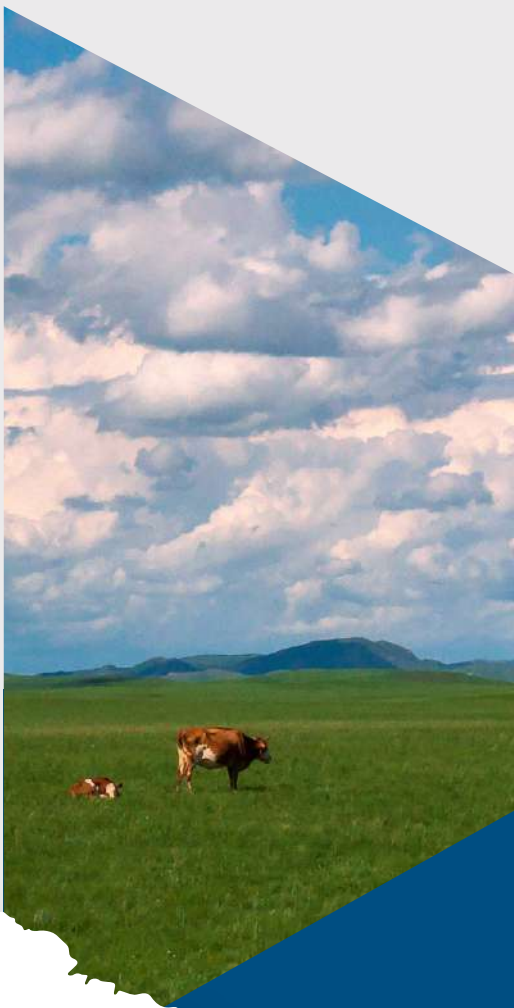
KONRAD ADENAUER STIFTUNG

Regional Programme
Energy Security and Climate Change
in Latin America (EKLA)

ASSESSING SOUTH AMERICAN GREEN ECONOMY

POLICY SOLUTIONS EMERGING FROM NATIVE ECOSYSTEMS

Leonardo Paz Neves
Jade Vasconcellos



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Foreword FGV IIU

Once more, FGV IIU has the pleasure to offer to the public another relevant output of its productive partnership with KAS EKLA.

At the very moment that COP27 is taking place in Sharm El Sheikh, Egypt, we present an original account of green initiatives in perhaps the three most important South American ecosystems: the Amazon, the Pampas and the Andean region.

This work and its findings were only possible due to the significant collaboration received from several stakeholders in the three regions: from technical staff to firm representatives and members of diversified associations. They spent precious time in interviews and talks with our team, and generously participated in group meetings and seminars that provided precious inputs.

We register our hearty thanks to all of them.

Together with our KAS EKLA partner, we hope that the Report will act as seed for further and clever endeavours related to the environmental improvement of our continent.

Renato G. Flôres Jr
Professor, FGV EPGE and Director, FGV IIU

Foreword EKLA-KAS

Freedom, justice and solidarity are the basic principles of the work of Konrad Adenauer Foundation (KAS). KAS is a political foundation, linked to the Christian Democratic Union of Germany (CDU) political party. Konrad Adenauer (1876-1967), co-founder of the CDU and the first German chancellor, managed to unite the social-Christian, conservative and liberal traditions. His name is synonymous with the democratic reconstruction of Germany, the consolidation of foreign policies in a transatlantic community, the vision of the European Union and the orientation of the social market economy. His intellectual legacy continues to be both a mission and a commitment to us.

For KAS, energy security and climate change have become an important piece in the structure and maintenance of a democratic social order. In this context, the **Regional Programme Energy Security and Climate Change in Latin America (EKLA)** has been designed as a platform for dialogue, in order to promote the political decision-making process on these issues. For this, we organize regional discussion forums, conferences and seminars, as well as reports, specialized publications and studies in close collaboration with the local offices and other regional programs of the Konrad Adenauer Foundation in Latin America, as well as with national and international partner organizations.

The publication "**Assessing South American Green Economy – Policy Solutions Emerging from Native Ecosystems**", was carried out with our partner FGV IIU, and as shown in the previous paragraphs, we believe this publication represents yet another input of our involvement in climate policy in the Latin American region and our concern with policy solutions. Green economy, the theme of this new publication is defined as low carbon, resource efficient and socially inclusive, according to UN Environment. More specifically, it allows us to talk about economic sectors such as forestry, agriculture, mining, fishing, among others, while taking into account environmental factors, such as protecting water sources and biodiversity or reducing greenhouse gas emissions; support workers' rights; and focus on specific parts of the production processes.

The Native Ecosystem of the region is really diverse and with distinct particularities, and that's why we based our study on 3 specific ecosystems. With this, we discuss Green Economy initiatives in the **Andes**, in the **Amazon** and in the **Pampas**. Economic and sustainable solutions have to be designed based on the particularities of each system while taking into account environmental, social and economic development all together.

We would also like to thank everyone involved in this study and wish you all a pleasant reading!

Nicole Stopfer
Director of EKLA-KAS

Introduction

ASSESSING SOUTH AMERICAN GREEN ECONOMY

POLICY SOLUTIONS EMERGING FROM NATIVE ECOSYSTEMS

The traditional predatory economy model carried out in South America has been the dominant rationale for the connection between development and original ecosystems, such as the Amazon rainforest or the Pampas grasslands. Most economic activities follow a dual pattern of territorial expansion and natural resource exploitation. This traditional perspective is not only entrenched in societies' perceptions but also has considerable support among political and economic leaders.

Over the last few decades, various concepts have gained ground and evolved quickly. Bioeconomy, sustainable development, and the green economy are some of these concepts that show people are concerned about modern society's climate and socio-environmental challenges. Their widespread adoption points to the importance of comprising them in academic debates, legislation, and business practices.

In that sense, a new approach has emerged. It confronts the causal relationship between exploitation and growth and fosters the idea that conservation and development are not mutually exclusive.

Green Growth and Green Recovery have been gaining traction in recent studies, and some initiatives are following suit. They show an enormous economic and developmental potential to (1) promote alternative forest products, (2) engage local communities in new production patterns, (3) improve 'ecommodities' (environmental commodities) value chains, and even (4) create disruptive innovation by focusing on those regions' biodiversity in sectors such as pharmaceutical and cosmetics.

The 'Green New Deal' type of policies is a clear and more contemporary embodiment of these policy efforts to achieve long-term sustainable growth. They have generated momentum for a significant increasing policy shift, enabling sustainable economic initiatives linked to the green economy. Seizing those prospects comes with some inherent challenges on many fronts: it requires investments in infrastructure and technology, community participation and empowerment, technical and capacity building, policy engagement, mindset transformations, and new cooperation schemes to build innovative market structures.

Green economy schemes encompass regionally sustainable solutions and might be the benchmark for national recovery plans to establish a new sustainable development pattern and to reposition South America on the global environmental agenda.

The objective of this study was to provide inputs to contribute to the green economy debate, focusing on the economic sustainability of its initiatives.

The objective of this study was to provide inputs to contribute to the green economy debate, focusing on the economic sustainability of its initiatives. To accomplish this, we examined three different important biomes on the South American subcontinent: the Amazon Forest, the Andes Mountains, and the Pampas Grasslands, and then the initiatives regarding green economy adopted in the countries where these ecosystems are located. To better organize the report's rationale, we started by addressing a crucial part of the debate: its conceptions. Although it may sound overly scholarly, it has extensive policy ramifications. A good understanding of the principles enables us to address important questions that often cloud the debate. As previously stated, updating and reinforcing specific terminology and concepts required the addition of a variety of factors that would make them more robust and have a more significant impact, such as indicators, goals, and the social dimension, in addition to environmental concerns.

Arguing how to approach them is another crucial aspect of having clear notions. Providing natural gas and nuclear power with a 'green label' is an essential topic in the European Parliament. Such a change is not inconsequential, as it would entail a substantial influx of new investments and an increase in subsidies for these energy sources. As part of the ongoing discussion is determining whether a green economy refers to a specific number of sectors and activities that are inherently sustainable, or whether it should be viewed more as a philosophy that entails becoming as efficient, environmentally friendly, and socially responsible as possible. If the latter is to be observed, it is reasonable to incorporate the crucial efforts of mining and logging into the green economy framework to become as sustainable as possible. This is especially vital in view of the green economy's resource-intensive logic, whose transformation would demand large amounts of minerals.

The following objective of this report was to examine the green economy as a policy. Here, we have attempted to provide a concise overview from the perspective of the Global South, particularly in contrast to the dominant viewpoints in emerging nations. In addition to this review, we also presented a typology designed by Carl Death which helps us to understand how different countries approach the topic of green economy and the related reasons. We provided a brief overview of the status of a green economy in South America, where we attempted to map the existing green economy efforts.

After that, we adopted a more pragmatic strategy. In chapter three, we provide the findings of a comprehensive mapping effort of existing projects in the three economically feasible and sustainable biomes. The intention was not to build a detailed map of all enterprises in those regions. Instead, we endeavored to provide a variety of initiatives that, in our opinion, not only represent their rich diversity but might also be considered authentic good practices with much more to offer for other entrepreneurs interested in conducting sustainable business.

Lastly, besides a review of the green economy literature, the study relied on multiple meetings and interviews with a vast array of actors from the three regions. The goal was to gain a deeper grasp of the practical issues limiting their actions, particularly about launching a viable company endeavor. After speaking with actors from the three different regions and backgrounds, we uncovered several complex issues that hinder their activities and diminish their competitiveness vis-à-vis traditional business practices. Even scratching the surface would require a more in-depth examination to handle all specifics, including location, types, and scope of the mapped and involved commercial activity. Therefore, the report's policy recommendations will focus on structural and transversal issues. Concerns touch upon issues from which nearly all actors in this research would be benefited.

The literature supports the decision to address structural and transversal issues on sustainable development. Porter's Diamond Theory of National Advantage (also known as the Diamond Model) provides a conceptual framework for measuring a nation's competitiveness based on four attributes. Using the Diamond Model, Birner (2018) developed a novel framework for identifying the factors of a country's competitive advantage in bioeconomy development. The four elements of Birner's adaptation are (1) Factor conditions, (2) Demand conditions, (3) Firm structure, strategy, and rivalry, and (4) Related and supporting industries.

Birner's adaptation is particularly pertinent when we delve into the fundamental conditions, which are indeed relevant for the potential development of a green economy, as we could verify during the meetings and interviews. The factor conditions are (i) natural, understood as a country's natural and climate endowments; (ii) labor resources, represented by the qualification and formal education of the country's labor force; (iii) knowledge resource, characterized by the availability of technology, innovation, and research; (iv) capital resources, embodied by the accessibility of investments along the entire length of the value chains; and (v) infrastructure, exemplified by the development of the appropriated channels for communications, transportation, and information. These principles must be the baseline of any comprehensive green economy strategy. ■

CHAPTER 1

Contextualizing Green Economy: background and concepts

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Sustainable and environmentally friendly socio-economic activities have been discussed since the 1970s. **Eco-Development** was the term used back then to aggregate activities which focus on 'essential human needs' and environmental concerns.

In 1972, the concept was first presented at the United Nations Conference on the Environment in Stockholm, Sweden. It was the first time the term 'environment' was introduced as a major international issue. Ignacy Sachs (1977) defined this concept as local development. His viewpoint was centered on the rational use of natural resources and organizational systems that honor the natural ecosystem and social and cultural patterns to ensure that the needs of local communities are meet. It is worth emphasizing that, since its inception, concepts relating to sustainable development have considered social and cultural issues besides just ecological concerns.

In the 1980s, eco-development was primarily replaced by a new concept, an overarching term encompassing several new dimensions: **Sustainable Development**, which was designed to cover a set of ideas that were gaining traction but were not fully covered by eco-development. Among the notable ideas incorporated into the sustainable development concept, it is worth mentioning the integration of conservancy with development, the acceptance of social self-determination and diversity, and the need for justice and social equity, among others.

The 1987 Brundtland Report (1987) first defined sustainable development as "development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs."

Later, it was quickly established at Rio de Janeiro Earth Summit in 1992. Since then, sustainable development has been an organizing principle for environmental and economic sustainability issues.

The United Nations General Assembly (UNGA) adopted the Sustainable Development Goals (SDGs) from 2015 to 2030. The Millennium Development Goals (MDGs), adopted by the UNGA at the Millennium Summit in 2000 and intended to last from 2000-2015, were replaced by the Sustainable Development Goals (SDGs).

The transition from MDGs to SDGs was set to frame the trend in the new development rationale. The MDGs established goals to handle developmental challenges, especially in developing countries. These goals were mainly related to poverty and health issues, although the seed of sustainable development was already contemplated in Goal 7, "to ensure Sustainable Development." The post-2015 development agenda debate acknowledged the cross-cutting character of sustainable development, identifying it as an organizing principle to which an expanded set of goals should be designated, from 8 MDGs to 17 SDGs and 169 targets.

The evolution of these sets of ideas continued as new approaches were introduced and critiques contemplated. Since the late 2000s, a new concept known as the **Green Economy**

has been gathering steam. Because of the striking similarities between the concepts of green economy and sustainable development, both have become increasingly blended (CURADO and BELINKY, 2014).

The notion of a green economy gained prominence, especially after global discussions pushed by the United Nations Program for Environment (UNEP). This green economy initiative has identified its three major characteristics: reduced carbon footprint, resource efficiency, and social inclusion.

For the RIO+20 summit in 2012, UNEP (2011) launched a report going further and proposing new key factors necessary to foster the development of the green economy in countries. Since then, other vital international entities, such as the World Bank, have endorsed the concept as a channel to sustainability.

Concepts and Ideas on Sustainability

According to the UNEP, **Green Economy** is defined as "one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is a low carbon, resource efficient and socially inclusive." (UNEP, 2011. P 01).

The green economy concept has also been closely linked to the idea of **Green Growth**, defined as "fostering economic growth and development while ensuring that the natural assets continue to provide the resources and the environmental services on which our well-being relies. To achieve this, it must catalyze investment and innovation which will underpin sustained growth and give rise to new economic opportunities" (OECD, 2011. P 15).

Previously, green growth referred to a specific 'eco-industry.' However, its definition has extended and now incorporates qualitative growth regarding the effective use of natural resources and its capacity to reduce environmental impacts, such as pollution and predatory exploitation (JÄNICKE, 2012).

Alternately, while the term green growth was initially used to distinguish between sectors that were thought to be sustainable and those that were not, it is now widely recognized as a philosophy or a purpose that has an impact that is more widespread on the entire economy. This new mindset implies a need to enhance efficiency while simultaneously minimizing risks and environmental impacts.

Similarly, green economics is also becoming an "umbrella concept" (LOISEAU et al 2020), as it has been consistently used to describe an increasing array of elements concerning growth, risks, efficiency, use of natural resources and social aspects such as inequality and well-being. Green economy is also closely related to many other concepts and terms that have been widely used by international agencies, the business sector, and the epistemic sustainability community. Some of these concepts and terms are worth highlighting, such as 'bioeconomy.'

First used in the late 1990s, **Bioeconomy** was a key term to define the unsustainable relationship between unlimited economic growth and the fundamental laws of nature, as argued by Georgescu-Roegen (GEORGESCU-ROEGEN 1971 as cited in BONAIUTI 2014, p.54). The term refers to the technological advancements in biological sciences that could affect the transformation of economic and industrial processes.

When European Union adopted the term as the central tenet of its policing concept, it gained widespread recognition. This tendency was especially noticed in the 2005 Commission report "New Perspectives on the Knowledge-Based Bio-Economy" and the Cologne Paper of 2007. Both emphasized the importance of bioeconomy as (1) a key pillar of Europe's economy by 2030, essential to sustainable economic growth, energy supply, employment and to maintain the standard of living through the biotech's logic, and (2) a key element in the transition of the European energy matrix towards renewable energy, by using crops as a feedstock to produce biofuels and other chemicals.

Circular Economy is another concept that has gained momentum in recent years. This term, popularized in the late 1980s by David Pearce and Kerry Turner (1989), refers to the patterns used to close the product loop found in the classical linear logic of economic systems. Its central purpose is to boost resource use efficiency, reduce waste, pollution, and environmental damage, and promote an upward transition in the waste hierarchy chain, by converting the outputs and byproducts of a specific industry into inputs for other industries. Most countries have widely adopted this concept in their green strategies and policies, as well as in their sustainability policies (especially in water usage and waste management).

In line with circular economy and green growth, the concept of **Clean Production** also received attention in sustainable development in the 1990s, especially in UNEP. According to the UNEP, clean production could be understood as "the continuous application of an integrated environmental strategy to processes, products, and services to increase efficiency and reduce risks to humans and the environment" (LOISEAU et al., 2018. p 07).

According to Loiseau et al. (2018), this new approach represented a paradigm shift because it changed the rationale at the time by finding that it was better to focus on preventative strategies rather than treatment techniques.

One critique of the various concepts comprising the green economy umbrella is that they do not pay enough attention to the industrial and services sectors. Cleaner production has also raised a counter-argument to this criticism.

Recently, UNEP (2016) has also updated the concept by including the idea of efficiency in resource use, furthering the convergence of the concepts of a clean production and green economy.

These and many other terms and concepts that comprise the constellation of sustainable development have consistently been established as part of our lexicon, leaving the exclusive presence in the academic and third sector debate arenas and making headway into the business and political debate.

This step is fraught with difficulties and criticism. Adopting sustainable practices has faced several challenges, from fierce opposition to reasonable denunciation. Some of the most vehement opposition comes from individuals commonly referred to as climate deniers. Those actors reject or, at least, cast doubts over the significant scientific consensus underlying the anthropogenic nature of climate change and its resulting extreme weather events. Deniers in a position of power have been instrumental in a lax environmental protection system and defunding environmental watchdog agencies.

A second fundamental critique is regarding the possible 'neo-liberalization of nature' (BIRCH, LEVIDOW and PAPAIOANNU, 2010). These critics generally believe in climate change and are not per se against sustainable efforts; instead, their discourse is founded on the premise that bioeconomy and green economy concepts are inherently dominated by capitalism and, thus, neoliberal logic. According to this group of critics, a green economy imposes market elements and rules on its initiatives, thus removing critical issues such as ethics and social concerns from the equation. In that sense, a green economy would be nothing more than a new corporate strategy to implement its agenda and achieve its goals, allowing nature to be commercialized while avoiding responsibility for its environmental impact.

Another ongoing argument is that several concepts, especially in the early days, such as clean production and bioeconomy, did not include clear and measurable environmental goals. However, one could argue that the sustainability logic was present, although subliminally. Notwithstanding, recent updates on these concepts and terms have integrated these and many other elements to strengthen them (WWF, 2009). These adjustments also have contributed to a greater harmonization amidst these concepts and terms, enabling them to be better articulated.

From the denunciation perspective, it is worth mentioning the recent greenwashing argument. The term refers to a communication strategy generally employed by corporate marketing to portray the company as environmentally friendly and responsible while not taking effective action by using the word 'green' or 'bio' in their products and services. The drive is to use these terms to improve the company's public reputation, differentiate itself from competitors, and increase profit margins. Greenwashing has been made workable chiefly by weak regulation and monitoring, resulting in the collateral damage of increased public skepticism towards current green/bio initiatives.

Lastly, economic viability is a critical argument that challenges the feasibility of converting economic systems to a green economy logic, at least for this study. For several sectors in the society, abandoning 'brown economy' would imply a dissociation from current productive patterns and consumption from the demand for natural resources, causing economic stagnation with adverse collateral effects on society, such as unemployment and higher living costs. A less harsh argument, done by more moderate actors, is that a green economy is essentially less economically efficient (or competitive) than its brown counterpart. Implementing a green economy would require significant and multiple trade-offs and continual governmental funding. That perception is deeply embedded in the economic and political elite rationale. Based on this argument, there is no potential substitute for predatory production practices, and economic efficiency is deemed the sole priority. That argument had been refuted by the Dasgupta Review (2021), which calls for a new understanding of the relationship between economics and the environment, by essentially reviewing instruments to measure economic development. It also highlights the need to acknowledge our interconnectedness with nature, thus economic models have to consider more carefully the economics of biodiversity (SANTOS and OSÓRIO, 2021).

Countering this rationale, some neoclassic economists have defended that environmental problems arise from the inefficient use of nature's resources and the undervaluation of natural capital. Thus, according to this viewpoint, economic growth and sustainable practices may not be mutually exclusive. The Porter Hypothesis, developed by the American economist Michael Porter (1991), supports this argument by defending the possibility of win-win solutions that would benefit both the economy and the environment. According to this hypothesis, well-placed environmental regulation could promote environmentally friendly innovation, increasing business competitiveness. As a result, enabling (strict) policies combined with innovation could boost efficiency and encourage rational management and

the ability of green economy initiatives to compete with traditional productive methods.

