



Theory of Change

# BIOeconomy Strategy



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# Overview

Since it started operating in 2010, Fundo Vale has supported various sustainable production initiatives that value people and biomes, especially in the Amazon. Thus, the topic of the bioeconomy is not exactly new to our work agenda. However, in 2020, after defining our 2030 Theory of Change, we decided to better structure our activities in this area, incorporating a longer-term vision.

We began a process of open listening with specialists, holding conversations and sharing information with long-time partners, reading a variety of materials and positions on the topic, and having meetings with different areas of our sponsor, Vale. This was a natural step forward, during which invaluable support was provided by Move Social and Sense-Lab. We couldn't have done it any other way, given that collaborative and participatory construction is in our DNA. We believe it is essential to listen to different stakeholders, which offer different perspectives on the same problem, in order to build solutions that can effectively tackle our challenges.

This was how Fundo Vale's Bioeconomy Strategy emerged. The idea is to strengthen bioeconomy businesses so that they can access investments and produce competitive forest products, generating value for local people. Operating in line with our institutional strategies to build capacities, catalyze social and environmental impact enterprises, and provide and unlock financial capital, we also intend to strengthen our contribution to the Amazon and leverage an economy that values and adds value to its social and environmental assets. We will do this with both old and new partners, who want to come with us on this journey, as we believe in the power of collective impact.

**Patrícia Daros**

Director of operations, Fundo Vale

# Visions of the BIOeconomy

The term **“bioeconomy”** has become more prominent in discussions about **new development models, new technologies and new consumption patterns, driven by growing pressure from society on companies and governments.**

Although the bioeconomy might seem to be a new topic, discussions about it have been on the environmental and development agendas for decades. Much has been said about the green economy, bio-business, and social and biological diversity economics, among other terms used to refer to the need or desire to develop new uses and new ways of processing and using nature’s resources. The concept of the bioeconomy is different, as it offers **a systemic view that integrates traditional, scientific and technological knowledge from the perspective of circular, fair and sustainable production.** This is the idea that guides many of the bioeconomy definitions presented on this page. For Fundo Vale, the term “bioeconomy” conveys a new horizon for the **development of a sustainable economy associated with conservation and restoration, which promotes economic development together with inclusion and social equity between peoples and genders.**

The bioeconomy means an economy based on the utilization of resources derived from a region’s biodiversity, encompassing:

- (i) conservation of natural ecosystems;
- (ii) promotion of multifunctional agriculture based on agroecology, aimed at strengthening native production chains and local social development;
- (iii) maintenance of natural regeneration flows and cycles; and
- (iv) waste treatment and reuse.

*(Idesam, 2019)*

The Amazon bioeconomy refers to economic and commercial activities that involve the region’s sustainable and native social and biological diversity chains.

*(Viana et al., 2020)*

In Brazil, the bioeconomy is intrinsically linked to the biodiversity of its biomes, as well as related social diversity. In the context of the tropics, a bioeconomy must be centered on new technologies aimed at forming new products, production processes and services that promote different forest businesses and recognition of traditional rights and knowledge associated with biodiversity.

*(Brazilian Climate, Forest and Agriculture Coalition, 2021)*

The bioeconomy encompasses the entire value chain that is guided by advanced scientific knowledge and the search for technological innovations in the application of biological and renewable resources in industrial processes to generate circular economic activity and collective social and environmental benefits.

*(Open letter titled “Agenda for Unlocking the Bioeconomy,” sent to the vice president of Brazil by Instituto Escolhas and other organizations, 2020)*

The bioeconomy refers to the set of economic activities involving the production, promotion of production, distribution and consumption of goods and services arising from social and biological diversity resources. It considers the technological scale applied in these processes, as well as the ecosystems in which these resources are managed and all the economic agents involved and their organizations and institutions. From a local perspective, the Amazon bioeconomy consists of market structures based on products and processes underpinned by four guiding principles: 1) conservation of biodiversity; 2) science and technology aimed at the sustainable use of social and biological diversity; 3) reduction in social and regional inequalities; and 4) expansion of biodiverse and sustainable forested areas.

*(Technical note titled “Science, Technology and Innovation in the Amazon Bioeconomy,” Amazonas State Science, Technology and Innovation Secretariat)*

## Land use patterns (except in urban areas)

Native forest

Deforested area

Intensive farming, logging and mining

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Degree of human alterations, physical production volume

+

+

Biodiversity relationship/dependence (conservation); Resilience to effects of climate change; Inclusion and strengthening of traditional peoples

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## Paradigm: Preserve and Develop

Preservation – Ecosystem Services

Forest and Regenerative Economies

Commodity economies seeking to increase efficiency and sustainable practices

1<sup>st</sup> Way

3<sup>rd</sup> Way (innovative, green bioeconomy)

2<sup>nd</sup> Way

Harnessing of ecosystem services: "PSA Hídrico" tool, REDD/REDD+.

