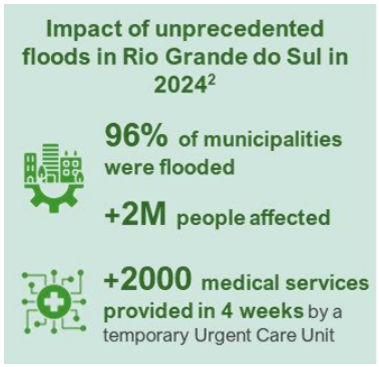
Rising temperatures and shifting rainfall patterns have also created favorable conditions for the increasing spread of vector-borne diseases such as dengue, zika, and chikungunya. Initiatives like TeleAMEs, which has already conducted **430,000 remote consultations** in areas far from urban centers, and reverse logistics programs such as LogMed, which has collected **2,000 tons of medicines** since 2021, show how Brazil is adapting global recommendations to its specific needs, combining climate resilience, inclusion, and sustainable innovation.

2.9.1.2 Challenges for Brazil

Brazil has one of the largest public health care systems in the world, serving more than 190 million people, of whom roughly 80% rely exclusively on public services for their health needs.[221] Despite progress in primary care, vaccination, and complex treatments, limited funding constrains the expansion of services and infrastructure. This leads to long waits for medium and high-complexity procedures, affecting those who rely solely on public services.[222]

Policy reforms that strengthen coordination across healthcare value chain, combined with relationships that leverage the extensive local network of private providers, are key to helping ensure inclusive and timely care nationwide.

Figure 49: Impact of Flood in Rio Grande do Sul State

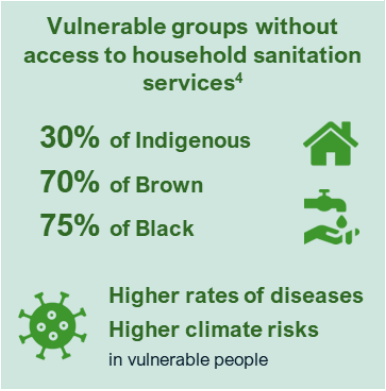


Source(s): IDB; OAS ORG

Furthermore, climate risk hits harder in peripheral and remote areas, where healthcare systems are less equipped to handle environmental emergencies. **The floods in Rio Grande do Sul revealed how regional inequality can limit climate adaptation, as investments are concentrated in major urban centers, leaving vulnerable communities without access to quality healthcare,** increasing risk of extreme weather concerns.[223]

[216] Harvard Medical School. Confronting Health Care's Carbon Footprint (2023).
[217] Health Care Without Harm. Health Care Climate Footprint Report (2019).
[218] Health Care Without Harm. Health Care Climate Footprint Report (2019).
[219] Health Care Without Harm & ARUP. Global Road Map for Health Care Decarbonization (Brazil)
[220] More info: Assessment of the effects and impacts of floods in Rio Grande do Sul
[221] More info: SUS
[222] OECD. Reviews of health systems - Brazil (2021)
[223] REDESCA. Impacts of the floods in Rio Grande do Sul (2025)

Figure 50. Vulnerable Groups at Amazon



Source(s): CBJC

2.9.1.3 Challenges for Amazon

The Amazon faces unique challenges in healthcare sector, specially related environmental aspects, which can be amplified by climate risks. **Severe and recurring droughts and forest fires affect communities and hinder access to essential healthcare, food, and medical supplies.**[224] Forest fires worsen the crisis by deteriorating air quality and causing widespread respiratory illnesses, **primarily affecting certain populations.**[224]

The **lack of proper sanitation** in many communities in the region also contributes to a high incidence of climate-sensitive diseases.[225] The territorial vastness and logistical complexity can demand tailored solutions, such as telemedicine, to expand access and strengthen the resilience of the local healthcare system.

2.9.2 Health Recommendations for Brazil and Amazon

PRIORITY 1

Coordinate integrated and climate-resilient health strategies through collaboration between the public health system and the private sector, tailored to regional realities

2.9.2.1 National Perspective: Brazil

A. Strengthen Essential Infrastructure through Public-Private Coordination: Public-private coordination is important to accelerate technology adoption, mobilize financing, and implement collaborative strategies that expand healthcare capacity. The national private sector can play a decisive role in strengthening health responses by leveraging its agility, innovation, and investment capacity. By complementing the SUS (Brazil's Unified Health System), it can help address challenges, such as long waits for medium- and high-complexity procedures, through its broad ecosystem of clinics, laboratories, diagnostic centers, hospitals, distributors, equipment and service providers, and technology companies.

B. Embedding climate risks into health protocols: Strengthening the capacity to respond to acute climate-related events, such as the floods in Rio Grande do Sul, heatwaves, droughts, and wildfires, requires integrating climate risks into health protocols and reinforcing intersectoral coordination and risk assessment. Implementing digital health solutions and training programs that equip healthcare professionals to respond to extreme weather concerns further improves preparedness, helping shift the healthcare system from reactive to strategic, forward-looking readiness, better positioning it to face future climate crisis.

C. Help Address Systemic Inequities and Strengthen Resilience in Vulnerable Populations: Embedding inclusivity into adaptation strategies, through tools such as telemedicine and decentralized care, can directly tackle systemic vulnerabilities while building long-term resilience. Climate impacts can be unequal, disproportionately affecting certain populations, who often lack adequate sanitation, leading to a higher incidence of climate-sensitive diseases, such as dengue, malaria, and hepatitis.

2.9.2.2 Regional Perspective: The Amazon

A. Develop Specific Responses for Local Environmental Health Risks: In the Amazon, recurring climate events such as wildfires and severe droughts pose unique health challenges that can require locally adapted strategies. Health protocols should be designed to help address, for example, respiratory conditions worsened by smoke and air pollution, as well as other climate-sensitive health risks, considering the specific

[224] Vital Strategies. New survey shows climate change already affects the daily life of the population in the Legal Amazon (2025)
[225] More info: Health, Race and Climate Bulletin

needs of Indigenous and traditional communities. Strengthening resilience also requires overcoming structural and logistical barriers to help ensure continuous access to healthcare supplies, specialists, and medical support.

B. Develop Climate-Responsive Emergency and Mobile Healthcare Units: Establish mobile health units and temporary urgent care facilities to reach remote and traditional communities, helping to ensure access to essential supplies, including vaccines and temperature-sensitive medical products, through robust cold-chain logistics. Integrating cross-sector coordination, risk assessment, and rapid deployment can help ensure timely and effective healthcare delivery during climate-driven disasters

C. Expand and Integrate Telemedicine Platforms to Overcome Logistical Barriers: Telemedicine platforms play a role in supplementing on-site interventions, extending the reach of healthcare services, and helping to ensure access to medical specialists, while maintaining continuity of care and building long-term health system resilience against climate-related events.[226] By combining telemedicine with on-site care and tailored protocols, the healthcare system can protect vulnerable populations, sustain essential services during extreme weather events, and strengthen readiness for future climate impacts.

PRIORITY 2

Promote decarbonization and sustainability in Brazil's health sector by embedding efficiency, circularity, and water stewardship, mobilizing the value chain through private initiatives, supply chain engagement, and the public health system as a catalyst

2.9.2.3 National Perspective: Brazil

A. Promote Sustainability as a Driver of Efficiency and Competitiveness (Scope 1 & 2): Pharmaceutical and healthcare providers can reduce environmental impacts while generating cost savings by optimizing processes to lower water use, energy demand, and waste. Adopting cleaner technologies and circular models, such as water reuse, energy recovery, optimized distribution networks, and waste valorization, further mitigates risks, enhances resilience, and positions strong environmental performance as a source of competitive advantage rather than compliance.

B. Strengthen Decarbonization in Healthcare Supply Chains (Scope 3): Since 73% of healthcare industry emissions in Brazil come from Scope 3, engaging suppliers, distributors, and logistics networks through common standards is important to advance decarbonization and improve water and waste management.[227] Embedding sustainability into quality and safety frameworks can reinforce trust, help ensure regulatory compliance, and positions environmental performance as a strategic pillar of healthcare. Brazil's Unified Health System (SUS) can also act as a catalyst, leveraging its scale and purchasing power through sustainable procurement and awareness campaigns, generating multiplier effects across the value chain.

2.9.2.4 Regional Perspective: The Amazon

A. Build Climate-Resilient and Low-Carbon Health Infrastructure: Decarbonization and resilience strategies should be tailored to the Amazon's unique challenges. In isolated communities, where droughts and extreme climate events disrupt access and operations often depend on non-renewable energy source generators, healthcare facilities should adopt renewable energy solutions and autonomous water management systems, including collection and reuse, to maintain continuous operations. These measures should reduce emissions, strengthen resilience, and help to ensure that essential health services remain functional during environmental crises.

B. Prioritize Decentralized Logistics Solutions for Medical Supplies: In the Amazon, where healthcare providers rely on long-distance transport by air and river, strategies should focus on minimizing the need for physical movement. Expanding telemedicine to reduce patient transfers, optimizing cold-chain logistics, and

[226] Mphar. Solutions in Medical Affairs. Sustainability in the Pharmaceutical Industry: A Greener Future for Healthcare (2024)
[227] Health care without harm & ARUP. Global road map for health care decarbonization

using low-carbon transport for medical supplies can help ensure continuity of care for remote and traditional communities. Waste management and circular solutions should be tailored to regional conditions, emphasizing source reduction, recycling, and co-processing within the complex river and road logistics. Through climate-smart practices adapted to local realities, the Amazon can reduce emissions, enhance resilience, and deliver sustainable healthcare in remote areas.

PRIORITY 3

Expand medicine waste reduction and reverse logistics across Brazil through joint efforts that mobilize the public sector, private sector, and interconnected health and waste systems

2.9.2.5 National Perspective: Brazil

A. Amplify and Scale Reverse Logistics for Medicines and public engagement: The LogMed program is Brazil's national system for reverse logistics of medicines, designed to help ensure the safe collection, disposal, and management of unused or expired pharmaceuticals[228]. Expanding collection points to more locations and citizen participation is important to help ensure proper disposal across all regions. Importantly, embedding clear rules and practices for safe medicine disposal safeguards for both public health and environment reasons. With its nationwide reach, the public health system offers a unique platform to leverage awareness and mobilization efforts, integrating reverse logistics into broader strategies of circularity and health protection.

2.9.2.6 Regional Perspective: The Amazon

Develop a Regional Reverse Logistics System for Medicines in the Amazon: Engage local populations through awareness campaigns and expand collection points in remote communities using mobile health units and local pharmacies. Help to ensure coordination among manufacturers, distributors, and health facilities to guarantee safe storage, transport, and disposal of medicines under challenging logistical conditions.

2.9.3 LEGACY INITIATIVES

2.9.3.1 Brazil's Reverse Logistics of Medicines and the LogMed Program

Figure 51. LogMed Program Impact Data

Source(s): LogMed

What is the initiative: The LogMed program, which since 2021 has organized the reverse logistics of household medicines in Brazil, enabling the population to dispose of expired, unused medicines and their packaging in an environmentally appropriate manner. The program's operation is carried out by the Performance Monitoring Group (GAP), composed of 17 entities representing the pharmaceutical value chain at the national level.[229] [229]LogMed is responsible for the technical, operational, and document management of the reverse logistics process for medicines, which are then incinerated, co-processed, or treated by other methods in accordance with environmental standards.

Main Impact: By establishing standardized operational rules, oversight mechanisms, and shared responsibility among stakeholders, LogMed coordinates medicine disposal to protect public health, reduce environmental impacts, and support Brazil's circular economy and sustainability goals. The program also prevents soil and water contamination, reduces health risks, and helps avoid medicine misuse.

[228] Initiated through a partnership between the Ministry of Environment and Sindusfarma (the largest pharmaceutical manufacturer association), the program consolidates efforts across the pharmaceutical value chain (including manufacturers, importers, distributors, and retailers) under a clear regulatory framework established by a Federal Decree (10.388/2020) which defined the flow of responsibility in the process. More info: LogMed

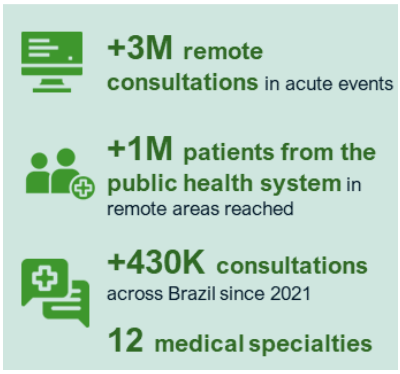
[229] More info: LogMed

Why this case reinforces the recommendations and priorities: it exemplifies the priority expanding medicine waste reduction and reverse logistics across Brazil through joint efforts. It strengthens multi-stakeholder coordination across the pharmaceutical value chain, demonstrating how structured governance and operational frameworks can help drive scalable and sustainable solutions.

2.9.3.2 TeleAMEs: Bringing Specialized Healthcare to the Amazon and Beyond

What is the initiative: The Hospital Israelita Albert Einstein created **TeleAMEs**, a telemedicine program with innovative mechanisms to strengthen **health resilience by combining preparedness, coordination, and digital health**.[230] In partnership with the Ministry of Health under the PROADI-SUS program, TeleAMEs operates through **more than 418 care points**, connecting local medical teams in underserved areas of Brazil, **particularly in the North** and Midwest regions, **with reference specialists**. The program has achieved a **95% resolution rate** and an exceptional satisfaction index (NPS 98) among local physicians.[230]

Figure 52. TeleAME Impact Data



Source(s): TeleAME

Main Impact: The program has expanded access to specialized **medical care in underserved regions**, including the Amazon. By connecting patients with reference specialists, TeleAMEs **reduces the need for long-distance patient transfers**, many of which would require boats or air transport with significant climate impact, while simultaneously **strengthening the capacity of local health systems and reducing limitations to access quality care**. The program exemplifies how integrating digital health into the public system can serve as a scalable, cost-effective, and climate-smart adaptation strategy.

Why this case reinforces the recommendations and priorities: it highlights the recommendation of expanding equitable access to specialized healthcare in remote and underserved regions, particularly in the Amazon. By leveraging telemedicine to connect local medical teams with reference specialists, the initiative strengthens health system capacity, reduces patient transfers that would otherwise generate significant climate impacts, and improves care quality and efficiency. Its scalable and technology-driven approach demonstrates how digital health solutions can help address geographic and social inequities, enhance resilience, and provide cost-effective, climate-smart strategies.

2.9.4 Potential Opportunities and Impact

Investments in healthcare in Brazil offer a wide array of benefits to the country, including increased employment opportunities, greater worker productivity, and the enhancement of family well-being. Due to the "multiplier effect," the resources allocated to the healthcare sector yield returns for the nation:[231]

[230] More info: TeleAME
[231] Veja Saúde. Money invested in health generates GDP growth, says study (2024)

Figure 53. Impact on Brazil

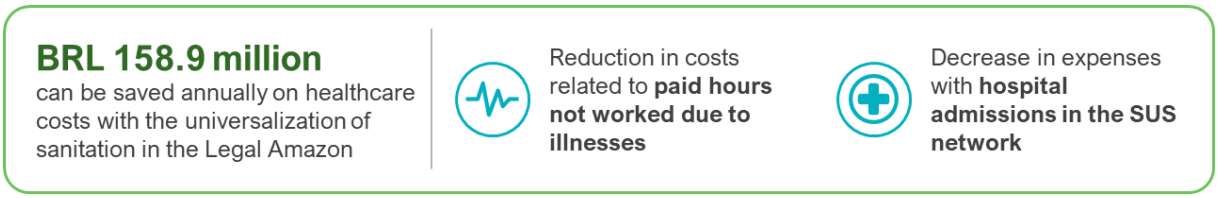
231231

Source(s): Veja Saúde

According to the same study, the impact of healthcare investments is pronounced for low-income families, who account for approximately 80% of public health expenditures.

In the Legal Amazon region, investment in healthcare is also important. Universal access to sanitation alone can generate significant impacts on healthcare costs:

Figure 54. Brazil's Opportunities Whitin Healthcare



Source(s): Trata Brasil

2.9.5 IMPLEMENTATION AND SCALABILITY LEVERS

This section outlines the key enablers to accelerate healthcare transformation in Brazil and the Amazon. Extreme weather can intensify pressures on already under-resourced systems in remote areas, making sustained investment, policy reform, public–private partnerships, and digital health integration important to build inclusive, resilient, and climate-smart healthcare.

2.9.5.1 Action Plan to implement and scale in Brazil

1. Strengthen public-private partnerships by mobilizing financing, adopting innovative technologies, aligning strategies across clinics, hospitals, laboratories, and service providers. This approach leverages the private sector's capacity and network to expand healthcare access in remote regions and vulnerable populations.

2. Reduce fragmentation in climate–health responses by convening SUS, private providers, pharmaceutical companies, distributors, and local authorities to enable faster, coordinated healthcare responses to climate-related challenges. Establish regulatory frameworks and aligned incentives to turn voluntary or isolated initiatives into systemic, credible, and scalable solutions. Foster continuous dialogue, transparent monitoring, and collaboration across providers, academia, civil society, and policymakers to build an ecosystem of innovation and cooperation, helping to ensure interventions are tailored to regional realities.

3. Establish robust monitoring systems and transparent standards to scale healthcare responses to climate-related challenges. By collecting consistent and comparable data, institutions can set targets, track progress, and evaluate the effectiveness of strategies across public and private providers. A common baseline enables benchmarking, informs investment and procurement decisions, and strengthens accountability, improving coordination among players in the healthcare system.

4. Scale climate risk protocols leveraging the recent experience of the Rio Grande do Sul S.O.S Mission, during the 2024 floods in Rio Grande do Sul. The mission demonstrated how rapid mobilization, multidisciplinary teams, and restored infrastructure, such as establishing temporary Urgent Care Units,

adopting telemedicine, and using Incident Command System to guide action, can help to ensure effective care in challenging settings.[232] Scaling this model can require institutionalizing preparedness protocols, strengthening public–private coordination, expanding digital health, investing in resilient infrastructure, training and equipping professionals for future extreme weather events. Additionally, protocols should be tailored to help address specific regional climate-related vulnerabilities.

5. Qualify the health workforce, including clinical, administrative, and management teams, to integrate climate risk into care delivery, planning, procurement, and operational protocols across public and private providers.

6. Scale sustainable practices in pharmaceutical production and healthcare operations by leveraging incentives, regulations, and industry guidelines to lower environmental impacts, cut costs, and strengthen resilience. Embed circularity, water management, waste reduction, and energy efficiency as core elements of competitiveness, setting industry-wide goals to optimize processes, reduce water use, energy demand, and waste, and promote cleaner technologies and circular models, such as water reuse, energy recovery, optimized distribution, and waste valorization.

7. Expand collection points and citizen participation, leveraging LogMed's experience to scale public engagement and help ensure proper medicine disposal across regions. Embedding rules and practices can safeguard public health and the environment, while the nationwide reach of the public health system enables reverse logistics to be integrated into broader circularity and health protection strategies.

2.9.5.2 Action Plan to implement and scale in Amazon region

1. Develop a scalable healthcare response by designing locally adapted protocols to address environmental health risks, such as respiratory conditions from wildfires or drought-related impacts, tailored to Indigenous and traditional communities. Complement these protocols with climate-responsive mobile health units and temporary urgent care facilities, equipped with essential supplies, vaccines, and cold-chain logistics. Help to ensure cross-sector coordination, risk assessment, and rapid deployment to overcome structural and logistical barriers, enabling timely, continuous, and effective healthcare delivery during climate-driven events.

2. Scale health services in the Amazon and other vulnerable regions by expanding telemedicine and on-site or mobile units, leveraging public-private coordination to strengthen resilience and access. This dual approach, combining digital and on-site capacity, expands care, strengthens workforce readiness, and builds climate-resilient health systems[233].

3. Expand digital inclusion and connectivity in Amazon and vulnerable other regions by increasing access to digital infrastructure to enable telemedicine, remote health services, health education, and participation in digital health networks, while leveraging technologies such as AI and 5G.

4. Strengthen access to essential goods and services, such as safe drinking water and basic sanitation, in the Amazon and other vulnerable regions, as a preventive strategy to help reduce the incidence of diseases and lower the demand for healthcare services.

5. Develop a common framework for sustainable and circular healthcare in the Amazon, which includes low-carbon buildings powered by renewable energy, autonomous water systems, expanded telemedicine networks, optimized cold-chain logistics, and low-emission transport solutions to ensure continuous access to medical supplies in remote and traditional communities. Circular waste management practices, such as source reduction, recycling, and co-processing, should be embedded throughout the system. To guide implementation, regional goals should be established, supported by incentives, regulatory frameworks, and robust monitoring systems to track progress and scale successful solutions.

[232] REDESCA. Impacts of the floods in Rio Grande do Sul (2025)

[233] This action plan can scale the experience of Einstein Hospital Israelita through its Medical Assistance Group for Emergency and Disaster Preparedness and Response (GMA-PRED) and its pioneering telemedicine center, operating for over 13 years, including TeleAME.