This approach is not without its flaws. As previously mentioned, enabling policies are required for a successful win-win solution. These policies, in turn, require careful identification, analysis, and measurement of external factors from each productive sector. All of that is needed to allow a proper internalization of the external costs, i.e., 'setting the prices right.'

Several brown economy processes must account for the collateral damage they eventually cause to society, which they have not done yet. Two significant components should be considered here: the idea of **external environmental costs** and **benefits**.

External environmental costs encompass a wide range of impacts that a process may have, such as pollution, noise, greenhouse gas emissions, and risk of resource depletion. While a company may experience some of those impacts, they usually pass them on to society, lowering production costs and thus making its business more lucrative. On the other hand, **external benefits** are associated with beneficial impacts caused by a company, which generally offsets its environmental impact.

According to Loiseau et al. (2020), "if private behavioral incentives do not reflect costs or benefits to third parties or society as a whole, the decisions taken will not lead to a social optimum and may lead to decreased social welfare." Thus, economic mechanisms should adequately measure the costs and benefits inherent to a specific production process or service to set the right price. Once measured, several policy instruments, including taxes, subsidies, liability laws, permits/licenses, and payments for ecosystem use and services, are ready to promote the 'price internalization' of these processes and services.

However, the core point of the Porter Hypothesis is that if the prices in both green and brown economies are properly settled, sustainable processes and rational resource use will prevail over their counterparts in brown economies (PORTER and VAN DER LINDE, 1995). As per UNEP (2011), that pricing decision could be achieved through cost-benefit analysis (CBA). It is a tool designed to evaluate the welfare effects of a given initiative. Using the CBA tool, it would be possible to assess various green economy initiatives, economy, environmental, and social elements. A genuine total economic value from goods and services, taking into account its positive and negative impacts on both environment and society, can be established by quantifying the drawbacks of the external environmental costs and the gains of the external benefits and then monetizing them (TEEB, 2010).

This approach is not as far-fetched as it may seem. Individuals, particularly in the business sector, already recognize that behaving to the detriment of the environment could be a liability for their business. Environmental, Social, and Corporate Governance (ESG) is an approach that has gained traction worldwide. ESG has been a vital framework to support the strategies of numerous companies concerning their sustainability practices and, consequently, their contributions to the achievements of the UN Sustainable Development Goals. Larry Fink, chief executive of the Blackrock fund, recently stated in a letter to CEOs[1] that they "focus on sustainability not because we are environmentalists, but because we are capitalists and fiduciaries to our clients." That statement emphasizes the view that "climate risk is investment risk." Hence, it is in companies' best interests to engage in sustainable practices: "Few things will impact capital allocation decisions — and thereby the long-term value of your company — more than how effectively you navigate the global energy transition in the years ahead," added Flink. ■

1. Larry Flink 2022 letter to CEOs: The Power of Capitalism. Access at: https://www.blackrock.com/corporate/investor-relations/larry-fink-ceo-letter

CHAPTER 2

Green Economy in the Global South

ASSESSING SOUTH AMERICAN GREEN ECONOMY

POLICY SOLUTIONS EMERGING FROM NATIVE ECOSYSTEMS

For several years now, the idea of a green economy has not only been popular in academia but also has found its place in current economic activities. According to Brown (2014) and his colleagues, by 2004/05, the green economic concept could be found in about a dozen papers; ten years later, they tracked about 50 times over. Additionally, it was also possible to depict from this mapping that despite most of the literature focusing on activities and cases in the Global South, the bulk of the (visible) debate and knowledge production still are in the Global North.

This imbalance is also identified by Brockington and Ponte (2015). They emphasized the importance of including more actors from the Global South in the debate, especially for their different perspectives on the matter. Pushing forward the debate in the Global South could provide substantial positive impacts, as green economy initiatives have been steadily growing in the Global South. Some joint initiatives include ecotourism, sustainability certification, carbon payments, wildlife management, offsets by extractivist companies, ecommodities, and community-based activities. These initiatives lay the groundwork for developing new prospects for sustainable activities and deeper integration into existing markets.

Another important dimension, from the Global South perspective, is the need to foster the role of biodiversity conservation as a driver for sustainable activities. This is especially relevant for it contrasts with some of the main discussions on Green Economy lead by industrialized countries, where the main driver for sustainability is the creation of new markets. That focus promoted several 'sustainable' policies, as the case of biofuel policies, which brought negative indirect impacts and problematic incentives, for example the expansion of monoculture farming, which often threatens native vegetation. That discussion has lead attempts to rethink concepts, such as bioeconomy, to incorporate the particularities from specific biomes – as is the case of the Amazon (COSTA et al, 2022).

As previously mentioned, different approaches to a green economy can be identified, from perceptions to practices. Despite the literature generally identifying clearer cleavages between the Global North and South, Brockington and Ponte (2015) argue that those differences can also be found within the Global South. In Latin America, for instance, more extreme versions of the green economy can be found in practice, such as the degrowth debate. These versions seek a more dramatic shift in the landscape, if not legislation, then public debate. On the other side, African countries seem more resistant or distrustful of moving towards a green economy as they generally correlate it to risks to their country's growth and traditional economic opportunities (i.e. traditional mining, logging, pasturing, etc.). This general position is consistent with Faccer's (2014) argument that countries whose economies depend heavily on extracting natural resources are less likely to adopt new economic approaches to development. These nations assume it is a costly activity that could negatively affect employment, investments, and pricing prospects. Emerging economies essentially believe they cannot afford to take more expensive options such as clean energy production because their overall lack of competitiveness would significantly hamper their economies and, therefore, their populations.

Recent research by Sarah Bush and Amanda Clayton (2022) shows that this economic cleavage in climate action attitudes is also visible by gender. By analyzing survey data from over 60 countries, the authors uncovered intriguing conclusions regarding men's and women's concerns about climate change. In contrast to the well-known data indicating that women are generally more concerned than males about climate change in industrialized democracies, the findings of Bush and Clayton demonstrate that this correlation does not exist in less developed nations. The higher the country's poverty, the smaller the gender gap in climate change denial (i.e., in the US, 7% of men vs. 27% of women are willing to adapt to climate change, compared to 34% of the men vs. 41% of women in Peru). In this regard, the authors successfully identify a robust correlation between climate concerns and GDP per capita, one strong enough to eclipse the gender gap.

The core of Bush's and Clayton's (2022) is that in wealthier countries is more challenging for its citizens to perceive the benefits of mitigation efforts (that has to do with the quality of the infrastructure in place and policies to react to extreme weather events). Nonetheless, as previously stated, the gender gap in wealthier countries reveals that men generally view climate mitigation's cost as higher. This disparity could be explained by the loss aversion and identity protection theories, which claim that men in wealthier countries often wield more income and power and occupy higher social hierarchies. It is reasonable that they would be more resistant to significant adjustments.

Based on these authors' findings, it is plausible to assume that men in poorer countries are more prone to accept that climate mitigation requires action. This is because their countries are typically more affected by extreme weather events resulting from climate change. As most of them are agricultural economies, they are more vulnerable to weather variations and have weaker governance and emergency response plans, placing their current wealth and status at risk. As a result, the costs of tackling climate change become more bearable.

Moreover, as Brockington and Pontes (2015) pointed out, the green economy theme has gained more visibility in the Global South due to the acute (illegal) deforestation process, which is considered a "low hanging fruit that can be targeted rapidly to reduce carbon emissions".

Deforestation is usually one of the leading causes of carbon emissions in countries with extensive tropical forest areas.

As a result, tackling this issue is considerably easier than undergoing a transition in technology (especially in the energy sector), and it is cheaper than investing in alternatives in carbon capture. Taking the Brazilian case as example: agriculture represents 504 million tCO2e, land-use change and forestry 394 million tCO2e, while electricity and heat combined with other fuel combustions emits 114 million tCO2e[2]. In that context, this action represents a potential win-win scenario.

Despite the literature's general focus on the different perceptions between North and South, as earlier noted, there are also significant distinctions within the Global South. In his essay "Four Discourses of Green Economy in the Global South", Carl Death (2015) moved to categorize different approaches to the green economy that he identified as the Global South. In other words, while the concept of adoption is commonly acknowledged as a

2. Data retrieved from Our World in Data. 'Greenhouse gas emissions by sector, Brazil, 2019' chart. Accessible at: https://ourworldindata.org/co2/country/brazil

win-win scenario for developing countries, differing perspectives have molded different national strategies, with varying ramifications for policy and environmental consequences.

The first discourse identified by Death is the **Green Resilience**, which aims to toughen the local and national economies of countries to brace for the effects of climate change while preserving economic growth. According to Death, Ethiopia is a fitting example of Green Resilience in practice. The second discourse is the **Green Growth** that is prevalent in India. The Green Growth discourse relies on the assumption that the transformations required to complete a green transition can be used as a lever to increment the country's overall economic growth. The third discourse is the Green Transformation. This discourse's linked strategies seek to implement policies that aim to reshape the economies, making them as greener as possible — here, the transformation is almost an end in and of itself. South Korea is an excellent example of green transformation in practice. The fourth and last discourse is the Green Revolution, which, as the name implies, is a more radical approach to adopting the green economy concept, which even advocates the idea of 'degrowth'.

Death pointed out Brazil as where the green revolution may be found. As Death's findings are from 2015, they must be evaluated considering the new path Brazil's current leadership took.

Along with Carl Death's classifications, it is helpful to review Inter-American Development Bank (IDB) surveys (CARDENAS et al, 2021) on the climate policies of the Latin American and the Caribbean nations. These sometimes contrast significantly with the level and profile of the climate debate in several countries, expressing how the political elite is out of place about the societal norm.

According to the IDB surveys conducted prior to the National Determined Contributions (NDCs) from Latin America countries, climate change is a key of national debate topic and preference formation. This is demonstrated by Chile's new constitutional assembly, who proposes an ecological state, the debate of initiatives to reform the energy matrix in various Central American countries, the new Colombian president's objectives for the oil industry, and widespread outcry over deforestation episodes in the Brazilian Amazon forest.

Notwithstanding, according to the IDB "Climate Policies in Latin American and the Caribbean: Success Stories and Challenges in the Fight Against Climate Change" (IDB, 2021), the "Information and analysis of what Latin American countries are doing to address these issues are diffuse, at best". This is particularly true when considering the work required to develop the initial NDCs.

As per surveys undertaken by the IDB (2021), over 60% of the Latin America and Caribbean countries have drafted their NDCs quickly and with little consultation.

Additionally, over 50% of the countries did not involve relevant government branches, including key ministries, in defining their sectoral targets for the document. Over 85% of governments successfully enhanced the ministries and other key actors in establishing their targets, indicating a considerable improvement in the level of engagement for the second NDC submission.

Despite the IDB report's emphasis on the quality of this involvement, arguing that there is a need to improve the policy coherence in the process, it seems undeniable that most countries have enhanced their level of political support for the second NDC efforts. The

Climate Action Tracker reviews of the countries' NDCs confirm this. Only Brazil, among the 14 Latin America and Caribbean countries analyzed, did not submit more ambitious targets for its second NDC, according to their study (about the first NDC's effort).

For prominent examples, the IDB report highlighted the case of Uruguay, which developed a broad government front and established a multisector coordination structure to engage in the NDC drafting process: The National Climate Change Response System. The new coordination system prioritizes green economy efforts with a new budgeting law that commits to aligning public expenditures and development planning with the country's NDCs. Also, Argentina, Chile, and Costa Rica established cabinet strategies to coordinate their climate change efforts, thereby enhancing government structure. Chile and Colombia were notable exceptions in the region, as they tend to concentrate climate planning and action inside the federal sphere, with minimal or no participation from other subnational actors (CARDENAS et al, 2021).

Green New Deals and Green Policy in South America

In the past decade, the concept of a green economy has received much attention. The number of green economy policy measures being carried out globally. The American and European 'New Green Deal,' is one of its most visible and concrete features. To ease the effects of the Great Depression on the country, the North American New Deal policy of the 1930s meant a significant upheaval of the American economy through major investments in labor, infrastructure, and other sectors. The New Green Deal idea demonstrates the need for a substantial renewed push toward a comprehensive transformation of our carbon-dependent economies.

In 2007, the North American journalist Thomas Friedman used the term 'New Green Deal' for the first time, saying:

> *"If you have put a windmill in your yard or some solar panels on your roof, bless your heart. But we will only green the world when we change the very nature of the electricity grid – moving it away from dirty coal or oil to clean coal and renewables. And that is a huge industrial project – much bigger than anyone has told you. Finally, like the New Deal, if we undertake the green version, it has the potential to create a whole new clean power industry to spur our economy into the 21st century"*[3].

When the UNEP started promoting Friedman's idea of a massive, government-led effort instead of piecemeal initiatives to reconstruct the logic of our economics and our energy

3. Thomas Friedman. A Warning from the Garden. New York Times. 19 January 2007. Available at: https://www.nytimes.com/2007/01/19/opinion/19friedman.html

matrix, it quickly achieved global support. Since then, various green policy initiatives have been carried out across the globe. Even though they were not the first, the American and the European Green New Deal policies drew significant attention because of their size and implications for their respective economies.

The idea of the North American Green New Deal originated in the mid-2000s platform of the American Green Party. The Green Party included elements of this logic in their presidential campaign agendas for at least the last four presidential elections. Nonetheless, when the Democratic Party took over the idea and began promoting it, primarily through Congresswoman Occasion-Cortez and Senator Markey in 2018, the American New Green Deal gained widespread attention and feasibility. Despite its significance in the public debate, the issue did not fare well in Congress during the Trump Administration. It was accomplished, however, in 2021, with the election of a new president, Democrat Joe Biden, who endorsed a climate plan throughout his campaign.

The American New Green Deal seeks to provoke a considerable transformation of the US economy, especially in the energy sector.

It intends to be a self-sustaining plan that will repay itself within 15-20 years (ZOGHBI, 2021). Despite having the objective of aligning with the US NDC commitments, it lacks clear deadlines and the means to define accurate targets. It does not have a binding nature to determine policy or mandatory commitments since it is a policy framework rather than a law. On the other hand, it has included many aspects of President Biden's climate policies, particularly the Build Back Better Plan. This comprehensive development strategy aims to invest in renewable energy, electric vehicles, sustainable agriculture, and clean energy innovation, among other areas. Given political division within the Democratic Party, the Build Back Better plan gave its place to the Inflation Reduction Act (IRA), which the Congress approved in July 2022. The Inflation Reduction Act is a bipartisan attempt to incorporate elements of the Build Back Better Plan, especially the investment in clean energy solutions. It is supposed to be the most extensive public investment effort addressing climate change in the US to date).

The European Green Deal is a comprehensive set of policies adopted by the European Commission in 2020 to achieve carbon neutrality in the European Union by 2050.

In contrast to the US Green New Deal framework, the European version is a legally binding instrument that seeks to reexamine existing laws and establish new legislation that conforms to the green economy rationale. It should serve as a baseline for an European Climate Law, which would implement several policy initiatives related to the circular economy, biodiversity, sustainable farming, and infrastructure. The main objective of the European plan is to decarbonize the energy, industry, and transportation sectors. The plan will rely on strategies such as the circular economy to achieve this goal, which is critical to its success. It should generate positive transformations in domestic supply chains, rendering them more sustainable and greener.

The plan, as expected, also sparked controversy in its early stages. One of the most relevant criticisms came from countries such as Hungary, Poland and the Czech Republic, which

would be severely hurt due to their substantial reliance on coal. To meet the objectives of the European Green Deal, these nations will need to increase their investments. The Just Transition Fund was included in the plan to address these issues and assist the most vulnerable areas. Another interesting difference between the EU and the US Green Plan is that, while the latter is overly focused on its context, the European Green Deal prioritizes international cooperation as one of its fundamental values. The plan aims to impact the European foreign policy to foster its environmental standards in many areas, including trade.

In addition to the American and European initiatives, other projects deserve attention for their innovative approaches and commitment to sustainable principles.

One of these examples is South Korean Green New Deal, which was launched in 2020. The South Korean plan, the first of its kind in Asia, aims to reach carbon neutrality by 2050 by dramatically increasing investments in clean energy and suspending funding for coal, instituting a carbon tax, and, most notably, establishing a Transition Center to facilitate the transition of workers from the non-renewable sector to green jobs. In its last Five-Year Plan, China has also made considerable investments in crucial sectors of the green economy, such as renewable energy and related technology. Similarly, Australia, Canada, and the UK are all debating legislation to build a comprehensive green policy plan.

A few considerations should be made in South America regarding the green economy and fighting climate change. Despite accounting for less than 10% of global CO_2 emissions, the region's climate mitigation and adaptation strategy differ from the traditional approach (BÁRCENA et al. 2019). Different from countries in most other regions, the bulk of the emissions are caused by land use (farming and cattle grazing) and deforestation. South American countries, on average, have a cleaner energy matrix than the world's top emitters. One of the critical elements of the green economy's values that gains drastic nuances in the region is its social dimension — just and egalitarian growth.

Zoghbi (2022) notes that social inequality has a long history in South American economic growth. This is partially attributable to the pervasive logic of predatory natural resource exploitation, which is viewed by many segments of the region as the only feasible way to generate sufficient funds to alleviate poverty and finance development. This "frontier logic" of predatory exploitation had a considerable impact on the countries' native ecosystems and biodiversity and on consolidating social structures that leave large segments of society vulnerable.

When viewed through the lens of sustainability, these differences show that most South American countries efforts to tackle climate change should focus on halting deforestation, managing environmental resources, implementing sustainable land use for farming and grazing cattle, investing in critical infrastructure to cope with climate change-related extreme weather events, promoting productive skills to facilitate a smooth job transition in the region, and creating mechanisms of the income distribution. Similarly, the UN's Economic Commission for Latin America and the Caribbean (ECLAC), which coordinates public policy efforts in the region under the name "Big Push for Sustainability"[4], believes that it is essential to build a resilient and low-carbon economy in the region while addressing the structural social problems.

4. For further reference on the 'Big Push for Sustainability', access: https://www.cepal.org/en/events/big-push-sustainability

Furthermore, here lies the most incredible opportunity and challenge in the region. Opportunity because the green economy logic presupposes equitable, sustainable growth. That is verifiable in American and European green policy initiatives, which take a solid justice approach. Thus, pushing for a new development plan based on sustainability and social justice to transform a country's economy is key to addressing structural struggles common to most developing countries. Nonetheless, South American countries also should face more significant challenges in implementing such transformational upheaval. Climate change mitigation requires significant financial resources. Developing countries face capital shortages to invest in present development needs and technologies to support the transition, given the already significant gaps in nearly all sectors.

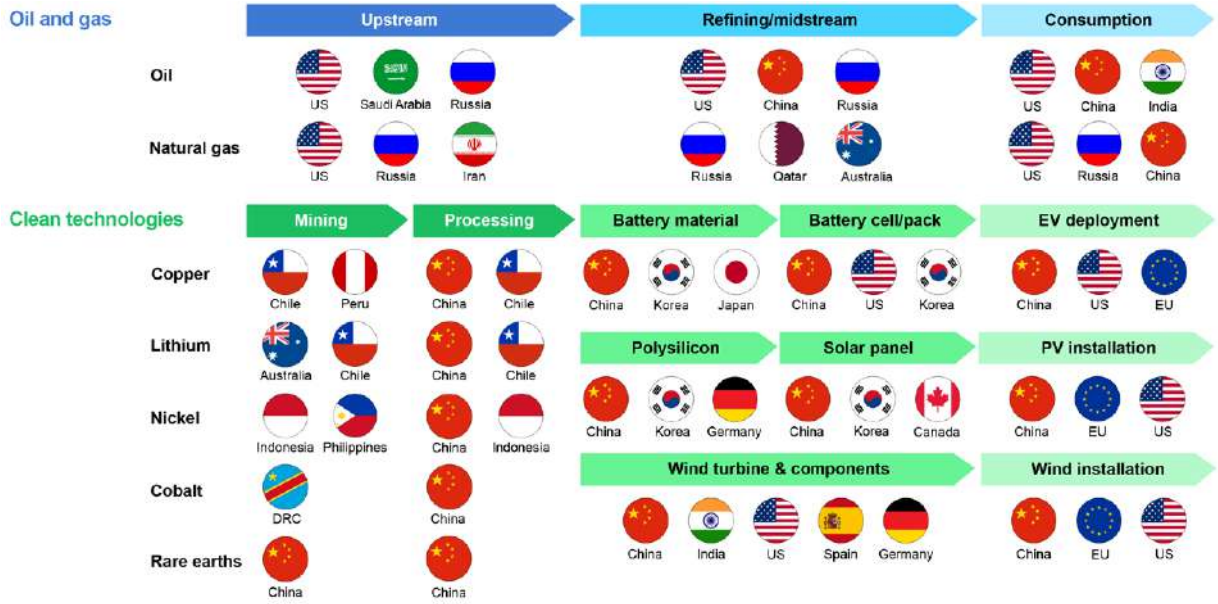
As a result of the climate transition, the energy system is undergoing a paradigm shift, moving from a fuel-intensive to a material-intensive system. That shift will significantly increase the demand for a selected group of minerals. According to IEA's 2022 World Energy Outlook Special Report, the demand for minerals required for a new unit of power-generating capacity has climbed by 50% since 2010, taking into account the sharp increase in the share of renewables in the energy matrix. Electric vehicle and battery storage alone should account for 50% of the increase in mineral demand due to clean technologies. According to IEA projections (2022), a scenario based on current policies, would require a tenfold increase in mineral demand by 2040. In contrast, in a scenario based on sustainable policies the minerals demand would require a thirtyfold increase for the same period.