- Intensive use of new scientific and technological knowledge (biotechnology, genomics, synthetic biology, bioinformatics, genetic engineering)
- Development of local capacities + technology: Amazon Creative Labs (Amazônia 4.0)

- Ecological tourism
- Social and biological diversity chains (extraction of non-timber forest products by traditional communities)

- Crop-livestock-forest integration
- Timber management
- Advanced biotechnology applied to agribusiness
- Automation and digital precision agriculture
- Plant and animal health

Prof. Carlos Nobre

Cooperation for the Amazon

Brazilian Climate, Forest and Agriculture Coalition

**Traditional Bioeconomy**  
(resource extraction + subsistence farming + environmental services/carbon)

**Forest Bioeconomy**  
(native forest silviculture)

**Commodity Bioeconomy**  
(tree plantations and commercial agriculture)

Inclusive bioeconomy based on intact forests: in Brazil, the bioeconomy is intrinsically linked to the biodiversity of its biomes, as well as their social diversity.

Silviculture based on native species with the potential to reduce deforestation and forest degradation, conserve biodiversity, sequester carbon, generate employment and income, and attract investment. Opportunity to contribute to post-pandemic green and low-carbon economic recovery. Need to expand knowledge about commercial planting of native trees.

(Ref. Silviculture and Native Species Research and Development Program)

The connection between the bioeconomy and agriculture permeates large-scale production systems, and as in any other commodity production system, it is necessary to strive for the sustainable use of natural resources, the adoption of agricultural best practices, the conservation of biodiversity in production areas, and continuous improvement regarding practices and innovations.

# Challenges and Levers

The bioeconomy's potential for Brazilian biomes, especially the Amazon – the tropical forest with the greatest biodiversity reserve on the planet – is unquestionable. However, the search for a sustainable, fair and inclusive economic development model entails identifying and overcoming some significant challenges. Based on document analysis and interviews with experts, five major levers for strengthening the bioeconomy were identified and they served as a benchmark for defining Fundo Vale's strategy.

## Science and Technology

- The emerging connection between science, traditional knowledge, technology and innovation must be converted into greater integration of these elements through laboratories and/or collaborative networks, resulting in new products and/or forest chains.
- Complex processing of biodiversity inputs needs to be accompanied by scientific research and technological development in order to generate more distinctive products and innovation in business models.
- Low degree of social self-organization in the initial links of production chains.

## Innovation and Entrepreneurship

- Seek competitiveness through innovation in business models.
- Given the low number of entrepreneurs, low level of training among them and high prevalence of the informal economy, there is a need for initiatives to encourage new entrepreneurs and to promote business incubation, acceleration and formalization.
- In order to enhance social self-organization in the initial links of production chains in the Amazon, in which a subsistence economy culture is predominant, community development and organization programs are needed.

## Development of Markets and Enabling Services

- In order to deal with difficulties in managing supply and demand (predictability, volume and quality) in social and biological diversity chains, a greater role for the private sector and other partners is required in strengthening the initial links of chains, thereby boosting corporate purchases.
- The poor competitiveness of Amazonian social and biological diversity products requires measures to highlight the social and environmental benefits associated with them and to make them more accessible to end consumers via e-commerce platforms and better distribution in physical stores.
- The considerable geographic distances between the forest and consumer markets require efficient infrastructure and logistics services, as well as solutions in areas such as communication, tracking and power generation.
- Although the government does not explicitly favor products from socially and environmentally positive chains, the public sector is a potential market for social and biological diversity chains.

## Regulation, Inspections and Incentives

- The lack of integration between the views of different spheres of government regarding the bioeconomy warrants the creation of a national program to mobilize different parts of the executive and legislative branches in a coherent manner.
- Excessive regulations must be tackled through a reduction of red tape in processes linked to the bioeconomy, as well as through the creation of accessible stimulus mechanisms such as access to credit and to federal government procurement programs.
- Given many small entrepreneurs' lack of land tenure, which makes it difficult to obtain credit and increase the scale of enterprises, it is necessary to encourage land tenure regularization initiatives.
- Faced with an unfavorable tax structure, it is necessary to create and implement tax incentive laws linked to the bioeconomy.