2.10 Carbon Accounting *(Complementary Theme)*

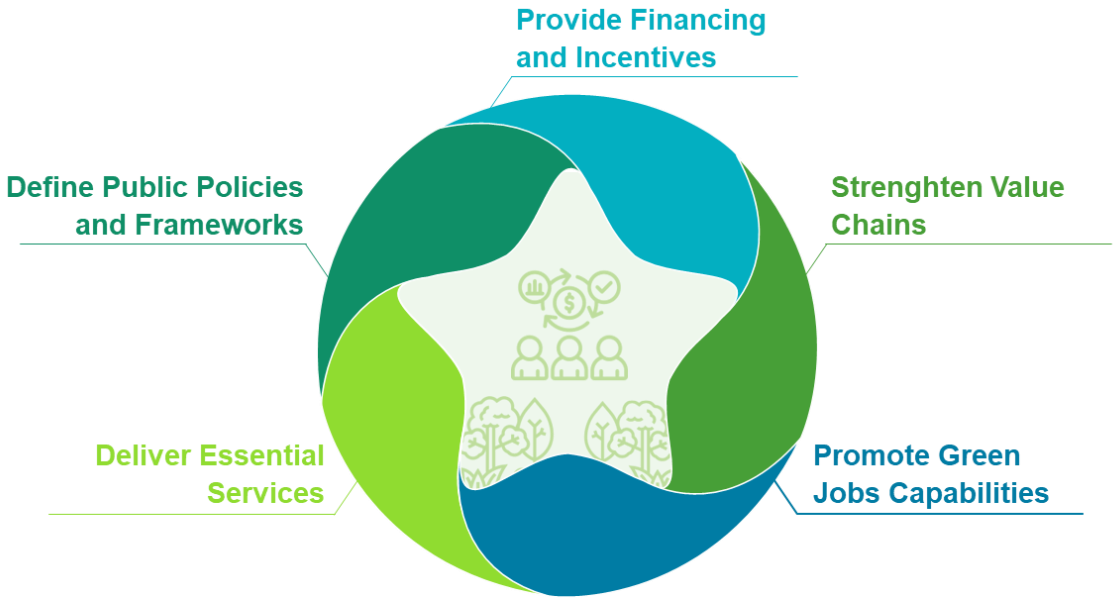
2.11 Integration Of Recommendations: Development Plan For Amazon

Through the integration of the recommendations and action plans developed by the working groups, a unique opportunity arises to consolidate these initiatives into a development plan, with a focus on strengthening the economic and social foundations of the Amazon region.

Brazil holds a strategic position to demonstrate global leadership in the transition toward a low-carbon economy, and the Amazon represents the epicenter of this transformation. This moment offers a chance to build a lasting legacy for the region's future by aligning national actions with the goals and focus of SB COP and turning global visibility into tangible results for local communities, the environment, and the Brazilian economy.

Integrating the working groups' action plans enables the **identification of opportunities to help advance a Socioeconomic and Environmental Development Plan for the Amazon**, prioritizing actions and investments across five complementary pillars:

Figure 5555. Five Pillars to the Socioeconomic and Environmental Development Plan for the Amazon



Source(s): Deloitte Brazil Analysis

Public Policies and Regulatory Frameworks for a Low-Carbon Amazon

Sustainable development can demand integrated public policies that balance environmental conservation, social inclusion, and economic competitiveness. Energy transition policies can stimulate bioeconomy value chains, while urban planning focused on sustainable cities fosters the adoption of circular economy principles. This integration guides investment decisions, reduces inequalities, and strengthens regional resilience.

Public policies and regulatory frameworks can pursue multiple goals by offering incentives, funding, and updated regulations. These efforts could be supported by concrete actions, such as:

- **Simplify and integrate regulations to accelerate sustainable projects** by streamlining licensing, creating fast-track procedures for low-impact initiatives, and integrating monitoring systems to ensure transparency, traceability, and local institutional capacity.
- **Ensure that regulatory frameworks for Amazon's extractive industries**—such as mining, oil and gas, and forestry—remain up to date and are effectively implemented. Promote low-impact territorial

practices, encourage alignment with bioeconomy and restoration objectives, and foster incentives for productive diversification that adds local value.

- **Adapt national circular economy and bioeconomy policies** to the socioecological diversity of the Amazon, and establish supportive regulatory mechanisms and certification schemes that enhance market access and value recognition for Amazonian products
- **Implement and enforce robust land governance frameworks** to help resolve land tenure conflicts and ensure legal certainty, aligning these efforts with the Forest Code Law to support sustainable land use, restoration, and conservation initiatives.

The integration of the Forest Code Law and Planaveg 2025–2028 into a transformative regulatory framework for Nature-Based Solutions, for example, supported by robust MRV systems (PRODES, DETER, CAR) and financing mechanisms (PAGs, CRA, CRVEs), is expected to enable the restoration of **12 million hectares by 2030***. (*)
Source: Planaveg

Financing and Incentives for Sustainable Development in the Amazon

Advancing sustainability infrastructure in the Amazon depends on financing mechanisms and incentives that help reduce risks, promote inclusion, and stimulate low-impact production models. A combination of blended finance, dedicated funds, subsidies, and tax incentives can catalyze investments in local value chains, bioeconomy, and green infrastructure.

This pillar can unlock and channel financial resources to accelerate socio-economic development, environmental restoration, and bioeconomy growth in the Amazon, while reducing risks and ensuring long-term sustainability, helping to address key opportunities such as:

- **Providing dedicated funding for renewable energy and sustainable projects**, leveraging blended finance and risk guarantees to mobilize private investment.
- **Creating incentives for the bioeconomy and sustainability industries**, stabilizing revenues, improving liquidity for small and medium enterprises (SMEs) and cooperatives, and increasing the bankability of small-scale projects.
- **Mobilizing carbon credit schemes at project and jurisdictional levels** to support ecosystem restoration, reduce emissions, and generate revenue for local communities, such as the case of B3 & ACX – Brazilian Carbon Market Infrastructure.[234]
- **Supporting sustainable supply chains and REDD+ programs** through financing, technical assistance, certification, and traceability to help ensure production scales without harming ecosystems.
- **Implementing Payments for Environmental Services (PES)** to reward verified outcomes in soil, water, biodiversity, and carbon, promoting sustainable land management and strengthening local livelihoods.

The Eco Invest Brazil Program demonstrates how blended finance can help drive sustainable growth, green jobs, and low-carbon development across the Amazon region. As a pioneering initiative attracting private capital for Brazil's ecological transition, it combines catalytic public funding with risk-mitigation tools such as a currency hedge, enhancing investor confidence and unlocking large-scale international financing.
(*) Source: BNDES. Eco Invest Brazil Blended Finance Program.

Valuing biodiversity and strengthening local value chains

Valuing Amazon biodiversity and strengthening local value chains can require coordination between research, innovation, and technology. This means identifying regional hubs, establishing inclusive governance, and creating commercial pathways to expand market access for local products.

[234] B3. B3 partners with ACX to launch carbon credit trading platform in Brazil (2023).

Connecting the Amazon's biodiversity potential across multiple sectors, such as biofuels, renewable energy, cosmetics, agriculture, and other local productions, can generate new opportunities for economic and social development. Regional hubs act as catalysts, linking communities, research institutions, and private actors to transform natural resources into sustainable value chains. Advancing this vision can require:

- **Identifying biodiversity potential and establishing regional hubs and networks** to promote sustainable practices and facilitate knowledge and technology transfer among universities, startups, cooperatives, and local communities.
- **Promoting governance models based on cooperation** between private actors and civil society to reduce informality and enable social inclusion in the development of value chains, helping to ensure that local and traditional communities actively participate in decision-making, share benefits, and contribute to sustainable production aligned with regional vocations.
- **Promoting Amazon products and cultural expressions** by defining go-to-market strategies that connect value chains through regional hubs, prioritize certified regional products in corporate and public procurement, and use territorial branding, such as for Brazil nuts, to highlight origin, authenticity, and support forest conservation.

Natura* has developed profitable value chains that benefit over 10,000 families and help protect more than 2 million hectares of forest, generating inclusive growth in the Amazon region. This model could be replicated to develop other value chains aligned with regional vocations—such as cacao, açaí, macaúba, and cupuaçu. Supporting these value chains can strengthen socio-economic development across the region while promoting forest conservation. (*)

Source: Natura's industrial park in Benevides, Pará (PA)

Development plan to provide essential services

Access to energy, transportation, sanitation, and connectivity is important to promote social inclusion, strengthen the bioeconomy, and empower local communities. An integrated plan should transform infrastructure into a driver of sustainable development, combining logistics, technology, and social participation to position the Amazon as a global reference for innovation and territorial resilience.

To help ensure access to basic services and promote sustainable cities in Amazonian communities, key enablers should be implemented. Public-private partnerships (PPPs), targeted financing, incentives, and private social investments should focus on helping to address the region's development challenges, including:

- **Helping to ensure access to clean water, sanitation, and renewable energy** is essential for health, well-being, and productivity in the Amazon. Decentralized energy systems can reach remote communities not connected to the National Interconnected System (SIN), while mobile health units and compact sanitation solutions help expand service delivery and promote social inclusion.
- **Investing in river transport, multimodal logistics, recycling hubs, and processing centers** is important to connect isolated communities and support bioeconomy value chains, while also aligning infrastructure with the Amazon's river-based geography and dispersed population.
- **Expanding digital connectivity is important to bridge the digital divide** in remote Amazonian communities. It enables access to telemedicine, green skills training, and essential services, while also improving public service delivery and transparency. Monitoring systems that integrate satellite and local data should track progress in healthcare, the circular economy, food systems, and conservation. Digital platforms can consolidate information on biodiversity, value chains, and socio-environmental impacts to support public policy and sustainable urban planning.

The "Trata Bem Barcarena" project by Aegea Saneamento is an example that could be replicated in other regions of the Amazon to accelerate universal access to clean water and basic sanitation. The initiative leverages public-private partnerships and strategic planning for long-term impact, combining social tariff solutions, modern treatment technologies, and a sustainable private financing model.

(*) Source: Information submitted via the official CNI platform

Promote the development of capabilities and skills in green jobs

Strengthening sustainable value chains depends on the development of local human capital. Regional hubs can act as catalysts by mobilizing institutions such as the "Sistema S" and directing investments toward technical and vocational training to prepare workers and entrepreneurs for a green and low-carbon economy.

Promoting a sustainable and inclusive development model in the Amazon requires investing in people and communities. Strengthening local knowledge, skills, and awareness is key to building long-term solutions that reflect the region's unique context and potential. This can be advanced through several action areas:

- **Raise awareness and engagement** by developing culturally relevant campaigns that highlight the impacts of deforestation and poor waste management, encouraging communities to take an active role in environmental protection and the circular economy.
- **Train the local workforce through vocational programs** focused on green jobs in areas such as renewable energy, bioeconomy, agriculture, and circular supply chains. These initiatives should help to ensure fair working conditions and formal inclusion for recyclers and waste pickers.
- **Develop local technical capacity by training professionals** to operate and maintain renewable energy systems. Relationships between private companies, regional universities, and institutions can support tailored education and technical training that empower communities and strengthen local economies.

Schneider Electric and SENAI are an example of a private partnership aimed at enhancing green skills in remote communities of the Amazon. Together, they are expanding access to energy-sector training across Brazil*.
(*) Source: Schneider and SENAI bring vocational training to the Amazon

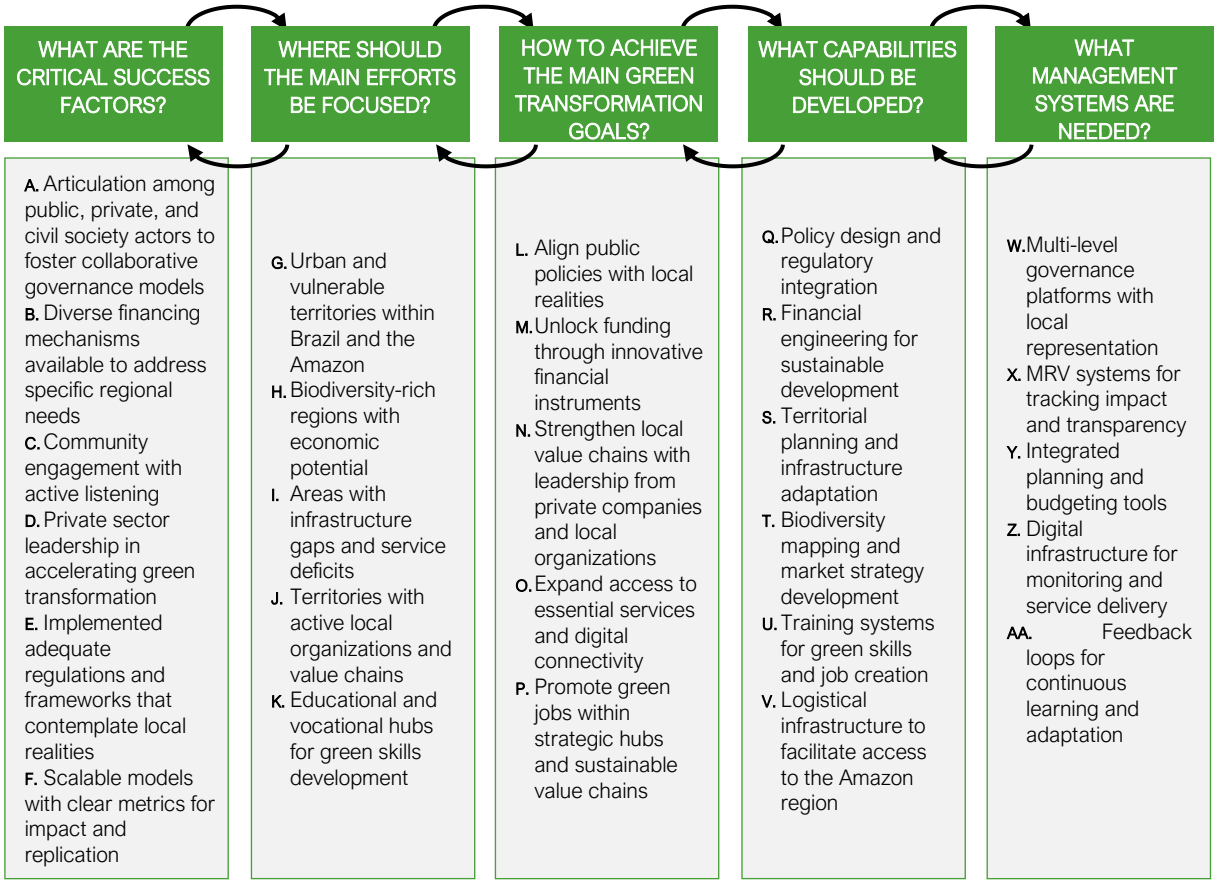
To support the implementation of the **Socioeconomic and Environmental Development Plan for the Amazon**, it is important that local stakeholders take on specific roles that **enable action across the five complementary pillars**. These responsibilities should be shared among public institutions and governments, private companies, and civil society, **with each contributing according to their roles, capacities, and mandates:**

Main Stakeholders and Roles

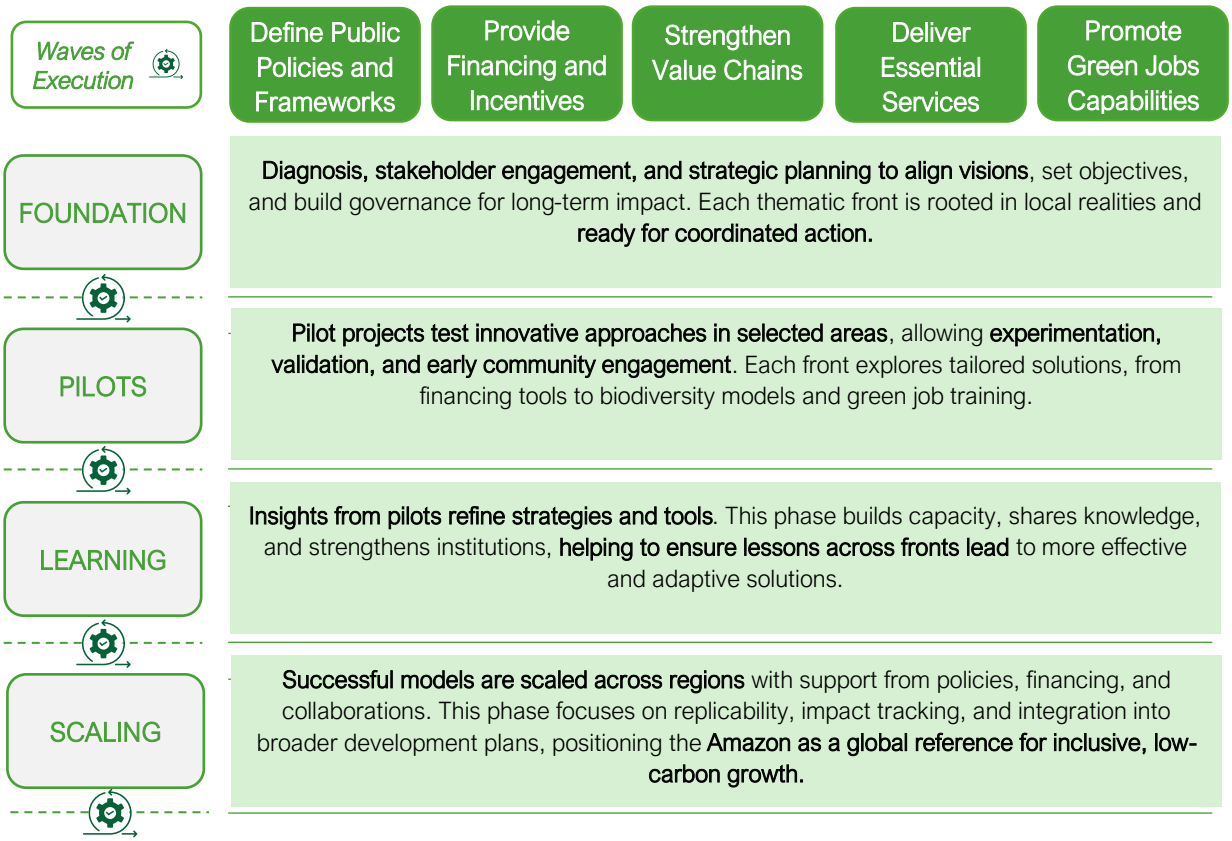
Government	Public institutions and governments are responsible for creating an enabling and catalyst environment through policies, regulatory frameworks, and fiscal incentives. They should also provide public funding and coordinate multi-level governance to align local, regional, and national priorities, helping to ensure that sustainable development efforts in the Amazon are coherent and effective.
Private	Private companies play an important role in developing value chains in the Amazon. They invest in innovation hubs and business models, creating scalable solutions that help drive economic development. In doing so, they integrate local communities into key sustainability sectors, such as renewable energy, bioeconomy, sustainable agriculture, and the circular economy, helping to ensure that value is shared among stakeholders.
Civil Society	Civil society organizations should mobilize communities, promote social innovation, deliver capacity-building programs, and help ensure transparency in implementing initiatives. They connect private companies with the untapped knowledge of Amazonian communities, helping to create new value chains and reduce informality.

Driving Amazon's sustainable transformation, a strategic approach can be shaped by five key questions that clarify direction, priorities, and execution.

Grounded in themes such as governance, infrastructure, biodiversity, green jobs, and integrated policies, this model outlines success factors, focus areas, impact pathways, and the systems that may be required to scale results.