Latin America is also an essential player in the ongoing shift to a green economy that is taking place worldwide.

Despite its unique economic and social transition obstacles, the region is also home to many vital natural resources needed to help transition to green technology and infrastructure. Minerals such as lithium, essential for electric vehicle batteries, are abundant in Argentina, Bolivia, and Chile. Chile is also a prominent international producer of copper, which is used in various products such as solar panels, wind generators, and electric vehicles. Brazil is also a significant source of minerals such as manganese and copper.

Being home to these key inputs enabling the shift to climate technologies could be both a blessing and a curse. On the other hand, suppose that South American countries will benefit from the high demand for minerals. In that case, they will suffer the extraction's negative consequences, owing to their location at the bottom of the production value chain, as shown in Figure 1. This imposes a 'double burden' on developing mineral-producing countries such as Chile, Peru, and Bolivia. This means that because they have to implement, like other countries around the globe, a sweeping policy change to foster a green transition in their economy (and fewer resources because they are a developing country), they are also forced to engage in an endeavor that is hugely detrimental to the environment. Suppose more profound efforts and resources are required to implement their environmental commitments. In that case, local populations will be exposed to the effects of resource exploitation and will likely reap a smaller share of the benefits of being in the lower supply chain.

Figure 1. Indicative supply chains of oil and gas and selected clean energy technologies



Source: International Energy Agency (2021), The Role of Critical Minerals in Clean Energy Transitions

In this regard, mineral-producing developing countries should keep climate justice principles in mind, demanding and enforcing the application of environmental and social responsibility standards in these supply chains to foster green transformation in other parts of the world. It is worth noting that Global Compact[5] is noteworthy for its initiative to establish a global commitment to promote greater sustainability in supply chains. Germany is an example of conducting a national policy concerned with climate guidelines. Recently, this country approved the Supply Chain Act, a new law that requires companies with over 3,000 employees to address environmental and human rights risks in their supply chains (FEFFER, 2022).

South American green economy policy initiatives have been advancing with varying approaches and velocities. They vary from the source of the initiative the actors involved, and the level of government commitment and coordination. Table 01 presents an overview of South America's most notable Green Economy policy (or related) initiatives to illustrate the region's efforts.

5. Global Compact is a United Nations initiative that establishes a pact to foster sustainable and socially responsible polices from businesses throughout the world. It is currently the largest corporate sustainability endeavor both in relation to the number of companies and countries covered.

Table 1. Green Economy Policies in South America

Country	Policy/ Initiative	Major Objectives	Leading Proponent/ Locus of the Debate
Argentina	Green Productive Development Plan (2021)	**Central Pillars:** 1. Transition from the national industry to a green economy 2. Transition towards a green economy 3. Competitive and sustainable production 4. Natural resources sustainable industry **Key Sectors:** a. Sustainable mobility b. Energy transition and production of green hydrogen c. National Plan for Circular Economy d. National Plan for Sustainable Mining	Ministry of Productive Development
Bolivia	People's Agreement (2010)	**Central Principles:** 1. Conservation of natural forests 2. Environment management with local communities and indigenous peoples' participation and preclusion of market mechanisms 3. Rejection of carbon markets mechanisms 4. Acknowledgment of UN Declaration of Indigenous Peoples Rights 5. Demands for developed countries: 6% budget allocation to climate change initiatives, change consumption patterns, among others	World Peoples Conference on Climate Change and the Rights of Mother Earth
Brazil*	National Green Growth Program (2021)	**Central Pillars:** 1. Reduction of Carbon Emissions 2. Conservation of Forests 3. Rational use of natural resources while generating green jobs and economic growth 4. Improving society's living conditions **Key strategies:** 1. Economic incentives 2. Institutional Transformation 3. Prioritization of green projects and initiatives	The Interministerial Committee on Climate Change and Green Growth
Colombia	Green Growth Policy (2018)	**Central Pillars:** 1. Generate new economic opportunities through the production of services and goods based on sustainable natural capital 2. Improve the use of natural resources, making it more efficient and reducing social and environmental impacts 3. Strengthen human capital to cope with the transition to a green growth-based economy 4. Foster science, technology, and innovation to aid in the productive sectors' shift towards a green economy 5. Establish inter-institutional coordination and articulation for implement the Green Growth Policy Expected timeframe: 2018-2030	National Council for Economic and Social Planning (CONPES) National Planning Department

Country	Policy/ Initiative	Major Objectives	Leading Proponent/ Locus of the Debate
Chile	National Green Growth Strategy (2013)	**NGGS Central Pillars:** 1. Subject to economic growth and generation of opportunities for sustainable management of natural resources and promote a national market of environmental goods and services 2. Protect the Constitutional Right towards the protection of the environment and reducing risks to it, establishing clear and verifiable goals 3. Equate the government's commitments to international endeavors toward the environment while preserving economic and production competitiveness 4. Assurance of Constitutional right to access information, especially regarding environmental data	The Ministry of the Environment The Ministry of Finance OECD
	Roadmap for a Circular Chile by 2040 (2021)	**RCC Central actions:** 1. Generate Green Jobs 2. Reduce municipal solid waste per capita 3. Reduce waste generation per GDP 4. Increase material property 5. Increase recycling rate 6. Increase municipal solid waste recycling 7. Recover illegal dumping sites Expected timeframe: 2040	
Ecuador	National Development Plan – Toda una Vida – 2017-2021 (2017)	**Toda una Vida Central Pillars:** 1. Guarantee rights of a decent life with equal opportunities, valuing plurality and diversity and nature rights for current and future generations 2. Consolidate sustainability and solidarity in the economic system, foster productivity, and competitiveness under a sustainable framework and develop productive capacities and assure food sovereignty 3. Foster civil society participation, promote transparency while establishing a new social ethic, and guarantee peace and sovereignty	The Government of Ecuador
	National Strategy and Action Plan for the Circular Economy Transition (2018)	**NSAPCET Central Drivers:** 1. Enforce environmental protection 2. Foster regional leadership and ambition 3. Promote economic benefits by encouraging a competitive, sustainable economy 4. Boost private sector engagement 5. Assure political direction and responsible inter-ministerial coordination	
Paraguay	National Development Plan: Paraguay 2030 (2014)	**Central Pillars:** 1. Poverty Reduction and Social Development 2. Inclusive economic growth 3. Paraguay's adequate insertion in the world **Transversal goals:** 1. Equal opportunity 2. Efficient and transparent public governance 3. Orderly territorial development 4. Environmental Sustainability	Technical Secretariat for Economic and Social Development Planning

Country	Policy/ Initiative	Major Objectives	Leading Proponent/ Locus of the Debate
Peru	National Strategy on Climate Change to 2050 (current on development)	The document is under construction. In august 2022 the Government was conducting open workshops for the civil society and regional governments to engage in the draft document.	The Ministry of Environment
Uruguay	National Environmental Plan (2019)	**Central Pillars:** 1. Environmental protection and equitable access to environmental goods and services 2. Foster environmental systems resilience and biodiversity conservation 3. Promote sustainable development and production practices 4. Strengthen institutional capabilities to manage and protect environmental systems	The Ministry of Environment
Venezuela	National Strategy for the Conservation of Biological Diversity 2010-2020 and its National Plan of Action (2015)	**Central Pillars:** 1. Information management 2. Conservation of endangered species 3. Conservation of strategic areas 4. Sustainable use of biological diversity 5. Prevention, control, and eradication of exotic species 6. Control and management of genetically modified organisms 7. Prevention and management of the illicit bio traffic **Transversal goals:** 1. Equal opportunity 2. Efficient and transparent public governance 3. Orderly territorial development 4. Environmental Sustainability	The Ministry of Environment
Suriname	Suriname National Adaptation Plan - 2019-2029 (2019)	**Central Pillars:** 1. Reduction of the climate change impact through adaptation and resiliency building 2. Development of a multi-sectorial planning process to integrate new and existing policies and harmonize them with sustainable principles **Strategic Priorities:** 1. Development of institutional arrangements, policies, and capacities to enable national and sub-national coordination for adaptations initiatives 2. Establishment of a data collection system to support the country's decision-making process 3. Institutionalization of adaptation within the country's economic development 4. Improve technical capacity for government agents to lead the country's initiatives and actions 5. Harmonization of sustainable development with respect to Surinamese culture while reducing gender and social inequalities 6. Map and access financing and investment opportunities for fostering enabling technological innovation that drives climate change initiatives	The Government of Suriname Supported by The Government of Japan and the United Nations Development Programme

Source: Authors' compilation from the information contained in the documents mentioned above

* Currently, there is at least one notable proposal for Green New Deals in Brazil, although it did not reach relevant debate in Congress. 'Green New Deal Brazil's (2021) public policy coordinated by Congressman Alessandro Molon (accessible at Website: https://www.gnd-brasil.com/_files/ugd/912c86_601753a18e8a47049a1031111a1d5599.pdf).

CHAPTER 3

Green Economy in South American Environments

ASSESSING SOUTH AMERICAN GREEN ECONOMY

POLICY SOLUTIONS EMERGING FROM NATIVE ECOSYSTEMS

Following the conceptual chapter, necessary to organize the debate by establishing a clear understanding of the policy categories further discussed and the green economy policy segment, where we sought to offer a broad overview of the major South American policies that are related to the green economy paradigm, we shall shift the focus to the private's sector initiatives towards sustainability. That is especially important in the region, for, as we saw, the policies designed to support sustainable practices are usually trailing the private sector, that has to innovate to became viable.

Acknowledging this reality, allow us to take a different perspective and look to how private initiatives are developing and which barriers they face in order to identify not only best practices, but more importantly, recommendations for the evolving policies.

To do that, we mapped some of the most important economic segments that followed the green economy logic, within the three largest biomes in the subcontinent, that share border with two or more countries. Once identified the biomes and economic segments, we map the initiatives that represented these segments from each biome, to offer an overview of the economic landscape. As mentioned before, it would not be possible to list all economic ventures in these pages, thus we tried to present here some of the initiatives that could be understood as good practices in their fields, recognized by the awards and certifications they possess.

Biomes here are understood as a geographic space defined from a set of specific characteristics such as climate and environmental conditions, soil, altitude and, consequently, communities with plants and animals with similar life forms. In this sense, the initiatives described below are divided into the Andes, Amazon and Pampa biomes, since each one of them has sets of qualities that allow, or favor, the exploitation of certain economic activities.

The Andean region, depicted mainly by the Andes Mountain range, comprises a geographic space that goes from Venezuela to the Argentine archipelago of Tierra del Fuego, in the extreme south of the American continent.

The Andean Mountain range has a high snow line in the Peruvian and Northern Chilean mountains (reaching an altitude of over 5.8 km), and peaks in Argentina, reaching almost 7 km high. In addition, it is a mountain range with one of the most interesting temperature variations in the world, mainly due to its extension and longitudinal variation, and for this reason, it can be subdivided into three major ecosystems: further north, in the center, and in the southern bordering continental.

In the northern region, the heat is more present for being closer to the equator, which favors the presence of tropical forests formed in the presence of a very humid climate. In the central region, the Andean climate is milder, and, in the southern region, the mountains are significantly cooler due to their proximity to Antarctica.

Because of its great natural beauty, the Andean region is a popular destination for visitors from all over the world, which favors the tourist market, especially in the area that ranges from Peru to the Argentine Patagonia. As it is a destination sought after by nature enthusiasts, many of the visitors value the natural space and give preference to hotels, activities and tours aligned with the environment protection schemes, which, in turn, have favored the development of economic initiatives of ecotourism in the region. On the other hand, some areas of the Andean mountains encounter large plateaus or plain areas associated with a warmer climate, which allows the development of agricultural activities, such as coffee plantations. Indeed, the Andes are marked by the presence of a rich animal and plant biodiversity, which allows activities that economically exploit this fauna and flora, as in one of the case studies we analyzed, which uses the wool of alpacas to produce biodegradable fabric.

However, despite the advance in eco-friendly activities in the region, the Andes still suffer significantly from mining, oil exploration and infrastructure projects that threaten indigenous groups to get off their lands. Not only that, but tourism, which is a great source of income in the Andean ecosystems, is still very disorganized and inefficient in some places, which can be attributed to the lack of workforce training and rivalries between local communities that control the access to some of the most popular tourist attractions in the mountains.

With an area of 6.7 million km², the Amazon Biome is the largest tropical rainforest in the world, covering part of the territories of Brazil, Bolivia, Peru, Ecuador, Colombia, Venezuela, Guyana, Suriname, and French Guiana.

In addition, the biome is also known for: possessing the richest biodiversity on the planet, harboring about 10% of all species known to biologists so far, the longest river in the world in length (almost 7,000 km), and the greater underground reserve of fresh water as well.

In addition to the fauna and flora, the forest is also home to traditional and indigenous communities and is the scene of many economic activities. Due to its great diversity, it is notably exploited by the pharmaceutical and cosmetic industries in the extraction of oils, herbs and other substances, in addition to companies in the food sector for the planting and production of fruits and their derivatives (in the form of pastes, sweets, juices, soft drinks, etc.) such as cocoa, guarana, açaí, and coffee, and is also widely exploited by the timber industry and livestock farming. To a lesser extent, the Amazon also explores some ecotourism activities, although less common than the previous ones.

Despite its great potential for a greener economic exploitation, the Amazon biome still suffers very much from problems related to the lack of basic infrastructure (in logistics and communication) and knowledge barriers (such as commercial, research and investment), which makes it difficult for smaller initiatives to compete with large monocultures. Additionally, illegal activities such as irregular mining, land appropriation and drug and wild animal trafficking are widespread in the region, which constrains much of the private investment in the region.

Finally, unlike the two previous biomes, the Pampa has a more modest area: 750 thousand km² divided between Argentina, Brazil and Uruguay.

Its most dominant feature is its composition of fields and plains, a relatively mild climate and grassy vegetation, low plants, few trees, and a small number of shrubs found near the water's edge. This type of vegetation is closely related to the natural fires caused by the savanna (provided in conjunction with the dry climate), so that the pampas depict large plains with small shrubs and trees.

Due to its qualities, this biome presents ideal conditions for the exploitation of agricultural activities, and therefore it is quite characterized by the presence of cattle and the production of soy and other grains and cereals, such as rice and wheat. In recent years, the mining industry has grown significantly in the region, and currently there are several megaprojects under development in the region. Besides, as it has open fields and good sunlight, it is a fertile area for the production of wind and solar energy, which is still relatively underused in the region. Also, the specificities of some areas of the Pampa make it an (eco)tourist attraction, not only because it is present in provinces and more isolated locations from urban centers, but also because it has some areas of interposition with geological formations that attract the ones looking for nature and more extreme activities, such as climbing, hiking, biking, etc.

As in the two previous cases, farming activities in the region are accompanied by problems such as soil depletion by monoculture plantations, large producers dislocating or making unfeasible the work of family farmers in the region, the subsoil contamination due to fertilizers, pesticides and other chemicals. The mining activities are also a reason for contest between companies, local groups and researchers in the public forums, since there are several negative environmental and social impact which results from mining exploitation, such as pollution, deforestation, expulsion of communities and animals, in addition to the risks associated with the rupture of dams and the dangerousness of the activities involved for the human workforce. In general terms, the biome also still lacks attention and investments that could facilitate access to credit and provide incentives for activities other than the agroindustry, such as ecotourism and organic honey production, as the case studies point out.

Given an overview of the biomes, below are presented some of the green economy initiatives currently going on in the Andes, Amazon and Pampa.

CHAPTER 3.1.

GREEN ECONOMY INITIATIVES IN THE ANDES

CHILE AND COLOMBIA

1. Mainstream Renewable Power

COLOMBIA

2. Andes Ecotours

PERU

3. Andean Lodges
4. Arms of Andes
5. The Andean Alliance for Sustainable Development (AASD)

GREEN ECONOMY
INITIATIVES IN THE ANDES

1. Mainstream Renewable Power (Chile and Colombia)

MAIN IDEA

Mainstream Renewable Power is a global company that produces clean energy on multiple continents. In 2008, they began operations in Chile as one of the country's leading renewable energy companies, with seven wind and three solar power model projects spread across the Chilean Andes[6]. In Colombia, they are also implementing wind and solar projects.

SUSTAINABLE ASPECTS

Wind and solar power exploration are, by definition, green economy initiatives that are alternatives to traditional nonrenewable sources since they contribute to CO_2 reduction, the transformation to a carbon-neutral energy matrix, the reduction of other gas emissions, and the diversification of energy production. The company's operations connect their solar and wind farms to their countries' national electrical systems, allowing them to centralize the power distribution and provide clean energy to their citizens. Furthermore, Mainstream works with local communities through the early childhood education, literacy, cultural heritage, capacity building, and entrepreneurship[7]. The company's local suppliers are covered by long-term Power Purchase Agreements (PPA's) and credit support measures (MAINSTREAM, 2022). Moreover, according to the 2020 Sustainable Report[8], the company adheres to relevant international standards to demonstrate its results, like IFC environmental[9] and social standards, the Equator Principles, the United Nations Principles and Human Rights, and World Bank Environment, Health, and Safety Guidelines.

Mainstream employs the Global Development Standard (GDS), a comprehensive process for completing renewable projects adopted by all collaborators, to use these criteria as a distinguishing mark of quality. The GDS standardizes all procedures for executing renewable projects to guarantee consistency throughout all markets, regardless of local requirements, and a long-term commitment to the community (MAINSTREAM, 2022). In Chile, Mainstream Renewable Power activities are related to SDGs 7, 11, 13, 16, and 17.

CHALLENGES

Despite the advances related to the net zero emissions targets in 2021 by many important countries in the world economy, according to Mainstream Group CEO Mary Quaney[10], political leadership (especially in the short term thinking) represents one of the most significant challenges for the company's operations and ambitions: for politicians waiting for coming elections tend to postpone difficult decisions, such as plans for

6. Those are distributed by Condor projects (3 wind and 1 solar), Huemul projects (3 wind and 2 solars), and Copihue projects (1 wind).

7. See all initiatives in the Andean region filtering the research with "Chile" in "Feature Initiatives" on: https://www.mainstreamrp.com/communities/. Additionally, in the following link, there are also some examples of community projects developed by the company: https://mainstreamrp.cl/comunidades/

8. Available on: https://www.mainstreamrp.com/f/50184/x/93593a0b62/mainstream_sustainability_report_2020_final.pdf

9. The International Finance Corporation (IFC) environmental and social performance standards are a reference for business and corporation's analysis around the world, reason why these standards are present in many companies' sustainability reports. See https://www.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/Sustainability-At-IFC/Policies-Standards/Performance-Standards.

10. Mainstream Group CEO Mary Quaney in conversation at Dublin Climate Dialogues 2021: https://www.youtube.com/watch?v=i_QGC-RT3Gs

energy transition. Indeed, the commitment to sustainable values based on international treaties is different from the internal repercussions that concrete actions may have. Energy transition decisions are always accompanied by controversies and distinct economic consequences for domestic players and their businesses, which reflects the lobbying of these corporations. In that sense, Quaney recognizes that "most electricity markets are still designed for the dispatch of centrally run fossil fuels based, often state-owned, bulk generation like coal. So the new markets of this transition need to be much more decentralized and much more dynamic.

OUTCOMES

Unlike traditional energy companies that adapt their operations to sustainable production, Mainstream Renewable Power's main activity is the generation of wind and solar energy. Its technological development and productive efficiency advancements have yielded positive results, attracting the attention of international investors. In that regard, concerning financial outcomes, the company's website states[11] it has raised 3 billion euros for project finance, 574 million euros for corporate finance, and has the World Bank Group International Finance Corporation (IFC)[12] and the Rockefeller Brothers as its equity investors, allowing to go public soon (MAINSTREAM, 2022).

Regarding the company's economic operation in the Andean regions, its last disclosed Sustainability Report (2020) accounted for, in Chile, the construction of 6 wind and 3 solar PV (adding 1.2 GW in power generation), 3 GW pipeline of development projects, and an ownership position in 332 MW Aela Energia generation portfolio. In Colombia, it accounted for developing one solar plant (150MW) and pursuing wind and solar opportunities (page 8).

