AMAZON INVESTOR COALITION

From Showcase to Territory: Invisible Infrastructures and the Future of the Amazon Bioeconomy

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1. Introduction

For decades, the Amazon has occupied a paradoxical place in the geopolitics of sustainable development: while celebrated as a strategic climate asset and a territory for socio-environmental solutions, it continues to be treated as an operational periphery - a place from which value is extracted, but where the production of meaning, innovation or politics is rarely recognized.

In international debates, the region is often invoked as a symbol or a promise, but little considered as an epistemic and economic subject. In this context, the advancement of the bioeconomy agenda has renewed hopes and narratives about the forest's ability to generate income, remain standing and become a protagonist in the global ecological transition. But what lies behind this promise? And what is missing for it to materialize with justice, scale and permanence?

The word "bioeconomy" circulates fluidly in multilateral summit speeches, strategic government documents and corporate reports. But its meaning is likewise fluid and disputed. Within the framework of the Global North, it tends to be associated with the replacement of fossil fuels with renewable biomass, the advance of biotechnology and the industrialization of green chains. However, when transposed to contexts such as the Amazon, this definition reveals its limits.

After all, as Nicholas Georgescu-Roegen (1971) rightly pointed out, the economy is an entropic process: it consumes useful energy and transforms it into waste - and the mere replacement of inputs doesn't change this logic. More than technological innovation, what is at stake in the Amazon is the right to production with justice, the recognition of the ways of life that sustain the living forest and the possibility of a new institutional architecture for development.

What this article proposes is a conceptual and political shift: from the bioeconomy as a showcase to the bioeconomy as a territorially based structuring process. To do this, we need to take aim at what is not usually visible. Here we introduce the concept of invisible infrastructures, understood as the set of material, organizational and institutional conditions that precede any viable production cycle: land regularization, basic logistics, connectivity, technical assistance, trust networks, local governance and adapted credit systems.

We argue that without strengthening these structures, any policy to promote the bioeconomy runs the risk of becoming just another piece of green rhetoric - dissociated from the reality experienced in the territories.

In addition, we propose a distinction between two types of arrangements that are fundamental for the Amazon bioeconomy to thrive: pre-productive arrangements, which concern the viability of production itself, and pre-competitive arrangements, which refer to the ability to cooperate before competing - through shared centers, collective certifications, logistics platforms and coordinated investments in research and innovation.

Both dimensions are necessary. Without the former, the production cycle doesn't even begin. Without the latter, the ventures that manage to produce cannot compete consistently and fairly. The absence of these infrastructures - ignored by most impact funds, acceleration platforms and public policies - is today the real chasm that separates the forest from the global market.

This article therefore starts from a simple but often overlooked premise: there is no bioeconomy without land. The forest already offers solutions - food, pharmacological, climatic and cultural - but it lacks a system that recognizes it, and funding that sustains it. COP30, to be held in Belém, is a historic opportunity to transform this condition.

Rather than promising new products or carbon offsets, it could be the moment to consolidate a global pact for the Amazon's invisible infrastructure, bringing together governments, philanthropy, civil society and patient capital around what, although silent, is structural. Building the invisible, in this case, is the only viable way to sustain the future.

2. Which bioeconomy are we talking about?

The word bioeconomy circulates fluidly in international summit speeches, government documents and corporate campaigns. But its meaning changes and radically depends on where one is talking about it - and, above all, with whom one is talking. It is therefore essential to recognize that the multiple formulations of bioeconomy share two founding elements, albeit with different weights: territoriality and the *modus vivendi* of those who produce it. In many forums in the Global North, the bioeconomy has been associated with replacing fossil fuels with renewable biological resources: plant biomass, organic waste or biodiversity assets.

This narrative is usually accompanied by promises of efficiency, innovation and green growth, anchored in technological solutions, innovative biotechnology and new markets.

We understand, however, that this is a conventional approach, which does not consider the productive diversity of territories such as the Amazon, Africa and, after all, the territories of the Global South. As presented in Northern hemisphere countries, the narrative focuses on "what" is being produced, rarely asking "how", "where" and "by whom". This approach ignores the fact that, outside of laboratories, the economy of life also involves cultural choices, political positioning, community values and historical power relations.

It is at this point that the criticism of Nicholas Georgescu-Roegen, the Romanian economist who coined the term bioeconomy in the 1970s, becomes topical and revealing. For him, it wasn't a simple technical reconfiguration of the production matrix, but a structural critique of the dominant economic model, based on the illusion of infinite growth. Georgescu introduces the idea of entropy in the economy, stating that every productive transformation consumes energy and generates an irreversible loss of order in the system, highlighting that this continuous movement carries within itself the fury of finitude, of insufficiency, and is designed to supply another major drain on the modern world's resources - our consumption patterns.

In other words, there is no production without degradation, and therefore no sustainable economy if it continues to be guided exclusively by accumulation and the current logic of consumption. In the view of this important but sometimes forgotten author, a genuine bioeconomy would need to consider the biophysical limits of the planet and reorder the role of time, work and consumption. This means recognizing that infinite economic growth is a dangerous illusion, sustained by a mechanistic view of nature as something external and inexhaustible.

In this sense, we need to note that time itself is a non-renewable resource, and human work cannot be measured only in units of production, but also in quality of life, social ties and relationship with nature. Consumption, in turn, needs to be reframed: instead of encouraging the constant replacement of goods, it should be oriented towards sufficiency, permanence and collective well-being. In this sense, the bioeconomy, as originally proposed, is not a green continuation of the capitalist economy - it is a break with its foundations.

The Amazon, in this context, is not just a repository of biological resources - it is also a source of other ways of life and other possible economies. We have observed over the last twenty-five years, following bioeconomy and territorial development projects in the Amazon (Brazil and South America) and in other territories of the Global South, that in many communities the choice of what to produce and how much to produce is not based on the logic of maximization, but on a balance between sustenance, well-being and preservation.

A practical example of these Amazonian wanderings: an extractivist in a municipality in Pará, probably in 2016, refused an offer from a large company to work an extra two hours a day at , even though he would be paid twice as much, because he valued time with his family, caring for his backyard, watching over the forest that surrounds him and socializing with his community more than accumulating income according to a logic imposed from outside.

This gesture, often read as unproductive or "disinterested", actually reveals a profound rationality - an attitude that subverts the dominant logic of accelerated extractivism. It's as if a form of "negative entropy" were symbolically enunciated there: not in the physical sense, which Georgescu-Roegen rightly dismisses as inapplicable to the economy, but as a living metaphor for an economy that slows down dissipation, regenerates bonds, conserves vital energy where the hegemonic system would see only idle time.

In this case, it's a bioeconomy of care, territory and interdependence - where the choice not to produce any more is, paradoxically, what keeps the basis of any future production alive. This vivid personal experience culminated in an absolutely necessary warning from the extractivist being interviewed: "*Remind the company owners that nature walks, it doesn't run*". His position of refusal, although apparently outside of current economic rationality, may in fact already be ahead of it.