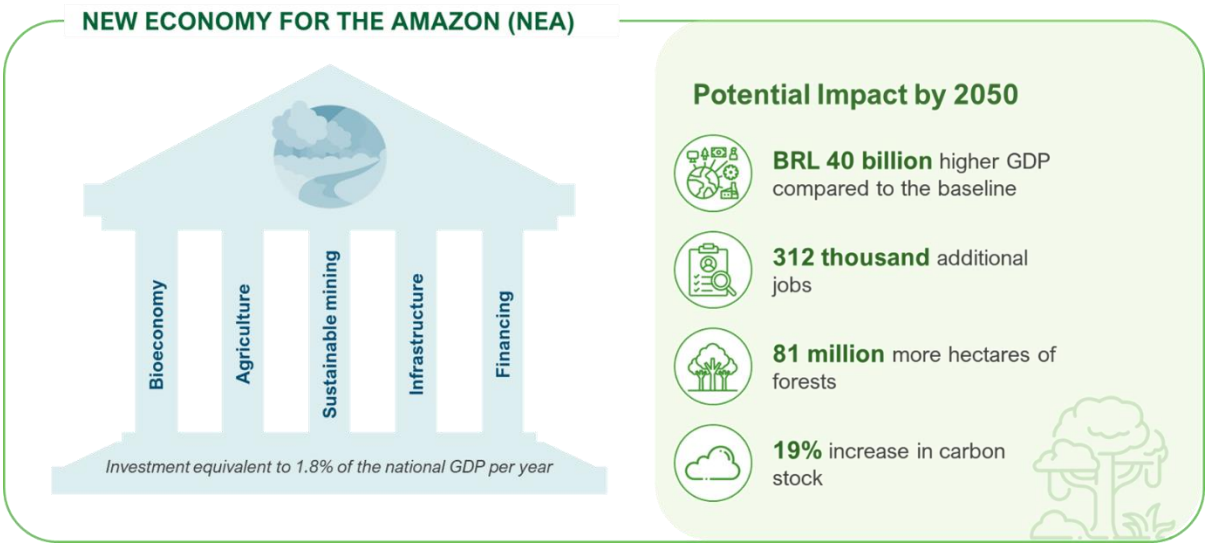


The implementation of the **Socioeconomic and Environmental Development Plan for the Amazon** can follow a phased approach, structured in waves of execution:



This approach brings structure and offers the pragmatism needed to pave the path toward implementing a lasting legacy and demonstrating tangible impact in the Amazon region. According to the study "New Economy for the Amazon" by WRI Brazil, the opportunity is significant for the Legal Amazon region:[235]

Figure 5656. New economy for the Amazon (NEA)[236]



Source(s): WRI Brazil

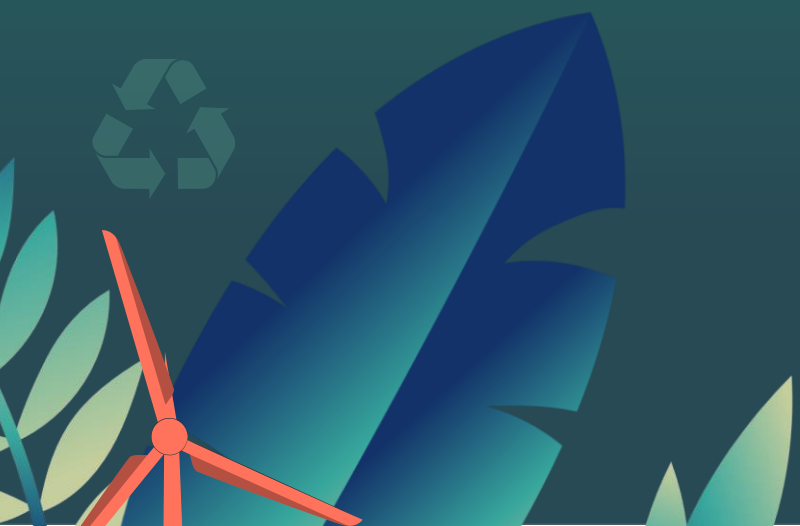
In this chapter, an analysis was presented of how each working group of the SB COP converged toward an integrated legacy vision. The goal was to translate priorities, case studies, insights, and global impacts into actionable approaches for Brazil and the Amazon region.

Building on this convergence, the **Legacy Report** advances in the next chapter with a discussion on **how to scale positive initiatives and transform them into concrete opportunities** in response to the socioeconomic and environmental challenges identified throughout the analyses. This reflection draws on the learnings from the SB COP, emphasizing the Amazon's regional context and a business-oriented approach — aiming to foster social, economic, and environmental progress as part of COP30's lasting legacy.

[235] WRI Brazil. New Economy for the Amazon
[236] Impact data for the Amazon considering the WRI Brazil. New Economy for the Amazon report's scenario which expands Bioeconomy, Sustainable Agribusiness and Mining, Infrastructure and Financing

3. PATH FORWARD

SB COP LEGACY REPORT



Complementing Chapter 2 — which presented the legacy perspective across each working group of SB COP and concluded with an analysis of how they interconnect in an integrated vision — this chapter advances the discussion to a more holistic and pragmatic standpoint.

While the report so far has focused on translating global themes into recommendations, case studies, insights, and impacts for Brazil and the Amazon, this chapter takes the reverse approach: it looks at the region's natural assets and explores how to leverage these strengths, in light of the learnings from SB COP, to create a strategic development pathway. The goal is to maximize value creation for the private sector while promoting social, economic, and environmental progress as a legacy of COP30.

Throughout the following content, analytical insights are provided to support a business-oriented understanding of the Amazon, emphasizing its wealth and development potential. The complementary pillars proposed in Subchapter 2.11 serve as a reference to help transform diagnosis into actionable, relevant, and useful strategies.

Practical cases of companies operating in the region are highlighted to anchor the analysis in real-world experiences. These examples were selected to offer a more holistic view of how to structure a reference framework for socio-economic development, starting from the Amazon's natural vocations.

3.1 The Amazon at the Heart of Brazil's Sustainable Future

The Amazon is the largest tropical biome on the planet, spanning nine South American countries, with 61.8% of its territory located within Brazil.[237] It is home to immense natural wealth, marked by unparalleled biodiversity, vast water resources, and an importance for global climate regulation.

In Brazil, the region is formally defined by the term Legal Amazon, established by Law No. 1,806/1953 in recognition of its significance to the national territory.[238] Since then, it has been increasingly understood as a strategic and economic asset of high value to the country.

In the second half of the 1950s, Brazil experienced a convergence of structural decisions reflecting its ambition to promote inland development and connect previously peripheral regions. The construction of Brasília, initiated in 1956, symbolized this new development logic, not only as the capital, but as a hub for a broader territorial network aimed at integrating the country's interior regions.[239]

Globally, the post-World War II era was marked by economic reconstruction and strong dependence on traditional industrial sectors, such as automotive and oil and gas, helping to influence a carbon-intense energy transition.[240] In Brazil, this industrial momentum combined with the expansion of agricultural and infrastructure frontiers includes advances into forest areas. [241]

This combination of inland expansion and activation of new economic vectors shaped Brazil's territorial development in the following decades, efforts that brought significant progress to the interior but also created tensions between economic growth and environmental preservation.[242] The growing global visibility of Amazon's role, especially from the 1970s and 1980s onward, sparked debates that remains active on socio-environmentalism and environmental justice.[243] [244]

It is within this context of reconciling growth, conservation and social inclusion, that the central objective of this section is framed: to recognize the Legal Amazon as a key strategic asset for Brazil to achieve a competitive, inclusive, biodiversity-based and low-carbon economy.

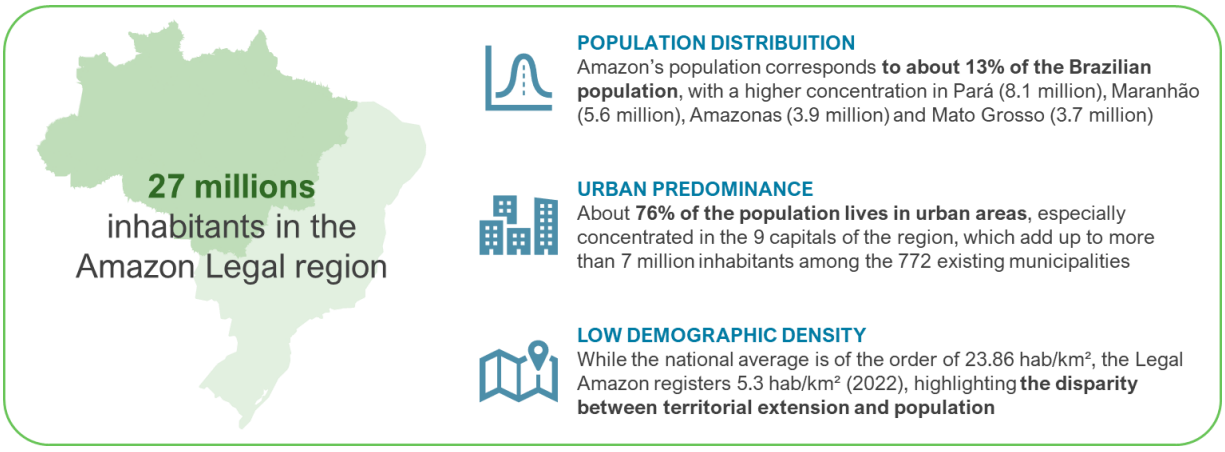
[237] Amazon 2030. Amazon Facts (2025)
[238] Details of Law No. 1,806/1953, Chamber of Deputies Portal
[239] Places Journal. Brasília and the Populist Frontier (2019)
[240] Science Direct Energy Research & Social Science. World wars and the age of oil: Exploring directionality in deep energy transitions (2020)
[241] Journal of Land Use Science. Historical reconstruction of land use in the Brazilian Amazon 1940-1955 (2010)
[242] Land Use Handbook of the Anthropocene in Latin America I. Land Use in the Amazon from the Mid-Nineteenth Century to 1950 (2024)
[243] International Affairs. The Amazon rainforest and the global-regional politics of ecosystem governance (2022)
[244] Oxford Research Encyclopedia of Latin American History. Environmental Change and Mobilization in Brazil (2019)

3.1.1 Territorial and Socioeconomic Overview

The Legal Amazon comprises nine Brazilian states — Acre, Amapá, Amazonas, Mato Grosso, Pará, Rondônia, Roraima, Tocantins, and part of Maranhão — covering approximately 5 million square kilometers, which accounts for about 59% of Brazil's territory. [245] [237][237]This continental scale becomes even more striking considering that, if it were an independent country, the Legal Amazon would be the 6th largest in the world, behind Russia, Canada, the United States, China and Australia.[246]

In demographic terms, the Legal Amazon is a vast and sparsely populated region, marked by dense urban islands that concentrate services, employment, and consumption:

Figure 5757. Population Characteristics of the Legal Amazon



Source(s): Amazon 2030

From an economic perspective, the GDP of the Legal Amazon reached BRL 970 billion in 2022, accounting for 9.6% of Brazil's national GDP that year.[247] On a per capita basis, the region recorded approximately BRL 35,000 per year — about 33% below the national average (around BRL 52,000).[248] This indicates the Legal Amazon is still underutilized in relation to its vast territory and wealth of natural assets — which helps explain why diversifying low-carbon activities that add value to standing forests is such a central theme in the region.

Another key element in shaping the region's socioeconomic profile is the population's access to basic services such as sanitation, electricity, healthcare, education, and connectivity.

In 2024, the average years of schooling among people aged 25 and older in the Legal Amazon reached 9.5 years — continuing a trend of progress in recent years, though still below the national average of 10.2 years.[249] Sanitation remains a more important concern: according to the 2022 Census (IBGE), about 68.4% of the Legal Amazon's population has access to potable water supply, and only 23.2% to sewage services[250] In terms of connectivity, in 2024, 87.5% of individuals over 10 of age in the region reported using the internet — a figure relatively close to the national average of 89.4%.[251]

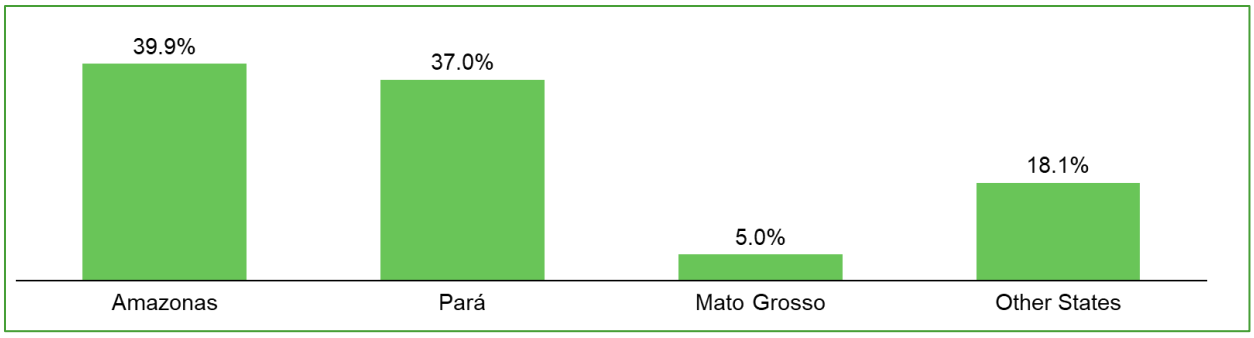
Together, these indicators reflect recent progress, but also persistent gaps that directly affect quality of life and regional competitiveness. The territorial and socioeconomic overview presented in this section reinforces the Legal Amazon's potential for implementing businesses, policies, and initiatives aimed at regional development, capable of serving its population and leveraging a vast and resource-rich territory, provided that basic services and infrastructure advance in step with economic opportunities.

3.1.2 Nature, Climate, and Land Use

[245] Amazon 2030. Amazon Facts (2025)
[246] Valor Econômico. The World's Largest Countries by Population and Land Area (2024)
[247] Legal Amazon in Figures: GDP (2022)
[248] Legal Amazon in Figures: GDP per capita (2022)
[249] Legal Amazon in Figures: Average Schooling (2024)
[250] Sanitation is Health. Economic Benefits of Expanding Sanitation in the Legal Amazon (2025)
[251] Legal Amazon in Figures. Internet (2024)

The Legal Amazon holds vast natural wealth of global importance, placing Brazil in a strategic position for the planet's sustainable future from multiple perspectives. In terms of water resources, the region sustains stock and flow of freshwater unmatched both nationally and globally.[252] In 2023, the Legal Amazon had an estimated water surface area of 11.3 million hectares, a figure relatively close to the historical average of the past decade.[253] [237237237237237237237237237237237237237237237237]This resource is distributed across the states in the region, but is especially concentrated in:

Figure 5858. Water Resources in the Legal Amazon



Source(s): Amazon 2030

The Amazon Macro Basin, the largest in the world, covers approximately 6.9 million km² and encompasses numerous tributaries and sub-basins such as the Madeira, Negro, Solimões, Tapajós, Tocantins-Araguaia, Trombetas, Xingu, among many others. Beyond Brazilian territory, the Amazon region that extends internationally is known as the Pan-Amazon and includes Peru, Bolivia, Colombia, Venezuela, Ecuador, Guiana, French Guiana, and Suriname, holding significant biodiversity potential. [254]

It is worth highlighting that the region's abundant and consistent water availability is not only a key asset but also an important pillar of the regional economy. It supports food production through agriculture, livestock, and fishing; energy generation via hydropower; transportation through river routes; urban and riverside community water supply; and climate resilience both within the Amazon and in Brazil's Center-South region through natural climate regulation.

In terms of biodiversity, the Amazon Basin is a global standout. According to publications by the Amazon Cooperation Treaty Organization (ACTO), the region holds approximately 10% of the world's known biological diversity, including more than 20,000 plant species, with many more yet to be discovered and cataloged.[255] This scale of biological diversity translates into a wealth of ecosystem services such as pollination, water and climate regulation, carbon capture, and a potential for supplying critical inputs to industries such as food, pharmaceuticals, cosmetics, biomaterials, consumer goods, and others that underpin a low-carbon economy.

The Legal Amazon's vegetation cover and biomes are not homogeneous. While it is predominantly composed of the Amazon biome, it also includes portions of the Cerrado and Pantanal. A frequently used concept to illustrate this diversity — and to help address challenges such as land transformation — is the classification into the "Five Amazons," which identifies regions as follows:[256]

1) Natural forest cover zone (approximately 39% of the territory);
2) Forest zone under environmental pressure (29%);
3) Deforested forest zone (11%);
4) Non-forest zone, including Cerrado and Pantanal (21%);
5) Urban zone (less than 1%).

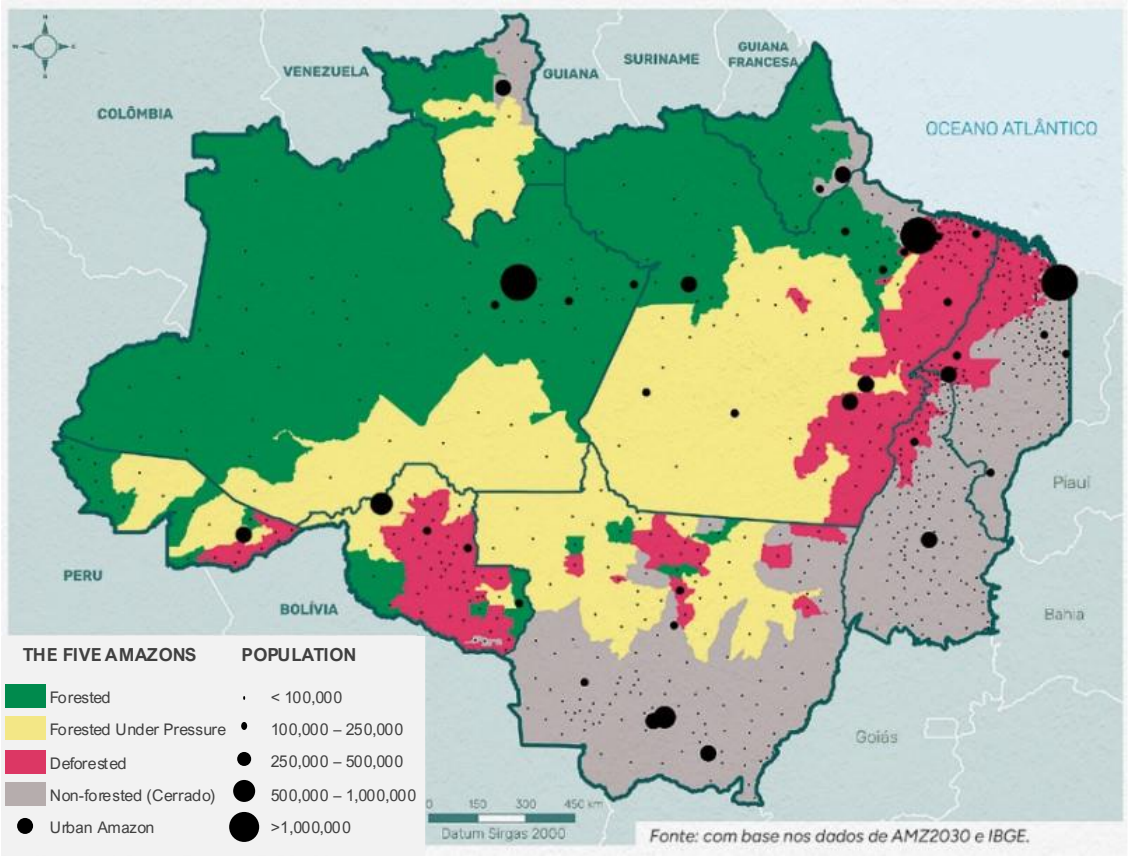
[252] Amazon 2030. Amazon Facts (2025)
[253] Amazon 2030. Amazon Facts (2025)
[254] Amazon 2030. COP30 Edition (2025)
[255] Deloitte Brazil analysis based on information on the biodiversity of the Amazon found in the report "Biological Diversity Program (2021)" by the Amazon Cooperation Treaty Organization (ACTO)
[256] Amazon 2030. COP30 Edition (2025)

This territorial classification enables a better understanding of the region's realities and guides targeted actions for sustainable development, such as:[257]

1) In forested areas: conserving and monetizing environmental services and the bioeconomy;
2) In pressured areas: halting land conversion and improving production quality;
3) In deforested areas: restoring ecosystems and increasing productivity;
4) In non-forest areas: integrating Cerrado and pasturelands into low-carbon value chains;
5) In urban areas: addressing infrastructure and services to support inclusion and economic dynamism.

This diversity of conditions is important for understanding the region's economic activity and how to integrate sustainability into the future of local populations — ensuring prosperity while valuing natural wealth.

Figure 5959. The Five Amazons and the Distribution of the Resident Population



Source(s): Amazon 2030

This classification of the Amazon territory highlights the underlying matters related to land use and the pressures from long-standing economic activities, particularly the unregulated expansion of agricultural and livestock frontiers, as well as illegal logging and gold mining.