Finally, in terms of socioeconomic impacts on communities, the 2020 Sustainability Report mentions 429 thousand community people who have been impacted by 36 different initiatives undertaken in Chile (page 45). Environmental Education[13], Cultural and Heritage subjects[14], Local Development & Community Infrastructure[15], and Community Strengthening[16] are among them (page 46).

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Since 2018, Mainstream Renewable Power has received an A- in the Climate Change category of the Carbon Disclosure Project (CDP)[17]. This leadership status was obtained "for a third year, running scoring high over a range of reporting criteria, including strategy, governance, and value chain engagement," according to its 2020 Sustainability Report (page 36).
- The CDP independent emissions reporting body awarded the company Supplier Engagement Leadership designation in 2020, placing it among the top 7% of companies globally. According to its 2020 Sustainability Report (page 36), "the company was awarded Supplier Engagement Leadership status for its work to reduce CO_2 emissions across its supply chains and placed Mainstream among a leading group of fewer than 400 companies worldwide".
- In 2019, Mainstream received the PFI Award for Latin America Renewables Deal, the Infrastructure Investor Awards Latin America Renewables Deal of the Year for the Condór Portfolio, Andes Renovables.
- Mainstream Chile has ISO 45001/ISO 18001 accreditation in their workplace, and due to environmental concerns, Mainstream also has ISO 14001 certifications in Chile.

11. https://www.mainstreamrp.com/investors/

12. https://www.ifc.org/wps/wcm/connect/corp_ext_content/ifc_external_corporate_site/home

13. Divided into: recycling project for the communities, community investment fund to support education of children of indigenous communities, and support equipment for rural schools.

14. Divided into: support to elaboration of tourism development plan for the commune and the website for museum of natural and cultural history (www.muhncal.cl/en/).

15. Divided into: a project to improve internet connectivity, a project to improve public lighting, a project to improve access to drinking water, support productive activities of indigenous communities, community investment fund to support the productive development of indigenous communities, and social investment fund to support the local development of the community.

16. Dived into: community investment fund to support social development of indigenous communities (training courses, consultancies and support for legal advice and cultural heritage of indigenous community.

17. See its classification on **CDP's website**.

2. Andes Ecotours
(Colombia)

MAIN IDEA

Andes EcoTours was conceived in 2010 after noticing that tourists flew in and out of the capital city of Colombia without appreciating the region's natural surroundings. From this moment forward, the Bogotá-based family-owned company established an ecotourism company intending to promote environmental conservation by strengthening rural communities that provide responsible and sustainable nature tours to international and local visitors. According to the website of Andes Ecotours[18], the company conducted its first tour in 2012. Since then, it has provided hiking, biking, horseback riding, and canoeing through ecosystems spread around the Andes, such as mountaintops, lush cloud forests, birds in wetlands, and coffee/cacao farms.

SUSTAINABLE ASPECTS

On its website, the company describes its ecotourism mission as (i) empowering locals through the support of community-based ecotourism projects; (ii) generating financial benefits for rural families by contracting the services of local 'campesino' farmers; (iii) visiting natural areas with a commitment to environmental conservation; (iv) building environmental and cultural awareness in both visitors and locals; (v) providing outstanding guest experiences that help raise awareness of Colombia's environmental challenges, and (vi) offering support and assistance for sustainable development initiatives in the communities with which the company collaborates.

The company has also organized ecotourism programs and sustainability events in collaboration with local communities, such as environmental workshops at rural elementary schools, seminars, training events for local guides, coffee farmers, and other activities[19].

CHALLENGES

Andes Ecotour claims that under the pre-pandemic environment, at least half of their clients came from the city's large number of international events: "these were people who took advantage of the remaining days of their stay in Bogotá to hire our services" (Interview, 2022). However, as a result of the Covid crisis, the frequency of events in the city decreased significantly, restricting one of the company's primary revenue sources and contributing to a change in its customer profile. Previously, a diverse audience was more engaged in community relations and willing to pay a premium price for services emphasizing social and environmental sustainability as a natural cause.

Today's clients are younger and more concerned with pragmatism or "fast tourism" (lower prices and fewer bookings in advance) than companies' work in the community. Additionally, the Andes Ecotour explains that government support varies greatly depending on the municipality and the importance each government puts on supporting

18. https://www.andesecotours.com/home

19. https://www.andesecotours.com/ecotourism

small businesses and tourism (government policies, not state ones).

Furthermore, while local authorities currently provide funds for community-focused tourism work, it is common that companies cannot access these funds because they lack the necessary documentation or requirements to be awarded the contract, allowing such funds to be awarded to other types of collectives, NGOs and universities that do not work specifically with tourism. In this sense, considerable resources are allocated for cultural activities or one-shot tours, which can be thrilling and relevant but do not constitute commercial or continuing activities that generate jobs and boost the local economy.

OUTCOMES

According to Umañas (Interview, 2022), the pandemic is a breaking point when it comes to results, so that they can be divided into before and after it. July 2022 was the first month considered profitable enough for the company to restart funding projects on local community development. The first initiative of this type was a workshop promoted for 15 young people, which is expected to be replicated in, at least, other 4 communities near to Andes Ecotours activities. The tours promoted by Andes Ecotour always avoid the big destinations of tourism, proposing for their clients to visit and consume from small and local products (coffee and cocoa) and services (tourism guides and horseback). Afterall, their biggest achievement could be described as its own survival after all the damage suffered by tourism worldwide in recent decades.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The seal "Red de Turismo Accesible (Bogotá Región)", provided by Bogota's government[20].
- Seven different annual certificates from TripAdvisor[21]: the category "Travellers' Choice" was reached in 2020, while they obtained the Certificate of Excellence in the years 2014, 2015, 2016, 2017, 2018, and 2019 by customers and users of TripAdvisor.

20. https://www.idt.gov.co/es/red-distrital-turismo-accesible

21. https://www.tripadvisor.com/Attraction_Review-g294074-d3644534-Reviews-Andes_EcoTours-Bogota.html

3. Andean Lodges
(Peru)

MAIN IDEA

Andean Lodges is a private company founded in 2006 in Cusco that offers ecotourism in the Peruvian Andes mountains. In collaboration with peasant communities from Chilca and Osefina, the company provides lodging[22], trekking, and climbing routes on the Apu Ausangate Route, located in the high Andean region. As part of this collaborative effort, locals from the communities are trained to work as guides, cooks, housekeepers, security guards, and maintenance personnel in Andean Lodges and its brands/subsidiaries, such as Chillcalodge[23] and Andean Excursions[24].

SUSTAINABLE ASPECTS

Andean Lodgers seeks to promote sustainable tourism, guarantee the conservation of ecosystems and natural resources in the High-Andean region, and safeguard its cultural and spiritual heritage with its traditional ways of living. The company has collaborated with the Regional Government of Cusco, the Association for Conservation of the Amazon Basin, and local village communities around Apu Ausangate to establish the zone as a Regional Conservation Area. This type of control promotes the conservation of local vegetation. It helps to prevent land degradation and wildlife extinction, allowing Andean Lodges to engage in more ecotourism activities that promote job creation and sustainable development that benefits local communities. Andean Lodges is different from traditional tourism businesses since it employs the local community. Members of Chilca and Osefina peasant communities own a share of the company equal to 20% of its total ownership, which means they hold a majority stake in the company and have veto power over major decisions.

According to its website[25], Andean Lodges adopts steps that allow it to reduce the impact of its operations on the natural environment, including appropriate waste management and recycling. Some companies, such as the Peruvian Association of Adventure Tourism (APTAE)[26], the Latin American Travel Association (LATA)[27], the Cusco Chamber for Regional Tourism (CARTUC)[28], and the Nature Services Perú also promote sustainable practices in tourism in this region and are Andean Lodges' partners. They manage a scheme for measuring and compensating carbon footprint in which Andean Lodges participates.

CHALLENGES

As per Juan Carlos Flores, general manager of Andean Lodges (Interview, 2022), the most significant challenge that the company faces

22. They have, in total, four lodges: Chillca Lodge, Machuraccay Lodge, Anantapata Lodge and Huampococha Lodge.
23. https://chillcalodge.com/en/
24. https://andeanexcursions.travel/
25. https://andeanlodges.com/en/about-us/responsable-tourism/
26. https://www.aptae.pe/
27. https://www.lata.travel/
28. https://cartuc.org/

today is certainly local conflicts between the different communities that inhabit the area. Vinicunca, also known as the Rainbow Mountain, is Peru's second-most popular tourist destination after Machu Picchu. It is surrounded by different communities' eager to explore the region economically with no planning or regulation from the Peruvian government. In this chaotic scenario, each community bordering the mountain charges a different price for tourists' entrance to Vinicunca, besides not managing and structuring hiking services properly (examples include the lack of toilets and the existence of a public market in the middle of the mountain).

OUTCOMES

Flores (Interview, 2022) states that one of the company's achievements is a significant number of community workers skilled in the tourism industry because of classes designed to advance their skills in cuisine, security, and housekeeping. An essential aspect of these lectures is that Andean Lodges translated all the material used into the native dialect of peasant communities, facilitating their adhesion and effective use of the courses. Andean Lodges is currently a 100% carbon-neutral operation, besides job creation, labor qualification, and management of some functional areas as environmental reserves. The company joined the Regenera Project[29] in 2017 to calculate the CO_2 emissions of individuals, businesses, and land managers using open calculators and detailed inventories. This allows Andean Lodges to calculate its carbon footprint and compensate for it by purchasing bonds that support efforts of sustainable ecosystem management in the Amazon region focused on deforestation prevention and biodiversity conservation. As a result, they recognize they intend to indirectly "preserve the natural landscapes in the Andes by fighting the thaw caused by global warming"[30].

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Since 2017, Andean Lodges has been certified by TourCerts[31]. This European organization provides consultancy services and training through an independent and volunteer council comprised of the business sector, academics, environment, development, and politics members. These experts establish the TourCert framework and certifications to be granted.
- Since 2018, Andean Lodges has also been a member of the System of Application of Good Practices (SABP), a tool of the National Tourism Quality Plan (CALTUR) of Peru's Ministry of Foreign Trade and Tourism. This tool promotes various types of training, process reformulation, document management, and the conduction of audits used to evaluate companies' practices. On their website, Andean Lodges states[32] that a "high level of service" is how "we have obtained this distinctive."

29. https://www.regenera.earth/

30. See https://www.regenera.earth/user/5da7b454-5edc-4c2d-9922-a8455051a93f

31. https://www.tourcert.org/en/community/andean-lodges/?cn-reloaded=1

32. https://andeanlodges.com/en/cultur/

GREEN ECONOMY
INITIATIVES IN THE ANDES

4. Arms of Andes
(Peru)

MAIN IDEA

According to the Preferred Fiber and Materials Market Report of 2021 by Textile Exchange (TEXTILE, 2022, page 8), synthetic fibers (mainly represented by polyester) summed up for 68.2% of global fiber production in 2020, followed by cotton (26.2%) and manufactured cellulosic fibers (5.9%). Because of complex decomposition, these are not only highly polluting materials, but they are also significantly associated with other socioeconomically problematic techniques, such as abusive labor exploitation. Contrary to the traditional fashion industry, which significantly contributes to the above figures, Arms of Andes is a slow fashion company that produces clothes in Peru's Andes Mountains using Alpaca Wool. While they recognize that the apparel industry has frequently engaged in unethical and unsustainable practices, they envision sustainable production and prioritize human and animal welfare and minimize the negative environmental impact. Their goal is to preserve the traditions of Peruvian Alpaca Wool production by producing high-quality, functional outdoor apparel while attempting to produce completely biodegradable clothing.

SUSTAINABLE ASPECTS

The production stages listed on the company's website[33] highlighted Arms of Andes' sustainable practices. First, industrial farming practices are absent. Small producers, usually individual families raising alpacas in the southern Peruvian Andes, provide raw materials. Traditional methods are employed to raise small herds of alpacas, which can roam freely during the day but are confined to a shelter at night. The fleece then is "taken overland to sustainable processing plants, where it is washed with biodegradable detergent and water heated by solar panels." The manufacturer uses natural and low-impact synthetic dyes (black, navy, lilac) when dyeing it. Until then, the entire process occurs in Peru. The company can reduce its carbon footprint by not sending materials to different countries, as most clothing manufacturing companies do. The clothing is flown to Los Angeles and Amsterdam distribution centers and packed in compostable bags[34]. Finally, it is essential to highlight that Alpaca Wool is natural, renewable, and biodegradable.

CHALLENGES

Meli Hinostroza, the co-founder of Arms of Andes, states (Interview, 2022) that the most significant challenge her company faces is a general lack of information on "true sustainability" in the fashion industry because there is a more significant concern with the economic profit despite such values. According to her, many consumers want to be more conscious and seek brands with 'eco-friendly,' 'organic,' or 'vegan' tags. However, a small group of consumers takes the initiative to learn more about this industry to consume ethically in the face of limited information and

33. https://armsofandes.com/pages/our-supply-chain

34. Since March 2021, their packaging is 100% compostable: https://armsofandes.com/pages/packaging

scientific study on the subject. She mentions, for example, that many brands embrace green marketing by selling clothes made from "recycled polyester." However, this material's microplastic component still harms one's health and takes centuries to decompose[35]. This lack of information and knowledge also poses a challenge to the company's marketing strategy, as the dissemination of sustainable clothing through social networks cannot attract a public unfamiliar with the concept of "true sustainability" and finds it difficult to change their consumer habits. Nonetheless, she highlights that having any audit control or body that can give this status to a company that wants to do green marketing is far from feasible since sustainability should operate throughout the entire production chain, which is challenging to evaluate. Furthermore, when asked about the company's certifications, Hinostroza says (interview, 2022) that the first organic production certificate for alpaca wool was created in 2021[36]. Despite completing all criteria, Arms of Andes has not yet been issued the seal due to its high price.

OUTCOMES

Arms of Andes is a company with a niche audience in the US and European markets and has a product that competes on quality rather than price. Unlike many other sustainability-branded companies in the traditional market, Arms of Andes distinguishes itself by manufacturing all its fabrics. Compared to the traditional industry, it becomes more appealing to consumers who want to consume single-origin products. These goods are differentiated because they are manufactured in Peru without any outsourcing, exported exclusively from Peru, and committed to supply via small producers and local communities. They are also entirely organic (including dyes, packaging, and so on). In short, Arms of Andes' competitive advantage is due to a higher level of transparency in production and a reduced carbon footprint that can be seen across its whole production chain.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Arms of Andes was Awarded the Selected Brand of ISPO brand-new[37] in the category "Outdoor Adventure" for its innovative and sustainable products.

35. Some recent research has been warning of the harm that this material has been causing. Access https://www.theguardian.com/environment/2022/mar/24/microplastics-found-in-human-blood-for-first-time and https://www.youtube.com/watch?v=O1B44VmZFiI to know more.

36. https://textileexchange.org/standards/responsible-alpaca-standard/

37. https://armsofandes.com/blogs/news/we-won-selected-brand-of-ispo-brandnew

5. The Andean Alliance for Sustainable Development (AASD) (Peru)

MAIN IDEA

The Andean Alliance for Sustainable Development[38] (AASD) is a private initiative launched in 2010 as a non-profit organization based on a social enterprise model. Its main objective is to assist small community-led agricultural initiatives in Peru's Andes region. The alliance helps 'campesino' farmers identify their needs and develop projects that meet these demands and/or incorporate new processes and techniques into their existing practices, ensuring the preservation of sustainability and tradition. The organization also intends to ensure the viability of its social enterprise model work by providing experiential learning opportunities where 'campesino' communities, external participants, and AASD professionals share knowledge, skill sets, and insights to identify projects and areas of activity related to the organization's objective, which is the development of agricultural activities led by community members, often through agroecology projects, in which the alliance specializes.

SUSTAINABLE ASPECTS

Agriculture initiatives in 'campesino' farming communities that seek lucrative ecological production comprise a range of projects, which are now best represented in four categories:

I. The Community Greenhouse projects are managed by the organization that helps community families in the ecological production of food in all its cycles, from the provision of the workforce to the construction of greenhouses, infrastructure (such as irrigation systems), and essential materials (plastic, nails, and mesh), passing by the capacity building of producers[39], until the monitoring and evaluation of projects' efficacy and efficiency;

II. The Coffee Project Laco Valley Initiative is a 2021 agriculture initiative with a coffee farmer in the Lacco Valley, an ecological region where the Andes and the Amazon meet. This project aims to improve the quality and fertility of the soil to combat pests and plague with natural resources and enhance the economic value of coffee production, which has been potentially harmed by a lack of organization that has let intermediaries who buy coffee pay farmers less. Aware of such exorbitant prices and unfair negotiation, the Alliance concentrated its efforts in helping to organize these coffee producers and its activities are now primarily focused on this project according to Stiegltiz and Fernandez (interview, 2022), which resulted in the creation of the Café Orígenes cooperative[40], giving financial, technical and capacity-building support to the coffee producers in the region;

38. http://alianzaandina.org/

39. AASD provides technical assistance in both the construction of the greenhouses and in fruit/vegetable production.

40. https://cafeorigenes.org/. See Café Orígenes YouTube Channel: https://www.youtube.com/channel/UCRYo_jkldBs2z1hc9nnuFhg

III. The Ecohuella Project is the product of a partnership between AASD and Escuela Agroecologica Ecohuella in 2017. They integrate practices from various ecological agriculture schools to learn about "agroecology, bio-intensive farming, permaculture, greenhouse growing, local soil fertility methods, and more"; and

IV. The Experiential Learning Program is an initiative in which communities host groups of international students who are then allowed to learn about their local and cultural techniques while being employed as laborers on some plantations.

These programs help fund community projects by covering operating and administrative costs with residual profits, donations, and mission-aligned grants. The AASD website describes the group's work building the producers' skills through training, workshops, and techniques that respect local culture, language, traditions, and learning styles, with organic products' quality improvement and production efficiency, adding value to their sales. In this sense, the sustainable parts of the production include protecting the environment, improving health (by producing organic food and combating malnutrition in the region), and socioeconomic development through capacity building, material incentives, and allowing different people to learn from and work together.

CHALLENGES

One of the significant issues noted by AASD is the level of community trust and the interactions between agricultural technicians of the Peruvian government and small agricultural producers in the Andes. These technicians frequently recommend using imported chemical pesticides and fertilizers and the use of mono-cropping, degrading the soil, and increasing the likelihood of market price fluctuations. Furthermore, they disregard the advantages of some plants' natural symbiosis, crop rotation, and the usage and effectiveness of inputs and traditional techniques employed on the land for generations.

Additionally, the first two years of the Covid-19 pandemic were especially difficult for the Alliance because it paralyzed many activities and sources of income, such as the reception of students from foreign institutions in its cultural and learning exchange between agronomy students, production techniques, and other initiatives. During this period, the region's small farmers were likewise idle.

As a result, the organization needed to be restructured and had philanthropic support. It now relies mainly on the Café Orígenes project to leverage the business of small producers so that they can manage an economically sustainable, self-sufficient production.

OUTCOMES

The Greenhouse Projects enabled families to improve their diets and economic opportunities while allowing communities to take ownership of the process by constructing additional greenhouses without AASD's assistance or support. According to the organization's website, regarding global results, the Alliance assisted in the construction of 12 school greenhouses and 150 family greenhouses. At the same time, its capacity-building efforts helped over 500 people, and the greenhouses positively impacted over 600 people.

As stated in the Andean Alliance for Sustainable Development 2021 Annual Report, the investment in hiring a professional data scientist in 2020 finally allowed the organization to account for the following findings as of last year's results: "In 2021, we wrapped up a two-year project with the International Federation of Organic Agriculture Movements (IFOAM) and using the baseline and endline data, we could show that (...) our project had a major impact on dietary diversity, especially for women in communities about 12,000 ft. Project Redwood as well awarded us a second round of funding, in part because we were able to show significant impacts on annual income from agriculture sources that could be tied directly back to the commercialization project" (page 10).

The report also indicated that in 2021, foundations and grant funding accounted for roughly 80% of the revenue, while individual donations accounted for 17% and product sales contributed 3% (page 20).

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The AASD is a US-certified 501c3 as non-profit organization with a social enterprise model. The Charles Engelhard Foundation (CEF), Project Redwood, SWIFT Foundation, Fundamental Advisors, and Rotary International are some of its partners and supporters. Additionally, among the educational institutions that have acknowledged and supported AASD's work through exchange programs are Education First (EF), Norfolk Academy, and the University of St. Thomas.

CHAPTER 3.2.