Talking about the Amazon bioeconomy therefore requires a radical repositioning. It is not a question of adjusting value chains to the forest, but of recognizing that the forest already has value and already sustains its own chains - invisible to conventional systems. This bioeconomy will not be built with the same logics that have extracted value from the Amazon for centuries: extractive, centralizing and focused on the gross export of wealth. It requires a model that respects the times of nature, the rights of peoples, the productive structure and local intelligence as the center of the process.

In short, there are different bioeconomies in dispute - and the one born from the forest needs infrastructure, yes, but invisible infrastructure: time, trust, support networks and recognition of the value of the unproduced.

3. Sociobioeconomics: a Brazilian and Amazonian paradigm

Among the many bioeconomies, the term sociobioeconomy was coined to take account of an Amazonian reality that escapes the conventional classifications of bioeconomy centered on biotechnology or bioresources.

As explained by economist Francisco de Assis Costa, coordinator of the study "Bioeconomy of Sociobiodiversity in the State of Pará" (COSTA et al., 2021), sociobioeconomy refers to a bioecological bioeconomy, rooted in agroforestry and

extractive systems, organized around value chains of sociobiodiversity, and structured on the territorial and reproductive logic of traditional populations and family farmers. This is a typically Amazonian concept of bioeconomy, with a strong emphasis on ecological processes and social links, rather than simply replacing fossil raw materials with organic ones.

This approach further highlights the principle of entropy, i.e., the fact that the energy used in production processes degrades and cannot be fully reused, and therefore mere substitution will not bring the expected result. Exchanging a fossil source for a renewable source, without changing the logic of production and consumption, continues to operate within an unsustainable paradigm.

This is why GEORGESCU-ROEGEN (1971) also criticizes so-called "energy efficiency" when it only serves to speed up extraction and increase consumption. Instead of creating ecological stability, this misplaced efficiency reinforces degradation on a larger scale and at a faster rate. It's not just a question of changing the means, but of changing the ends.

This criticism is shared by contemporary authors such as SAITO (2022), who argues that the current ecological crisis is inseparable from the logic of capital accumulation, and that a degrowth model is needed that breaks with the dependence on continuous economic growth and aligns itself with the perspective of a new economy that effectively respects natural limits.

Another relevant author is ROCKSTRÖM et al. (2009), known for his work on "planetary boundaries", in which he points out that there are nine fundamental processes that regulate the stability and resilience of the Earth system, and that transgressing these boundaries can lead to abrupt and irreversible environmental changes. These processes include climate, biodiversity, the biogeochemical cycles of nitrogen and phosphorus, land use and ocean acidification.

This author's proposal is not just descriptive, but normative: he states that human development must take place within a safe planetary operating zone, and that going beyond it compromises the biophysical foundations that sustain life. In this model, economic policies need to be reorganized in such a way as to respect these non-negotiable limits of the Earth, creating global governance mechanisms that combine social justice with ecological integrity.

BONAIUTI (2014), for his part, emphasizes that advanced capitalist societies are entering a phase of "diminishing marginal returns", where increased social and economic complexity leads to stagnant growth and a sustainability crisis. The author argues that it is necessary to rethink the current economic model, adopting a degrowth approach that values voluntary simplicity and the reduction of material consumption.

We should remember, however, that for Georgescu-Roegen, true progress does not lie in increasing GDP, but in ensuring that societies can live well with less - respecting ecological limits and prioritizing social bonds. In this sense, the sociobioeconomics approach also has the didactic value of reminding us that, especially in the Amazon, the production and movement of forest assets does not take place without a seminal connection with traditional knowledge and, therefore, with the people who inhabit this territory.

Unlike the industrial model - which seeks to maximize productivity and scale - socio-bioeconomic arrangements prioritize the reproductive efficiency of families, i.e., their ability to sustain a dignified life over time, balancing production with conservation and autonomy with reciprocity. Instead of relying on external inputs, these systems are anchored in local knowledge, the diversity of species, the cycles of the forest and solidarity between actors in the territory. It is an economy that does not require the destruction of the place where people live, nor does it break community ties.

This contrast is visible when we look at the case of açaí. Although the fruit is a symbol of the Amazonian bioeconomy, its value chain has been dualized. A growing part of production is going through an industrialization process that concentrates processing in a few companies, drives out small producers and disconnects the product from the territory. This happens, for example, when açaí is grown in monocultures, with pesticides and solely for export.

Although technically renewable, this production is not in line with Georgescu's bioeconomy or the sociobioeconomy highlighted by Professor Francisco Costa - because it ignores care for the forest, local social relations and the diversity of uses and meanings that açaí has in the communities. On the contrary, production systems based on managed extractivism, family-based agroforestry and solidarity marketing networks best represent the spirit of sociobioeconomics.

They integrate conservation and income, traditional knowledge and territorial innovation, with emphasis on the logic of SAFs-F (forest-based agroforestry systems) and SAFs-A (agriculture-based), as defined in the NAEA/UFPA studies (COSTA, 2021). These systems, far from being "backward", are highly sophisticated in their management of biodiversity and offer resilient alternatives to the climate and food crisis.

In addition, they have a high potential for generating employment and added value for local economies, as shown by data from Pará, where 87% of the value generated by the açaí chain, for example, remains in the interior of the state.

Therefore, recognizing and financing the socio-bioeconomy as a legitimate and priority strategy for the development of the Amazon is a political and ethical decision. It's not a

question of adapting the forest to the demands of the global market, but of reorganizing the investment, consumption and governance circuits so that they are at the service of the ways of life that actually keep the forest standing.

Supporting this transition requires strengthening what we have learned to call invisible infrastructures - such as land regularization, intercultural technical assistance, socio-environmental certification systems and just transition funds[1] , designed to make structural economic changes possible without deepening territorial inequalities. By recognizing the unequal costs of ecological transition, these funds are crucial to guaranteeing real alternatives for populations that currently depend on unsustainable activities. This is the basis of a bioeconomy that truly recognizes the forest as a subject - and not as an input.

Even without full access to the invisible infrastructures highlighted here, isolated initiatives show that there is productive and organizational power in the territories. These are enterprises that have managed to design real solutions, based on socio-biodiversity and community coordination, despite the absence of ongoing policies, logistical support or structural funding. Warabu Chocolates, for example, produces organic chocolates with wild cacao grown in the Amazon rainforest, following the "*bean to bar*" concept and promoting the appreciation of Amazonian products.

Na'kau Chocolates de Origem works with riverside dwellers and Indigenous people, supporting their traditional production systems that help keep the forest standing. Casa do Ribeirinho, located on Ilha das Onças, in Pará, has transformed the home of a river dweller into a tourist attraction, promoting sustainable tourism and valuing local culture.