In this context, monitoring deforestation rates in the region is key. In 2024, according to data from the National Institute for Space Research (INPE), annual deforestation in the Legal Amazon reached 6,518 km², a significant reduction compared to 2021, when it exceeded 13,000 km², following a long period of growth from 2012 to 2021.[258] This figure remains alarming and is largely driven by deforestation in the Cerrado and Pantanal biomes located within the boundaries of the Legal Amazon. In 2024, these areas accounted for

[257] Amazon 2030. COP30 Edition (2025)
[258] Amazon 2030. COP30 Edition (2025)

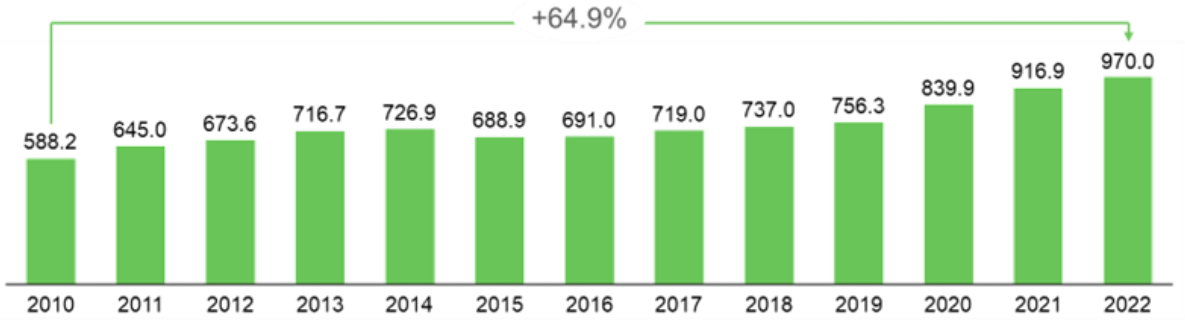
approximately 68% of the region's total deforested surface, with the highest concentrations in the states of Mato Grosso, Tocantins, and Maranhão, states marked by the strong expansion of agriculture and timber extraction.[259]

Another important concern for environmental conservation in the region is the high incidence of wildfires. In 2024, around 192,700 fire outbreaks were recorded, a figure 50% higher than the average for the previous ten years.[260] These indicators culminate in a concerning estimate: according to INPE, approximately 20.6% of the Legal Amazon's original forest cover had been deforested by 2024, underscoring the need for stronger environmental degradation control measures.[261][254] An additional point of interest is that in 2023, the Legal Amazon was responsible for 602.5 million tons of CO_2 equivalent in net emissions, representing 36.4% of Brazil's total emissions. This is particularly noteworthy, as the region covers nearly 60% of the national territory, yet its share of net emissions is lower due to the forest's role in carbon capture.[262][254] This reinforces the strategic importance of conservation as a means to mitigate environmental impact and advance a low-carbon, high-biodiversity economy.

3.1.3 The Economic Vocations of the Legal Amazon

As previously highlighted in this chapter, the economy of the Legal Amazon reached a real GDP of BRL 970 billion in 2022, the result of sustained growth since at least 2010, as illustrated in the figure below.[263]

Figure 6060. Real GDP (BRL billions) in the Legal Amazon, 2010–2022

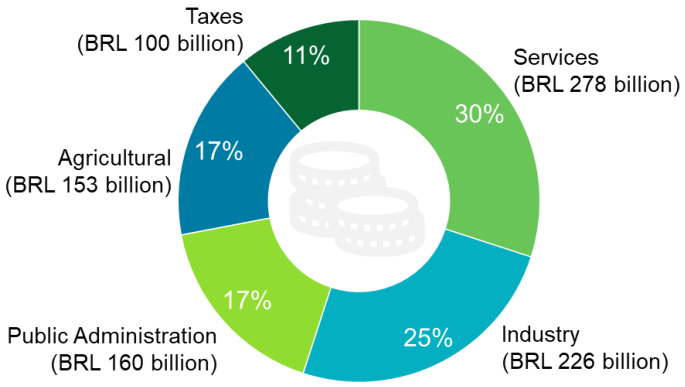


Source(s): Amazon 2030, Valor Globo

When analyzed in detail, the region's GDP in 2021 reveals a structure dominated by the Services and Industry sectors. If the focus is exclusively on the productive sectors — excluding Public Administration and Taxes — it becomes evident that Agriculture and Industry combined account for approximately 57.7% of the Legal Amazon's economic output, underscoring their strength and strategic importance to the region.[264] For comparison, in the same period, Brazil presented an average representation of 33.5% of these segments in the activity of the productive sector (Agriculture, Industry and Services).[265]

[259] Amazon 2030. COP30 Edition (2025)
[260] Deloitte Brazil analysis based on information on fire records in Legal Amazon found in the report Amazon 2030. Amazon Facts (2025) by Amazon 2030.
[261] Amazon 2030. Amazon Facts (2025)
[262] Amazon 2030. Amazon Facts (2025)
[263] Amazon 2030. Amazon Facts (2025)
[264] Deloitte Brazil analysis based on data presented in the text from the report "Amazon Facts 2024" by Amazônia 2030
[265] Deloitte Brazil analysis based on data presented in the interative platform "SIDRA – Quarterly National Accounts (2021)" by IBGE

Figure 6161. Nominal GDP by Economic Activity in the Legal Amazon, 2021



Source(s): Deloitte Brazil analysis based on data presented in the text from the report "Amazon Facts 2024" from Amazônia 2030

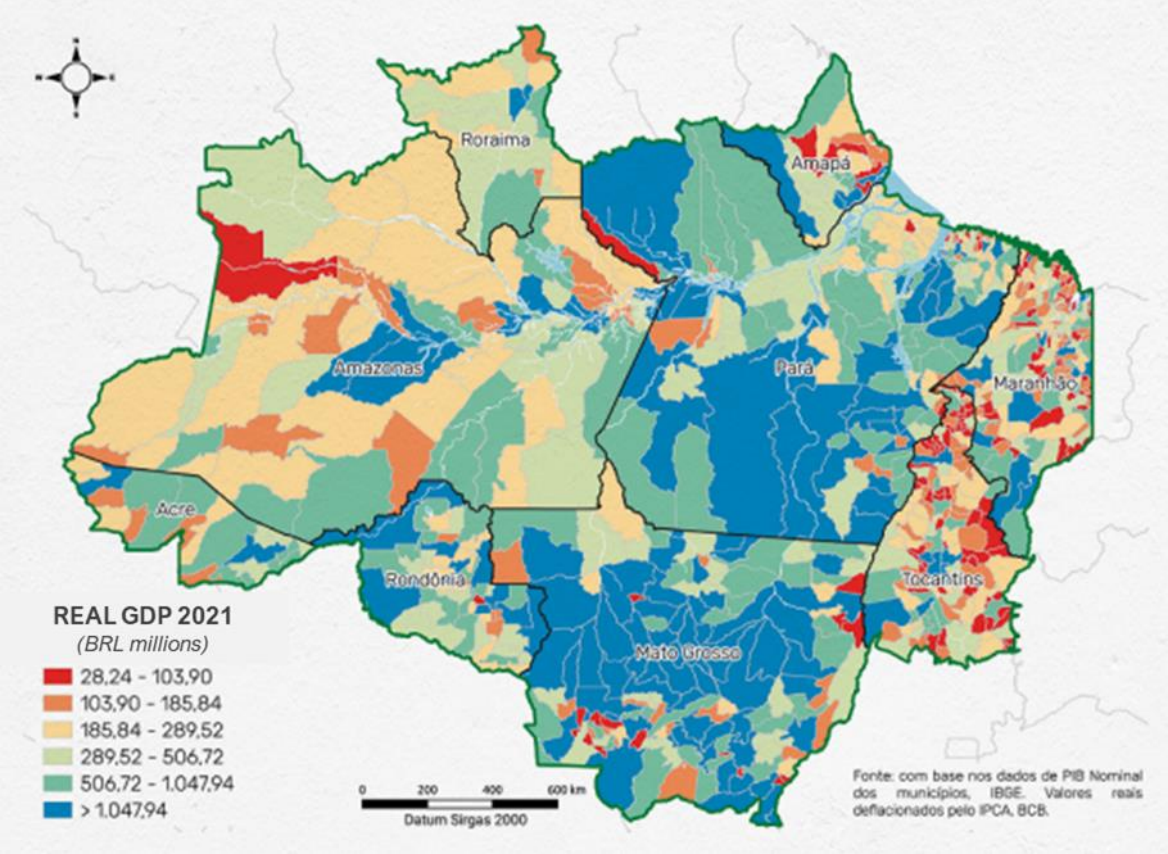
Despite the sectoral representativeness that highlights the strength of these segments, the region still lags the national average in absolute terms. In 2022, the Legal Amazon region recorded a GDP of BRL 970 billion, which was lower than other Brazilian regions. [266] For comparison, the Southeast Region reached BRL 5.34 trillion in GDP, the South Region BRL 1.68 trillion, the Northeast Region BRL 1.39 trillion (including Maranhão), and the Center-West Region BRL 1.07 trillion (including Mato Grosso).[267]

These local economic outcomes are not uniform across the states that make up the Legal Amazon, reflecting a historical pattern of greater participation by Pará, Mato Grosso, Amazonas, and Maranhão. These states exhibit key characteristics that contribute to stronger economic performance — such as mineral resources, pasture and cropland areas, forest cover, water availability, territorial extension, and resident population. These conditions support the strength of each state's main economic activities, including mining, agriculture and livestock, industry, extractivism, and others.[268]

The following chart illustrates this context.

[266] Amazon 2030. Amazon Facts (2025)
[267] Deloitte Brazil analysis based on data presented in the article "GDP of Brazilian states: See the ranking of the largest and smallest (2024)" by Valor Econômico
[268] Amazon 2030. Amazon Facts (2025)

Figure 6262. Real GDP (BRL millions) in the Municipalities of the Legal Amazon, 2021



Source(s): Amazon 2030

Consequently, it is possible to understand the economic composition of the region and highlight its key natural vocations, which are expected to help drive development in the coming years: agribusiness, bioeconomy and agroforestry systems, energy and mining. These specific sectors are closely connected to the region's abundant natural and anthropogenic resources, currently playing a significant role in local activities and, more importantly, representing potential for future leadership in sustainable business.[269] The following sections will explore the intrinsic aspects of each of these vocations in greater detail.

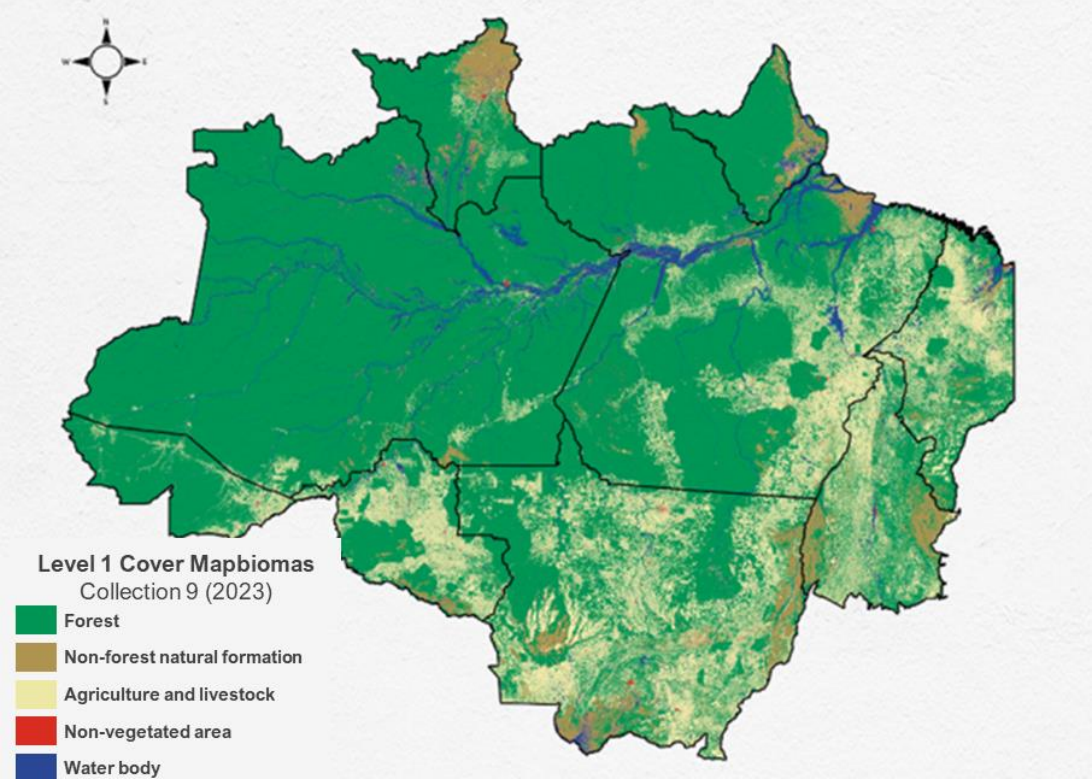
1) Agribusiness

Agribusiness is an important economic driver in the Legal Amazon, especially due to cattle ranching, timber extraction, and agriculture. These activities play a substantial role in income generation in the region, although their rapid expansion is directly associated with uncontrolled situations linked to deforestation, which is harmful to preservation efforts and sustainable development.[270]

Cattle ranching is currently one of the main types of land use observed in the Legal Amazon, as a result of decades of agricultural frontier expansion into Brazil's interior, occupying around 72.4 million hectares in 2024, equivalent to approximately 14,1% of the surface area of the Legal Amazon.[271]

[269] Amazon 2030. Amazon Facts 2025 (2025)
[270] Globo. How the Amazon became the birthplace of the largest cattle herd in Brazil (2024)
[271] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030

Figure 63. Level 1 Land Cover and Land Use in the Legal Amazon, 2023

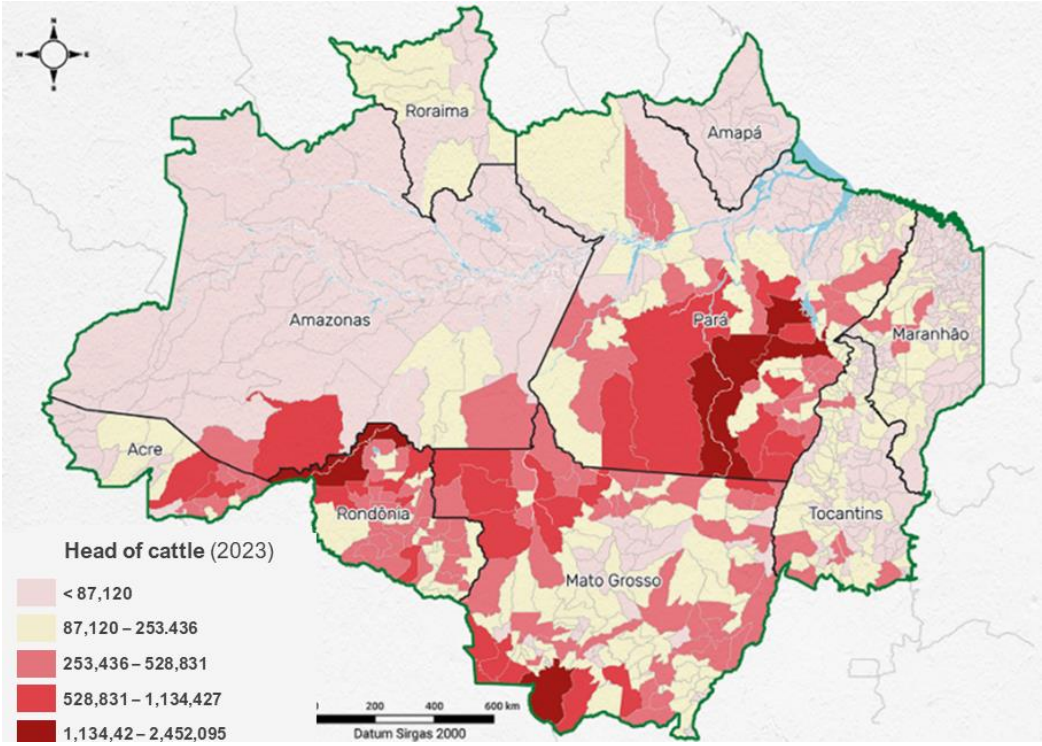


Source(s): Amazon 2030

This same territorial distribution is reflected in the cattle herd in the region – the main type of livestock raised locally. In 2024, the Legal Amazon's herd reached the number of 107.2 million head of cattle, representing 45.0% of Brazil's total, mainly concentrated in: (1) Mato Grosso (32.9 million); (2) Pará (25.6 million); and (3) Rondônia (18.2 million).[272]

[272] Amazon 2030. Amazon Facts: COP30 Edition (2025)

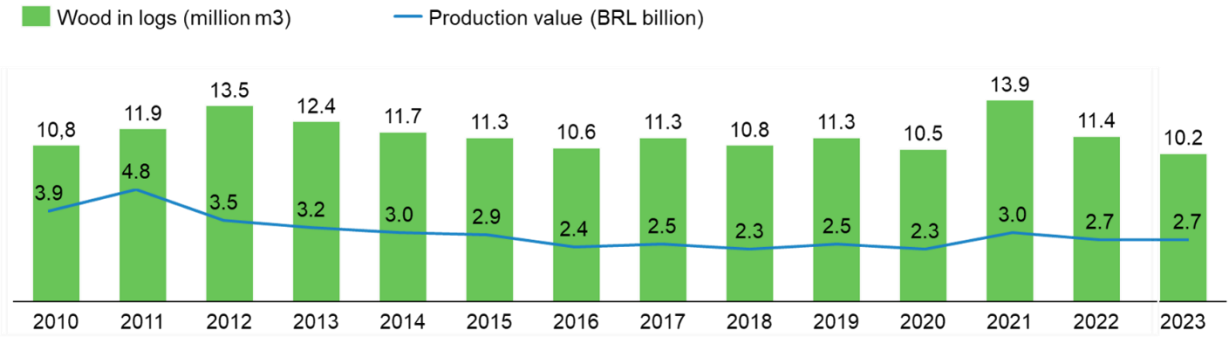
Figure 6464. Number of Head of Cattle in the Municipalities of the Legal Amazon, 2023



Source(s): Amazon 2030

Timber production in the Amazon is directly associated with land use transformation in the region's main states, commonly involving the conversion of forested areas into new agricultural frontiers, resulting in the opening of pastures and planting areas.[273] In 2023, timber extraction in the region generated approximately BRL 2.7 billion, equivalent to 6 million cubic meters of wood, mainly from the states of: (1) Mato Grosso (49.2%); (2) Pará (33.1%); and (3) Rondônia (6.9%).[274] Estimates indicate that most of the timber extraction area is legally authorized (65%), while a smaller, yet still significant portion is carried out without authorization (35%).[275]

Figure 65. Data on Logging Plant Extraction in the Legal Amazon, 2010-2023



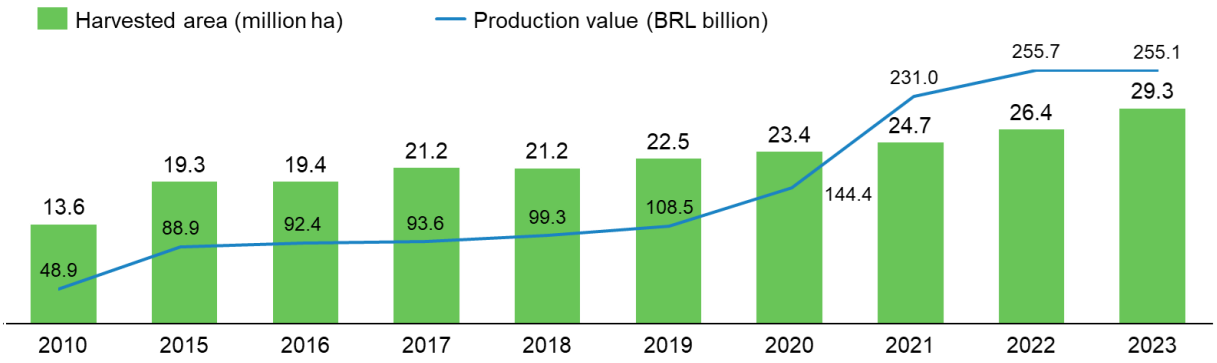
Source(s): Amazon 2030

Agriculture complements this economic segment of growing importance for the Legal Amazon, as well as for Brazil as a whole. In the Amazon region, there is a trend of intense agricultural expansion, marked by the growth of harvested area, which in 2023 accounted for approximately 30.4% of the national harvested area (96.3 million hectares).[276] The participation of Amazonian states is distributed as follows: (1) Mato Grosso with 21.3 million ha (22.1% of Brazil); (2) Pará with 2.5 million ha (2.6% of Brazil); (3) Tocantins with 2.2

[273] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[274] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[275] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[276] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030 and from the article "PAM 2023: Harvest breaks record, but production value falls" by IBGE News Agency

million ha (2.3% of Brazil); (4) Maranhão with 1.8 million ha (1.9% of Brazil); and (5) Other AML states with 1.5 million ha (1.6% of Brazil).[277]

Figure 66. Data from All Crops in the Legal Amazon, 2010-2023



Source(s): Amazon 2030

Agricultural production in the Legal Amazon, largely led by Mato Grosso, currently reflects Brazilian agribusiness, focusing mainly on temporary crops such as soybeans, corn, cotton, cassava, sugarcane, and other less prominent ones – mostly geared toward export.[278] In 2023, published data indicate that Legal Amazon produced approximately: (1) BRL 128.7 billion in soybeans (38.1% of the country); (2) BRL 37.9 billion in corn (44.5% of the country); (3) BRL 20.9 billion in cotton (74.0% of the country); and (4) BRL 17.7 billion in other crops.[279]

This production concentration presents two contradictory sides for the future development of Brazil and the Amazon: On one hand, focusing production on specific segments helps consolidate Brazil's position as a global commodity supplier, which can be positive for the competitiveness of Brazilian agribusiness; [280] on the other hand, it creates conditions for unsustainable land exploitation with implications for the environment and biodiversity, which can be detrimental to the country's sustainability.[281] The key to the future will be knowing how to balance these sides assertively.