GREEN ECONOMY INITIATIVES IN THE AMAZON

BOLIVIA

1. Chalalan Ecotourism

BRAZIL

2. Aliança Guaraná de Maués
3. Amazon Oil – The Rainforest Company
4. Café Apuí Agroflorestal
5. Manioca
6. Precious Woods

PERU

7. AJE Group- Bio Amayu Project
8. Alianza Cacao Perú
9. Kemito Ene

GREEN ECONOMY
INITIATIVES IN THE AMAZON

1. Chalalan Ecotourism
(Bolivia)

MAIN IDEA

The Chalalán Ecotourism Lodge is a responsible initiative in the heart of Madidi National Park near the Beni River, Amazonian forests, and foothills. This park, characterized by its biodiversity of ecosystems, overlaps with the indigenous territory (San José de Uchupiamonas), which gave rise to this effort in 1993 when the indigenous people used the forests, animals, rivers, and lakes for ecotourism.

The Inter-American Development Bank (IDB) and Conservation International Bolivia contributed to the creation of this tourism and sustainable development initiative for the local population. They provided funding and technical assistance in various areas[41], including the instruction of English by international professionals and of local wildlife by scientists and biologists, gastronomy training, and school for tour guides and bird experts, as disclosed by Neil Palomeque, responsible for Chalalán[42].

SUSTAINABLE ASPECTS

As presented by Eduardo Forno (Interview, 2022), Executive Director of Conservation International Bolivia, this Bolivian tourism system was created to support the development and tourism products of indigenous communities by providing autonomy in the management of this economic activity and valuing the visions and principles of the communities. The ecological tourism project of Chalalán was designed to attract foreign visitors, such as Europeans and Americans, allowing them to learn and preserve cultural traditions, support environmental conservation, and generate direct and indirect benefits for the indigenous families of San José de Uchupiamonas.

Chalalán encourages various activities for its visitors, including boat trips, canoe rides on the lake, and walks through the rainforest to observe the local fauna and flora. These activities are in addition to the services provided by the ecolodge, which was constructed from native materials and features private cabins and dining rooms[43].

Using over 10,000 hectares of land for its activities, the community promotes actions to minimize the environmental impact of ecotourism, recognizing the connections between environmental conservation, healthy ecosystems, large populations of endemic wildlife species, and tourism attraction. In addition to low-impact tourism, the lodge employs environmentally appropriate waste management and energy technologies (UNDP, 2012).

CHALLENGES

Eduardo Forno (Interview, 2022) explains that the tourism initiative in Chalalán faces considerable impediments and challenges. Among them,

41. Staff are trained in business administration, accounting, marketing, sales, customer service, meal preparation, guiding, navigation and maps (UNDP, 2012).

42. https://www.conservation.org/bolivia/noticias/un-para%C3%ADso-natural-albergue-ecotur%C3%ADstico-chalal%C3%A1n

43. https://chalalan.com/en/

the following stand out: (1) the high prices of plane tickets for international tourists to arrive in Bolivia; (2) the difficulty of access due to the need to take a boat trip to enter Chalalán; (3) the difficulty of transitioning in tourist paths, especially during the rainy seasons; (4) the high prices of taxes (5); the difficulty in accessibility and availability of bonuses for having to live under the Bolivian public policy system that promotes a system of closed seals only for activities in line with State norms[44]. The most prominent issue faced by the initiative, however, is not having the tourism goods or assuring the arrival of tourists, but the development of the capacity of local communities for the autonomous administration and management of this economic activity. This challenge, which is related to governance and culture, is caused by the inability of indigenous people to manage the complex tourism system and its technical aspects, such as the payment of taxes, which an outsourced company currently handles.

With the advent of the pandemic, they have recently encountered heightened competition from mining activities. Rural areas of Bolivia, characterized by a low population compared to medium and enormous cities, rely primarily on mining and sustainable tourism for income. Nevertheless, according to Forno (Interview, 2022), with the onset of the Covid-19 pandemic crisis, the economic activity of tourism suffered a devaluation, prompting many producers and members of indigenous communities to switch their formally or informally sustainable production systems to the mining predatory production system.

OUTCOMES

Among the outcomes of the ecotourism initiative in Chalalán, as described by Forno (Interview, 2022), the rise in income for 97 families stands out, as they earn nearly 500,000 dollars per year in gross revenue from the sale of visitor tickets. These revenues are also reinvested in social and infrastructure projects, including drinking water, clinics, and schools (UNDP, 2012). These economic advances have profoundly and positively altered the community of San José de Uchupiamonas (SJU). On one hand, production organization has been adapted to the tourism industry, which presently accounts for 80% of the local economy. In addition, the educational framework of the community has had significant effects, as 100% of children complete secondary education, of which more than 60% become professionals in universities or Bolivia cities.

In addition, where there has been no deforestation throughout the years, the ecolodge initiative supported preserving and protecting natural spaces from logging and mining. It has become commonplace for criminal networks to penetrate the protected and maintained region of Madidi Natural Park to harvest wood and wild animals for trafficking illegally. Within the scope of the Our Future Forests project, Conservation International Bolivia is providing SJU community members training in monitoring deforestation, hunting, and fishing in the area[45].

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- 2017 Maya Award (Premio Maya) for the best ecological enterprise.
- 2007 Virgin Holidays Responsible Tourism Awards for the best park/protected area.
- Finalist for the 2010 Indigenous Tourism and Biodiversity Website Award.
- World Travel Awards Winner.
- Recognized as one of the top 50 ecolodges by National Geographic Adventure in 2009.
- 2019 Tripadvisor Certificate of Excellence.

44. The Bolivian state support failed in the provision of public services, such as poor maintenance of schools or late arrival of telephone and electricity systems (arrived only 2-3 years ago, after 18 years of negotiations)

45. See https://www.conservation.org/bolivia/noticias/un-para%C3%ADso-natural-albergue-ecotur%C3%ADstico-chalal%C3%A1n

2. Aliança Guaraná de Maués
(Brazil)

MAIN IDEA

The Aliança Guaraná de Maués (AGM) was first proposed in 2017 by the giant Brazilian Ambev (a beverage industry holding corporation, the 14th largest company in Brazil, controlling almost 70% of the Brazilian beer market).

Ambev began the project in collaboration with the American Development Agency (USAID) to constitute a collective of people, organizations, and public authorities in Maumés46, a municipality known for planting the Amazonian guarana fruit. The consume of guarana is very popular and have a big market in Brazil, reason why Ambev and many other companies are interested in this fruit as raw material for the producing of sodas and beverages. The AGM is also attended by the International Center for Tropical Agriculture (CIAT) and Idesam, a Brazilian NGO.

The initiative addresses social, environmental, and economic matters directly linked to the local cultural identity. It has been carrying out concrete actions through working groups in education, tourism, sustainable and socio-cultural production, which are considered crucial for the region's long-term socioeconomic development by project participants.

SUSTAINABLE ASPECTS

In addition to teaching and training projects for young people in schools, the projects aim to highlight and honor local culture and traditional groups through music, handicrafts, and other activities, and initiatives that support ecotourism through the itineraries' expansion and training of local receptive.

AGM supports green economy initiatives closely related to its producing activities. For example, the Guarana Production Tracking Project aligns traditional guarana production techniques with new technologies to provide security and value in the production chain and allows the adoption of sustainable practices with better results and preservation of biodiversity in the region47.

Carlos Koury, Idesam's director of Bioeconomy Innovation, reveals (Interview, 2022) that the first guarana harvest in 2019 used traceability mechanisms. The method was implemented for suppliers, cooperatives, and buyers who participated in the pilot, supported by public managers, associations, and local communities.

This initiative generates a single code list of Maués farmers. "Each one of them has a number, and, with this makes possible verify the origin of the lot, information about the year of the harvest, the location planted, and the name of the producer. AMBEV, the main buyer, has a receipt and declaration of a commercial transaction to control the entry and identification of raw material" (Interview, 2022). This instrument allows not only to empower small producers and guarantee the quality of the product supplied but also to ensure greater

46. https://idesam.org/projetos/agm/

47. See Rastreamento da produção de guaraná beneficia agricultores familiares e comunidades na Amazônia

transparency throughout the production chain, demonstrating that the areas used for planting are of lawful use (without illegal deforestation practices and biodiversity loss) and allowing for increased interaction with consumers in urban centers and other countries.

Additionally, according to PPA[48], traceability implementation enabled producers to obtain seals of a geographical indication for guarana, attesting its origin. Seals benefit producers by allowing them to seek new markets and certifications (such as the organic seal), whereas traceability helps researchers to collect data from the value chain.

CHALLENGES

Concerning producer certifications, one issue raised by family farmers is that the certification process may be too expensive for small actors[49]. Along the same lines, producers continue to face financial barriers such as the granting of credit, which is not enough to run their entire production. Koury points out that, despite a national plan of technical incentives aimed at these productive communities, the "Política Nacional de Assistência Técnica e Extensão Rural"[50] struggles to adapt to the reality of local Amazonian communities. "This technical assistance plan does not consider the particularities of the Amazon region, such as its extension[51] and logistical barriers, and the lack of credit for local producers to run their productions, to name a few" (Interview, 2022).

On top of that, guarana is seen as a symbol of the heritage, traditional and indigenous cultures that have been cultivating and selling this and other fruits for hundreds of years. The typical artisanal production, led by underprivileged families in remote and difficult-to-access localities, reinforces the contrast between the home market's discounted pricing and exorbitant values outside Brazil. "Proof of this is the export to Mexico, Italy, and France, where guarana is a luxury item (a 65-gram jar costs more than 100 reais, aprox. 20 US dollars)" (Jornal Aliança, page 3).

When growing global demand meets a sustainable production that respects traditional knowledge and practices, there are specific challenges that are inherent to the scenario: on the one hand, companies are demanding large quantities of the fruit as if it were produced by intensive agriculture, while on the other hand, there is resistance and difficulty among more traditional producers in adopting and using the new technologies presented by AGM, which are necessary for circumventing logistical difficulties and knowledge barriers in remote productions.

In addition, many small producers still cannot guarantee consistent high-volume production or keep company contracts. Given this, large companies must try changing how they get products from local Amazon producers, raising operational costs.

OUTCOMES

At the beginning of the project, a notable achievement directly related to the guarana production tracking project was the production of 15 tons of guarana with direct sales from the associations to Ambev, which meant a 52% increase for producers in the pilot crop[52]. According to the Plataforma de Parceiros Pela Amazônia (PPA)[53], the AGM is increased to 63 tons in the 2019 harvest.

As per recent Idesam data[54] shared by Carlos Koury (Interview, 2022), the project has already achieved the implementation of guarana traceability mechanisms in 92.4% of the organizations in direct commercialization with Ambev, 34 producers managed to obtain organic

48. https://ppa.org.br/rastreamento-da-producao-de-guarana-beneficia-agricultores-familiares-e-comunidades-na-amazonia/

49. See the details on: https://ppa.org.br/rastreamento-da-producao-de-guarana-beneficia-agricultores-familiares-e-comunidades-na-amazonia

50. Available on: Assistência Técnica e Extensão Rural (ATER) — Português (Brasil)

51. The geographics between communities makes boat trips necessary, for instance.

52. According to **this PPA note**, "that year, Amazonas produced 733 tons of guarana, grown in 15 municipalities. Of these, the three main ones are Maués, Presidente Figueiredo and Urucará — accounting for 77% of the state. Brazil is practically the only producer in the world. Venezuela and Peru have only small planted areas."

53. https://ppa.org.br/rastreamento-da-producao-de-guarana-beneficia-agricultores-familiares-e-comunidades-na-amazonia/

54. Their webpage was updated in July 2022. All numbers can be seen on: https://idesam.org/projetos/agm/.

production certifications, and 1,131.65 hectares show improvement in the value chain between 2018 and 2021. In addition, it is worth noting that the ManejeChat application by agritec Maneje Bem helped farmers with 451 agricultural technical assistance, whereas 12 organizations worked with Ambev alongside 9 associations and 3 cooperatives on direct marketing, and, finally, 10 organic production demonstration units were established with the assistance of 31 training groups, which participated in the activities and production processes based on these units.

Global results show that environmental education seminars helped 5,347 individuals, including 550 children and young people. Moreover, the handcraft production chain promotion helped 106 riverside artisans, and the Operational Plan for Tourism Development in Maués inventoried 280 tourist resources, among other critical socioeconomic achievements.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Finalist in the Sustainable Business and Communities category of the 5th Edition of Rede América's "Transformers 2021" Award, selected along with 12 organizations from 12 different Latin American countries.
- Winner of the BNDES "Todos pela Sustentabilidade" Award — an initiative — aimed at recognizing actions by companies that sponsor socio-environmental projects in favor of philanthropic environments that contribute to the structured and perennial development of projects, leveraging the power of impact and transformation in society.

GREEN ECONOMY
INITIATIVES IN THE AMAZON

3. Amazon Oil – The Rainforest Company (Brazil)

MAIN IDEA

Amazon Oil is a 2009-founded Brazilian oleochemical industry. It is responsible for extracting oils and butter from Amazonian oilseeds for cosmetics, medications, foods, and textiles. The company is guided by the philosophy of manipulating Amazonian oilseeds and other non-timber products to reach these different markets. Working with Amazonian communities, the company identified production opportunities and economic benefits of using natural Amazonian products (such as Maracujá, Castanha-do-Pará, and açaí[55]) for the production of consumer goods, including oils, butter, resins and wax, clays, extracts, hair creams, medicines, food, among others. Since its inception, Amazon Oil has concentrated its efforts on unique Amazonian products and fine chemicals and has successfully reached the international market.

SUSTAINABLE ASPECTS

Currently, communication technologies and the circular economy principle facilitate the work and production of Amazon Oil. Natural resources such as oils and butter appear as an alternative to the dominating açaí and wood-based economy. Since açaí has become a major source of income, many producers have neglected other oilseeds and seeds processed into oils and butter. The açaí harvest occurs exclusively in the year's second half, while the other oilseeds and seeds are harvested in the first half. As a result, Amazon Oil took advantage of the opportunity to invest in these other natural resources during the first half of the year, when it did not have to compete with açaí. Ekkehard Gutjah, director of business development at Amazon Oil, explains (Interview, 2022) that the company takes advantage of the natural resources that already exist in the biodiversity of the Amazon for the production of cosmetics rather than focusing on developing an innovative cosmetic product for the market, which takes an average of five to six years and wastes forest resources. The company's Amazon rainforest-native goods are cold extracted without pesticides and fertilizers, and no preservatives, additives, or other chemical compounds are added. "The extractive processes are conducted under controlled temperatures and hygienic environments. In addition, special care is taken to obtain the raw materials following the quality standards specified by Amazon Oil, which helps preserve the maximum amount of active compounds and produces safe products for the consumer."[56] The surpluses from the plant extraction process that are not used to produce oils and butter are recycled for other applications, such as managing cattle and pigs or manufacturing anti-inflammatories and insect repellents (Interview, 2022).

CHALLENGES

Despite the company's expansion, the Covid-19

55. Whose scientific names are, respectively: *Passiflora edulis, Bertholletia excelsa* and *Euterpe oleracea*.

56. See https://www.amazonoil.com.br/

pandemic did not cause substantial damage. Local communities suffered, even if only for a few weeks, as ports were closed, blocking the delivery of external humanitarian aid. However, this was not a long-term solution since the government was aware of the interior of Brazil's dependence on capital-based sales and inputs. Nevertheless, the company's greatest challenge was the high cost of production, labor, and space. This alternative sustainable economic endeavor must preserve the plants from which the seeds and oilseeds will be harvested to maintain the quality of its work. After 25 years, the plantations are abandoned due to harvesting difficulties, the employment of specialized forces in plant treatment and care, and the preservation of vast land for plantation management. The Conselho de Gestão do Patrimônio Genético (CGen) 2015 regulation of access and benefit sharing[57], as a tool to achieve national development while preserving Brazilian biodiversity, posed an additional challenge for the national market. Extensive national and foreign cosmetics companies distanced themselves from Brazilian biodiversity, whether the Amazon or from other biomes such as the Atlantic Forest, Cerrado, or Pampas, after discovering that few actions suggested by this rule were executed. Distance from national products results in a return to the most lucrative activities of the traditional market—the timber market—and a devaluation of the products and labor for local producers, as well as a lack of concern for forest preservation (Interview, 2022).

OUTCOMES

The company's operations are on the riverbanks; the extraction of seeds for manufacturing oils and butter comes from the floodplain forests. Due to rivers and the likelihood of floods, it is advantageous for the company to compete in the traditional extractive market with the least possible environmental impact, as its production areas are not the center of attraction for extractive activities and forest clearing. According to Gutjahr, cattle ranchers, for instance, do not establish their economic activities in these regions since they need vast grazing pastures. Besides this geo-advantage, 50% of Amazon Oil sales are directed to the foreign market, namely English and German, because of the high international demand for organic and Amazonian products (Interview, 2022).

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Amazon Oil is audited by ECOCERT[58] periodically to obtain the organic production certification and Union for Ethical Biotrade (UEBT)[59] for fair trade and benefit sharing to gain recognition and appreciation in the national and global consumer markets.

57. https://www.gov.br/mma/pt-br/assuntos/biodiversidade/patrimonio-genetico/conselho-de-gestao-do-patrimonio-genetico-cgen-1

58. https://www.ecocert.com/pt-BR/home

59. https://uebt.org/

GREEN ECONOMY
INITIATIVES IN THE AMAZON

4. Café Apuí Agroflorestal (Brazil)

MAIN IDEA

The Café Apuí Agroflorestal is a 2012 project designed by the NGO Idesam[60] that produced the first organic coffee to be grown in an agroecology system in the Brazilian state of Amazonas, preventing cattle pastures from encroaching upon old coffee plantations and increasing deforestation in the region. According to Sarah Sampaio, the executive director of Café Apuí Agroflorestal, "the project was born, basically, to guarantee the purchase of coffee from local producers" (interview, 2022). Following that, the organization, which had previously been entirely funded and supported externally by philanthropic donations from partners such as WWF, WeForest, reNature, Fundo Vale, and Instituto Clima and Sociedade, became a company in 2019, beginning to implement a more economically sustainable model that has gradually moved toward complete independence from external support. The goal of this management is to expand its business and prepare for large-scale production that is being realized as a result of recognition and inventive investments obtained in the carbon market in 2022, explained in further depth in the following section. As Sampaio (interview, 2022) points out, this movement is opposed to that of traditional businesses operating green economy initiatives, as most of them are/were founded to make a profit but have been forced to adapt to a new modus operandi for sustainable activities due to modern-day demands.

60. https://idesam.org/

SUSTAINABLE ASPECTS

Amazônia Agroflorestal, a Brazilian startup, was founded to reasonably bridge the gap between producers and the market, thereby addressing one of the critical ideals of sustainability. Farmers participating in the Café Apuí Agroflorestal initiative continue receiving technical assistance and capacity building, including supplies, seedlings, machinery, and services. According to Sampaio (Interview, 2022), all producers who enter the project must produce organically and adapt to the agroforestry model to obtain the organic certification in the project's third year. Following that, they are evaluated regularly to renew their participatory organic certification, which guarantees organic coffee production and serves as a tracking mechanism for the entire production chain, with each bag of coffee having an ID linked to the producer of the bag. Additionally, the roasting process is certified, which explains the significance and added value of this certification for the niche of consumers seeking organic and environmentally friendly products manufactured at a fair labor cost. In this regard, Idesam has committed to ensuring strong information transparency policies and publicly sharing data and information requested by the public over the years of project coordination. Still, regarding social impact, Sampaio points out (Interview, 2022) that in addition to the technical training for producers, there are training programs aimed at women and young people in producing biofertilizers, who can be sold and enhance family income.

In terms of the environment, agroforestry

plantations intercrop coffee with other species, generally native to the region, whose crowns form a natural protection for the soil, revealing itself as an alternative income for agriculture and livestock, allowing for a rotation of the productive cycle[61].

CHALLENGES

In addition to the main challenge of achieving financial independence, Sampaio explains (interview, 2022) that the lack of legislation in Brazil regarding carbon credits makes it very difficult for Café Apuí Agroflorestal to operate in this market. Despite being a hot market with high demand from foreign companies looking to purchase these credits, the lack of debate and regulation in the Brazilian national sphere on this topic is a barrier for smaller companies to understand and enter this endeavor.

Furthermore, Sampaio (interview, 2022) mentions that most of their challenges in the Amazon territory are caused by a lack of transportation infrastructures, such as bad roads (when they exist) and places that can only be reached by relatively precarious ferry that take hours to arrive and depend significantly on weather conditions to carry out the transportation effectively. Besides, there are problems with communication, such as weak phone and internet signals. Even in areas where producers are wealthy, internet access is scarce. In summary, escalating agroforestry production in small properties, especially with these logistic considerations, is a considerable challenge.

Likewise, there is a significant challenge in carving out a market niche for Amazonian coffee by touting not only the distinctive flavor of the country's most popular variety —arabica—, produced in this region, but also the benefits of socioeconomic and environmental factors that contribute to its production.