Xapuri Socioambiental, in Acre, structures the Brazil nut chain with traceability and the generation of local added value, making Xapuri the third largest Brazil nut producer in the country. These initiatives are not the result of a system - on the contrary, they are stubborn exceptions that reveal the potential of the forest when there is intelligence, networking and persistence. A case in point is Manioca[2] , an Amazonian brand that has established itself nationwide. With a strong regional identity, local processing processes

[1] As an example, the *Just Transition Fund (JTF)*, created under the *European Green Deal*, is one of the most structured examples of a just transition fund in the world. With a budget of €19.3 billion for the period 2021 to 2027, the fund aims to support European regions facing the greatest challenges in decarbonizing their economies - especially those dependent on coal and emissions-intensive industries. Its resources range from green infrastructure and retraining to technical support for small businesses, territorial innovation and local economic diversification. Similar initiatives have been proposed in Pan Amazonia: in Brazil, the BNDES has started to discuss the creation of financial instruments dedicated to the transition of high-impact production chains to sustainable models (such as the restructured Amazon Fund); in Peru and Colombia, projects with GIZ support have been designed with similar objectives, integrating support for conservation with productive inclusion in chains such as cocoa, shade-grown coffee and nuts.

[2] Manioca is a food tech company from Pará that is known for valuing ingredients from Amazonian socio-biodiversity with local processing. In 2023, it received a contribution from the Ajinomoto industrial group - the first outside Japan - signaling its potential, but also the scarcity of national impact financing mechanisms with scale and permanence (CAPITAL RESET, 2023).

and a focus on ingredients from socio-biodiversity, Manioca has become a symbol of a contemporary, quality bioeconomy. The investment that allowed it to scale up - the entry of the Ajinomoto industrial group as a partner - reveals the fragility of the impact financing ecosystem.

When even one of the most promising businesses in the Amazon bioeconomy has to scale up with conventional corporate capital rather than impact funds, what is revealed is not just a strategic choice - it is the silent bankruptcy of an ecosystem that should exist to sustain it.

It was necessary to resort to corporate capital, with a traditional profile, to make growth viable, precisely because there wasn't a robust development platform that brought together patient capital, territorial governance and logistical infrastructure. Manioca's merit remains and is widely recognized, but its trajectory highlights a limit: when the only way to scale up is through a large food industry, it is a sign that the support system for the standing forest has yet to be born.

Other businesses have sought support from acceleration programs such as the AMAZ Accelerator, BNDES Garagem and Impact Hub Amazônia initiatives. Accelerated companies such as Na'kau Chocolates de Origem (RO), which works with river dwellers and indigenous people, supporting their traditional production systems that help keep the forest standing, and Casa do Ribeirinho (PA), which transformed the home of a river dweller into a tourist attraction, promoting sustainable tourism and valuing local culture, show that there is a growing portfolio of solutions based on native ingredients, traditional knowledge and inclusive innovation. However, the majority of these experiences enter into isolated calls for proposals, with short cycles, without access to transition funds or infrastructure of scale.

The natural selection of the market, without structural corrections, tends to preserve the few and eliminate those that value time, complexity and justice the most. These cases, while proving the potential of the Amazon bioeconomy, reiterate the urgency of building the foundations that are still missing: basic logistics, land guarantees, technical support networks, patient credit and political stability for the forest's entrepreneurial communities.

4. The forest as a promise and the shop window as a distraction

The consolidation of socioeconomics as a territorial and culturally rooted paradigm requires a direct confrontation with the narratives that, although clothed in sustainable promises, operate in the Amazon in a functional but often decontextualized way. In various spaces of global formulation, the "forest" has been presented as the most promising natural solution to the climate crisis and the collapse of biodiversity.

However, this promise, amplified by campaigns, summits and corporate reports, is often based on a simplified representation of the Amazon; a forest redeemed by its capacity to generate "green assets" and premium products for global markets. It is a carefully crafted showcase that often obscures the structural and institutional voids in the territories that sustain it.

Criticism of this model has already been widely debated by authors and institutions from different fields. In the European context, for example, the European Commission recognizes that a large part of the bioeconomies promoted globally are focused on the technological replacement of fossil inputs with plant biomass, as we have already said, "*prioritizing efficiency gains and economic competitiveness*" (EUROPEAN COMMISSION, 2021).

Although relevant in their regions of origin, these models ignore the historical and structural conditions of the Amazon, where the challenge is not just to replace energy sources, but to build material and political bases for historically marginalized ways of life. As COSTA et al. (2021) warn, when this imported model is transplanted directly into the Amazonian context, it tends to reinforce asymmetries, reactualizing exploitative logics in a new guise.

This dissonance is especially visible in the açaí and Brazil nut chains. While their derivatives circulate in gourmet markets around the world as symbols of sustainability and exoticism, many of the producing territories remain on the margins of basic public services (especially quality education and health), such as reliable energy, accessible transportation and technical assistance.

In many cases, the industrialization of açaí follows the logic of concentration: it verticalizes the chain, appropriates the symbolic value of the forest and subordinates extractivists to precarious contracts or dependence on intermediaries. As the TNC and IDB study (led by COSTA et al., 2021) shows, most of the added value in industrialized açaí is accumulated outside the territories of origin, even when production takes place in family agro-extractive systems.

At the institutional level, this contradiction is deepened by the fragmentation of public policies and the lack of articulated strategies for productive infrastructure. The articles in the collection Reflections on the Legal Amazon (NAEA, 2023) show that funds such as the FDA (linked to the Superintendence for the Development of the Amazon - SUDAM) and the FNO (administered by Banco da Amazônia - BASA), historically created to foster regional development, have been operating below their potential, with budgetary limitations, low capacity for coordination with municipalities and a lack of prioritization

of investments in logistical, agro-industrial and digital infrastructure aimed at socio-bioeconomic chains.

It's no coincidence that most of the successful sustainable production experiences in the Amazon take place in fragmented arrangements, supported by local solidarity networks, philanthropic financing or alternative marketing circuits such as the Povos da Floresta Network, Jirau da Amazônia or articulation initiatives promoted by organizations such as Conexsus and the Socio-Environmental Institute (ISA), which connect community enterprises to ethical market niches. These models, although powerful, operate on the margins of the dominant financial and logistical system, precisely because it is not prepared to absorb the actual costs of the so-called "standing forest".

In the Amazon context, the "corporate account" rarely closes: the costs of river and land logistics are high, the supply of quality technical assistance is scarce and discontinuous, and there is extraordinarily little flexibility, or even willingness, to incorporate consistent social investments aimed at strengthening local communities. Thus, although there is global demand for sustainable forest products, conventional market mechanisms are still unable to translate this demand into economically viable models in the territory, without structural public or philanthropic support.

This dissociation between the discourse of the showcase and the reality of the territory also appears acutely in the field of private investment. The document entitled *Finance Amazonia Report* by the Amazon Investor Coalition (AiC, 2022) recognizes that although there is capital available to finance impact businesses and standing forest chains, the logistical, legal and institutional bottlenecks in the Amazon have acted as invisible barriers to the fluidity of investments.

According to the report, there is a lack of intermediary mechanisms (financial, technical and organizational) capable of transforming impact intentions into long-term operations rooted in the territories. The absence of these basic conditions reveals the extent to which the conventional financial system has not yet been adapted to the complexity of the real Amazon.

This is where the concept of invisible infrastructures, which we've been talking about since the beginning of this article, comes in. It's not just about roads, electricity grids or internet access, although all these elements are indispensable. It is also, and above all, about the institutional, cognitive and socio-territorial structures that allow the bioeconomy to be realized as a process and not just as a product. They are invisible because they don't appear on labels, ESG reports or investor *pitches*.