Additionally, an important point for decoupling growth from deforestation is the recovery of degraded pastures. Recent studies have identified approximately 28 million hectares with productive conversion potential in the country, with a significant portion in the Amazon arc – Mato Grosso and Pará alone accounting for about 25.7% of that total.[282] Focusing on this measure could allow agricultural expansion to continue without the need to open new areas – a perspective that aligns well with the principles of regenerative agriculture.[283] Public programs such as the ABC+ Plan (2020–2030) offer guidelines, emission monitoring tools, and support lines for low-emission practices.[284] For the region, this translates into productivity gains, reduced pressure on forests, and improved eligibility for performance-based environmental financing.

2) Bioeconomy and Agroforestry Systems

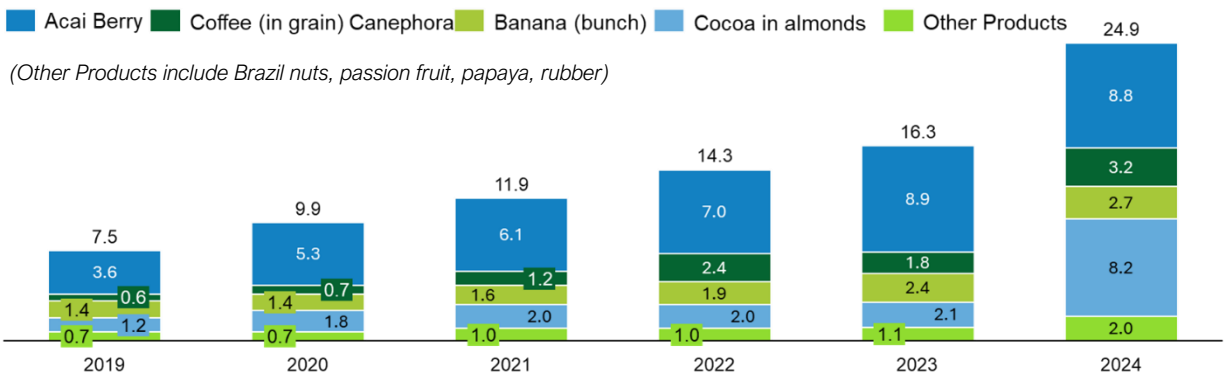
Bioeconomy in the Legal Amazon represents a direct pathway to convert forest, water, and traditional knowledge into economic value, employment, and inclusion—without opening new fronts of environmental degradation. In this context, "bioeconomy" refers to the organization of value chains ranging from food and

[277] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030 and from the article "PAM 2023: Harvest breaks record, but production value falls" by IBGE News Agency
[278] Amazon 2030. Amazon Facts 2025 (2025)
[279] Amazon 2030. Amazon Facts 2025 (2025)
[280] USDA Economic Research Service. Brazil's Momentum as a Global Agricultural Supplier Faces Headwinds (2022)
[281] Unearthed. Soya, corn and cotton make Brazil world leader for hazardous pesticides (2020)
[282] Deloitte Brazil analysis based on the data presented in the text from the article "Brazil has 28 million hectares of degraded pastureland with potential for agricultural expansion (2024)" by Embrapa
[283] Forbes. Is regenerative agriculture the savior of climate problems in agriculture? (2025)
[284] MAPA. Sectoral plan for adaptation to climate change and low carbon emissions in agriculture (2021)

natural ingredients (açaí, Brazil nuts, cocoa, oils, and extracts) to biomaterials and biotechnology solutions, operating with traceability, standardized quality, and benefit-sharing. When this mechanism functions consistently, it can help bring socioeconomic and environmental benefits across the territory.

The most recent public surveys indicate that the main bioeconomy products produced in the region are: (1) Açaí; (2) Cocoa; (3) Coffee; (4) Banana; and (5) Others such as Brazil nuts, passion fruit, papaya, and rubber.[285] These commodities accumulated a production value of approximately BRL 24.9 billion in 2024 — a significant figure for the region's economy, with growth prospects in the coming years.[286]

Figure 67. Value (BRL billions) of Commodity Production per Year, 2019–2024



Source(s): Deloitte Brazil analysis based on the data presented in the text from the report Amazon 2030

Evaluating each of these products individually, it is possible to highlight that in 2023 the Legal Amazon was responsible for the production of: 144,812 tons of cocoa (48.9% of national production); 238,831 tons of açaí (100.0% of national production); and 35,363 tons of Brazil nuts (100.0% of national production).[287] In these cases, the leading producer is the state of Pará, accounting on average for 75.3% of the total volume produced. [288][286]

The economic dimension of Amazonian bioeconomy is intrinsically linked to the traditional practices of Indigenous peoples, extractivists, and local communities – knowledge that guides management, variety selection, medicinal uses, and value chains.[289] In the Brazilian Amazon, access to genetic heritage and associated traditional experience has been a key driver of responsible and successful business models. [290] [291] In parallel, regional assessments highlight that local knowledge systems are important for conserving biodiversity and translating this diversity into economic value. [292][286] In practical terms, interaction between the private sector and traditional local communities can promote social and economic prosperity for both stakeholders. Moreover, the development of commercial strategies for these value chains can impact the scalability of production practices, especially in segments that remain underexplored — as is the case with other products such as Brazil nuts, passion fruit, papaya, and rubber.

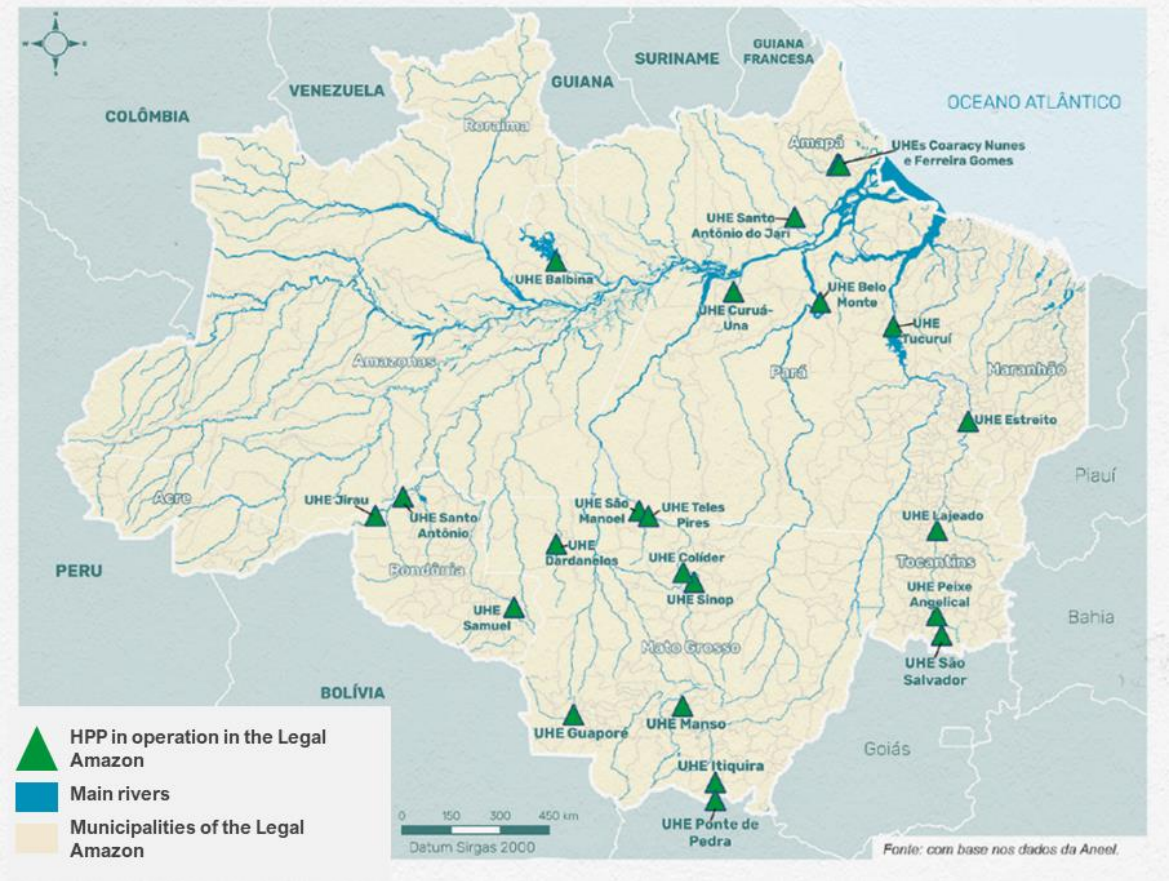
3) Energy

The Legal Amazon simultaneously hosts some of the largest centralized generation assets in the country – highlighting the hydroelectric complexity with some of Brazil's largest plants such as Tucuruí, Belo Monte, Jirau, and Santo Antônio – and a broad set of distributed opportunities (solar photovoltaics with storage, biomass from forest and agro-industrial waste, and low-impact small hydroelectric plants).[293]

[285] Amazon 2030. Amazon Facts 2025 (2025)
[286] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030
[287] Amazon 2030. Amazon Facts 2025 (2025)
[288] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030
[289] (OTCA). Rapid Assessment of Biological Diversity and Ecosystem Services of the Amazon Basin/Region (2023)
[290] Globo. With more than half of its products dependent on the Amazon, Natura sees challenges in climate change and scale (2025)
[291] Ellen Macarthur Foundation. Creating a Regenerative Economy in the Amazon Rainforest: Natura Brasil (2021)
[292] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" by Amazon 2030
[293] Amazon 2030. Amazon Facts: COP30 Edition (2025)

Hydroelectric power generation is important to Brazil, as this source has an installed capacity of 110.1 GW and accounts for 51.3% of the country's electricity matrix – with the majority concentrated in the Legal Amazon, around 37.3 GW (33.9% of the total). [294] The region has 22 hydroelectric plants (UHEs) in operation, with the main ones being: (1) Belo Monte in Pará (11.2 GW capacity); (2) Tucuruí in Pará (8.5 GW capacity); (3) Jirau in Rondônia (3.8 GW capacity); and (4) Santo Antônio in Rondônia (3.6 GW capacity).[295]

Figure 68. Hydroelectric Power Plants in Operation in the Legal Amazon, 2024



Source(s): Amazon 2030

In 2023, it is estimated that the Legal Amazon generated 21% of Brazil's electricity and consumed only 12%, outlining the region's historical role as an energy exporter to the rest of the country.[296] This is one of the region's striking contradictions, as isolated systems still predominantly powered by diesel remain relevant in remote areas – driving up costs and emissions and highlighting the need for a planned transition to clean solutions suited to the region's territorial profile. Estimates indicate that around 3 million inhabitants are served by these isolated systems, and nearly 1 million additional people still lack consistent access to electricity, relying on intermittent generation from diesel generators. [297] However, recent initiatives are already gathering investments to help address this issue, such as the Amazon Energies program, which recently approved 14 projects aimed at reducing dependence on diesel and expanding the use of clean energy sources in the region.[298]

The region holds significant potential to diversify its electricity matrix with other clean generation sources, particularly solar photovoltaics and biomass from waste (urban, agricultural, and bioeconomy-related). According to recent publications, some scenarios project that these combined alternatives could reach an

[294] Deloitte Brazil analysis based on the data from the interactive Power BI "ANEEL SIGA Generation Information Systema (2025) by ANEEL
[295] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[296] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[297] Amazon 2030. Amazon Facts 2025 (2025)
[298] Brazilian Government. MME announces approval of projects to reduce energy costs in the Legal Amazon (2025).

installed capacity of approximately 81.0 TWh by 2050 – a significant amount considering that electricity consumption in the Legal Amazon in 2021 was 54.4 TWh.[299] This shift would be important not only to contribute to the energy transition agenda but to help ensure this basic resource for the population and foster favorable conditions for local socioeconomic development.

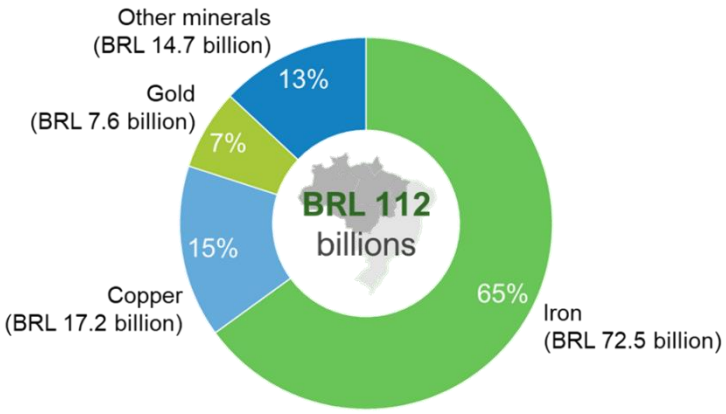
4) Mining

Mining in the Legal Amazon holds a central position in the regional economy and in Brazil's export agenda, as the state of Pará, for example, ranks among the country's top mineral exporters.[300] Additionally, one of the sector's highlights is its potential to supply strategic minerals for the energy transition (bauxite, copper, iron, manganese, nickel, among others) – despite the contradiction posed by environmental degradation when the activity is conducted irresponsibly and without regulation. In this context, the debate around sustainable mining emerges, incorporating aspects such as circularity, renewable energy, impact mitigation, waste treatment, and environmental conservation – elements that are important for the future of the sector.

In 2024, it is estimated that the Amazon region accounted for approximately USD 62.9 billion in exports, mainly composed of: (1) Soy and related products (29.4%); (2) Iron ore and concentrates (20.8%); (3) Corn (10.0%); and (4) Other minerals (9.3%) – showing that mineral exports alone totaled at least USD 18.9 billion that year, a significant figure for the local economy.[301]

According to public data from the National Mining Agency (ANM), in 2024 Brazil's processed mineral production reached BRL 262.5 billion, encompassing the commercialization of 998 million tons of minerals such as iron, gold, copper, aluminum, and others.[302] In monetary terms, this production is mainly concentrated in the following states: (1) Minas Gerais with BRL 103.8 billion (39.5%); (2) Pará with BRL 99.1 billion (37.8%); (3) Goiás with BRL 12.5 billion (4.8%); and (4) Other states combined with BRL 47.1 billion (17.9%).[303] Production in the states of the Legal Amazon accounts for about 42% of the country's total and is distributed as shown in the figure below.[304]

Figure 69. Distribution of Processed Mineral Production in the Legal Amazon, 2024



Source(s): Mineral Year Book, 27/07/2025

It is important to highlight that the benefited production of critical minerals in the Legal Amazon states reached BRL 18.3 billion in 2024, distributed between copper (BRL 17.2 billion) and nickel (BRL 1.1 billion).[305]

[299] Deloitte Brazil analysis based on the data presented in the text from the report "Amazonia New Economy" by WRI Brasil
[300] Deloitte Brazil analysis based on the data from the interactive Power BI "Foreign Trade of the Interactive Mineral Sector (2025)" by ANM
[301] Amazon 2030. Amazon Facts: COP30 Edition (2025)
[302] Deloitte Brazil analysis based on the data from the interactive Power BI "Interactive Brazilian Mineral Yearbook (2025)" by ANM
[303] Deloitte Brazil analysis based on the data from the interactive Power BI "Interactive Brazilian Mineral Yearbook (2025)" by ANM
[304] Deloitte Brazil analysis based on the data from the interactive Power BI "Interactive Brazilian Mineral Yearbook (2025)" by ANM
[305] Deloitte Brazil analysis based on the data from the interactive Power BI "Interactive Brazilian Mineral Yearbook (2025)" by ANM

The Amazon region holds a potential future in the mining sector, as it contains globally significant measured reserves such as 18% of the world's tantalum, 11% of niobium, 9% of manganese and tin, 8% of metallurgical bauxite, 4% of iron ore, among others that have not yet been identified.[306]

This economic hub in the Amazon can serve as a reference for Brazil and the world when it comes to responsible mining, given the symbolic interaction of this activity with one of the planet's main natural assets and the large-scale operations of some of the world's largest mining companies under the close watch of various global stakeholders.

Complementary Analysis

The Carbon Market for the Amazon

In parallel with the four economic vocations of the Amazon outlined in this section, there is a cross-cutting financial vector with scalable potential that can help drive a variety of sustainable practices: the carbon market. This market is a global strategy to support the climate agenda by creating a mechanism that assigns economic value to activities that promote the mitigation of greenhouse gas emissions – carbon credits.[307] In practice, the mechanism is simple: each credit represents the removal or reduction of one ton of CO_2 from the atmosphere. It can be sold by those who demonstrably promote this mitigation and purchased by those who demonstrably seek to reduce their impact.[308] [307]Given that forest protection can generate credits[309] – since vegetation naturally captures carbon from the atmosphere – it is evident that the Amazon region holds significant potential in this regard.

In an effort to unlock this market for Brazil, in 2024, Law No. 15.042/2024 established the Brazilian Emissions Trading System (SBCE), creating a regulatory and legal framework for the formal carbon credit market in the country.[310] This initiative strengthens Brazil's position in the global sustainability agenda by providing legal certainty and encouraging private sector participation in the decarbonization agenda, one of the commitments made by the nation in its Nationally Determined Contribution (NDC).[311] The new legislation outlines an implementation timeline distributed in five phases, which will likely be eagerly awaited by companies interested in this sector.[312]

The study "Carbon and the fate of Amazon" (Amazon 2030) assessed the impact of different carbon capture compensation scenarios, analyzing in detail the spatial and temporal dynamics between land use in the Amazon for livestock farming or for forest restoration and conservation.[313] The publication explored the perspective of credit pricing as a measure of economic attractiveness, influencing whether local producers are more or less likely to adopt sustainable practices on their properties. The results are striking, indicating that at a minimum value of USD 20/tCO_2, the Amazon could capture around 16 $GtCO_2$ over the next 30 years and generate USD 320 billion in revenue.[313] By comparison, the European market has already surpassed EUR 100/tCO_2, while global emissions in 2024 are projected at 37.4 $GtCO_2$, reinforcing the likelihood of achieving the projected results and their significance on the international stage.[314]

After discussing each of the main economic vocations of the Legal Amazon (Bioeconomy and Agroforestry Systems, Mining, Energy, and Agribusiness) as strategic assets for promoting Brazil's transition to a low-carbon, high-biodiversity economy, it should be debated how development can be promoted through each of them. It is important to emphasize that this progress is not only about environmental impact, but about how to create economic value while keeping the forest standing, as illustrated in the carbon market analysis.

[306] WRI Brazil. Amazon New Economy (2023)
[307] IPAM Amazônia. What is the carbon market and how does it work? (2025)
[308] IPAM Amazônia. What is the carbon market and how does it work? (2025)
[309] UNDP. What are carbon markets and how do they work? (2025)
[310] Ministry of Finance. Law establishing the basis for a regulated carbon market in Brazil has been approved (2024)
[311] Ministry of Finance. Law establishing the basis for a regulated carbon market in Brazil has been approved (2024)
[312] Ministry of Finance. Law establishing the basis for a regulated carbon market in Brazil has been approved (2024)
[313] Amazon 2030. Carbon and the fate of the Amazon (2023)
[314] Deloitte Brazil analysis based on the data from the article "Carbon breaks €100/t barrier in the European market (2023)" by Capital Reset UOL and from the interactive chart "Annual carbon dioxide (CO2) emissions worldwide from 1940 to 2024 (2025)" by Statista

In this context, the following subchapter will present practical references of business models and transformative case studies that offer insights into the dynamics of each of these segments to help visualize a path forward.

3.2 Experiences That Pave the Way: Transformative Cases

The transition to a sustainable economy in Brazil is already underway, driven by the potential of the Amazon, which not only generates value but also serves as an inspiration for the country. Various initiatives — from business, community, and public-private partnerships — can prove that it is possible to promote socioeconomic development while preserving the forest and strengthening the region's social fabric.

Below are emblematic examples that embody the main strengths of the Amazon and have the potential to become benchmarks in transforming Brazil's economic model, pointing to paths towards a sustainable and more inclusive economy.

3.2.1 Bioeconomy and Agroforestry Systems

3.2.1.1 Context and Motivation

Natura has structured a business model anchored in sociobioeconomy—a concept that combines economic development with environmental preservation. [315] The company uses Amazonian ingredients, R&D in bioactives, and long-term relationships with supplier communities, with the Amazon as its foundation for integrating innovation and culture. This approach builds community-based production chains and leverages the region's bioactives in high-performance products.