## Supply of Capital

- The shortage of credit and investment requires various financial mechanisms to support businesses at different levels of maturity.
- Given the fledgling nature of impact investing in the Amazon, it is necessary to coordinate with/recruit different financial actors to together strengthen the impact investing ecosystem in the region, including large companies linked to major social and biological diversity chains.
- Because of impact businesses' high risks and unpredictable potential for returns, business promotion capital and seed capital must build a pipeline of opportunities and strengthen impact businesses to mitigate risks and achieve higher returns.
- There is a need to multiply risk mitigation experiences and pilot projects such as blended finance structures in which non-repayable resources assume the risk of the initial phase of impact businesses or pay for financial, administrative or capacity-building support.

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# Innovation and Entrepreneurship

The Brazilian Amazon is a critical region for the ecological balance of the continent and the planet, but it is also an area with low rates of social progress associated with lack of opportunities and low-productivity economic activities. The region's growing productivity has been accompanied by unsustainable levels of environmental degradation. Thus, new solutions, based on innovative business models, need to be created and introduced, allowing an increase in income without environmental degradation.

We believe that innovation – in the terms set out at the end of this text – and enterprise that benefits conservation and promotes social and biological diversity can enhance the competitiveness of intact forest and harness natural assets on the necessary scale, not only in the Amazon but also in other Brazilian biomes. However, there is still a lot of work to be done to create greater entrepreneurial capacity, develop local talent and change the mindset of those who want to do business with environmental assets.

The forest and the knowledge of its traditional communities offer the opportunity to bring together innovation, supported by science, with sustainable economic activities. This is about stimulating the strengthening of economies based on forest conservation or restoration, bolstering natural regenerative cycles and increasing the provision of ecosystem services. The idea is to achieve a sustainable, fair and inclusive bioeconomy.

In our strategy, we want to expand, diversify, strengthen and connect, on a regional scale, the organizations responsible for making the impact ecosystem dynamic, including researchers, universities, science and technology institutes, talented entrepreneurs, incubators, accelerators and companies. This means working in networks of systematic collaboration, which offer knowledge, ideas and patents for the generation of new products and processes.

By organizing, liaising and interacting with different agents, we are helping create an environment that fosters local enterprise, accelerating the performance of extractive community businesses and startups, allowing efficient resource allocation and public policies, thereby improving the competitiveness of forest-based products.

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An innovation is the implementation of a new or significantly improved product (good or service), or process, a new marketing method, or a new organizational method in business practices, workplace organization or external relations. *(OECD, 2005, p.55)*

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New ideas (products, services and models) that simultaneously meet social needs and create new social relationships or collaborations. In other words, they are innovations that are good for society while increasing the capacity to act. *(Murray et al, 2010)*

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The application of innovative, practical, sustainable, market-based approaches to benefit society in general, and low-income or under-served populations in particular. *(World Economic Forum, 2016)*

# Principles

We have eight guiding principles, which will direct Fundo Vale's activities toward a sustainable and resilient socio-bioeconomy.

- 1 Expand the generation of products and services for Brazil**, based on a localized vision of an economy that values, conserves and restores the Amazon biome and its biodiversity.
- 2 Value innovation and technology** focused on products, production processes, services and business arrangements for promoting forest conservation or restoration value chains.
- 3 Include traditional and indigenous peoples in production arrangements** and strengthen their businesses, valuing their knowledge associated with biodiversity and its sustainable use while seeking to reduce social and regional inequalities.

- 4 Expand and facilitate investments and capital flows in different parts of the system**, especially in the early stages of the innovation and entrepreneurship journey.
- 5 Promote fair and sustainable negotiation and market practices**, favoring competitive and inclusive economic growth in different regions.
- 6 Promote cooperation, collaboration and information sharing** among stakeholders involved in the subject, strengthening intervention capacities and economies of scale.