However, it is these structures that keep families in the territory that guarantee the quality of the products and the stability of the chains. As the NAEA researchers state

(2023), the absence of these infrastructures explains why so many policies fail, so many programs don't scale, and so many "Amazonian" products lose connection with their origins.

Faced with these contradictions, we propose that the debate on the bioeconomy in the Amazon be refocused on a systematically neglected element: the invisible infrastructure that supports the very possibility of a forest-based economy. Contrary to what the dominant approaches indicate, the Amazonian challenge is not just about creating new products or sophisticating export chains.

Rather, it lies in the absence - or fragility - of the structural conditions that make it viable to remain productive in the territories: access to regularized land, stable energy networks, functional river transport, digital connectivity, working capital adapted to the logic of the forest and technical and institutional support systems in tune with the natural and social cycles of the region. Because these conditions are absent from official discourse and investment models, they remain invisible. But their absence defines the contours of what is or isn't possible to produce, market and maintain with fairness and scale.

It is in this sense that we introduce the concept of pre-productive arrangements as a fundamental analytical and political category. Although not new, the term is often neglected in debates on productive development. It refers to the set of elements, capacities and articulations that precede the start of production itself, but which make it viable, safe and sustainable. It is a matter of recognizing that no production cycle can be built from scratch and that a minimum territorial base is needed.

This includes everything from legal and regulatory frameworks, through technical assistance, territorial trust networks, access to public services and institutional support mechanisms, to training and social organization processes. Without these arrangements, there is no way of talking about "market access" or an "impact bioeconomy". Investing in pre-productive arrangements is not just a technical prerequisite, but a political choice that reveals who you want to build the future of the Amazon bioeconomy for - and from where.

When we look in this direction, i.e., at the moment before production and the prospect of profit, we realize that the transition to a real Amazonian bioeconomy, based on justice, permanence and regeneration, requires inverting the logic of the shop window. Instead of starting with the product and trying to fit it into market narratives, we need to start with the territory, with the basic conditions that make sustainable production possible with local protagonism.

This ultimately means recognizing that without solid pre-productive arrangements, strengthened community governance and grassroots financing, there is no bioeconomy possible, only marketing and a promise that will never be fulfilled. And it also means that the forest doesn't need to be reinvented to fit the market, what needs to be reinvented is the market to fit the forest.

5. Invisible infrastructures and the structural void in Amazonia: the challenge of grassroots arrangements

The idea that the Amazon represents a frontier of sustainable economic possibilities has become almost a consensus in development agendas and international politics. However, few analyses manage to recognize that these possibilities are severely limited by the absence of minimum structural conditions in the territories.

It is in this context that the central finding of this section emerges*: without pre-productive arrangements, the forest continues to produce promises - but not prosperity.* The promise remains at the level of projections, whether in the form of exotic products, ethical markets or regenerative narratives, but prosperity is not realized, because the real field of production lacks firm ground, energy, governance, pacts and continuity.

In this sense, we can see that the emergence of the bioeconomy as a development vector for the Amazon has aroused widespread political, business and institutional interest. However, this mobilization has failed to tackle the biggest problem: the main bottleneck in the Amazon bioeconomy is not market access or the lack of innovative products, but rather the unbuilt base that should make these products viable, scalable and sustainable in the long term. This structural void is what we call the "abyss of basic arrangements".

Let's take a closer look at these invisible infrastructures. As we well know, they don't appear on the product label, in the company's sustainability report or on the packaging that reaches the shelf. But without them, there is no bioeconomy. We're talking about

- Land regularization and legal security of territories;
- Technical and organizational training for communities and small producers;
- Local governance and clear inter-institutional pacts;
- Access to energy, digital connectivity and basic logistics;
- Credit models adapted to the reality of the forest;
- An environment of trust, permanence and continuity.

Without these infrastructures, the Amazon remains at the level of a promise, a producer of speeches and symbols, but lacking the installed capacity to transform these assets into shared prosperity. One of the Amazon 2030 project's reports on exports of forest-compatible products shows that the region's enterprises maintain a share of less than

0.2% in the global markets for these products, despite their vast potential (COSLOVSKY et al., 2021).

Furthermore, the analysis of economic dynamism in the region reveals that the generation of jobs and qualified income continues to be concentrated in urban and bureaucratic sectors, while the territories where sociobiodiversity chains are concentrated remain marginalized (GONZAGA et al., 2021). There is a systematic disconnect between the rhetorical space of green development and the places where it actually needs to happen.

The financialization of the bioeconomy - via funds, investment platforms and promises of returns - operates as if the "foundation" were in place; as does the recurring bet on the "acceleration" of startups, often mobilized as an almost automatic solution to boost impact businesses in peripheral contexts. But the truth is that it isn't. In practice, many of these programs reproduce logics and metrics developed in urban ecosystems in the South and Southeast of Brazil or in highly capitalized global contexts, disregarding the reality of Amazonian ventures that operate under logistical scarcity, land insecurity, low connectivity and strong dependence on local networks of trust.

The result is a persistent asymmetry between the resources available for investment and the effective capacity to absorb them. An asymmetry that is fundamentally explained by the absence of the support that should sustain any productive cycle fairly and permanently, but not only. It is also due to the fragility of local institutional arrangements, the scarcity of appropriate technical training policies, the difficulty of forming ongoing support networks and the lack of intermediary mechanisms that connect the available capital with the socio-economic realities of the forest.

We can therefore conclude that financialization and acceleration alone are no substitute for a lack of grounding, long-term plans and a connection between the capital invested, territorial vocations and development support networks, which are fundamentally at the service of supporting the quality of life of those who produce the forest's goods. Without an ecosystem that recognizes and finances these bases, support programs tend to operate like shortcuts that don't reach their destination.

The same discouraging scenario applies to public policies, which remain fragile, discontinuous and fragmented. We believe that the Brazilian state abandoned the idea of structural induction for territorial development too soon, but that's a subject for another article. As a study on qualified employment in the Amazon region shows (GONZAGA et al., 2021), there was a retraction of more than 23% between 2012 and 2019 in high-skilled jobs in the Legal Amazon, reflecting the region's difficulty in

attracting and retaining talent - a problem that is exacerbated in inland and productive territories.

It is necessary to distinguish and articulate two complementary concepts: pre-productive arrangements and pre-competitive arrangements. The former refer to the minimum material and institutional conditions that make it possible to produce with dignity and permanence: land regularization, policies to support family production, functional logistics networks, access to energy, technical training and community governance. These elements, often invisible in the product, are the silent foundations of any production cycle that claims to be fair, resilient and continuous.

Pre-competitive arrangements, on the other hand, although related, operate on a different level: they deal with the creation of collective structures that precede direct competition between actors in the same value chain. Instead of isolating enterprises in the race for the market, they promote forms of strategic collaboration that reduce costs, expand scale and strengthen territorial identity.

They include, for example, shared processing centers, joint certifications, marketing platforms and collective promotion, as well as coordinated investments in applied research and distributed technological infrastructure. These are institutional mechanisms that create an environment for cooperation in territories with low productive density and high social and economic fragmentation.