Figure 70592. Amazon Forest, taken from Natura's website "Amazon: Everything we do for forest conservation"

Source(s): Natura

3.2.1.2 Model/Operationalization

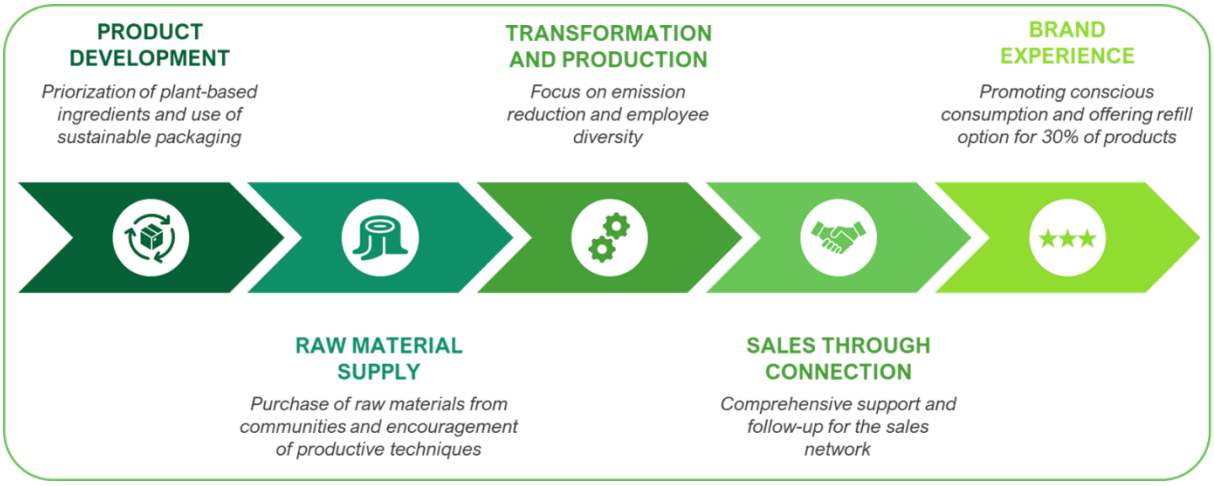
The design of Natura's value chain requires the creation and formalization of business relationships, including relationships with Amazonian communities. To enable the development of these communities, a combination of bureaucratic assistance, cooperativism, educational initiatives, local capacity building, and the development of leading practices for managing local resources is necessary. This community development helps populations to make better profits while staying in their own region.[316]

From a financial perspective, Natura leverages capital mobilization strategies to operationalize its business model, making use of blended finance instruments. Historically, the company has unlocked financing

[315] The Nature Conservancy. Sociobioeconomy beyond products (2024).
[316] Ellen MacArthur Foundation. Creating a regenerative economy in the Amazon Forest: Natura Brazil (2021).

mechanisms for suppliers of Amazonian raw materials,[317] in addition to raising about BRL 1.3 billion with IFC (International Finance Corporation) and IDB to expand the use of local bio-ingredients.[318]

Figure 71593. Natura's Value Chain



Source(s): Natura

3.2.1.3 Challenges & Learnings

Natura faces challenges related to the impact of climate change on the production of its raw materials – as certain harvests decrease, there is also a reduction in the products manufactured. As a learning experience, the company seeks to understand harvest patterns in different regions, expand the number of families and communities involved in its supply chain, and encourage the regeneration of planting areas. Additionally, Natura promotes partnerships with companies focused on sustainable businesses.[319]

The development of business models that foster the socio-bioeconomy of the Amazon also requires financial resources, knowledge, basic infrastructure, and logistics, since the products need to be transported, a challenging task in remote areas.[320] Nevertheless, the company finds alternatives such as seeking innovative financial instruments that enable the consolidation of these processes.[321]

One example is Natura's relationship with local producers, where the company previously advanced 30% of payments to help finance the purchase of raw materials for the harvest.[322] Building on this, Natura has now developed a blended finance mechanism that supports producers with access to capital and provides assurance that their products will be purchased. This structure reduces market risk and attracts investment by offering greater predictability and formalization across the value chain.[323]

3.2.1.4 Impacts & Results

Natura is internationally recognized for its sustainable transformation,[324] having developed around 44 bio-ingredients and planning to expand to 55 bio-ingredients by 2030.[325] Through its business model, the brand has already preserved more than a million of hectares of forest – contributing to the reduction of local emissions – and has positively impacted thousands of families in communities throughout the Amazon region.[326]

[317] Exame. With a new financing mechanism, Natura aims to stimulate the bioeconomy and avoid middlemen (2024).
[318] Exame. With IFC and IDB, Natura raises BRL 1.33 billion to expand the use of bioingredients from the Amazon (2024).
[319] InfoMoney. Natura sees climate and scale challenges with half of its products coming from the Amazon (2025).
[320] UOL. At a Natura factory in Pará, a path to the bioeconomy in the Amazon (2024).
[321] Exame. With IFC and IDB, Natura raises BRL 1.33 billion to expand the use of bioingredients from the Amazon (2024).
[322] Exame. With a new financing mechanism, Natura aims to stimulate the bioeconomy and avoid middlemen (2024).
[323] Exame. With a new financing mechanism, Natura aims to stimulate the bioeconomy and avoid middlemen (2024).
[324] Natura. Natura is recognized as the most sustainable brand in the world (2025).
[325] Exame. With IFC and IDB, Natura raises BRL 1.33 billion to expand the use of bioingredients from the Amazon (2024).
[326] Forbes. Natura: The richest in the world is Brazilian (2024).

Figure 72594. Natura's Sociobioeconomy Impact

Source(s): Forbes; Natura

3.2.1.5 Importance of the Case – Scalability Potential for the Amazon and Brazil

Natura's case enables the scalability of pillars established in the socioeconomic and environmental development plan for the Amazon outlined in Chapter 2.11, practically demonstrating actions that can be encouraged:

Pillars	Necessary action to scale	How does the case help to address it?
Define Public Policies and Frameworks	Facilitate access to biodiversity data and resources to promote innovation and the development of bioeconomy products	Acquisition of information from Amazonian natural resources for product development
Provide Financing and Incentives	Develop financing lines and incentives that help meet the specific demands of the Amazon region	Establishment of innovative mechanisms, such as incentives for regional producers and funding for the expansion of bio-ingredients
Strengthen Value Chains	Incorporate regional biodiversity resources and promote local relationships to strengthen the value chain	Development of bioingredients from local inputs, leveraging relationships with Amazonian communities
Deliver Essential Services	Enable infrastructure for product distribution logistics, considering the conservation of environmental areas	Mobilization of capital for infrastructure to sustainably transport products produced by local communities
Promote Green Jobs Capabilities	Provide technical, bureaucratic, and educational assistance to include communities in local operations	Professional training of local communities, generating income for thousands of families involved in operations

The example of Natura's sociobioeconomy is also scalable for Brazil, since many of the good practices adopted are replicable—such as a structured value chain governance and the development of innovation leveraging local resources. With the unlocking of investments and the establishment of local relationships, Natura's case can be replicated in other Brazilian biomes, expanding the logic of shared value throughout the country.

In summary, the business model structured by Natura includes strategies that can be leveraged for the future of business in Brazil, such as:

- **Value Chain Structuring:** diagnosing the local biome and the potential for biodiversity inputs, organizing and establishing relationships with local residents, and offering technical training
- **Promotion of Innovation, Technology, and Sustainability:** encouraging innovation for product development and use technologies that allow for sustainable utilization of the area, creating trust among stakeholders and in the market
- **Governance Coordination:** engaging different parties involved—government, private sector, financial institutions, and the community—enabling access to capital
- **Brand Positioning:** communicating the shared value generated by products made with unique bio-ingredients, developed in an environmentally responsible and profitable way for the families involved

3.2.2 Sustainable Agribusiness

Agriculture and livestock are central economic drivers in the Legal Amazon, but the future of the sector may depend on the ability to decouple production from deforestation and to adopt models that increase productivity in a sustainable way. In this context, governments, companies, and civil society organizations have developed collaborative models that combine technical assistance, traceability, market incentives, and productive innovation to promote regenerative practices throughout agricultural and livestock supply chains.

These initiatives have shown that it is possible to increase the income and efficiency of rural producers while reducing pressure on the forest and greenhouse gas emissions.

Three experiences illustrate different paths for this transition, both in the Amazon and in other Brazilian regions:

- The Sustainable Calf Production Protocol promoted by IDH and private sector partners[327];
- The expansion of regenerative agriculture by Nestlé[328];
- JBS's Green Offices 2.0, a model of integrated service hubs for small producers.[329]

3.2.2.1 Sustainable Calf Production Program

3.2.2.1.1 Context and Motivation

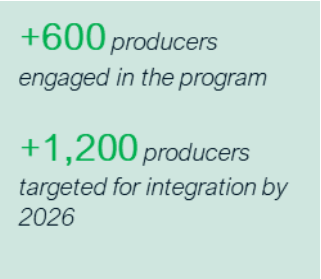
The Sustainable Calf Production Program is an initiative promoted by the global foundation IDH – The Sustainable Trade Initiative, managed by Brazilian Confederation of Agriculture and Livestock (CNA) and with the support of leading sector companies such as Mars, Petcare, and Marfrig. Local representative entities also participate, such as Faepa (Agriculture and Livestock Federation of Pará) and Acrimat (Mato Grosso Breeders Association).[330]

3.2.2.1.2 Model/Operationalization

Launched in 2019 in Mato Grosso and expanded to Pará in 2023,[331] the program operates during the breeding stage—a critical phase of the cattle supply chain—with a focus on technical assistance, traceability, and socio-environmental compliance from the birth of the animals. The goal is to professionalize calf production, ensuring that producers have access to markets that reward attributes such as "zero deforestation."[332]

This initiative aims to help ensure that products meet socio-environmental requirements by providing producers with a property diagnosis to confirm adherence to good agricultural practices. From there, the program offers guidance for land and environmental regularization, support for resource acquisition to enable environmental recovery, and technical assistance for

Figure 73595. Sustainable Calf Production Program Impacts



Source(s): IDH Brazil

[327] IDH Brazil. Sustainable Calf Production.
[328] Nestlé Global. Regenerative Agriculture.
[329] JBS. Green Offices.
[330] IDH Brazil. Sustainable Calf Production.
[331] IDH Brazil. Sustainable Calf Production.
[332] CNA Brazil. CNA, IDH, and Carrefour launch calf traceability protocol | Brazilian Agriculture and Livestock Confederation (2022).

managing these areas. In this way, the animals raised comply with socio-environmental criteria and are identified from birth and tracked end-to-end, giving the final consumer visibility into the socio-environmental attributes of beef cattle products.[333]

Field activities are carried out by technical partners such as Natcap, Instituto BioSistêmico (IBS), and Senar-PA, while CNA coordinates the Calf Traceability Protocol, which defines standardized procedures—from birth to the last farm before slaughter—with nationwide coverage and scalability potential.[334]

3.2.2.1.3 Challenges & Learnings

Among the main challenges are cultural adoption and transition costs for small producers, data interoperability between systems, and logistics in remote areas of the Legal Amazon. The main lesson learned is that combining market rewards (premium prices for sustainable calves) with access to green credit significantly accelerates adoption of the model, creating a virtuous cycle between profitability and sustainability.

3.2.2.1.4 Impacts & Results

The program has been driving a structural change in the calf production chain, with highlights including:[335]

- Guarantee of animal traceability;
- Compliance with environmental legislation;
- Technical assistance for the recovery of preservation areas;
- Improvement of pasture management techniques.

3.2.2.2 Nestlé Regenerative Agriculture – Nescafé Plan

3.2.2.2.1 Context and Motivation

While the Sustainable Calf Production Program focuses on regularization, traceability, and productive efficiency in livestock farming, Nestlé is moving forward in transforming agricultural practices, promoting regenerative models that restore soils, conserve natural resources, and strengthen climate resilience.[336]

The Nescafé Plan, implemented in Brazil since 2011 under the concept "Grown with Respect", is part of the company's global effort to transition from sustainable agriculture to regenerative agriculture. The program focuses on coffee farming, one of the most economically and socially significant supply chains in the country, and seeks to integrate productivity, conservation, and rural prosperity within a single model.[337]

Figure 74596. Nescafé Plan Impacts

Source(s): Nestlé

3.2.2.2.2 Model/Operationalization

In recent years, the program has tripled the number of participating farms, reaching 3,800 properties across the states of Bahia, Espírito Santo, Minas Gerais, and São Paulo, supported by an expanded network of agronomists and local technicians.[338] Actions include crop renewal, planting of cover crops, reduction of chemical inputs, and ongoing training for producers.[339]

3.2.2.2.3 Challenges & Learnings

Scalability and measurement of regenerative results can require integration with public policies and engagement of local cooperatives. Nestlé's practices, however, may create opportunities for application in plantations in the Amazon region. To achieve this, it is necessary to adapt regenerative practices to local

[333] CNA Brazil. CNA, IDH, and Carrefour launch calf traceability protocol | Brazilian Agriculture and Livestock Confederation (2022).
[334] CNA Brazil. CNA, IDH, and Carrefour launch calf traceability protocol | Brazilian Agriculture and Livestock Confederation (2022).
[335] IBS. Sustainable Calf Production: the path to advancing livestock farming in Brazil (2025).
[336] Nestlé Professional. "Grown with Respect" Program".
[337] Nestlé Professional. "Grown with Respect" Program".
[338] Isto É. Nestlé expands regenerative agriculture program in Brazil (2025).
[339] Nescafé. Nescafé plan 2030 Progress Report (2023).

conditions and typical crops, such as açaí, cupuaçu, and cocoa. The main lesson from the Nescafé Plan is that the combination of technical training, proper soil management, and economic incentives makes it possible to increase the productivity and resilience of plantations, even in diversified agroforestry systems.[340]

3.2.2.2.4 Impacts & Results

- 32% of global coffee supply with regenerative practices (2024);[341]
- Reductions of 20% to 40% in greenhouse gas emissions per kilogram of green coffee;[342]
- Productivity gains between 5% and 25%;[343]
- In Brazil, participating farms report higher organic matter in the soil, better water usage, and increased agricultural income, establishing the country as a strategic producer of sustainable coffee for Nestlé.[344]

3.2.2.3 Green Offices 2.0 JBS

3.2.2.3.1 Context and Motivation

While Nestlé's program focuses on the regeneration of agricultural systems and reconnecting production with nature, JBS's Green Offices 2.0 demonstrate how this vision can be put into practice on a large scale through integrated service hubs dedicated to technical assistance, management, and environmental regularization for rural producers.[345]

The JBS model links regularization and traceability (IDH) to productive regeneration (Nestlé) and moves toward a system of ongoing territorial support, with technical and institutional infrastructure capable of sustaining the sustainable transition in the Brazilian countryside.[346]

The Green Offices 2.0 from JBS are decentralized hubs for technical, environmental, and managerial assistance targeting small and medium producers, with a focus on environmental regularization, pasture regeneration, and professionalization of rural management. These initiatives are especially relevant for the Amazon region, where sustainable practices can be adapted to typical crops such as açaí, cupuaçu, and cocoa.[347]

3.2.2.3.2 Model/Operationalization

Launched in 2021 and expanded in 2024, Green Offices 2.0 operate across three main areas:[348]

- **Green Environmental Office:** environmental regularization and commercial reintegration of properties;
- **Green Technical Assistance:** technical support for pasture recovery and soil regeneration;
- **Green Management Assistance:** management training and productivity enhancement for small producers.

Figure 75597. Green Offices 2.0

Source(s): JBS

Currently, 1,500 farms are participating in the program, covering 800,000 hectares spread across seven Brazilian states, with 20 operational units primarily concentrated in the Amazon region: Acre, Rondônia, Pará, Tocantins, Mato Grosso, Mato Grosso do Sul, and Goiás. The team of specialists from these units conduct technical visits to properties, promote technologies that increase productivity, profitability, and quality of life for family farmers, and provide management assistance to improve farm operations. [349]

---

[340] Deloitte Brazil analysis based on the information on the report Nescafé. Nescafé plan 2030 Progress Report (2023).
[341] Nestlé. Nestlé surpasses 2025 regenerative agriculture goal (2025).
[342] Nestlé. Nestlé surpasses 2025 regenerative agriculture goal (2025).
[343] Nescafé. Nescafé plan 2030 Progress Report (2023).
[344] Nescafé. Nescafé plan 2030 Progress Report (2023).
[345] JBS. JBS launches service hub to increase productivity of small producers (2024).
[346] JBS. JBS launches service hub to increase productivity of small producers (2024).
[347] JBS. JBS Brazil Green Offices regularize 8,000 marginalized farms (2024).
[348] JBS. JBS launches service hub to increase productivity of small producers (2024).
[349] JBS. JBS launches service hub to increase productivity of small producers (2024).

3.2.2.3.3 Challenges & Learnings

In the Amazon, the dispersion of properties and logistical challenges can require personalized service. The key lesson is that units located near producers, combined with technical and managerial assistance, are important for adopting sustainable practices, increasing productivity, and promoting environmental regularization and restoration without compromising economic viability.

3.2.2.3.4 Impacts & Results[350]

- Over 8,000 marginalized farms regularized in 2023
- 47% small properties
- 2,300 hectares designated for reforestation
- Goal to reach 12,000 regularizations with a focus on small producers (2024)

3.2.2.4 Importance of the Cases – Scalability Potential for the Amazon and Brazil

The highlighted factors for scaling sustainable agriculture can be integrated into the socioeconomic development plan for the Amazon, as suggested by the integration of priorities from different working groups:

Pillars	Necessary action to scale	How does the case help to address it?
Define Public Policies and Frameworks	Integrate public policies, corporate commitments, and regional strategies for collaborative and territorial governance	Partnerships between public and private actors to promote the environmental regularization of initiatives
Provide Financing and Incentives	Direct capital and financial instruments to accelerate the regenerative transition of agriculture	Facilitating access to credit and market incentives for products developed in a sustainability context
Strengthen Value Chains	Increase productivity and traceability, promoting competitiveness in sustainable markets	Strengthening units close to producers and providing technical and management assistance to mitigate logistical challenges
Deliver Essential Services	Help to ensure networks of technical assistance, infrastructure, and connectivity that enable sustainable production	Operating in an expanded network, covering areas of regularization, recovery of degraded lands, and capacity building
Promote Green Jobs Capabilities	Expand technical training and empower local communities and producers in sustainable agriculture initiatives	Training in farm management and productivity for small producers in the Amazon region

The combination of elements from the presented cases enables rural productivity to become a driver of environmental regeneration and economic prosperity, creating a new agro-environmental economy not only for the Amazon but for Brazil as a whole. The experiences show that success depends on adapting solutions

[350] JBS. JBS Brazil Green Offices regularize 8,000 marginalized farms (2024).

to the local context, engaging various stakeholders, and providing concrete incentives—thus creating a positive dynamic between sustainability and profitability.

These experiences demonstrate that the scalability of sustainable agriculture in Brazil can be positively influenced by the convergence of different factors:

- **Institutional and technical infrastructure:** helping to ensure local support networks and clear protocols for traceability and monitoring
- **Productive and technological innovation:** applying regenerative practices, digitalizing rural management, and using data to measure environmental and economic performance
- **Market incentives and sustainability financing:** promoting access to credit, sustainable procurement policies, and certifications that value responsible production
- **Collaborative and territorial governance:** engaging actors such as government, companies, producers, and local institutions to align goals, resources, and responsibilities
- **Human development and local capacity building:** training technicians and producers in regenerative practices, management, and the use of technologies adapted to local realities

3.2.3 Renewable Energy

3.2.3.1 Context and Motivation

Although the Amazon region accounts for over 27% of Brazil's electricity generation, it consumes only 11%, and 14% of its population still lacks access to energy connected to the National Interconnected System (SIN). Thousands of families rely on diesel generators, which provide intermittent supply at high costs.[351]

In this context, hybrid solar mini grids with batteries have emerged as a clean, reliable, and productive solution for remote communities. By replacing diesel generators, these technologies can significantly reduce carbon emissions and create favorable conditions for local processing of bioeconomy products, such as oils, pulps, and refrigerated foods, adding value to regional production.