Another issue Sampaio raises in the interview is that the Apuí region is under intense pressure from large monoculture producers. This drives up land prices and encourages small producers of organic products to sell their plots. This occurs in an environment of a scenario of violence, oppression, and conflict that has become widespread in productive lands dubbed "lawless", where the lack of supervision and fear are often prevalent.

Finally, it is worth mentioning that traditional organic certification is costly, especially for family farmers and small producers, and is economically viable only for large-scale productions. This makes the company opt for participatory certifications, which will be shown in more detail below.

OUTCOMES

Sampaio (Interview, 2022) shows a presentation of the company's global results, including over 27 thousand native species seedlings, 55 thousand kilos of coffee sold, 92 hectares of reforested areas, and 57 families profiting from its efforts. In 2021, 40 hectares of SAF were implemented, 6 new families were certified organic, 16 families renewed their organic certification, and 23 new families joined the initiative. Amazônia Agroflorestal also guaranteed the acquisition of all Apuí coffee production.

In 2022, Café Apuí Agroflorestal raised 11 million reais (aprox. 2.2 million US dollars), allowing it to grow its business on a commercial scale. According to Sampaio (Interview, 2022), 10 million stemmed from a loan maturing in 2030 granted by the French Mirova's impact manager, which Café Apuí Agroflorestal must repay by issuing carbon credits to avert deforestation caused by the manufacturing process. On the other hand, the remaining 1 million reais (aprox. 200 thousand US dollars) came as equity, with Axcell's accelerator obtaining a stake in the company.

According to a USAID article[62], this innovative arrangement (the first of its kind by Mirova in Brazil) will allow over 300 families to participate

61. *Andiroba*, ipê and jatobá, for instance, contribute to the natural fertilization of the soil through the fall of dead leaves, and protect the soil and crops from the scorching sun, especially in the hottest and driest seasons.

62. https://www.pcabhub.org/en-us/news/news-highlights/first-organic-agroforestry-coffee-produced-in-the-amazon-prepares-to-scale-production

in coffee production and is capable of "reaching over 12,000 bags of agroforestry coffee per year—a growth of more than 5,000 percent compared to the 231 bags produced in 2021." It is also worth noting that the project has the potential to create many carbon credits because it is being conducted in an area with high deforestation. In addition to repaying the debt, these credits may be used to compensate the company and pay the producers. Furthermore, this strategy for monetizing a forest restoration asset often favors large rural landowners, who target the region's major carbon credit developers, placing their bets on Café Apuí Agroflorestal's success with its small producer-focused.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The company obtained and renewed the IBD seal[63], which refers to the quality and organicity of the coffee roasting process.
- Café Apuí Agroflorestal also works with participatory organic certification to guarantee the production and processing (of farmers) with the Rede Maniva de Agroecologia.
- Idesam was awarded Environmental Management Award in the Amazon Biome by Instituto Brasileiro de Administração Municipal—IBAM (Brazilian Institute of Municipal Administration) for three different projects[64]: the Coffee Project in Apuí's Agroforestry, in the category of Sustainable production and conservation incentives, and the Young Forest Entrepreneurs Project and the Socio-environmental Agenda Project, both in the category of socio-environmental governance.
- Idesam was one of the six finalists for the 2018 Criando Valor Shared Award[65]; the best-placed Brazilian initiative was the Coffee Project in Agroforestry. The award is a Nestlé initiative sponsored by Ashoka Network.
- ATER Good Practices (December 2015) – In a joint initiative between MDA, Incra and Anater, the Idesam's Coffee Project in Agroforestry (which became Café Apuí Agroflorestal) was awarded and participated in the publication of best practices.[66]

63. https://www.organicsnet.com.br/certificacao/ibd/

64. http://www.amazonia-ibam.org.br/premio-gestao-ambiental-bioma-amazonia/pratica/lista?palavra_chave=Idesam&classificacao=&state_id=&category=&modality=

65. https://www.youtube.com/watch?v=bhJWYHnpQBE

66. http://www.agraer.ms.gov.br/wp-content/uploads/2017/06/Caderno-de-Boas-Praticas-de-Ater.pdf

GREEN ECONOMY
INITIATIVES IN THE AMAZON

5. Manioca
(Brazil)

MAIN IDEA

Manioca is a Brazilian company with a socio-environmental impact, founded in 2014 in Belém, in the North state of Pará. Produces 100% natural food and beverage products using Amazon rainforest resources. The main objective of this project is to bring traditional Amazon biome products such as Tucupi, Taperebá, Cumaru, and Feijão Manteiguinha[67] to other markets, stores, and restaurants in Brazil. This will help to promote a more sustainable Brazilian cuisine connected with the Amazon and support the development of production chains, generating more income and sustainable development in the region. The manufacture of Manioca products is the result of the interaction of biodiversity management and traditional culinary knowledge. According to Joanna Martins (Interview, 2022), founding partner of Manioca, this is an environmentally conscious business that evolved from identifying several issues. These issues include (i) Brazilian consumers were not familiar with traditional Amazonian flavors, (ii) a lack of truly natural and Brazilian foods on the national market, (iii) 25 million people without access to suitable employment, (iv) a failure to capitalize on culture, (v) an increase in deforestation, and (vi) a threat to the region's biodiversity.

SUSTAINABLE ASPECTS

Manioca's portfolio includes jellies, beans, flours, and granolas from Amazonian biodiversity. Tucupi and its sauce are its most well-known products, made from cassava, the company's main raw material (Interview, 2022). The work of Manioca in this Brazilian biome is based on a policy of zero deforestation and conservation of forest biodiversity. According to its website[68], the company does not employ raw materials from recently deforested areas. It assists its suppliers in complying with the Forest Code's rules and regulations and preserving the region's native ecosystem, achieving SDGs 2, 8, 10, 12, 13, and 15 in their operations.

Manioca's Code of Conduct (Interview, 2022) states that the company prefers to work directly with local producers in the Amazon in an open and accountable manner rather than through intermediaries. The company only employs raw materials from suppliers who engage in sustainable agriculture and practices. To accomplish that, Manioca promotes technical assistance to its suppliers, teaching them fundamentals (ranging from obtaining the necessary documentation to regulate their business to issuing invoices), incentivizing them to adopt good food manufacturing practices, and supporting their certifications when possible.

67. Tucupi is a yellowish liquid extracted from cassava (scientific named as *Manihot esculenta Crantz*), Taperabá has the scientific name of *Spondias mombin*, Cumaru is *Dipteryx odorata*, and Feijão Manteiga, *Phaseolus lunatus*.

68. https://maniocabrasil.com/

CHALLENGES

Joanna Martins mentions that (Interview, 2022) the primary challenges that Manioca faces today are related to its scale, which is complex due to its decentralized structure, characterized by horizontal relationships with family farming suppliers and with local Amazon communities. Moreover, there is a considerable knowledge gap between the remote Amazon and the rest of Brazil, affecting investment in this type of venture and forming potential consumers. Martins adds that there is still a great deal of potential for national investors to use resources in their own country. However, they typically do not due to a lack of knowledge and confidence in a region with structurally solid security and logistics issues. At the same time, in terms of the consumer market, many Brazilians are unaware of local products and their diverse flavors, ingredients, and bioactive, demonstrating the company's marketing challenges and the opportunity for public policies that encourage this type of cultural exchange to generate wealth within the country.

Another challenge mentioned by Martins (Interview, 2022) is some limitations imposed by the informal environment and a lack of scientific knowledge and research within the Amazon region, which prevented the company, for instance, from working with animal products with higher sanitary complexity. As a result, this bottleneck in local development inhibits the commercialization of products in high demand. It could be better explored if they could guarantee consumer safety, such as regional canned fish. Similarly, she discusses the shortage of skilled labor, focusing on the food market, which is worsened by the flight of talent in the region who seek to qualify themselves in places with superior infrastructure.

OUTCOMES

According to Joanna Martins (Interview, 2022), Manioca's production was primarily intended for Brazilian restaurant chefs. However, they are already available in the largest Brazilian supermarket chains, such as Pão de Açúcar, Zona Sul, St. Marche, and Festval. They have more than 200 retail locations in Brazilian states and have already reached international markets (US, France). Manioca has an online store that sells its products, consolidating a collaboration with the Mercado Livre online marketplace. In addition, between 2014 and 2021, Manioca's product sales increased significantly, beginning at 195 thousand reais (aprox. 39 thousand US dollars) in 2014 and nearly quintupling this value by 2021.

In socioeconomic terms, according to Martins (Interview, 2022), Manioca's supplier development program can currently preserve 164 hectares of land, guarantee the purchase of 71 tons of raw material, generate 264 thousand reais (aprox. 52.8 thousand US dollars) for its partners, and help 38 families in 11 different communities, besides indirectly supporting other suppliers, such as through the Rede Origens.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- In 2018, it receiveid investments from the Investment Laboratory – Social and Environmental Impact Business of Conexsus (Instituto Conexões Sustentáveis), a joint investment with SITAWI Finanças do Bem and Idesam[69].
- In 2019, Manioca won the agriculture category of Climate Ventures call "Bom Negócio pelo Clima[70].
- In 2019, it raised 200 thousand reais (aprox. 40 thousand US dollars) in investments for working capital, communication, marketing, and market expansion during a business roundtable. Idesam and USAID facilitated a discussion during the inaugural Forum for Impact Investments and Sustainable Business in the Amazon (FIINSA)[71].

69. https://www.conexsus.org/nectar-da-amazonia-e-manioca-sao-os-primeiros-negocios-a-participar-do-laboratorio-de-investimento-da-conexsus/

70. See https://www.climateventures.co/br/programas and https://drive.google.com/file/d/13Qk5ce6V6E5HBjhhFM-lad9OlTrH1hsh/view.

71. https://pcabhub.org/pt-br/noticias/noticias-destaques-pcab/forum-de-investimentos-e-negocios-sustentaveis-se-encerra-com-investimentos-de-mais-de-r-1-milhao-em-startups-amazonicas-com-impacto-socioambiental

- In 2019 and 2020, was selected for the acceleration programs run by "Parceiros Pela Amazônia" (PPA)[72], raising more than 250 thousand reais (aprox. 50 thousand US dollars) in the second year. In 2020, it actively engaged in the "Amazônia em Casa, Floresta em Pé" campaign, an initiative developed by the Climate Ventures Institute in partnership with PPA and Fundo Vale, by advertising its products on the Mercado Livre online platform.
- In 2021, participated in the new Mercado Livre campaign, "From the Amazon to You," to sell goods from the accelerated products on the PPA platform, as well as in marketing, digital marketing, and benefits workshops, such as media packages with free marketplace advertisements.
- In 2021, won the Sirha Innovation Awards[73] at the world's largest gastronomic fair, recognizing the value of its primary product: tucupi.

72. https://ppa.org.br/programa-de-aceleracao-ppa/

73. https://www.sirhafood.com/en/sirha-innovation-awards-2021-summary-and-winners

GREEN ECONOMY
INITIATIVES IN THE AMAZON

6. Precious Woods
(Brazil)

MAIN IDEA

The enterprise started in Rio 92 with a group of young Swiss investors interested in proving that wood extractives could coexist with sustainability. It has grown to become the world's largest producer of certified tropical wood 28 years later. Precious Woods' first investment was considered revolutionary not just because of its founding idea but also due to the amount of capital, time, and energy needed. Markus Brütsch, the company's CEO, explains: "the entry barrier is quite high because you have to enter three years before a single cut in the forest with the inventories, so you have fix costs. You have to invest into machines, into the industry, into people" (2022). The holding's management project is a pioneer in extracting forest products using low-impact procedures, which are sustainable solutions for tropical forest conservation. Mil Madeiras Preciosas is its subsidiary based in the Brazilian Amazon.

SUSTAINABLE ASPECTS

The sustainability aspect of the company's final/main activity is related to the organized wood and replanting model. As explained by Jeanicolau Lacerda (Interview, 2022), advisor to Precious Woods in Brazil, the company owns 500 thousand hectares blocks in the south of the Brazilian Amazon, in the city of Itacoatiara, approximately 240-270 km from Manaus (the capital of the Amazonas state). This block is divided into 15 thousand hectares, where they cut only 1-3 trees per hectare that are explored for one year, then they move to the next area. Thus, with a spacing of decades[74] and the logic of the continuous measuring cycle over a long time, the company allows the first batch to develop again, restoring the balance between what is taken from nature and what is planted and cultivated. They are already planning for the next 40 years of harvesting since they know which trees can be cut and which must be preserved. All this work is only viable given its scale (for the high fixed-cost and time-spaced costs for tree harvesting). It is also possible due to the traceability system, which allows for identifying each planted tree and the whereabouts of its wood after it has left the factories. Because the company has achieved relevant certificates[75], all these traceability methods can be trusted. These elements differentiate the company from the traditional wood business, enabling it to be sustainable and competitive.

Regarding the secondary activities needed for the entire operation, the Precious Woods website[76] indicates that all biomass waste generated at Mil Madeiras has an environmentally appropriate destination in the power generation by the company Mil Energia Renovável. This reduces the methane emission caused by the decomposition of accumulated biomass and the CO_2 emissions generated by using diesel oil instead of biomass.

74. The initial design of the company business was planned for 30 years ahead, and today it is capable of achieving an even longer-term planning.

75. The subject will be better explained in the last topic "awards, recognitions and/or certifications".

76. https://preciouswoods.com.br/

In short, this circular economy model allows to produce clean energy and efficient disposal of waste through the reuse concept.

Another sustainable component of Precious Woods initiative is social and covers workers and residents of the region. Even though Precious Woods has purchased land plots for their logging operations, the locals continue to live in their homes, economically exploiting the region and coexisting positively with Precious Woods' operations.

Furthermore, it is worth mentioning that Precious Woods invests in and supports technology and research. In this context, the Precious Forest Foundation[77] was established to conduct a study on tropical forest management.

CHALLENGES

Uncertainty is one of the company's most significant obstacles shared by other companies in the Amazon region. The Amazon has been a site of conflict between illegal loggers, land grabbers, and threats to small producers. However, its significance has grown with the rise of illegal trafficking (e.g., weapons, drugs, people, etc.) and money laundering through other activities in the region. Lacerda (Interview, 2022) describes the company's unsuccessful attempt to increase its production area in Brazil, which was rendered impossible in certain concession areas due to the severity of the regional conflicts.

Furthermore, structural issues such as inadequate energy, transportation, the internet, and communication systems have posed a considerable obstacle for the company, as they have for other projects in the Amazon region. These logistical barriers, which make it difficult to access the region and learn about its potential, also contribute to a cultural barrier by preventing the general population from accessing information about the region. Even a vast, economically, and sustainably successful company like Precious Woods faces challenges in attracting domestic and international investments. This ignorance also has implications for the attempts to export business models incompatible with the Amazonian reality. It frustrates investors and initiatives that abandon working in a region brimming with possibilities owing to a lack of understanding of its needs and idiosyncrasies.

OUTCOMES

As previously stated, the wood industry's approach to energy generation proved to be a suitable option for waste disposal and any residual sawdust from tree logs. Consequently, a thermoelectric plant was installed in Itacoatiara (the municipality where the extraction and office activities occur), which supplies 50% of the city's energy. The company has a zero biomass effect because the total amount of biomass consumed is lower than the rate of forest growth, and it replaces diesel in power generation. The production of clean energy wood chips and waste from the company's primary operations allows it to balance energy consumption and carbon emissions (Interview, 2022).

The growing area in productive spaces is even bigger than in forest reserves or protected areas in terms of planted trees, with a net positive impact of 140 thousand m^3 after dividing the area on the ground for the limited extraction of wood into one to three trees per hectare (BRÜTSCH, 2022).

According to Jeanicolau Lacerda (Interview, 2022), Precious Woods was a pioneer in managing tropical forests in Latin America and the only company in Brazil that follows this operating model. It is a publicly-traded company with the most comprehensive database and research on forest management in Latin America, encouraging it to share its management strategies, technical concepts, and knowledge with other countries worldwide. Few companies in Latin America perform this forest management work, as most of the players in this industry are based in Africa and are of Chinese origin.

77. https://precious-forests.foundation/en/ueber-uns/

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- As shown in the company's website[78], in 1997, it became the first native forest management company in Brazil to obtain the FSC® forest certification seal[79], adopting its rigorous principles and criteria. Currently, Precious Woods - Mil Madeiras has joined another independent Forest Certification scheme called CERFLOR, certified by INMETRO[80] and accredited worldwide by the PEFC system[81], making it the only company of this segment with these two important seals. Forest certification seals attest that management is environmentally correct, socially fair and economically viable.

78. https://preciouswoods.com.br/
79. https://fsc.org/en/fsc-public-certificate-search
80. http://inmetro.gov.br/qualidade/cerflor.asp
81. https://www.pefc.org/

7. AJE Group - Bio Amayu Project (Peru)

MAIN IDEA

The AJE Group[82] is a multinational company specializing in producing, distributing, and selling alcoholic and non-alcoholic beverages. It was founded in the 1980s in Ayacucho, Peru. The company collaborates with local communities, such as the Pacaya Samiria National Reserve, to manufacture beverages using native superfruits (such as açaí, buriti, and camu camu[83]) from uncut palm trees to promote sustainability and new techniques of preserving the Peruvian Amazon[84]. All this started with the Bio Amayu (Amarumayu)[85] bio business project, a collaboration between Peruvian indigenous communities, the Ministry of the Environment (MINAM), and Amazonian regional governments, in which the AJE Group purchased fruits from local indigenous to produce beverages[86], thereby assisting in the preservation of Peru's humid Amazon. This effort helps minimize the country's carbon footprint while empowering Peruvian indigenous peoples economically[87].

SUSTAINABLE ASPECTS

Prior to the Bio project, local producers did not view superfruits beverage production as a profitable economic activity. Nevertheless, the project introduced communities to circular economy strategies, demonstrating how environmental preservation guaranteed returns and economic benefits for a devalued sector. For instance, wetlands in the Loreto and Ucayali regions help retain carbon, enabling superfruits to grow. Communities are therefore urged to preserve forests and biodiversity to increase their income and serve a new beverage industry by manufacturing natural juices derived from fruits with great nutritional value. AJE's action plan[88] "is to support residents so they have adequate management plans for their lands and can sell us the fruits that are processed in the Amazon itself, through micro-enterprises that transform them (the fruits) into pulp so that we can transform them into the drinks that you find in stores." In a global context where the debate over environmental preservation is escalating, the natural drinks produced by Bio Amayu appear to represent a new market alternative. It meets the demands of a contemporary public that has adopted healthier eating habits based on organic foods and natural juices[89].

CHALLENGES

According to the Tropical Forest Alliance[90], "the great challenge has been to create a supply chain

82. https://www.ajegroup.com/

83. Whose scientific names are, respectively: *Euterpe oleracea, Mauritia flexuosa,* and *Myrciaria dubia*.

84. https://www.ajegroup.com/sostenibilidad/revolucion-natural/

85. https://www.bioamayu.com/

86. https://amarumayu.com/

87. https://www.ajegroup.com/aje-y-el-bionegocio-que-tiene-como-reto-preservar-la-amazonia/

88. https://www.ajegroup.com/decidimos-poner-en-valor-los-productos-de-la-biodiversidad-peruana-y-asi-fue-como-surgio-el-proyecto-bio/

89. https://www.tropicalforestalliance.org/en/insights/blogs/aje-amazon-fruit

90. https://www.tropicalforestalliance.org/en/insights/blogs/aje-amazon-fruit

from scratch for the Amazonian fruit, as this did not exist, and was made more difficult due to the remote location in the Peruvian Amazon. Another challenge was to initiate a direct relationship with the Amazonian communities, something new to Peruvian companies. "We had to consider that these communities were not familiar with a market economy. We forged a direct business relationship with the community members, and this has been recognized by the communities" (2020). The importance of creating favorable conditions for the project's execution was an additional barrier to "create and organize a 'cold chain' so that these Amazonian super fruits could reach the pulper to be frozen and then be transported to the capital". That is because community management plans included high costs and long-term implementation.

OUTCOMES

In 2019, AJE was certified by the Peruvian National Service of Natural Areas Protected by the State (SERNANP) with the brand "Aliados por la Conservación" as the first company to use fruits from a protected natural area: the Pacaya Samiria National Reserve. The Reserve covers an area of over 5.5 million hectares, responsible for approximately 40% of the carbon retained in Peruvian territory. It also features around 700 species of birds, 120 species of mammals, and more species of fish than in the entire Atlantic Ocean. In the official press release of the government[91], the Minister of the Environment, Fabiola Muñoz, recognized that "the best way to reverse deforestation is by valuing the products of our forests, and that is what we are now doing thanks to the articulation between the State, the native communities and the private company" (2019). The agreement allowed the company to explore the Buriti[92], committing itself to the producing communities to take advantage of the fruit within the Reserve and maintaining a purchase rate throughout 2019 that corresponds to a 50% increase per bag compared to 2018, thereby contributing to the enhancement of this product's value. Additionally, the BIO (one of the brand's product line) beverages are sold on the Amazon marketplace and are exported to Colombia and the US.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The Bio Amayu initiative was named one of the best-shared value business initiatives[93] on the list of "Companies that Transform Peru"[94] at the 2021 Annual Conference of Executives (CADE Ejecutivos)
- Grupo AJE is also part of the Coalition for Sustainable Production in Peru, which is supported by the Tropical Forest Alliance and has tropical Amazonian fruit production chains as one of its key action areas[95].
- The Pacaya Samiria National Reserve provides the raw material for the aguaje drink, which was certified by the Peruvian National Service of Natural Areas Protected by the State (SERNANP) with the brand "Aliados por la Conservación" as the first company to use fruits from a protected natural area.