This conceptual distinction is essential. Without pre-productive arrangements, the bioeconomy cycle doesn't even begin. And without pre-competitive arrangements, even enterprises that manage to produce cannot compete in markets that demand standardization, traceability, volume and constancy. Several studies show that collective action and shared governance are key elements for forest producers to overcome the structural fragmentation of their chains (FURTADO; SCOTT; LIMA, 2023).

Successful initiatives in the field of specialty coffees, Amazonian nuts or the cocoa chain in Pan Amazon confirm that when these two levels of arrangement are articulated, the result is value generation with territorial permanence. Pre-productive and pre-competitive arrangements, when conceived in an integrated manner, not only make it possible to start production cycles, but also to stabilize and expand them in cooperative networks.

As some of the Amazon 2030 project's studies suggest, the absence of these bases has produced a market of opportunities that is occasional, fragile and dependent on external intermediation (COSLOVSKY et al., 2021). The real strategic shift towards the Amazon

bioeconomy requires the patient construction of these bases, with financial, technical and political support articulated between multiple actors.

To do this, it is necessary to mobilize not only conventional development instruments, but also new forms of international cooperation and strategic philanthropy. Unlike traditional investment, these actors can - and must - operate where the market cannot reach. We're talking about institutional voids, diffuse risks and grassroots structures. They can take on the task of investing in what doesn't appear on the immediate impact charts, but which is absolutely necessary if the bioeconomy is to stop being a narrative and become a stable, rooted and fair practice.

Ignoring this minimum basic architecture means insisting on a logic of "aerial" promotion, in other words, projects that fly over the territory without landing, calls for proposals that demand prerequisites that are disconnected from reality, and investment programs that replicate the failures of the conventional market. Overcoming this structural void requires intersectoral pacts and coordinated investments in logistics platforms, technical support programs and hybrid financial instruments. Above all, it means recognizing that it is not a question of financing products, but of building systems that make them possible and sustainable over time. This is the subject we propose to develop in the next section.

6. Philanthropy and international cooperation: investing in the unseen

The construction of a rooted and fair bioeconomy in the Amazon cannot do without the active presence of actors capable of taking risks, operating with patience and investing in the invisible. In a territory where the lack of basic infrastructure, legal insecurity and institutional fragility are structural realities, conventional funds and short-term investments tend to fly over the challenges without landing effectively.

This is where philanthropy and international cooperation can and should play a strategic role. What investors see as a risk, philanthropy needs to be seen as a mission.

Instead of seeking only measurable returns in the short term, philanthropic capital has the vocation and legitimacy to finance what sustains the Amazon's productive cycles: territorial arrangements, local capacities, networks of trust and pacts that prepare the ground for development that respects the rhythms of the forest and the rights of those who live in it.

Alongside traditional philanthropy, there is an important movement to overcome the classic model of corporate social responsibility, marked by one-off actions that are disconnected from local dynamics. In its place, more integrated forms of corporate

action are emerging that seek to align social objectives with the sustainability of the territories in which they operate.

As proposed in the Charter of Collaborative Philanthropy for Sustainable Regional Development in the Amazon (GIFE, 2022), there is growing recognition that companies must make long-term commitments to institutional, economic and environmental strengthening in the regions where they operate. Territorial prosperity is now understood not as a by-product of business activity, but as part of its strategic mission.

Although there is growing international interest, the philanthropic resources earmarked for the region are insufficient to meet the magnitude of the needs. According to the Amazon Investor Coalition, since 2015, around US$108 million a year has been directed towards protecting the Amazon. However, this amount represents a tiny fraction of the investments needed to consolidate sustainable value chains and strengthen local communities.

This is where the link between companies, business institutes, cooperatives and community organizations and the global philanthropy infrastructure becomes essential. Simply donating resources or supporting campaigns is not enough to tackle the region's structural blockages.

What is expected of modern corporate philanthropy is its ability to co-create solutions with local actors, contributing managerial expertise, institutional influence and financial stability to systemic transformation projects. According to the Ethos Institute (2023), the role of companies in developing resilient territories requires the direct commitment of business leaders to local agendas, recognizing that shared value arises from reciprocity.

The global philanthropy crisis is further exacerbating this scenario. According to the Organization for Economic Cooperation and Development (OECD), official international aid will fall by 7.1% in 2024, marking the first drop after five years of consecutive growth. This decline reflects a downward trend in investment in social and environmental causes, especially in regions like the Amazon, which rely heavily on external support to implement structuring projects. By 2025, the outlook could be much worse.

The US government's decision to end USAID's activities in Brazil and around the world exemplifies this retraction. In 2024, the agency earmarked US$22.6 million for the country, with more than half going to environmental initiatives. The closure compromised at least R$84 million in projects, directly affecting conservation and sustainable development programs in the Amazon region (see PRIZIBISCZKI, 2024). This measure highlights the vulnerability of local actions to external political decisions and underscores the need to diversify funding sources.

In this context, international philanthropy, European cooperation, Family Offices and other philanthropic entities have a crucial role to play: investing in what the market can't reach - the first. This means directing resources towards strengthening the foundations that underpin the bioeconomy, such as technical training, territorial governance, connectivity and minimum infrastructure. These investments are essential for creating an environment conducive to the development of local initiatives, allowing Amazonian communities to take the lead in their own development processes.

It's worth noting here that approaching multilateral organizations, cooperation networks, sub-national governments and local organizations are well-received strategies. Even in the third sector, there is fierce competition between established and emerging players for philanthropic resources. Often, in this field, the imbalance between the "brands" shows its negative facets. Thus, support networks, inter-municipal consortia and public-private partnerships can be interesting ways of promoting philanthropy.

Furthermore, with the departure of a major global player on the international philanthropy scene like USAID, organizations, even the most traditional ones, have had to look for funding alternatives. Countries and organizations are also adjusting to this new scenario and there is room for new and better narratives, the rise of projects, coalitions and new actors.

The work of organizations such as the Sustainable Amazon Foundation (FAS) and the SOS Amazon Foundation demonstrates the positive impact of investments in training and infrastructure. FAS, for example, has implemented projects to reduce deforestation and preserve biodiversity, improving the quality of life of traditional populations. These experiences show that strategic investments in pre-productive and pre-competitive arrangements can generate meaningful results in terms of sustainability and social inclusion.

However, it is necessary to recognize that philanthropy in Brazil still faces structural challenges. Data from the GIFE 2022-2023 Census indicates that the majority of philanthropic resources are concentrated in the Southeast and are managed by organizations with a mostly white profile and linked to business interests (CENSO GIFE, 2023). This concentration limits the reach of philanthropic efforts in regions such as the Amazon, where needs are more pressing and resources scarcer.

To overcome these limitations, it is essential that philanthropy adopts a more decentralized and inclusive approach, strengthening local organizations and promoting the active participation of communities in decision-making processes. Experiences in strengthening Indigenous protagonism and in the sustainable management of territories

show that it is possible to develop models of action based on autonomy and valuing traditional knowledge.

In addition, it is important that philanthropy commits itself to long-term funding, guaranteeing the continuity and sustainability of the initiatives it supports. Patient capital is essential to allow structuring projects to mature and generate lasting impacts. Without patient capital to prepare the ground, productive capital will continue to fly over the forest without ever landing. This perspective reinforces the need to align philanthropic investments with the specificities and rhythms of Amazonian communities.