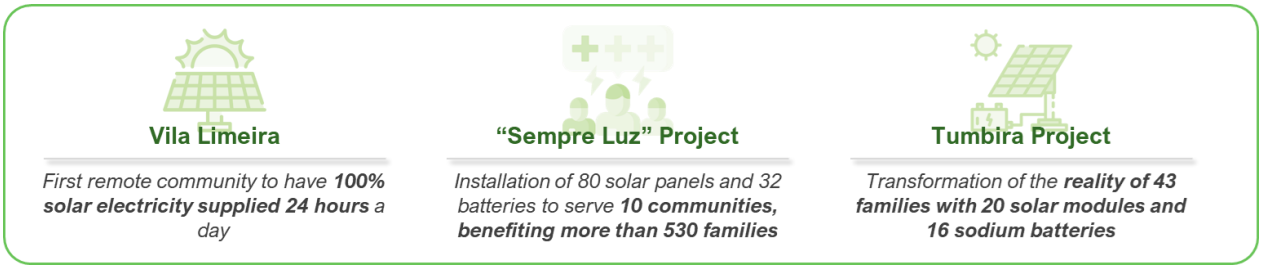
This trend is already evident in flagship initiatives that highlight its transformative potential:

- **Vila Limeira (AM):** Located in southern Amazonas, this was the first remote community to have 100% solar electricity supplied 24 hours a day. Based on local needs, a 30 kWp mini grid was set up, with active community participation throughout all stages, from building the infrastructure to training for basic maintenance. The system enables remote monitoring of generation, consumption, and batteries. The initiative was made possible with the support of WWF-Brazil, in collaboration with other civil society organizations.[352]
- **"Sempre Luz" Project (2024):** Carried out by the Sustainable Amazon Foundation (FAS) and the Brazilian multinational UCB Power, the project involved installing 80 solar panels and 32 batteries to serve 10 communities between the Uacari Sustainable Development Reserve (Carauari, AM) and the Médio Juruá Extractive Reserve (Juruá, AM), benefiting more than 530 families.[353] The system provices continuous electricity and boosts the local bioeconomy by enabling small plants for producing andiroba, murumuru, buriti, and açaí oils. The initiative strengthens sustainable entrepreneurship, improves social indicators, and reduces CO_2 emissions, promoting regional development.[354]
- **Tumbira Project, Sodium Batteries (2025):** Also developed by FAS and UCB Power, this project implemented Brazil's first photovoltaic system with sodium batteries in the Tumbira community, located in the Rio Negro Sustainable Development Reserve (Iranduba, AM), providing 43 families with continuous access to clean energy. With 20 solar modules and 16 sodium batteries, the

[351] Climate Policy. Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[352] WWF Brazil. Discover the first 100% solar community in southern Amazonas (2021).
[353] Sustainable Amazon Foundation. Amazonian communities benefit from solar energy system that strengthens sustainable entrepreneurship (2024).
[354] Sustainable Amazon Foundation. Amazonian communities benefit from solar energy system that strengthens sustainable entrepreneurship (2024).

initiative transforms the local reality, drives income generation and productive activities, and serves as a laboratory to expand sustainable storage solutions to other remote regions of the Amazon.[355]

Figure 76. Renewable Energy Initiatives in the Amazon



Source(s): WWF Brazil; Sustainable Amazon Foundation; Exame

3.2.3.2 Model/Operationalization

The typical model involves EPC companies (Engineering, Procurement and Construction, responsible for designing, supplying equipment, and building the infrastructure) and local operators integrated into an O&M structure (Operations & Maintenance), empowering the community to help ensure the continuous and efficient operation of the system. With a social tariff model and blended finance, which combines donations, public funds, and private capital, the project can go beyond household electrification, enabling the productive use of energy in bioeconomy chains, such as vegetable oil production, food and health supply refrigeration, thus strengthening the economic autonomy of communities.

3.2.3.3 Challenges & Learnings

The main challenges include:

- High initial CAPEX and component replacement in long supply chains;
- Community governance and participatory management of mini-grids;
- Sizing and modularity, given the progressive growth in demand.

Lessons learned show that standardizing kits, telemetry for remote maintenance, and local technical training are important for the operational and financial sustainability of the systems.

3.2.3.4 Impacts & Results

- Replacement of diesel and significant reduction of emissions;[356]
- Reliable 24-hour energy for previously isolated communities;[357]
- Development of the local bioeconomy and promotion of energy security in remote areas;[358]
- Improvements in health and education, with vaccine preservation, lighting, and connectivity;[359][360]
- Productive and digital inclusion of riverine and extractive populations.[361]

3.2.3.5 Importance of the Case – Scalability Potential for the Amazon and Brazil

The cases presented offer pathways to accelerate Brazil's energy transition, fostering the universalization of clean energy through policies and incentives tailored to the country's unique characteristics, as detailed below:

[355] Exame. Brazil's first sodium battery project brings clean energy to the heart of the Amazon (2025).
[356] Climate Policy. Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
[357] WWF Brazil. Discover the first 100% solar community in southern Amazonas (2021).
[358] Amazon Planet. Amazonian communities are transformed by access to clean and sustainable solar energy (2025).
[359] USP. Promoting health in isolated communities through energy supply (2024).
[360] WWF Brazil. Discover the first 100% solar community in southern Amazonas (2021).
[361] WWF Brazil. Discover the first 100% solar community in southern Amazonas (2021).

Pillars	Necessary action to scale	How does the case help to address it?
Define Public Policies and Frameworks	Align national energy planning with Amazon-specific characteristics and community participation	Adaptation to the specific characteristics of the Amazon region, serving as a reference for decentralized electrification policies and community participation
Provide Financing and Incentives	Expand blended finance instruments and climate funds aimed at decentralized electrification	Use of blended finance, combining donations, private capital, and public resources to attract investments for the development of clean energy in remote areas
Strengthen Value Chains	Integrate productive energy with the bioeconomy and agroforestry systems	Integration of electrification with the productive use of energy, strengthening the local bioeconomy and generating income opportunities
Deliver Essential Services	Provide connectivity, maintenance, and logistics adapted to the conditions of remote communities	Improvement in access to education, healthcare, refrigeration, connectivity, and other, adapted to the logistical conditions of remote communities
Promote Green Jobs Capabilities	Offer technical training for local operators and managers to sustain energy systems over the long term	Technical training of local operators, preparing professionals capable of managing energy systems, fostering autonomy and employment

These pathways demonstrate that the energy transition in the Amazon can go beyond electricity generation. It can encompass social inclusion, increased productivity, and energy sovereignty, directly impacting territorial development and the nation's low-carbon economy.

The three cases provide scalable examples of how to help address the structural challenges of Brazil's energy transition, highlighting that:

- **Clear and secure regulation** attracts investment and help ensure the stability of the electrical system;
- **Hybrid financing** enables the implementation of high-cost clean energy projects;
- **Integrating energy with the low-carbon economy** strengthens production chains and adds value;
- **Innovation in storage technologies** enables modernization and increased flexibility of the power grid;
- **Professional training** creates green jobs and sustains energy systems over the long term.

On a national level, clean energy and storage systems can reduce emissions and costs in the most polluting industrial sectors, while also decreasing dependence on hydropower and the risks associated with drought. With clear policies, strategic investments, and workforce development, it is possible to accelerate the adoption of clean energy, fostering a more sustainable and resilient low-carbon economy.

3.2.4 Sustainable Mining

3.2.4.1 Context and Motivation

Vale includes circular mining — a mining practice that does not discard unused mineral resources but seeks to maximize their use — as part of its long-term decarbonization strategy. In this context, the Waste to Value circular mining program aims to incorporate into operations a strategy focused on minimizing the generation of waste and tailings, combined with carbon neutrality throughout the iron ore production value chain.[362]

3.2.4.2 Model/Operationalization

Vale's circular mining model strategy includes R&D partnerships with universities, such as UFMG, with whom the company has established a Circular Mining Collaboration Lab aimed at developing innovative solutions. Through the creation of this Collaboration Lab, Vale not only fosters new solutions but also establishes a collaborative environment open to companies, universities, entrepreneurs, government, investment funds, and communities — creating a favorable setting for new partnerships that can boost its model.[363]

The business operation is driven by three main levers: reuse and reduction of tailings, utilization of waste rock, and development of co-products. A highlight of the operation in the Amazon is the Gelado dam in Carajás (PA), which has been reprocessing iron ore tailings using sustainable extraction techniques and beneficiation technologies to improve material quality.[364]

3.2.4.3 Challenges & Learnings

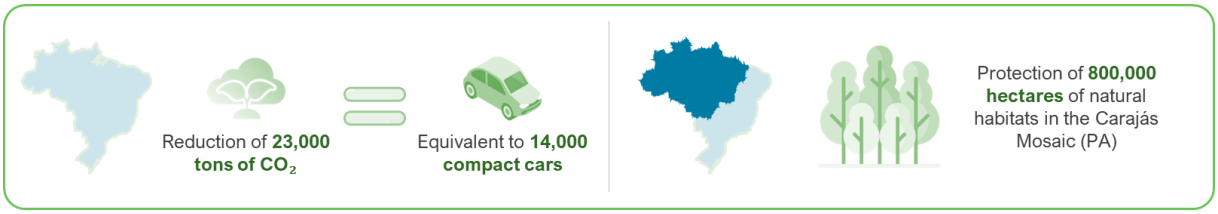
The challenges of circular mining stem from the need to establish new value chains and develop new business models. Vale, however, has made progress in generating new products, such as sustainable sand, which is already being commercialized to the construction sector. The company, however, has already publicly addressed the difficulties related to the lack of public policies, incentives, and regulations that recognize and support these new products.[365]

3.2.4.4 Impacts & Results

Vale's circular mining initiative has produced 12.7 million tonnes (Mt) of iron ore from the reuse of waste rock and tailings, generating significant environmental impacts. The company aims to have 10% of its total iron ore production in Brazil come from circular sources by 2030.

In the Amazon, at the Gelado Project in Carajás (PA), beyond the environmental impact, the initiative has also contributed to local socioeconomic development: currently, around 76% of employees are residents of the Parauapebas region.[366]

Figure 77598. Vale's Circular Mining Impact in Brazil and in Amazon



Source(s): Vale; Vale Amazon

3.2.4.5 Importance of the Case – Scalability Potential for the Amazon and Brazil

The reality of Vale's circular mining initiatives highlights opportunities to translate the enablers of the Amazon's socioeconomic and environmental development plan into pathways:

[362] Vale. Circular Mining.
[363] Vale. Vale and UFMG announce partnership for innovative circular mining solutions (2025).
[364] Vale. Circular Mining.
[365] Amazônia Magazine. Vale calls for public policies to expand the circular economy (2025).
[366] Vale. Circular mining: learn how the Gelado operation reuses mineral waste (2025).

Pillars	Necessary action to scale	How does the case help to address it?
Define Public Policies and Frameworks	Formulate regulations that cover new circular products, enabling their commercialization	Commercialization of new products – such as sustainable sand – and public requests for the formulation of favorable regulations
Provide Financing and Incentives	Enable incentives for products derived from circular mining	Creation of collaborative environments that foster conditions conducive to attracting potential investments and developing incentives
Strengthen Value Chains	Establish relationships and foster collaborative environments that encourage the engagement of different stakeholders to strengthen the value chain	Establishment of the Circular Mining Collaboration Lab, which promotes innovation and connects various stakeholders, enabling new relationships
Deliver Essential Services	Provide appropriate infrastructure and logistics for the distribution of products derived from circular mining	Adaptation of infrastructure in Vale's existing operations to help ensure essential services
Promote Green Jobs Capabilities	Expand the network of qualified professionals, such as R&D specialists and local residents employed in operations	Development and training, employing residents from the Parauapebas region in the operations of the Gelado Project in Carajás (PA)

Although the focus is on Gelado, with operations located in Carajás, Pará, Vale has been expanding its Waste to Value initiatives to other parts of Brazil — such as the reuse of waste rock and the production of paving blocks in the state of Minas Gerais.[367] In this way, the company's example has potential to be scaled to other mining operations across the country, promoting greater circularity in a challenging sector.

Key learnings from Vale's case for scaling circular mining initiatives in Brazil include:

- **Alignment of regulations and incentives:** promoting discussions that support regulations and incentives for new circular products
- **Sustainability goals setting:** defining decarbonization and circularity targets that are embedded in the company's strategy, guiding planning, investments, and actions
- **Encouragement of innovative and technological solutions:** Seek solutions that enable circular mining, both in the mining process and in the development of new products
- **Establishment of relationships:** Build relationships with universities, startups, companies, and other stakeholders that add value to the circular mining chain

What are the key lessons from the transformative cases?

The highlighted examples demonstrate that well-established business models in the Amazon region not only achieve success but also have the potential to be replicated and adapted in other areas of Brazil, leveraging the country's diverse strengths. Among the key learnings is the feasibility of aligning economic outcomes

[367] Vale. Circular Mining.

with environmental conservation, if supply (producers, communities, suppliers) and demand (industry, retail, public sector) are addressed in an integrated and coordinated manner — a decisive factor in successful cases.

Additionally, it is important to foster enablers that help drive the process forward: the adoption of standards and greater transparency — such as traceability protocols, certifications, and circularity metrics — helps reduce risks and adds value to the product; innovative financial mechanisms, such as blended finance combined with enabling public policies, are key to making these models scalable; finally, strong local governance and investment in capacity building strengthen operations, help to ensure quality, and promote trust among stakeholders.

Thus, to sustain and expand this legacy, Chapter 3.3 proposes consolidating these learnings into a landmark for continuous collaboration, establishing monitoring metrics, well-defined decision-making processes, and a coordination mechanism involving government, the private sector, funders, and civil society.

3.3 THE LEGACY AS A CONTINUOUS PROCESS

The Legal Amazon represents not only an environmental asset of global value but also a strategic platform for Brazil's socioeconomic development. Drawing from its biodiversity, water wealth, energy potential, and productive vocation, the region offers opportunities to build a development model that is inclusive, regenerative, and competitive.

As demonstrated in the previous chapters, by integrating bioeconomy, clean energy, circular mining, and sustainable agriculture, it is possible to generate economic value while reducing the potential impact on natural assets that sustain life and climate stability.

The analysis of the cases presented reveals that the development of the Amazon requires a systemic approach, supported by interdependent action plans. The coordination between public policies and regulatory frameworks, combined with financing mechanisms and incentives, is important to enable the strengthening of productive chains and collaborative governance. Adequate infrastructure, territorial connectivity, and technical training focused on job creation can support this set of actions. Together, these elements contribute to expanding the role of the private sector and civil society in building a socioeconomic and environmental development model—not only for the Amazon but for Brazil as a whole.

Initiatives such as the Sustainable Calf Production Program, JBS's Green Offices 2.0, and Nestlé's expansion of regenerative agriculture show how the private sector can lead scalable solutions, provided it is coordinated with public and community actors. In this regard, it is important to promote active listening to local populations and help ensure effective social inclusion processes, helping to guarantee that public policies and other enabling solutions are built based on the real needs and characteristics of the territories, valuing the voices and perspectives of the communities themselves. Furthermore, energy transition projects in remote communities, such as Vila Limeira, Tumbira, and the Sempre Luz project, highlight that technological innovation and local leadership are key to helping ensure productive inclusion and improving social indicators.

Bioeconomy is consolidating as a strategic vector for transforming traditional knowledge, biodiversity, and natural resources into economic value without opening new fronts of deforestation. With production already exceeding BRL 24 billion annually, and with highlights such as açaí, cocoa, Brazil nuts, and vegetable oils, the region demonstrates its capacity to generate income, attract investment, and access differentiated markets. [368]

Natura's hub model stands out as an example in integrating innovation, socio-biodiversity, and community development. By structuring productive chains with Amazonian communities, the company has mobilized financial instruments such as blended finance and has already contributed to the preservation of 2.2 million

[368] Deloitte Brazil analysis based on the data presented in the text from the report "Amazon facts 2025" from Amazon 2030

hectares of forest, in addition to developing dozens of high-value bio-ingredients. This case reinforces pillars such as collaborative governance, climate financing, and local value generation, demonstrating potential for replication in other Brazilian biomes and for building a regenerative economy on a national scale.

Mining, when conducted responsibly and integrated into the logic of the circular economy following Vale's example, can play a role in the global energy transition and in strengthening Brazil's export agenda. Leveraging Brazil's advantageous position to establish the country as an exporter of sustainable commodities also present an opportunity to advance in value chains, adding technology, sustainability, and innovation to local products. In this way, it is possible to boost national production of higher value-added items, making Brazil a reference in competitive solutions in the international market. The energy sector, in turn, by combining large hydroelectric assets with low-impact distributed solutions, can offer paths to help ensure energy security and reduce emissions, especially in isolated systems.

The leadership of the private sector in promoting the socioeconomic development of the Amazon points to a replicable model, with clear synergies for the development of technical skills. One example is the partnership between Schneider Electric and SENAI, aimed at training local professionals to operate energy systems in remote communities, directly contributing to the advancement of green skills and productive inclusion in the region.

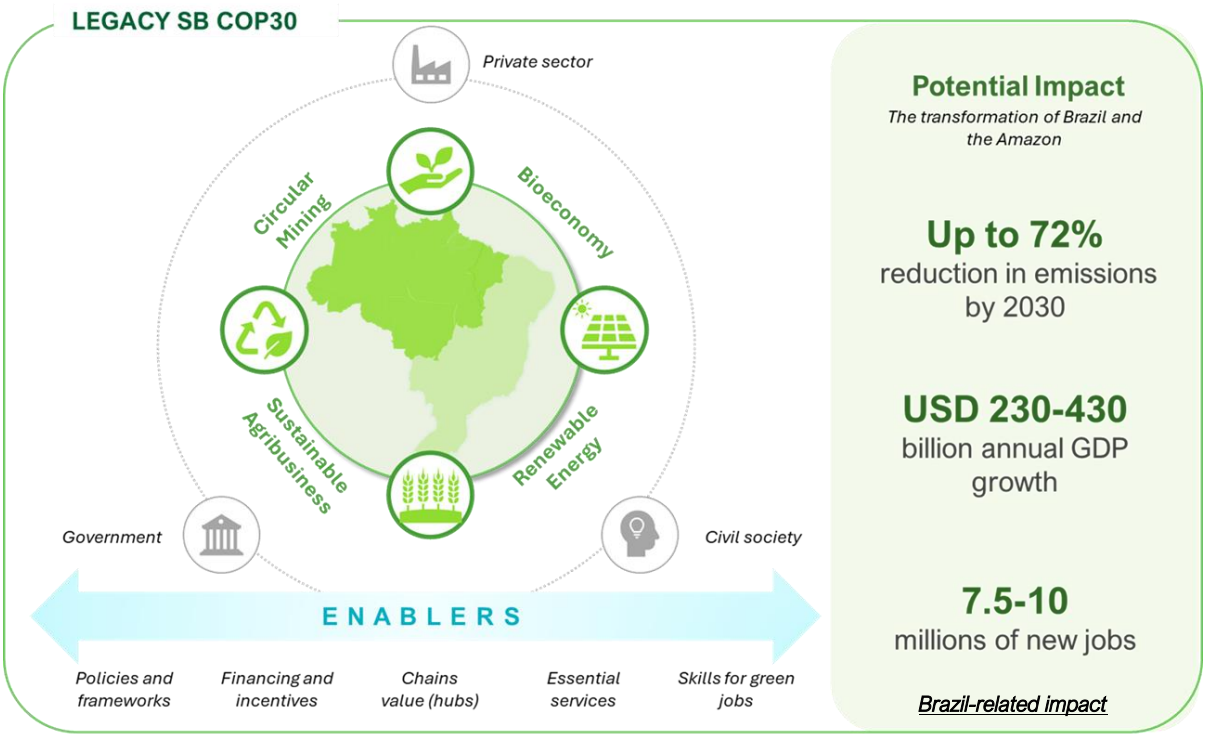
Promoting the development of the Amazon is, therefore, promoting the development of Brazil. The region concentrates structural challenges such as inclusion, low infrastructure, and environmental vulnerability, which, if addressed with territorial intelligence and innovation, can generate replicable solutions for other regions of the country. The Amazon could be the laboratory for a new Brazilian economy: fairer, and more sustainable and resilient. To achieve this, it is necessary to strengthen multisectoral governance, expand access to climate financing, and help ensure that the benefits of the transition reach local populations.

In this context, the launch of ReInvest+ stands out as an initiative led by the Inter-American Development Bank Group (IDB Group), in partnership with SB COP and the Brazilian Presidency of COP30. The program aims to connect global financial markets with transformative adaptation and mitigation projects in developing countries, with a particular focus on territories such as the Legal Amazon. By 'going where the money is,' ReInvest+ seeks to unlock large-scale climate financing, expanding access to capital for initiatives that integrate environmental impact, inclusive productivity, and territorial innovation.[369]

Brazil has before it the opportunity to position the Amazon as a strategic center of its sustainable development policy. This requires long-term vision, federative agreements, business engagement, and community leadership. Standing forests, clean rivers, productive territories, and empowered communities are not merely environmental goals—they are the foundations of a new economy that could help transform the country and inspire the world.

[369] IDB. IDB Group Launches ReInvest+: Where the Money Is to Unlock Private Climate Finance (2025).

Figure 78599. Articulation of the SB COP Legacy and Potential Impacts of Brazil and Amazon Transformation[370]



Source(s): Deloitte Brazil elaboration based on Legacy work performed and potential impact data from the report "Pathways to Brazil's Ecological Transformation"

In summary, the legacy of the discussions promoted by SB COP highlights that the Amazon can serve as a strategic asset in Brazil's journey toward building an integrated ecosystem, capable of coordinating various fronts of transformation and fostering the participation of different sectors of society. For this potential to be realized, it is important to efficiently structure enablers, helping to ensure that policies, incentives, and solutions are properly implemented. If this is achieved, the resulting impact can be significant, driving social, economic, and environmental progress on a national scale.