91. See the official press release by the Peruvian government (2019).

92. Buriti It is an extremely coveted and rare plant due to is high volume of vitamin A. In addition, the fruit grows in palm trees that are usually up to 35m high, which makes access difficult.

93. See https://www.ipae.pe/wp-content/uploads/2022/04/Folleto-empresas-reconocidas-2021.pdf (page 10).

94. https://rpp.pe/empresasquetransforman

95. https://www.tropicalforestalliance.org/en/insights/blogs/aje-amazon-fruit

GREEN ECONOMY
INITIATIVES IN THE AMAZON

8. Alianza Cacao Perú
(Peru)

MAIN IDEA

The Peru Cacao Alliance[96] is a public-private partnership supported by USAID that employs a collaborative work model in collaboration with over thirty private-sector businesses and cooperatives involved in the cacao/chocolate manufacturing industry[97]. The organization's main objective is to make the Peruvian cacao value chain more competitive and increase the income of farming/producing families in San Martin, Huanuco, and Ucayali regions through environmentally friendly, sustainable techniques.

Peru is well-known for its delicate and aromatic cacao, which has been gained popularity in foreign markets. The quality and quantity of this product have increased. Because of the seed's genetic diversity and variability in the Amazon region, local producers can benefit and generate income from this market. In this sense, the Alliance's work enables cocoa to be socially inclusive, environmentally friendly, and profitable while ensuring the processes and certifications required to reach more demanding markets with higher value and better prices. Thanks to a traceability system, all cocoa produced can be traced by its final buyers, allowing the local producer to be recognized as a key player in this value and production chain.

SUSTAINABLE ASPECTS

The Peru Cacao Alliance promotes economic, social, and environmental sustainability. Technical assistance, schools of excellence, training of technological agents, and sustainability strategies are the Alliance's approaches for its productivity component. Such approaches promote various educational and training activities to teach agroforestry management, good agricultural practices, organic fertilization, soil management, crop irrigation, and pest control. In addition to encouraging personal development, business management, digital inclusion, financial education, and investment management, these initiatives connect participants to financial institutions. The funding component addresses producers' and organizations' working capital and fixed asset finance[98].

Furthermore, it is critical to note that the Alliance has socioeconomic training programs aimed exclusively at women. It also tracks overall outcomes by separating beneficiaries based on gender to determine the percentual of men and women who benefit from learning, training, financing, and loan initiatives.

CHALLENGES

The region's considerable increase in illegal coca production is one of the biggest concerns confronting agricultural producers

96. See http://www.alianzacacaoperu.org/en/ and https://www.youtube.com/channel/UCgWV93Wydu6uyKDyu2P9LDg.

97. Divided into: technological partners/suppliers of inputs, financial partners, aggregators/technical assistance partners and purchasing partners.

98. Such as Agrobanco, Mibanco, Financiera Confianza, Cooperativa de Ahorro y Crédito Tocache, Cooperativa de Ahorro y Crédito Norandino, Cooperativa de Ahorro and Crédito Prisma.

in the Peruvian Amazon. These activities cause deforestation, contribute to drug trafficking and violence, and weaken and expel the indigenous and traditional communities in these areas. One goal of the Peru Cacao Alliance in boosting small producers and establishing regional activities is to replace illegal coca production with regulated and ecologically production. However, the latter has progressively affected small producers and requires much more attention and resources at the national and international levels for surveillance, containment, and violence control.

OUTCOMES

According to the Alliance's website[99], the training groups benefited 15,638 farming families from San Martin, 6,815 families from Huanuco, and 4,930 households from Ucayali throughout 2020. In the school of excellence, 552 farming families from San Martin participated, as did 279 families from Huanuco and 385 from Ucayali. The activities of the field days comprised 5,776 farming families from San Martin, 2,966 families from Huanuco, and 3,173 families from Ucayali. As per technical visits, 8,313 farming families in San Martin have received this support, while 7,399 families in Huanuco and 5,763 in Ucayali have benefited.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The Agroindustrial Cacao Alto Huallaga Cooperative[100] was founded in 2015 and currently has 360 members spread over the three regions where the Alliance operates: Huanuco, San Martín, and Ucayali. The cooperative promotes UTZ Certified[101], organic, and fairtrade cacao production and marketing as an alternative for increased value-added and income generation.

99. See http://www.alianzacacaoperu.org/nuestro-trabajo/productividad/

100. http://www.alianzacacaoperu.org/en/directorio/caica/

101. https://www.rainforest-alliance.org/utz/

GREEN ECONOMY
INITIATIVES IN THE AMAZON

9. Kemito Ene
(Peru)

MAIN IDEA

Kemito Ene[102] is a community business founded in 2010 in the Peruvian Amazon, city of Satipo. After years of displacement caused by terrorism, invasion of lands, and social conflicts, the indigenous organization Central Asháninka del Rio Ene (CARE)[103] was able to unite communities in the Ene River basin, bringing together 231 Asháninka cocoa producers of a highly aromatic organic cocoa and 94 coffee producers of organic shade-grown Arabica coffee beans. Their main operations are in the river basin, where dry cocoa beans are collected, and wet beans are fermented and dried in post-harvest centers by Kemito Ene's staff, one of the few indigenous producer organizations in the Amazon, to achieve global markets. Chocolates, cocoa butter, coffees, and cocoa nibs are the products the company sells and exports.

SUSTAINABLE ASPECTS

The Ashaninka communities produce more than 300 hectares of cocoa and coffee on over 70,000 hectares of community forest using natural processes and organic agroecology standards. This production is shade-grown and deforestation-free. They set up new farms on deteriorated lands and do not burn the vegetation but cut it and let the organic matter degrade. This technique enriches the soil, increasing crop productivity while reducing carbon emissions. The entire open-air grain fermentation and drying process rely on manual work and the sun's heat. Later, the seeds are chosen for the ultimate producing goods.

Economically and socially, the association enabled the elimination of intermediaries who used to purchase cacao from indigenous communities at low prices[104], favoring direct negotiation and thereby increasing the income of these small producers. Additionally, the enhancement of the product was made possible by CARE's technical assistance, which enabled the beans to achieve superior quality and obtain the international certifications needed for entering the most demanding markets and competing in terms of quality. As stated in the UNDP's analysis of the Kemito Ene initiative[105], "(the project) provides technical training to producers through Field Schools in order to share knowledge, and techniques, discuss and identify problems. The Field Schools program is a highly participatory training approach, where farmers are encouraged to experiment on their own farms based on their observations. It has also developed a three-year program called "Escuela Kemito Ene Empresa y Gerencia Indigena" to empower the Board of Directors (BoD)." In this sense, Kemito Ene's activities embrace a series of Sustainable Development Goals, including 1, 8, 13, 15, and 17.

102. https://www.kemitoene.com/

103. http://careashaninka.org/

104. Beyond the undersell, some producers would even give away their cacao in exchange for foreing products (such as spaghetti, flashlights and machetes).

105. https://www.equatorinitiative.org/2020/04/24/solution11456/

CHALLENGES

Living and producing in the Peruvian Amazon, the Asháninka communities of the Ene River, like so many other groups of small producers (mainly traditional communities and indigenous people), face severe challenges from predatory agriculture producers and the illegal coca production in the region. Additionally, mining, and hydroelectric concessions all over the place and deforestation by logging companies have threatened Asháninka's territory and production, which is needed for their autonomy.

OUTCOMES

More than 450 Asháninka families currently produce cocoa beans. Simultaneously, coffee production encompasses a group of approximately 100 families of small producers, aiming to improve their living conditions and boost the indigenous economy.

According to UNDP[106], Kemito Ene exported 10 tons of cocoa in 2015 and 90 tons of cocoa and cocoa derivatives in 2016, providing significant income to the 231 Ashaninka producers and their families (roughly 1,000 people) at the time[107].

Rainforest Foundation UK collaborated with Kemito Ene to assist the Ashaninka people. Their cooperation intends to improve post-harvest and production techniques and strengthen the cooperative's capacity to sell its products on the global market). As per Rainforest Foundation[108], "Kemito Ene has registered its brand and has been an actively participant in the Salon del Cacao y Chocolate in Lima, Peru." It was able to engage 4,000 people, maintain 90 tons of production annually, and account for 106 thousand hectares of covered protected forest.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Kemito Ene won the Equator Prize in 2019, an award given by the Equator Initiative within the United Nations Development Programme (UNDP) to community initiatives advancing nature-based solutions to climate change and sustainable development. According to a UNDP press[109], Kemito Ene was chosen as "a model for sustainable commodity supply chains worldwide" and an "indigenous social business enterprise that enabled 300 Asháninka families to break into the international market and directly export 90 tons of sustainably produced organic cacao annually while conserving their forests" (2019).
- In 2021, the national indigenous organization in Peru, AIDESEP[110], acknowledged Kemito Ene as a model of indigenous economy developed bottom-up and founded on indigenous peoples' development vision. As a result, it was awarded the Indigenous Entrepreneurship Fund (Category 3), a joint initiative headed by AIDESEP, NESsT, WWF, and USAID, as a part of the Indigenous Amazon Rights and Resources project.
- All Kemito Enes cocoa and coffee production is organic and certified by USDA/NOP and EU Organic.

106. https://www.equatorinitiative.org/2020/04/24/solution11456/

107. Data form the UNDP accessible at: https://www.equatorinitiative.org/wp-content/uploads/2017/05/Kemito-Ene-Case-Study-English-r4.pdf

108. https://www.rainforestfoundationuk.org/sustainable-livelihoods

109. "Equator Prize 2019 winners announced for local innovative climate solutions" of June 5th, 2019.

110. http://www.aidesep.org.pe/index.php/noticias/fondo-emprendimientos-indigenas-categoria-3-anuncia-sus-ganadores

CHAPTER 3.3.

GREEN ECONOMY INITIATIVES IN THE PAMPAS

ARGENTINA

1. Organic Latin America & Going Natural & Pampa's Rice - Pampa's Grains
2. Pampa Energía
3. Ucropit
4. Yamay

BRAZIL

5. Parque Municipal - Pedra do Segredo

URUGUAI

6. Sweet Flavor Lab - SFL Honey

GREEN ECONOMY
INITIATIVES IN THE PAMPAS

1. Organic Latin America & Going Natural & Pampa's Rice - Pampa's Grains
(Argentina)

MAIN IDEA

Organic Latin America[111], Going Natural[112], and Pampa's Rice. Pampa's Grains[113] consists of three companies ruled by the same Argentine pampas-based business partners. Despite having different labels to differentiate their products and markets, they are specialized in producing, transforming, and distributing organic grains and work according to the same certifications and standard logic. They are responsible for 3% of Argentina's rice production.

Organic Latin America is dedicated to the production of different types of rice and rice flour[114]. In contrast, Going Natural produces different grains[115], such as vegetables, cereals, seeds, and their derivatives and flours. Alternatively, Pampa's Rice. Pampa's Grains is a company with two distinct labels (one for grains in general and the other for rice only) that sells exclusively within Argentine.

SUSTAINABLE ASPECTS

The company's products adhere to the National Organic Law nº 25.127-1999 of SENASA and the Ministry of Agroindustry, which permits the use of the organic seal on the front of the packaging.

In addition to studying different variations of rice, vegetables, and seeds for a better application for the industry and consumers, the company has a technical team that works on developing functional products, such as those free of chemical residues, gluten-free, vegan, low glycemic, high protein content, etc. The company is also concerned with continuous monitoring across the entire production chain, including land preparation, seed selection, planting time, crop development, harvest, industrial process, packaging, and distribution. For this reason, organic production has strict standards regarding sustainability and ecology, working with producers who (i) respect biodiversity and encourage the cultivation of various products rather than monoculture, (ii) do not waste water in tasks or irrigation, (iii) recycle or invest surplus waste in the generation of green energy, and (iv) control weed and insects without the use of synthetic chemicals.

CHALLENGES

Christian Martinez, president of Organic Latin America, discusses (Interview, 2022) the

111. https://organiclatinamerica.com/

112. https://www.goingnaturalsrl.com/

113. http://www.pampasrice.com.ar/

114. Such as long grain and short grain white, black and brown rice, carnaroli brown and white rice, mochi brown and white rice, among others.

115. Going Natural produces a huge variety of grains, among which are different types of beans and corns, chia, oat, canola, wheat, sunflower oils, etc.

company's challenges due to Argentina's volatile economic and regulatory legislation. He also underlines how inflation affects long-term planning, particularly regarding international operations and currency volatility. In this sense, the high expenses of the dollar and the fluctuation in currency rates have hampered the importation of machinery and equipment, making export planning more complex and challenging. Concerning a more typical difficulty of the pampa as a biome of major agricultural producers, Martinez highlighted the ongoing rivalry for land, capital, and huge producers with greater bargaining power in many situations. The costs of certification, for example, is ultimately borne by the three companies because family farmers cannot afford it. Therefore, Martinez (Interview 2022) concludes that these costs benefit large-scale and monoculture producers to the detriment of small ones, notwithstanding his proficiency in Argentine legislation and bureaucracy for organic products.

OUTCOMES

As previously mentioned, the analyzed companies carry out sustainability functions on numerous fronts: product quality, research and development, sophisticated planting and soil management, investment in small producers, and responsible action throughout the production cycle. "Of course, all these benefits can only be guaranteed through the certifications" (Interview, 2022), which makes organic grains precious and a specialist product for which consumers are willing to pay more. This applies not only to eating the chemical-free product and high-quality standards but those that have completed a sustainable process throughout their whole production chain, beginning with purchasing goods from small producers under fair conditions.

As a result, Organic Latin America and Going Natural products can meet the requirements of the most demanding markets, currently exporting to the US, Canada, Ecuador, Costa Rica, Bolivia, Uruguay, Brazil, Peru, Denmark, Belgium, the UK, Germany, Italy, Spain, Switzerland, Vietnam, Hong Kong, Japan, Australia, and New Zealand.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Certifications obtained: Organic, gluten-free, vegan, Kosher[116], EU organic, no GMO, USA NOP, BIOSWISS[117], JAPAN MAFF & UE IFOAM, GrainPro, USDA Organic[118], OIA Organic USDA-NOP[119], Canada Organic Biologique[120].
- Member of the Global Pulse Confederation (GPC)[121] and Organic Trade Association (OTA)[122].

116. https://sakosher.com/
117. https://www.bio-suisse.ch/de.html
118. https://www.usda.gov/
119. http://www.oia.com.ar/
120. https://www.canada-organic.ca/en
121. https://globalpulses.com/
122. https://www.ota.com/

GREEN ECONOMY
INITIATIVES IN THE PAMPAS

2. Pampa Energía (Argentina)

MAIN IDEA

Pampa Energía is Argentina's largest private integrated energy provider, with an installed capacity of almost 5 MW in 2020. It has managed the oil and gas (fossil fuels and petrochemical) business and the electric power generation through thermal and hydroelectric power plants and wind farms for over 15 years.

SUSTAINABLE ASPECTS

Since 2018, Pampa Energía has published annual sustainability reports, committed to 2030 Agenda SDGs 4, 6, 7, 8, 9, 12, 13, and 17, and joined the special stock market trading panel (+GC) established by ByMA[123], which is dedicated to efficient, transparent, and fair corporate governance. The company shows its relationship with local communities in its more recent 2020 Sustainability Report, by highlighting, among other things, its social investments in education (including environmental subjects), capacity building, employment and social and community inclusion, gender equality, and promotion of culture (2021, pages 155-178).

Pampa Energía has sustainable energy, water, and waste management initiatives linked to reduction, reuse, and recycling policies. It has recently implemented information technology to help measure and monitor them.

Finally, the "green economy initiative" par excellence is represented by producing clean energy for commercial use. Utilizing the potential of the pampa's biome, with its vast geographic fields and regular winds, the company began exploring the production of wind energy in addition to its production of hydroelectric power plants.

CHALLENGES

Although the company has achieved considerable progress, its report reveals several lags and declines when comparing 2018 to 2019. The total amount of nonhazardous waste recycled/reused decreased from 154.7 to 137 tons, a number that is significantly lower than in 2018 (277.5 tons of waste reused or recycled). Similar gaps were observed in the discharge of freshwater, which rose by 120,365 m³ compared to 2019.

Comparing 2019 to 2020, several of the figures reviewed for the 2020 sustainability report show lower rates or slight improvements in some categories, despite the numbers being more favorable than in previous years. This suggests that the company has made improvements but that they are still incipient and fragile, possibly not being able to face the pandemic solidly, as it appears to have had a significant negative impact on Pampa Energía's practices (as stated in the opening pages of the 2020 sustainability report), highlighting the challenges inherent to sectors where unconventional fossil energies coexist with the renewable ones.

123. Bolsas y Mercados Argentinos Sociedad Anonima (BYMA). See all Pampas reports since 2017 on the sustainability section of their webpage.

OUTCOMES

According to its 2020 sustainability report, Pampa Energía generated, in 2020 "2,404 GWh of clean energy from three wind farms and three hydroelectric power plants" (2021, page 93), which represented 14.6% of the total net generated energy. In terms of clean energy consumption (the company also uses solar panels for its own consumption[124]), its results were even better compared to the previous year: from 31% in 2019, the consumption of renewable electric sources rose to 83% of total electric consumption in Pampa's buildings. In terms of water, in 2020, there was a 9.2% increase in freshwater reuse actions compared to the previous year, in actions such as irrigation of forested areas, maintenance in general, recirculation pump tests, and other operations (2021, page 102). Still, according to the same report, regarding emissions, "although in 2020 GHG emissions experienced a 3.4% year-on-year increase, it was accompanied by a year-on-year increase in the gross production of electricity and hydrocarbons of 5.8% and 5.4%, respectively", indicating an increase in production efficiency when comparing total emissions with the volume of resources produced (2021, page 97).

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Pampa Energía is a Carbon Disclosure Project signatory (CDP).
- Since 2018, Pampa has been included in the first (non-commercial) sustainability index managed by ByMA and sponsored by the Inter-American Development Bank, in which 15 ByMA-listed companies with the best performance in environmental, social, corporate governance, and contribution to SDG are selected.[125]
- In 2020, all Pampa Energía's offices retained their USO 14001 certifications for environmental management.
- In 2020, the company made substantial progress toward converting its occupational safety and health management certification from OHSAS 18001 to the new ISO 45001 in 2020.
- In 2020, most of its power generation assets, E&P, and petrochemical business maintained their ISO 9001 certifications.

124. Forty photovoltaic cells installed in 2012 contributing 10 kW of energy to some of the power plant's facilities.

125. See https://www.pampaenergia.com/en/sustainability/

GREEN ECONOMY
INITIATIVES IN THE PAMPAS

3. Ucropit
(Argentina)

MAIN IDEA

The agritech company[126] was founded in 2018 with a B2B model that helps agricultural producers adopt more sustainable practices throughout their production process and reap additional economic benefits. Producers register as users of the application, bridging the gap between technology and agriculture so that companies may identify those who are adopting production practices that meet the required sustainability standards (which can be related to low carbon production, responsible use of fertilizers, sustainable genetic footprint, climate finance, and others), connecting such producers to the food companies that contract Ucropit's services, benefiting from the added value of traceable raw materials. Ucropit's traceable solution is powered by blockchain technology and enables the identification of more sustainable producers to gain prizes and financial incentives. The application is easy to access, free for agriculture producers, and wide-ranging since it does not need a Wi-Fi network or mobile data for its operation, facilitating rural producers who labor in the field without internet access. Currently, businesses in Argentina, Uruguay, Paraguay, Brazil, and the US employ Ucropit services.

SUSTAINABLE ASPECTS

The platform works by monitoring all stages of the production chain, starting with geolocated batches; verification of sustainable potential in land use; creation of a detailed history from cultivation to harvest (crop story)[127]; direct assistance to producers in the field by "field engineers" (local centaurs); reward and benefit ecosystems to publicize their sustainable production practices.

These ecosystems consist of the digital agreements and licenses companies make available to hire a local producer and access to the traceability of crops with specified objectives. For producers, objectives and benefits of traceability are discussed in depth. They select and implement such digital agreements in the requested crop, providing the contracting company with a crop history. The application tracks sustainable crop types of cotton, sunflower, corn, soy, and wheat. In addition, the initiative lists inputs and technology adoption in agricultural practices, green financing, the impact of CPG (Consumer Product Goods) brands, and lower carbon dioxide emissions.