Philanthropy can also play a strategic role in bringing together different players and promoting inter-institutional partnerships. By acting as a catalyst for initiatives and facilitating dialogues, it can contribute to building a common agenda aimed at the sustainable development of the Amazon. This collaborative approach is fundamental to tackling the complex and interconnected challenges that characterize the region.

Last but not least, philanthropy and international cooperation must commit to strengthening the invisible infrastructures that sustain the Amazon bioeconomy. Investing in those things that are of little or no interest to big business is essential to creating the conditions necessary for local communities to develop their own solutions and achieve prosperity. By recognizing and supporting these structures, philanthropy can play a transformative role in building a fairer and more sustainable future for the Amazon.

7. Access to the market must start in the territory: global co-responsibility for the bioeconomy's infrastructure

Over the last few decades, the debate about the insertion of the Amazon into so-called "sustainable markets" has been dominated by the rhetoric of access: access to the European market, access to ethical supply chains, access to green buyers. The emphasis is on certifications, traceability, phytosanitary requirements and regulatory compliance. Most investment projects introduce the costs of these missing elements as project costs and, more often than not, the *payback* account doesn't close, or the lead time becomes too long, because the core problem is not tackled in a broad and transformative way.

However, this excessive focus on the exit door, on the destination, obscures what actually prevents the Amazon from fully participating in these markets - the lack of structural conditions in the territories where these products originate. Real market access is not built from the point of arrival. It has to start at the point of origin, and that point still lacks almost everything.

It is necessary to reframe what is meant by "market access" in contexts such as the Amazon. It's not just about allowing Amazonian products to reach international routes more easily. It's about ensuring that Amazonian territories have access to the productive infrastructure, land rights, technical assistance and institutional stability that make it possible for them to remain in productive activity with regularity, quality and equity.

The forest doesn't participate in the global market because it lacks roads, energy, connectivity, adapted credit, human capital and strengthened local institutions. As long as these gaps are not addressed, any talk of international integration will be a symbolic arrangement at best - and an unfair one at that. Without investing in the ground that sustains production, the international market will continue to demand results from a territory that still needs to guarantee the basics in order to exist with dignity.

Added to this is a growing contradiction in the new demands of global markets. Regulations such as the EU Deforestation Regulation (EUDR) and climate neutrality commitments demand fully traceable, deforestation-free and carbon-neutral chains. But few resources are allocated to strengthening the community, and a technical and logistical base that would allow these criteria to be met.

In the last two years, several European leaders have started to relax their environmental targets in the face of internal pressure. The revision of points in the so-called European Green Deal, protests by farmers in countries like Germany and France, and the partial moratorium on the application of some climate regulations signal a shift in commitment to environmental sustainability in the Global North itself.

Although some of these measures respond to legitimate demands for food security and economic stability, they reveal a worrying trend: that ESG commitments have not been implemented with the same rigidity in the countries that promote them as is expected of those in a position to supply raw materials and biodiversity. Demanding full compliance with international environmental standards from the Amazon, without providing the minimum structural resources to make it possible, deepens an asymmetry of expectations and capacities that is already historically unequal.

This, however, should not be interpreted as a criticism of ESG principles or regulations such as the EUDR, but as a call for coherence and global co-responsibility. Compliance with environmental standards must be universal, but the conditions for compliance must be equally universal. This requires that the countries and markets that set these requirements also contribute financially to building the local capacities needed to implement them.

Instead of relaxing the rules for some and radicalizing them for others, the challenge is to strengthen the base of vulnerable territories, so that the ESG does not become a

mechanism of exclusion disguised as ethics. Without this balance, the very spirit of the just transition, which should guide the new global green pact, will be eroded by internal contradictions.

The Amazon is being called upon to operate according to European standards, but without having received the equivalent investments that these requirements presuppose. This asymmetry jeopardizes not only the inclusion of Amazonian enterprises in ethical chains, but the very meaning of the global ecological transition, which risks becoming yet another system of exclusion camouflaged by good intentions. It is therefore necessary to build a new logic of action based on global co-responsibility. If the Amazon bioeconomy is considered a global solution, then the countries, companies and institutions that benefit from this potential must co-finance its material and institutional base.

This means investing in solutions for land regularization, the implementation of collective processing centers, training platforms, shared certification structures and territorial governance networks, entrepreneurial education, financial management and effective management. It's not about doing charity, of course. It's about making the very market you want to foster possible. Financing forest infrastructure cannot be seen as an externality: it is the actual cost of a just economic transition.

There are experiences that point to viable paths, albeit sparse ones. Initiatives such as the Alianza Cacao program in Peru, which combines European funding with local technical support and community coordination, show that it is possible to structure tropical production chains with a focus on inclusion, traceability and territorial prosperity. In Colombia, the Territorios Amazónicos Sostenibles para La Paz (TASP) project, supported by GIZ, works with indigenous and Afro-descendant communities to strengthen chains such as cocoa, honey and non-timber forest products.

In Ecuador, the Bioeconomía para el Desarrollo Sostenible de la Amazonía Ecuatoriana initiative, supported by the Ministry of the Environment and the FAO, seeks to leverage sustainable production models by adding value to socio-biodiversity. In Bolivia, networks such as the Red de Agroindustria Amazónica have strengthened community-based businesses focused on Brazil nuts and açaí, with support from international NGOs and European funds. And in Brazil, partnerships between cocoa cooperatives and European buyers, which include counterparts in infrastructure and certification, have created replicable models of integration with justice.

But these cases are still exceptions. What is lacking is a coordinated strategy of scale. A multilateral effort that recognizes the Amazon as a productive ecosystem and not just as an extractive reserve.

The Conference of the Parties to the Climate Convention (COP30), to be held in Belém, represents a historic opportunity to reposition this agenda. More than presenting the Amazon as a destination for green investments or a showcase for the regenerative bioeconomy, Brazil and its partners need to propose a Global Pact for Amazon Bioeconomy Infrastructure.

A pact that establishes clear funding commitments for the fundamentals that make the forest economically active with equity. A pact that brings together development banks, climate funds, sub-national governments and private actors around structuring investments in the forest's productive base - and not just in its exportable results.

In this innovative design, the Amazon is no longer an environmental liability to be compensated for and is now recognized as a platform for socio-economic and climate innovation of global interest. But for this to happen, resources - public, private, philanthropic or commercial - need to arrive first. Before the market, before the carbon, before the measurable impact. Access to the global market is not an end point: it's a process that starts on the forest floor. And that ground needs to be financed, agreed and protected so that the forest can, in fact, negotiate with the world - not with submission, but with sovereignty.

This agenda of co-responsibility and co-funding of the Amazon base also resonates with commitments made in the South American diplomatic sphere. The Letter from Belém, signed at the Presidential Summit on the Amazon in 2020, already recognized the need to promote a sustainable development model for the region, centered on valuing the standing forest, the rational use of natural resources and social inclusion as premises for any regional or global cooperation pact (CARTA DE BELÉM, 2020).