The Legacy of SB COP and COP30

The legacy of COP30 and SB COP does not end with the drafting of a report or the consolidation of recommendations. It is expressed in the collective ability to transform knowledge into action and to help ensure that the commitments made become practices of sustainable development in Brazil and the Amazon. Throughout the work of the thematic groups and the experiences gathered in this report, it became clear that SB COP's main contribution was not to bring together good ideas, but to create a space for multisectoral coordination, where governments, companies, investors, civil society, and academia learn to act in a coordinated manner.

This learning is, in itself, a legacy: it showed that cooperation is viable, productive, and necessary, and that the Amazon can be the territory where Brazil demonstrates to the world its ability to lead the sustainability transition.

Based on the guidelines presented in this report, SB COP leaves a legacy for Brazil and the Amazon: the consolidation of a new paradigm of territorial development, based on sustainable, regenerative, and inclusive productive practices. This legacy is not embodied in a final product, but rather in a living process of coordination, learning, and continuous action.

[370] Impact data for Brazil by 2030, according to the "Pathways to Brazil's Ecological Transformation" report with the development of 7 key sectors: Energy, Bioeconomy, Industry and Mobility, Sustainable Agriculture, Climate Infrastructure, Circular Economy and Finance

In this context, the Amazon ceases to be a symbol of conservation and begins to play a strategic role in Brazil's sustainability transition. The examples gathered throughout this report show that there are paths to help transform the territory into a hub of innovation, productivity, and sustainable prosperity, with benefits that extend across the country.

The Amazonian focus, therefore, is a national platform for potential transformation. By testing and scaling solutions in the Amazon, Brazil builds replicable models for other biomes and vulnerable territories. The legacy left by this process strengthens the country's institutional and technical capacity, helping to position Brazil as a global reference in socio-environmental innovation. The Amazon becomes a demonstration territory, where Brazil learns, leads, and exports sustainable solutions with national and international impact.

The mission is to help ensure that this process continues to move forward, with long-term vision, strong federative agreements, and leadership from businesses and local communities. Brazil has before it the opportunity to transform the Amazon into a potential driver of sustainable development and, in doing so, to inaugurate a new phase of sustainable prosperity for the country.

References and Appendix

Legacy report

REFERENCES

- ABC+. Plan for Adaptation and Low Carbon Emission in Agriculture (2021)
- ABRAINC. What is 'Amazon Styrofoam', a sustainable alternative to civil construction created by scientists (2024)
- Agência Brasil. Industry creates platform to promote sustainable practices at COP30 (2025).
- Agência Brasil. Universalization of sanitation in the Amazon could generate BRL 330 billion (2025)
- Agência FAPESP. Climate change can alter methane emission and uptake in the Amazon (2025)
- Agência GOV. Drought in the Amazon: municipalities have more than 80% of their agricultural production areas affected (2023)
- Agência GOV. IBGE: Electricity reaches almost all households in the country (2025)
- Agência GOV. Pact for Ecological Transformation between the Three Powers of the Brazilian State (2024)
- Agência IBGE Notícias. Brazil has 1.7 million indigenous persons and more than half of them live in the Legal Amazon (2022)
- Amazon 2030. Amazon Facts (2025)
- Amazon 2030. Amazon Facts: COP30 Edition (2025)
- Amazon 2030. Carbon and the fate of the Amazon (2023)
- Amazon 2030. Pathways to Energy Transition in the Amazon.
- Amazônia 4.0. Industry 4.0 within the forest: Socio-biodiversity bioeconomy
- Amazônia Magazine. Vale calls for public policies to expand the circular economy (2025).
- Arandanet. Schneider and SENAI bring vocational training to the Amazon (2025)
- Arapyaú Institute. Climate and Nature Solutions in Brazil (2022);
- Arsepam. More than 924,000 people used intercity transport in Amazonas in 2021
- Assessment of the effects and impacts of floods in Rio Grande do Sul
- B3. B3 partners with ACX to launch carbon credit trading platform in Brazil (2023).
- Barreirinha City Hall. City Hall and Senai Samaúma II School Boat certify more than 800 students in Barreirinha
- BCG. Seizing Brazil's Potential for Low-Emission Marine Fuels (2025).
- Bioeconomia.eng.br. Dengo Chocolates and ReSeed Form Pioneering Partnership to Promote Sustainable Agriculture through Carbon Credits.
- Bioeconomy's Impact in Brazil (ABBI)
- Bloomberg. Brazil Climate and Ecological Transformation Investment Platform (2024).
- BNDES. Eco Invest Brazil Blended Finance Program.
- Brazil Alliance NbS. Scaling the Voluntary Carbon Market in Brazil Report (2023).
- Brazil explores half of the waterways with potential for cargo and passenger transport (2025)
- Brazilian Alliance for Ocean Culture. 2024: The hottest year in history (2025).
- Brazilian Association of Waste and Environment (ABREMA). Amazonas, Maranhão, Roraima and Pará Have the Highest Percentage of Municipalities with Landfills (2024).
- Brazilian Ministry of Agriculture and Livestock. ABC+ Targets.
- Brazilian Ministry of Foreign Affairs. About Brazil (2024).
- Brazilian Ministry of Mines and Energy. Brazil, World Leader in Energy Transition (2025).
- Brazilian Ministry of Science. Technology and Innovation (MCTI). (2025).
- Brazilian National Confederation of Municipalities (CNM). Panorama of Disasters in Brazil – 2013 a 2024 (2025).
- Brazilian Social Communication Secretariat. Federal Government announces 2nd Eco Invest Auction, focused on restoring degraded lands (2025).
- Brazil's Ministry of science, technology and innovation. (2022). National Inventory of Anthropogenic Emissions.
- CAU BR. Social Housing in Amazonas (2025)
- CCN Brazil. Circular Economy Can Generate BRL 11 billion and Create 240 thousand Jobs (2025).

- Cebds. B3's role in the climate agenda (2025).
- Climate Policy Initiative (CPI) & PUC-Rio. Where Are We In Implementing The Forest Code? (2024).
- Climate Policy Initiative (CPI). Brazilian Agricultural Mitigation and Adaptation Policies: Towards Just Transition (2023).
- Climate Policy Initiative (CPI). Portrait of Energy in the Legal Amazon and the Democratization of Data (2023).
- Climate Policy Initiative. Where Does Brazil Stand with the Implementation of the Forest Code? (2024).
- CNA Brazil. CNA, IDH, and Carrefour launch calf traceability protocol | Brazilian Agriculture and Livestock Confederation (2022).
- CNI. Brazil experiences hottest year since 1961 in 2024 (2025).
- CNI. COP30: Entrepreneurs focus on successful green agenda solutions (2025).
- CNM. Half of Brazilian municipalities still do not have a Master Plan, survey shows (2025)
- CNN Brazil. Brazil Could Waste BRL130 Billion in 2050 Due to Poor Waste Management (2024).
- CNT Urban Population Mobility Survey (2024)
- CONFEA. The photovoltaic sector is expected to generate more than 281,600 new jobs in 2024 (2024)
- CPI. Brazil surpasses global growth in climate finance, but international resources for forests still fall short of potential (2025).
- Dialogue Earth. Why cattle ranching is the biggest deforestation driver in the Amazon (2022).
- DIEESE. Green and Sustainable Jobs in Brazil (2022)
- Eat Forum. New landmark EAT-Lancet Commission warns food systems breach planetary limits (2025).
- Ecosystem Marketplace. State of the Voluntary Market 2025
- EIA. Country Analysis Brief - Brazil
- Ellen MacArthur Foundation. Creating a regenerative economy in the Amazon Forest: Natura Brazil (2021).
- Embrapa. Brazil has 28M ha of degraded pastures with agricultural potential (2024).
- EMBRAPA. Geographical Indication of Marajó Cheese intensifies research challenges (2021)
- Engineering Institute. Amazon and Bioeconomy (2022).
- EPE. Energy and Electrical Matrix (2023).
- Exame. Brazil's first sodium battery project brings clean energy to the heart of the Amazon (2025).
- Exame. With a new financing mechanism, Natura aims to stimulate the bioeconomy and avoid middlemen (2024).
- Exame. With IFC and IDB, Natura raises BRL 1.33 billion to expand the use of bioingredients from the Amazon (2024).
- Fator Brazil. Natura celebrates 10 years of its industrial park in Benevides (2024).
- Federal Government. National Energy Balance (2025)
- Federal Government. Rural Environmental Registry.
- Federation of Industries of the State of Pará (FIEPA). Energy transition: Brazil can be a leader in a global movement (2025).
- FIEPA. Industry in Pará advocates for responsible oil exploration and the strengthening of biofuels (2025).
- Folha de São Paulo. Açaí seed is an energy source in cement production (2025).
- Forbes. Is regenerative agriculture the savior of climate problems in agriculture? (2025)
- Forbes. Natura: The richest in the world is Brazilian (2024).
- Forest Code Observatory. Forest Code in the Amazon and land regularization (2023).
- FunBio. GEF approves $6.2 million for Amazon Viva to invest in cooperatives in the Amazon (2025).
- G20 reaches consensus and establishes High-Level principles on Bioeconomy
- GBC Brazil. The Steel Community shows that environmental certification is for all homes (2024)
- Globo. How the Amazon became the birthplace of the largest cattle herd in Brazil (2024)

- Globo. With more than half of its products dependent on the Amazon, Natura sees challenges in climate change and scale (2025)
- GOV. Legal Framework for Sanitation
- GOV.BR. Lula enacts Fuel of the Future law: “Brazil will drive the world's largest energy revolution” (2024)
- GOV.BR. President Lula announces BRL 546.6 billion to boost sustainable agro-industrial chains (2024)
- GOV.BR. President Lula signs Pact for Ecological Transformation between Three Branches of Government (2024)
- Grand View Research. Brazil Carbon Credit Market Size & Outlook, 2023-2030
- Green Earth. Brazil’s Amazon Fund reaches record $154.9 million (2024).
- Grupo Roncador. Bridging Tradition and Technology in Farming (2023).
- Health Care Without Harm & ARUP. Global Road Map for Health Care Decarbonization (Brazil)
- Health, Race and Climate Bulletin
- High-Level Commission on Carbon Prices. Report of the High-Level Commission on Carbon Prices. (2017).
- IBGE (2023).
- ICAT. Assessment of the policy framework impact on the renewable energy generation expansion in the Brazilian power grid (2024).
- ICC Brazil. Brazil’s Potential on Bioeconomy (2025).
- IDB. Amazon Bioeconomy Fund.
- IDB. IDB Group Launches ReInvest+: Going Where the Money Is to Unlock Private Climate Finance (2025).
- IDB. IDB Group Launches ReInvest+: Where the Money Is to Unlock Private Climate Finance (2025).
- Idesam. Mapping forest carbon projects in Brazil
- IDH Brazil. Sustainable Calf Production.
- iFood. iFood e YvY Capital anunciam investimento milionário para impulsionar motos elétricas no Brasil (2025)
- IHLEG. Raising ambition and accelerating delivery of climate finance (2024).
- ILPF reference and technical overview.
- Industry News Agency. 36% of Brazilians in large cities spend more than 1 hour a day in traffic (2023)
- Industry Portal. Implementation Guide According to the ABNT NBR ISO 5900 Series (2024).
- Info Amazon.More than half of the municipalities in the Amazon spent the entire year of 2024 in drought (2025)
- InfoMoney. Natura sees climate and scale challenges with half of its products coming from the Amazon (2025).
- INPE. Estimated deforestation in the Legal Amazon (2024).
- Instituto AYA & Systemiq. Pathways to Brazil's Ecological Transformation Plan (2023).
- Instituto AYA & Systemiq. Pathways to Brazil's Ecological Transformation Plan (2023).
- Inter-American Development Bank (IDB). Amazon Restoration Bioeconomy (2024).
- Interfaith Rainforest Initiative (2021).
- Intergovernmental Panel on Climate Change (IPCC). AR6 (2022).
- International Affairs. The Amazon rainforest and the global-regional politics of ecosystem governance (2022)
- International IDEA. Indigenous inclusion in UN climate talks – What progress ahead of COP30? (2025).
- International Union for Conservation of Nature (IUCN). Nature-based Solutions.
- Invest Amazon. Amazon and energy transition: Opportunities for a green development model (2025).
- Invest Amazon. Brazil’s Energy Transition in 2025: Advancements, Challenges and the Role of Amazon (2025).

- IPAM Amazônia. What is the carbon market and how does it work? (2025)
- IPCCAR. Mitigation of Climate Change (2022).
- IPEA Gov. Unemployment, Informality, Underutilization and Inactivity
- IPEA. Just Energy Transition in Amazon
- IPEA. Pricing and financing of urban public transportation (2013)
- JBS. Green Offices.
- JBS. JBS Brazil Green Offices regularize 8,000 marginalized farms (2024).
- JBS. JBS launches service hub to increase productivity of small producers (2024).
- Jirau Energia. Socio-Environmental, Economic-Financial Report (2024).
- Jirau Energia. The Structure of Jirau Hydroelectric Power Plant.
- João Pinheiro Foundation (2023)
- Journal of Land Use Science. Historical reconstruction of land use in the Brazilian Amazon 1940-1955 (2010)
- Land Use Handbook of the Anthropocene in Latin America I. Land Use in the Amazon from the Mid-Nineteenth Century to 1950 (2024)
- Law 14.119/2021. National Payments for Environmental Services.
- Legal Amazon in Figures. Internet (2024)
- Legal Amazon in Figures: Average Schooling (2024)
- Legal Amazon in Figures: GDP (2022)
- Legal Amazon in Figures: GDP per capita (2022)
- Legal Amazon. Dashboard
- Legal Amazon. Integrated view of the territory formed by the nine states of the Legal Amazon (2024).
- Linkedin. Global Green Skills Report 2023
- LogMed
- MAPA. ABC+ Plan For adaptation and Low Carbon Emission in Agriculture (2021)
- MAPA. Sectoral plan for adaptation to climate change and low carbon emissions in agriculture (2021)
- Ministry of Cities Brazil records the smallest housing deficit in history (2025)
- Ministry of Finance. Law establishing the basis for a regulated carbon market in Brazil has been approved (2024
- Mongabay. 40% of Amazon region is potentially conserved (2024).
- Mphar Solutions in Medical Affairs. Sustainability in the Pharmaceutical Industry: A Greener Future for Healthcare (2024)
- National Circular Economy Plan (2025 – 2034).
- National Plan for the Recovery of Native Vegetation (Planaveg).
- Natura. Natura is recognized as the most sustainable brand in the world (2025).
- Nature Finance. The Global Bioeconomy (2024).
- Nature Portfolio. Integrating Circular Economy in Urban Amazon (2021).
- Nescafé Global. Growing coffee with nature – Brazil.
- Nescafé. Nescafé plan 2030 Progress Report (2023).
- Nestlé Global. Regenerative Agriculture.
- Nestlé Professional. “Grown with Respect” Program”.
- Nestlé. Nestlé surpasses 2025 regenerative agriculture goal (2025).
- OECD. Education at a Glance (2023)
- OECD. Measuring greenhouse gas emissions in the health sector (2025).
- OECD. Reviews of health systems - Brazil (2021)
- OTCA. Rapid Assessment of Biological Diversity and Ecosystem Services of the Amazon Basin/Region (2023)

- Oxford Research Encyclopedia of Latin American History. Environmental Change and Mobilization in Brazil (2019)
- Oxford. Nature-based Solutions are essential for Brazil to meet its NDC
- Places Journal. Brasília and the Populist Frontier (2019)
- Planalto. President Lula signs law creating regulated carbon market in Brazil (2024).
- Planaveg National Vegetation Recovery Plan (2025-2028).
- Portal Solar. More Light for the Amazon will require up to 12 million solar energy devices (2023)
- PV Magazine. Brazil generates 88% of power from renewables in 2024
- R7. The Challenge of Fluvial Transport in the Amazon (2025)
- Reagen10. Outcomes-Based Framework overview (2023),
- Rede ILPF. ILPF in Numbers.
- REDESCA. Impacts of the floods in Rio Grande do Sul (2025)
- Regulatory Assistance Project (RAP). Roadmap for Electricity Access as a Development Driver in the Legal Amazon (2024).
- Reuters. Brazil's Gol, Vibra complete first SAF 'book-and-claim' in Latin America (2024).
- Safra Plan 2024/25 Official Page
- Sanitation is Health. Economic Benefits of Expanding Sanitation in the Legal Amazon (2025)
- Schneider Electric. Access to Energy Program.
- Science Direct Energy Research & Social Science. World wars and the age of oil: Exploring directionality in deep energy transitions (2020)
- Science Panel for the Amazon. The role of Indigenous Territories and Protected Areas in Amazon Connectivity (2025).
- SEEG Brazil. Analysis of GHG emissions 1970-2023 (2024).
- Senai. RN wins Brazil's 1st Center of Excellence in Professional Training for Green Hydrogen (2024)
- SENAI. Senai and GIZ inaugurate Brazil’s first Center of Excellence for Vocational Training in Green Hydrogen, in Natal
- Simmmem. Extreme drought on Amazonian river roads demands infrastructure investment and poses challenges for transportation and logistics (2024)
- SINISA System (2023)
- SUS. The largest public health system in the world, SUS turns 31 (2022)
- Sustainable Amazon Foundation. Amazonian communities benefit from solar energy system that strengthens sustainable entrepreneurship (2024).
- Suzano. Sustainability Center (2024).
- TeleAME. Home Page
- Deloitte Brazil. The Circularity Gap Report (2025).
- The Nature Conservancy. Sociobioeconomy beyond products (2024).
- Third Sector Observatory. Schneider Electric Delivers Clean Energy to Indigenous Communities in the Amazon (2025).
- Trata Brasil. Economic study in the Legal Amazon (2025)
- Trata Brasil. Sanitation Ranking (2025)
- Trata Brasil. Sanitation Ranking (2025)
- Trata Brasil. Sanitation Ranking (2025)
- Trellis. Natura’s formula for cultivating Indigenous relationships in the Amazon rainforest (2024).
- Tupy. Tupy Gains International Recognition for Innovative Technology (2023).
- U.S. National Science Foundation (2019).
- UFPA & Norte Energia. UFPA and Norte Energia develop the first sustainable electric boat in the Amazon (2024)
- UFPA. First electric and fully sustainable catamaran in the Amazon (2024)
- UN. Progress on Wastewater Treatment (2024).
- Unearthed. Soya, corn and cotton make Brazil world leader for hazardous pesticides (2020)
- UNEP. Resource efficiency & green economy (2022)

- UNICEF. Green Skills and Jobs for Adolescents and Youth in Brazil
- United Nations. Sustainable Development Goal 11.
- UOL. At a Natura factory in Pará, a path to the bioeconomy in the Amazon (2024).
- USDA Economic Research Service. Brazil's Momentum as a Global Agricultural Supplier Faces Headwinds (2022)
- Vale. Circular mining: learn how the Gelado operation reuses mineral waste (2025).
- Vale. Vale and UFMG announce partnership for innovative circular mining solutions (2025).
- Valor Econômico. The World's Largest Countries by Population and Land Area (2024)
- Veja Saúde. Money invested in health generates GDP growth, says study (2024)
- Vital Strategies. New survey shows climate change already affects the daily life of the population in the Legal Amazon (2025)
- Votorantim Cimentos. Açaí, the fruit of our Energy (2024).
- WEF. Finding Pathways, Financing Innovation: Tackling the Brazilian Transition Challenge (2023).
- WEF. Future of Jobs Report 2025.
- WIEGO. Waste Pickers in Brazil: A Statistical Profile (2021).
- World Bank Group. Eight Amazonian Countries with the Power to Save the Planet (2023).
- World Bank. A Balancing Act for Brazil's Amazonian States (2023).
- World Economic Forum. Transforming Food Systems with Farmers: A Pathway for the EU (2022).
- WRI Brasil. Restauração já criou milhares de empregos no Brasil – e tem potencial para criar milhões (2022).
- WRI Brazil. New Economy for the Amazon (2023)
- WRI The Green jobs advantage: how climate friendly investments are better job creators (2021)
- WWF Brazil. Discover the first 100% solar community in southern Amazonas (2021).
- WWF. Amazon (2025).

APPENDIX

DISCLAIMER AND ACKNOWLEDGEMENTS

This report was developed within the scope of the SB COP initiative, with the support of Deloitte Brazil acting as Knowledge Partner, who assisted the Working Group by consolidating discussions, providing data, and offering technical assistance. The content reflects the collective contributions and decisions of the Working Groups, mainly composed of private sector representatives and coordinated by SB COP and CNI.

The analyses, data, and opinions presented herein are intended solely for informational and discussion purposes. They do not constitute technical, legal, financial, or investment advice, nor do they create any commitment by the participants. The involvement of the Knowledge Partner and Network Partner does not imply endorsement of the recommendations or conclusions. No responsibility or liability is assumed by the Knowledge Partner, Network Partner, their professionals, or any participating organizations for decisions or actions taken based on this report.

Each participant remains fully independent in business decisions, relying on their own judgment and publicly available information. This publication does not contain non-public or sensitive information, except where explicitly indicated for SB COP use. References to specific cases, products, or services do not imply endorsement.