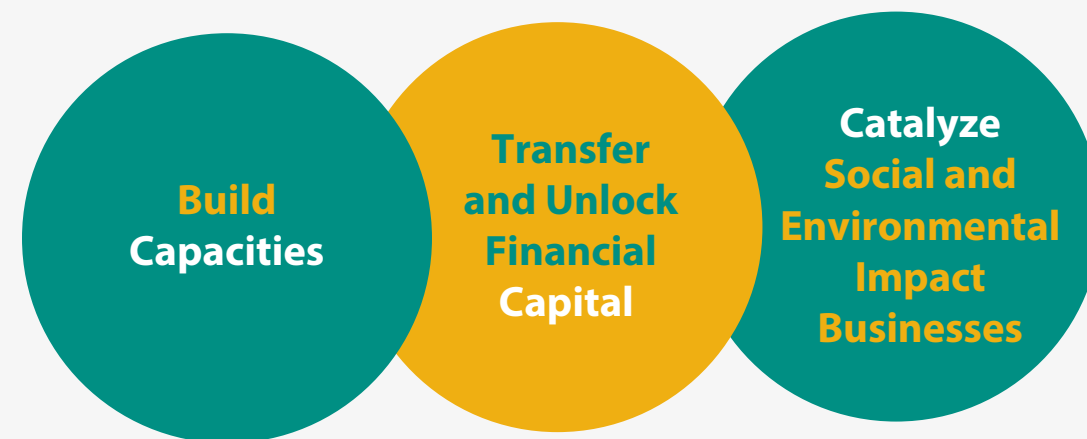
- 7 Act in alignment with Vale's sustainability goals**, optimizing opportunities for synergies with other programs and areas.
- 8 Encourage sustainable consumption** and food security.

## Productive Sectors

1. Non-timber forest products
2. Timber forest products
3. Sustainable family farming
4. Ecotourism
5. Creative economy
6. Reforestation
7. Services and greentechs that improve or leverage other bioeconomy chains
8. Artisanal fishing

Fundo Vale Strategies (5Cs)

Direct



Cross-Cutting



Stakeholders

Primary

- Impact entrepreneurs
- Family farmers and extractive workers
- Traditional and indigenous peoples
- Young people and women

Secondary

- Dynamizing organizations in ecosystem
- Research organizations
- Institutes and foundations
- Impact investors
- Companies

Areas of Activity

Science and Technology

- Coordination with and support for initiatives that stimulate prototyping and connections between research and social and environmental businesses

Innovation and Entrepreneurship

- Support for and development of initiatives involving entrepreneurial education, talent development and productive social organization
- Support for incubation and acceleration programs

Market Development

- Support for businesses to access local markets
- Expansion of sales channels to harness national and international markets

Enabling Services

- Promotion of a pool of complementary services (logistics, tracking, certification, communication and monitoring/measurement)

Supply of Capital

- Business promotion/seed capital in hybrid models
- Repayable investment

Impact Ecosystems

- Support for strengthening and integration of dynamizing organizations and other stakeholders in local ecosystems to promote the bioeconomy

Geographical scope

Focus on **Brazilian Amazon**, especially in locations where Vale operates (along the company's "Northern Corridor")



Bioeconomy businesses strengthened and with access to investments, creating competitiveness for forest products and generating value for local people

Broad results

- Science and technology solutions adopted by bioeconomy businesses, generating more added value
- Community and impact businesses strengthened and integrated into the social and biological diversity chain
- Greater supply of Amazonian services and products arising from the creation of new businesses
- Forest chains and their products highly visible, valued and accessible to the consumer market
- Private sector and other partners engaged in strengthening the initial links of social and biological diversity chains, boosting corporate purchases
- Hybrid investment arrangements providing capital for emerging businesses
- Coalitions generating collective impacts, focusing on the bioeconomy

Contribute to the following impacts in Fundo Vale's 2030 Theory of Change:

- Protected and restored natural ecosystems, enabling the sustainable use of their resources
- Local communities, traditional and forest peoples and farmers working in a cooperative, organized way, generating wealth sustainably from natural resources, with greater access to services and products, boosting the quality of their lives
- A regenerative economy based on the harnessing of natural resources and the fair, egalitarian and equitable distribution of their benefits throughout the value chain



# Next Steps

For Fundo Vale, this bioeconomy strategy is an institutional journey that is just beginning. We have a lot to do – understand, decide, test, dare, make mistakes, learn, correct and invest – between now and 2030 in order to achieve the desired results. We are prioritizing the Amazon, a biome that covers almost 60% of Brazil, in which 25 million Brazilians live. It is the region with the greatest biodiversity on the planet.

There are many challenges to be tackled to ensure that the Amazon bioeconomy plays a significant role in the conservation of biomes and the country's economy. For this reason, it will be essential to provide patient, enterprise-boosting capital, understanding the region's specific circumstances and promoting a more entrepreneurial mindset.

We are implementing a work plan to turn all this into concrete actions. We want to support ventures in their initial phases so that businesses that believe that intact forest is worth more than cleared forest are the new normal. We must always include and value traditional knowledge and the peoples and societies that occupy this vast region.

**We are sure that we will not be alone on this path. It will have to be a collective, shared journey if we really want to generate lasting impacts and changes. As always, we remain open to dialogue. Come with us!**

## Our partners





# Credits

The following people contributed to this material:

## Partners and specialists

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