Repositioning the Amazon as a platform for climate innovation and productive justice, therefore, is not just an ecological urgency - it is also a diplomatic commitment made by the Amazon nations themselves.

8. COP30 as a turning point: from discourse to pact

The COP30 in Belém, in the heart of the Brazilian Amazon, represents more than a symbolic milestone, it is a political and geo-economic turning point that could redefine the region's role in the global climate, biodiversity and development agendas.

For the first time, the debates on ecological transition and climate justice will take place not in the central halls of the Global North, but on the banks of the Amazon rivers, where the impacts of the environmental crisis are daily and the solutions require territoriality, time and a pact. This geographical decentralization needs to be accompanied by a conceptual decentralization: it's time to shift the focus from the shop window to the

territory, from the product to the foundations that support it, from the narrative to the materiality of investments.

For decades, the dominant discourse on the Amazon in international forums has centered on a logic of conservation linked to containment. Contain deforestation, contain emissions, contain the advance of the frontier. But containment alone does not transform. We need to set in motion a new language of international cooperation that recognizes the Amazon as a common planetary asset, not just for its ecological function, but for its capacity to produce climate, food and economic solutions from the forest floor, provided that this floor is financed, agreed upon and protected.

This COP cannot just be the stage for new compensation commitments; it must be the starting point for a global alliance for living forest infrastructure. To this end, we propose that COP30 be the inaugural moment of an International Pact for the Invisible Infrastructures of the Amazon Bioeconomy. A pact that goes beyond announcements of green funds and fragmented pilot programs. A pact that brings together governments, development banks, climate funds, philanthropic institutions, investors and civil society around a new equation of co-responsibility, in which public and private resources are committed to the bottom, and not just to the top of production chains.

This pact must recognize that without solid pre-productive and pre-competitive arrangements; the Amazon bioeconomy will remain a promise and a showcase - but not a historic transformation project.

This requires, among other measures, coordinated financing instruments for land regularization, basic technical assistance, logistical structuring, territorial governance and shared technological infrastructure. It requires strengthening local institutions, valuing traditional knowledge, legally recognizing ways of life and adapting development instruments to the real time of the forest that doesn't run, but walks.

COP30 must take on the challenge of financing the transition time and building the means for the peoples of the Amazon to be agents of the bioeconomy and not just suppliers of raw materials or carbon data. The forest doesn't need yet another roadmap of promises; it needs infrastructure, permanence and the redistribution of power.

By taking place in Belém, this major event has the opportunity to show the world that the future of the green economy and climate justice begins with recognizing what almost never appears: the foundations, the care and the alliances that support everything we want to see stand. The pact for the living forest will primarily be a pact for what has not yet been done but urgently needs to begin.

9. Conclusion: building the invisible, sustaining the future

The Amazon bioeconomy has been repeatedly presented as one of the most promising ways to tackle the climate crisis and create sustainable economic alternatives in the 21st century. It occupies speeches at international summits, government plans, business reports and investment promises. But this celebration, so often made from the outside in, is based more on projections than on real structures. In many cases, what is presented as a model for the future lacks the essentials to exist in the present. What's missing isn't purpose - it's foundation. And without a foundation, any profound transformation becomes unfeasible.

Throughout this article, we have argued that the bioeconomy needs to stop being treated as a market product and start being understood as a systemic process that begins long before the commercialization of a good and goes far beyond the aesthetics of sustainability. For this process to be possible, it is necessary to recognize - and finance - what is at the origin: the invisible infrastructures that sustain productive permanence, organizational autonomy and the local capacity for adaptation.

These infrastructures don't appear on labels, but they are behind everything that can flourish with equity: land regularization, energy, connectivity, logistics, technical assistance, territorial governance, cooperation networks and adequate credit mechanisms.

Without these conditions, what we have is a cycle of broken promises. Good businesses emerge - and resist - but do not scale up. Innovative products are developed, but they cannot find distribution channels. Entire chains operate in a state of improvisation. And the communities that sustain the forest economically continue to face barriers to access that go far beyond the market: they are institutional, legal, technological and cultural barriers.

This is not the fault of the forest peoples, it is the fault of the system that should recognize them as strategic partners in the global ecological transition. The bioeconomy, as it is structured today, still operates as the exception, not the rule.

Our proposal is therefore a reversal of logic. Instead of continuing to look for solutions in the final layers - branding, exports, carbonification - we should turn our attention to what needs to be done first: building the ground on which this economy can walk with dignity. It's time for a pact that finances the invisible, connects territories, shares responsibilities and creates permanence.

This pact must recognize that the Amazon already has power, diversity and accumulated intelligence - what is lacking is not capacity, but co-financing. It's not about charity, it's about vision. What is at stake is not just the viability of a regional model, but the coherence of a planetary sustainability project.

The forest is ready. It provides food, medicine, ways of life, climate regulation, culture and knowledge. What's missing is a system that recognizes it. What's missing is funding that comes before impact, before measurement, before sale. Without this, we will continue to repeat slogans while missing out on real opportunities.

The challenge of COP30, and of the years that follow it, is precisely this: to transform the promise of the bioeconomy into state policy, development policy and global alliance policy. This can't be done with a showcase. It's done with a base, a pact and the courage to start where no one can see.

10. Bibliography

AGÊNCIA DE NOTÍCIAS DO ACRE. *Com incentivos do governo, Xapuri é a terceira cidade com maior produção de castanha no Brasil*. Disponível em: https://agencia.ac.gov.br/com-incentivos-do-governo-xapuri-e-a-terceira-cidade-com-maior-producao-de-castanha-no-brasil/. Acesso em: 21 maio 2025.

ALIANZA CACAO PERÚ. *Boletín de resultados: Cadenas de valor del cacao y la agroforestería amazónica*. Lima: Alianza Cacao Perú, GIZ, 2021. Disponível em: https://alianzacacaoperu.org. Acesso em: 20 maio 2025.

AMAZON INVESTOR COALITION. *Filantropia*. Disponível em: https://amazoninvestor.org/pt/filantropia/. Acesso em: 20 maio 2025.

AMAZON INVESTOR COALITION. *Finance Amazonia Report*. 2022. Disponível em: https://amazoninvestor.org. Acesso em: 25 abril 2025.

BRASIL. *Carta da Presidência da COP30*. Belém: Presidência Brasileira da COP30, jan. 2024a. Disponível em: https://cop30.br/pt-br/presidencia-da-cop30/carta-da-presidencia-brasileira. Acesso em: 24 maio 2025.

_____. *Segunda Carta da Presidência da COP30*. Belém: Presidência Brasileira da COP30, fev. 2024b. Disponível em: https://cop30.br/pt-br/presidencia-da-cop30/cartas-da-presidencia/segunda-carta-da-presidencia-brasileira. Acesso em: 24 maio 2025.

_____. *Terceira Carta da Presidência da COP30*. Belém: Presidência Brasileira da COP30, abr. 2024c. Disponível em: https://cop30.br/pt-br/presidencia-da-cop30/cartas-da-presidencia/terceira-carta-da-presidencia-brasileira. Acesso em: 24 maio 2025.

BONAIUTI, Mauro. *The Great Transition: Degrowth and the challenge of sustainability*. London: Routledge, 2014.

CAPITAL RESET. Por que a Ajinomoto se interessou pela startup do tucupi. *Capital Reset*, 2023. Disponível em: https://capitalreset.uol.com.br/amazonia/bioeconomia/por-que-a-ajinomoto-se-interessou-pela-startup-do-tucupi/. Acesso em: 24 maio 2025.

CARTA DE BELÉM. Declaração da Cúpula Presidencial da Amazônia. Belém, 2020. Disponível em: https://www.gov.br/mre/pt-br/assuntos/noticias/discursos-artigos-e-entrevistas/discursos-do-ministro/d2020-09-18-carta-de-belem-cupula-presidencial-da-amazonia/view. Acesso em: 24 maio 2025.

CENSO GIFE 2022-2023. *Especial RedeGIFE*. Disponível em: https://gife.org.br/especial-redegife-censo-gife-22-23/. Acesso em: 20 maio 2025.

COMISSÃO EUROPEIA. *Just Transition Mechanism*. Brussels: European Commission, 2023. Disponível em: https://ec.europa.eu/info/strategy/priorities-2019-2024/european-green-deal/finance-and-green-deal/just-transition-mechanism_en. Acesso em: 21 maio 2025.

COSLOVSKY, S. V.; VERÍSSIMO, A.; JARA, J. *Oportunidades para exportação de produtos compatíveis com a floresta na Amazônia brasileira*. Amazônia 2030, 2021. Disponível em: https://amazonia2030.org.br. Acesso em: 05 maio 2025.

COSTA, F. A. *Desenvolvimento sustentável, acordos verdes e bioeconomias na Amazônia*. Belém: UFPA, 2022.

COSTA, F. A. et al. *Bioeconomia da sociobiodiversidade no estado do Pará*. Brasília, DF: The Nature Conservancy (TNC Brasil), Banco Interamericano de Desenvolvimento (BID), Natura, 2021. Disponível em: https://tnc.org. Acesso em: 25 abril 2025.

EUROPEAN COMMISSION. *Bioeconomy – the European way: policy, challenges and opportunities*. Brussels: EC Directorate-General for Research and Innovation, 2021.

EUROPEAN COMMISSION. *Regulation (EU) 2023/1115 of the European Parliament and of the Council on deforestation-free products*. Official Journal of the European Union,

2023. Disponível em: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A32023R1115. Acesso em: 20 maio 2025.

FAO; MINISTERIO DEL AMBIENTE DEL ECUADOR. *Bioeconomía para el desarrollo sostenible de la Amazonía ecuatoriana*. Quito, 2022. Disponível em: https://www.fao.org. Acesso em: 21 maio 2025.

FUNDAÇÃO AMAZÔNIA SUSTENTÁVEL. Wikipedia. Disponível em: https://pt.wikipedia.org/wiki/Funda%C3%A7%C3%A3o_Amaz%C3%B4nia_Sustent%C3%A1vel. Acesso em: 20 maio 2025.

FURTADO, A. T.; SCOTT, C. A.; LIMA, M. A. *Arranjos pré-competitivos e coordenação institucional na bioeconomia da Amazônia.* In: UNIVERSIDADE FEDERAL DO PARÁ. *Reflexões sobre a Amazônia Legal em uma Perspectiva para o Desenvolvimento Socioambiental*. Belém: NAEA/UFPA, 2023.

GEORGESCU-ROEGEN, Nicholas. *The Entropy Law and the Economic Process*. Cambridge: Harvard University Press, 1971.

GIZ – DEUTSCHE GESELLSCHAFT FÜR INTERNATIONALE ZUSAMMENARBEIT. *Amazonía 2.0: Gobernanza territorial y conservación de bosques*. Bogotá: GIZ Colômbia, 2022. Disponível em: https://www.giz.de/en/worldwide/12931.html. Acesso em: 21 maio 2025.

GOMES, Fernanda; CORDEIRO, Rafael. *O mercado de cacau no Brasil: cadeias sustentáveis e comércio justo*. São Paulo: Instituto Conexões Sustentáveis (Conexsus), 2022. Disponível em: https://www.conexsus.org. Acesso em: 20 maio 2025.

GONZAGA, G.; CAVALCANTI, F.; ALFENAS, F. *Dinamismo de Emprego e Renda na Amazônia Legal: Ocupações Qualificadas e de Liderança*. Amazônia 2030, 2021. Disponível em: https://amazonia2030.org.br. Acesso em: 02 maio 2025.

INSTITUTO ETHOS. *Responsabilidade social empresarial e desenvolvimento territorial sustentável*. 2023. Disponível em: https://www.ethos.org.br. Acesso em: 20 maio 2025.

OCDE. *International aid falls in 2024 for first time in five years*. Disponível em: https://reliefweb.int/report/world/international-aid-falls-2024-first-time-five-years-says-oecd. Acesso em: 20 maio 2025.

OPERAÇÃO AMAZÔNIA NATIVA. Wikipedia. Disponível em: https://pt.wikipedia.org/wiki/Opera%C3%A7%C3%A3o_Amaz%C3%B4nia_Nativa. Acesso em: 20 maio 2025.

PRIZIBISCZKI, Cristiane. *Fim da USAID compromete ao menos R$ 84 milhões em projetos ambientais no Brasil*. O Eco, 2024. Disponível em: https://oeco.org.br/reportagens/fim-da-usaid-compromete-ao-menos-r-84-milhoes-em-projetos-ambientais-no-brasil/. Acesso em: 20 maio 2025.

RED DE AGROINDUSTRIA AMAZÓNICA (RAA). *Experiencias comunitarias en la Amazonía boliviana*. La Paz: RAA, 2022. Disponível em https://www.researchgate.net/publication/362083770_Vivencia_en_la_Amazonia_y_aprovechamiento_de_recursos_naturales_y_frutos_amazonicos_para_mejorar_la_calidad_de_vida_de_las_comunidades. Acesso em: 20 maio 2025.

ROCKSTRÖM, Johan et al. *A safe operating space for humanity*. *Nature*, v. 461, p. 472–475, 2009.

ROVAROTO, Isabela. *Ajinomoto do Brasil faz aporte em foodtech de temperos e molhos do Pará*. *Exame*, 2023. Disponível em: https://exame.com/negocios/ajinomoto-do-brasil-faz-aporte-em-foodtech-de-temperos-e-molhos-do-para/. Acesso em: 21 maio 2025.

SAITO, Kohei. *O Capital no Antropoceno*. São Paulo: Boitempo, 2022.

UNIVERSIDADE FEDERAL DO PARÁ. *Reflexões sobre a Amazônia Legal em uma Perspectiva para o Desenvolvimento Socioambiental*. Belém: NAEA/UFPA, 2023.

USAID; PACTO AMAZÔNIA. *Bioeconomia e investimentos sustentáveis na Amazônia: oportunidades e desafios*. Brasília: USAID Brasil, 2022. Disponível em: https://www.usaid.gov/brazil. Acesso em: 20 maio 2025.

WARABU CHOCOLATES. Warabu Chocolates. Disponível em: https://www.warabu.com.br/. Acesso em: 21 maio 2025.