CHALLENGES

According to Diego Hoter, Ucropit's CEO, the most complex aspects of the company's operations are the cultural boundaries between the traditional agriculture business and the new demands of the sustainable market and technological innovations. The company nevertheless recognizes its role in this disruptive scenario, in which it must modify its business to "not only feed the world but to cool it" (Interview, 2022). In this sense, agribusiness is still identifying these new sustainable needs, which

126. https://ucrop.it/pt/

127. The crop-story, produced with the assistance of agronomists at ucrop.it, is a confidential cryptographic record of the crop in which producers control the information they want to share with other actors in the production chain. In Ucropit website's there are visual examples of these crop-stories.

allows Ucropit to emerge. On the other hand, Hoter (Interview, 2022) mentions the challenge of producers being hesitant to enable their products to be monitored and shared with companies. Even though the crop stories are encrypted, the technological operation of the entire platform is not readily apparent, resulting in an access barrier for many farmers.

OUTCOMES

Surcos[128] (Argentina), Donmario Semillas[129] (Argentina), Gensus[130] (Argentina), Molinos Agro[131] (Argentina), Viterra[132] (Brazil), Chacra Servicios[133] (Argentina) and Cazenave[134] (Argentina) are among the companies that purchase from agricultural producers registered on the platform.

Agrositio reports[135] that BASF and Ucropit agreed on a partnership in 2021 to encourage more soybean producers to register, digitize, and verify their crops. Producers that plant BASF Credenz soybeans can register their cultivation histories on the Ucropit platform at no additional expense. The platform for digitally certifying sustainable soybeans and receiving prizes and/or incentives.

On the other hand, there is an agreement reached with Control Union Argentina in 2021, "by which soybean producers in Argentina, Brazil, and Paraguay will be able to access, free of charge, a digital verification of compliance with the sustainable scope of their crop histories"[136]. This agreement facilitates the remote digital verification of sustainable soybean growing history. As a result, producers can differentiate their products and increase their value, gaining access to new markets through the Control Union's pre-verification of carbon emissions.

Finally, Tomorrow foods[137] (Buenos Aires) and Boortmalt[138] (Buenos Aires) are also planning to use the Ucropit platform as a traceability tool. According to Hoter (Interview, 2022), the platform has digitalized about 2 million hectares with over 400 users. Among the sustainable ecosystems, the company's customers use (i) sustainable practices on differentiated grains, emphasizing low carbon traceability (this ecosystem aggregates contracts signed for up to 1 million hectares in 2021); (ii) responsible use of crop protection products and fertilizers (with contracts signed for over 100 thousand hectares in 2021); (iii) sustainable genetic footprint objects to Internet Protocol (IP address) recognition on seed use and product performance data on large surfaces. This ecosystem has over 1 million contracts signed in 2021); (iv) Consumer packaged goods (CPGs) & Specialties traceability, objecting impact label, and products traceability. This ecosystem had more than 100 thousand hectares of contracts signed in 2021; and (v) climate financing about compliance with the issuance of green bonds. This group represents more than 50 thousand hectares of contracts signed in 2021.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Ucropit has already been accelerated by the Creative Destruction LAB[139], Startup Chile[140], and Acelerar España[141].
- Additionally, the startup was also one of the three winners of the UNEP Sustainable AGTECH Challenge. This challenge aimed at awarding initiatives with products, services and/or technologies that are contributing to the fight against climate change and are creating more regenerative, sustainable and inclusive agrifood systems[142].

128. https://www.surcos.com/home
129. https://www.donmario.com/
130. https://gensus.com.ar/
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140. https://startupchile.org/en/
141. https://www.acelerar.es/
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GREEN ECONOMY
INITIATIVES IN THE PAMPAS

4. Yamay
(Argentina)

MAIN IDEA

Yamay[143] was founded in 2008 as a permaculture education and exchange program (natural building workshops) for local community projects. Eventually, the initiative located in the Argentine pampas of Villa Pardo (a rural area in Las Flores, Buenos Aires) that began with volunteer workers exchanging knowledge for the stay, began to offer ecotourism hosting and activities for the general public as well, evolving into a more diverse and sustainable business model. Fundamentally, Yamay was established on valuing interaction with nature and promoting simple and sustainable experiences that respect the environment and the local fauna and flora, resulting in a threefold impact: socio-cultural/educational, environmental, and economical.

SUSTAINABLE ASPECTS

Yamay's tourist plan includes many self-guided tours of Pardo's attractions and printed instructions for observing the sky throughout the current month. According to Yamay's website, the program is based on three pillars that "serve as a model case to be applied in other similar rural towns: (1) Social Responsibility, (2) Ecological Awareness, and (3) Educational Development and Cultural Rescue".

Following this objective, Yamay offers to its clients eco camping, astrotourism, bird watching, space for motorhomes, and horseback riding. Regarding spiritual activities, yoga retreats, Tai Chi, Qi Gong, and meditation are provided by Yamay's team of workers and volunteers. It also offers "workshops, talks, courses, volunteers on permaculture, natural construction, astronomy and astrophotography, renewable energy, waste recycling, organic gardening, gardening, vermiculture, afforestation with native plants" for environmental education activities. In addition, social activities such as gatherings of "micro-entrepreneurs in a fair-trade environment" where "producers can transmit their knowledge and establish contact networks through dissemination/educational days."

CHALLENGES

Marcelo Giuggioloni (Interview, 2022), Yamay's founder and administrator, describes the recurrent floods in the region as the most significant challenge. These floods cause the demolition of some structures in Yamay (mainly the adobe houses) and discourage people from visiting the area. Still, as a result of the rains' lingering effect, the distance (which is an attraction for tourists who want to go to remote places and disconnect from urban centers) becomes an obstacle since the paths lack the infrastructure to drain the water, which complicates the access of people (tourists and workshop instructors) and materials to the location.

Another challenge noted by Giuggioloni (Interview, 2022) is developing a growth model for his business without surrendering control, as external funds and investments may include relinquishing a portion of the enterprise's

143. https://yamay.com.ar/

management. Even after 15 years of Yamay's existence, the last two problems identified are the shortage of skilled local employees to conduct workshops on a continuous basis and the reluctance of older people to "open their minds" and become familiar with this form of business (Interview, 2022).

OUTCOMES

According to Giuggioloni (Interview, 2022), the company has promoted approximately 30 formal workshops (with open calls via social networks and email) and around 20 informal workshops in the format of actions with local villages at the Las Flores Schools near Villa Pardo. In addition, since its inner activities, Yamay has struck a deal with the Buenos Aires planetarium to promote the region's sky as a tourist attraction for night owls and astronomical observers. The relationship with the Argentine National Institute of Agricultural Technology (INTA)[144] promoted groups to aid local businesses, notably in the tourism industry, which was primarily unexplored at the time. One of Yamay's most significant accomplishments was its contribution to the region's tourist ecosystem. Before a few decades ago, Villas Pardo relied solely on agriculture and livestock as a primary source of local revenue. After the commodity boom of the 2000s, the activity began to suffer from fluctuations and a decline in the price of soybeans and cattle prompted producers to seek opportunities in other agricultural sectors. However, these productions did not adapt well to the region's annual flooding, which hindered the growth of certain vegetables and grains. In this scenario, the region saw several decades of socioeconomic decline and underdevelopment, and the promotion of tourism initiatives, local culture, and gastronomy played a crucial role in reviving the local economy. Giuggioloni (Interview, 2022) recalls that there were few tourism initiatives and nothing meaningful or incredibly sustainable when the company began operations there (the tourism business was concentrated in Las Flores in traditional hotels). In this sense, Yamay played an important role as an active agent of transformation in the tourism sector of Villa Pardo, both as a successful example and by articulating with the local city hall, helping the sector to be recognized and thereby paving the way for the proliferation of similar initiatives today. Currently, such initiatives have multiplied in number. Giuggioloni (Interview, 2022) states that the city hall is currently preparing regulations to register tourism producers and govern the activity in the region, which may take place soon, given that the voting on bills has already begun.

In addition, ecotourism has introduced a new socioeconomically beneficial activity on the land, also offering an option for young people who like to visit/stay in these places but do not choose to engage in agriculture-related occupations. Lastly, Yamay participated in the Los Pueblos del Futuro project, sponsored by the NGO Colectivo Sustentable[145], a series of online seminars held in March 2021 in which approximately 25 specialists.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- The NGO Colectivo Sustentable won the Pueblo Empreendedor 2018 contest sponsored by the Asociación Civil Responde and Galicia Bank, representing the project carried out in partnership with Yamay for a cycle of six workshops on rural tourism capacity building. Yamay obtained a "Declaration of Interest " from the local city hall, which allows public resources to be used and benefit the enterprise's private space by recognizing it for its work with the community and as the catalyst for socioeconomic enhancements in the area.

144. https://www.argentina.gob.ar/inta

145. https://congreso.colectivosustentable.org.ar/

GREEN ECONOMY
INITIATIVES IN THE PAMPAS

5. Parque Municipal - Pedra do Segredo
(Brazil)

MAIN IDEA

The Municipal Natural Park — Pedra do Segredo was formed in 1999 as a municipal environmental preservation area in Caçapava do Sul, Rio Grande do Sul, Brazil. Approximately 20 years ago, the area suffered from inadequate public management, which occasionally aided the park, mainly due to weak maintenance and inspection regulations. Natural Park was an area with few activities and programs, characterized by poor customer service, looting, human-caused forest fires, and illegal animal hunts. Fortunately, the municipality began attracting more attention to the park in the last four years. Tuna Ecoturismo[146] awarded a management contract through a competitive bidding process of 2018 and 2019, when the company began a series of forest management, restoration, and structural reforms at the park.

Tuna Ecoturismo began operating the park for tourism and visitation, leisure, sports, and environmental education practices, embracing activities such as hiking trails, climbing, abseiling, camping, night observation, cultural events, trekking, and scientific research, utilizing the region's distinctive pampa characteristics, such as rock chains, many mountains, and geological diversity (the so-called geosites). The combination of fauna and flora in the park's rich biome captured the public's attention.

146. "Tuna" means cacti, whose appearance as a single endemic species in the Pedra do Segredo geosite gave the company its name.

SUSTAINABLE ASPECTS

On the website for the Park, Tuna Ecoturismo describes itself[147] as "an agency dedicated to solutions in tourism and the environment", focusing on "actions and technologies for community-based tourism and alternative experiences (ecotourism, adventure, etc.) which have principles of sustainability, social and inclusive responsibility, preservation of biodiversity and appreciation of the local community and native peoples."

The trails, observatories, abseiling areas, and other places were designed and built to preserve the area's scenery and nature. Furthermore, the park's activities aim to encourage bicycle transportation, collect litter along the trails and walkways, limit the number of visitors, prohibit the removal of plants and animals from the areas, and encourage people to plant native trees. In this sense, the company[148] can economically explore the region while promoting the region socioeconomically through job creation and contributing to the promotion of other businesses (restaurants, hotels, etc.) in the municipality that can benefit from the influx of tourists attracted by the park.

147. https://www.pedradosegredo.com.br/ecoturismo

148. During a conversation with Tuna Ecoturismo principal owner and administrator, Jackeline Moreira (2022), it was clarified that the main intention of the Park is to maintain itself in a sustainable way, and that they do not encourage the unrestrained entry of tourists and visitors, regardless of profitable improvements arising from this movement, in order to avoid negative impacts of human action in the park.

CHALLENGES

Despite recent attempts at the municipal level, the city hall, and the secretariats of Caçapava do Sul lack a technician body specializing in environmental management, making it extremely difficult to have recurrent and effective public policies to aid the park's management. In addition, during the years of the pandemic was challenging to preserve the site, as all of its funds came from box office receipts, and it did not receive financial support from any government level (municipal, state, or federal).

Principal owner and administrator of Tuna Ecoturismo, Jackeline Moreira, noted (Interview, 2022) the local culture of "scientific illiteracy" and low levels of understanding and education on environmental and conservation issues as another obstacle (such as cleaning water and avoiding pesticides, for example). Tuna Ecoturismo had to progressively establish environmental education efforts for park visitors during the park's first few months of operation. One of these measures was the (initially resisted) prohibition of pets in the park, which used to generate issues linked to the degradation of the area and the removal of native animals, which can now be noticed because of the implementation of the new rule. Currently, the majority of geosite visitors are composed of young people. Simultaneously, Tuna Ecoturismo has trouble attracting older and more conservative generations, who have lived alongside the park in an underutilized manner for many years and, at times, continue to imagine this scenario.

OUTCOMES

In addition to the improvement mentioned above in the preservation and socioeconomic development of the region, a notable accomplishment is the formation of collaborations with universities and local scientific institutions. Expressly, the Caçapava Geoparque project[149], led by the Universidade Federal de Santa Maria and the Universidade Federal PAMPA, submits the territory as a candidate for the UNESCO geopark, a special status defined by UNESCO[150] as "single, unified geographical areas where sites and landscapes of international geological significance are managed with a holistic concept of protection, education, and sustainable development", incorporating a "bottom-up approach to combining conservation with sustainable development". The geopark in question encompasses the entire region and includes the Parque dos Segredos as one of its main assets (most of the geosites are on private properties). However, its engagement and contribution to obtaining this UNESCO label has been active and essential for the geopark's advancement as a candidate. UNESCO evaluators will keep visiting the geopark until the end of September 2022.

149. https://geoparquecacapava.com.br/

150. https://en.unesco.org/fieldoffice/brasilia/expertise/earth-science-geoparks

GREEN ECONOMY
INITIATIVES IN THE PAMPAS

6. Sweet Flavor Lab - SFL Honey (Uruguai)

MAIN IDEA

In Uruguay, producing and selling honey has become an alternative for a sustainable economy. The country's production systems predominant in the Pampas biome were centered on livestock, ecotourism, handicrafts, and traditional agriculture. Currently, honey is one of the country's main economic sources, comprised of 500,000 beehives and more than 3,000 qualified beekeepers, with a traceability system for its products that are labeled and certified by competent national authorities[151]. However, valorizing this production chain in the country generates a more competitive market. Many producers have begun to produce synthetic honey to meet consumers' increasing demand in the national and international markets.

The history of Sweet Flavor Lab (SFL Honey) begins with a family business called MOSA, founded in 1983, and developed under the idea of producing organic food from natural honey. In this sense, SFL Honey do not add chemical elements or pesticides that impair the nutritional content of Uruguayan honey. As a result, the company is guided by the philosophy of promoting healthy eating, valuing the small producer, and employing natural resources sustainably at all production phases.

SUSTAINABLE ASPECTS

Beekeeping is a natural resource for sustainable economic activity since it values the tradition of manual labor, provides income for local producers, and does not require tree cutting. Thus, SFL Honey is distinguished from other Uruguayan companies' commitment to organic and natural honey production. According to Flavio Wasserman (Interview, 2022), there are many important details that make up organic production. Right at the beginning, care is taken in choosing the place where the hive will be, as this determines where the bees will drink water (it must be a clean source) and from which flowers they will collect the pollen (which must be away from soils with pesticide/agrochemicals). In addition, the quality of life of bees is also constantly monitored through numerical control by space, temperature, and food (beekeepers also give organic food, not just sugar), beware of diseases that can be caused by pest control etc. Before being offered as a natural product, every tank of honey produced by the company is evaluated, tested, and need to pass through certifications processes when sold to the foreign market by domestic and international organizations by the government or hired by it. In other words, the honey production evaluation has to be conducted to attest its quality of natural product for commercialization. These quality assurance institutions are the UruguayNatural[152], DILAVE - División Laboratorios Veterinarios[153], Agencia Nacional de Investigación e Innovación (ANII)[154], ANDE - Agencia Nacional de Desarrollo[155], among others.

151. https://www.youtube.com/watch?v=ARwlHSMbzfg

152. http://marcapaisuruguay.gub.uy/

153. http://www.mgap.gub.uy/unidad-organizativa/direccion-general-de-servicios-ganaderos/institucional/mision-y-vision

154. https://www.anii.org.uy/

155. https://www.ande.org.uy/

CHALLENGES

In economic terms, Flavio Wasserman says that (Interview, 2022) that the volatility of the dollar is a major challenge due to increased costs, reduced profits, the difficulty of long-term planning that it entails, in addition to the difficulty in accessing credit, especially at the beginning of operations. In social terms, he says (Interview, 2022) that there is still a great stigma about this economic activity: many people use the company to exploit bees, when in fact the exploitation of this activity helps in the care of these animals. To the extent that it is necessary to analyze them, study them, beekeepers are the ones who see if they are dying, or if the population is increasing very fast, for example, and thus control their quality of life and become the most responsible for and call the authorities, if necessary.

OUTCOMES

They have more than 1,500 beehives distributed throughout the main beekeeping regions of Uruguay. In addition to having managed to start exporting honey (which required an adjustment of its entire production to the standards of different national and international certifications), Flavio Wasserman says that (Interview, 2022) SFL Honey achieved sufficient recognition to be able to export honey in glass jars to Brazil, which had not been done for over 20 years.

As a social-educative accomplishment, the company obtained, from EMBRAPA[156], the copyright for the reproduction of the book "The girl who didn't like bees"[157], which consisted of the expansion of an educational social project already present in Rio de Janeiro, Brazil, to Uruguay through SFL Honey. Aimed at children, the book tells the story of a girl who was afraid of bees, and who learns about the vital importance of this animal for the balance of the ecosystem and the environment through a journey of discovery, contributing to the awareness of future generations.

AWARDS, ACKNOWLEDGMENTS, AND/OR CERTIFICATIONS

- Exportation certified by The Technical Laboratory of Uruguay (Latu)[158].
- Certified by the Peruvian Ministry of Agriculture, Livestock, and Fishing[159].

156. The Brazilian Agricultural Research Corporation (EMBRAPA) is a public research company linked to the Ministry of Agriculture, Livestock and Supply of Brazil. See more at: https://www.embrapa.br/

157. Free translation, original title: *A garota que não gostava de abelhas*. The first edition of the book was released in 2017. ISBN-10: 8570357206.

158. https://www.latu.org.uy/

159. http://www.mgap.gub.uy/

CHAPTER 4

Pathways, barriers, and policy recommendations for Green Economy

ASSESSING SOUTH AMERICAN GREEN ECONOMY

POLICY SOLUTIONS EMERGING FROM NATIVE ECOSYSTEMS

From a historical viewpoint, it is feasible to identify clear trends toward sustainability in the South American region. The countries analyzed in this research and many others globally have enacted policies to create a green economy, strengthen their economic systems' resilience, and induce sustainable change. Despite the clarity of the trend, the epistemic community appears to agree that these countries are not engaging in the process quickly or thoroughly enough considering the challenge posed by climate change events that are rapidly arriving.

Throughout this study, it was possible to acknowledge the significant challenges impeding the capacity of states and civil society to engage in the necessary transition process toward a green economy. As previously stated, efforts toward sustainability face a myriad of obstacles. They are distinct from entrenched economic and political elites, who derive their capital and political influence from traditional, frequently predatory industries that would disappear or find it challenging to adapt to this new worldview. The complex framework of economic instability in developing countries exacerbates the difficulty faced by these traditional elites. Predatory industries, such as illegal mining, logging, etc., are typically more financially attractive to the local population. As a result, attacking the brown economy without properly addressing the needs of the local population in the name of sustainability could create additional resistance to this process.

Information is a key aspect that plays multiple roles throughout the process. In its most basic form, climate change information is straightforward but essential for building societal involvement. Disinformation about climate change and awareness of the imminent threats to our livelihoods from extreme weather events and global warming is paramount to mobilize people to change their behavior and consumption patterns, but more importantly, to exert pressure on political elites to design and implement more assertive command-and-control policies. However, belief in climate change and awareness of its risks are insufficient. Especially in developing countries, society must be exposed to new streams of information. Such nations succeed in demystifying several commonly held beliefs, such as the notion that sustainable development and economic growth are incompatible. The concept of 'degrowth' found in most radical arguments has once again created layers of resistance in civil society. It is difficult to require vulnerable communities to choose between immediate economic hardship and future degrowth due to climate change in the long term. Therefore, a new narrative is required. One acknowledges that implementing the green economy is indeed harder. Here, again, we call the attention to the Dasgupta Review (2021) for recognizing the need to rethink the metrics used for economic analyses – thus offering a completely new perspective. However, this challenge does not stem from economic inefficiency but rather from tackling and resolving issues left behind and/or exacerbated by the traditional brown economy, such as inequality, poverty, environmental degradation, and out-of-control emissions. Sustainable practices should not be perceived as detrimental to economic growth; instead, they should be viewed as fostering Better Growth.

Disinformation

Challenge

Across the board, the lack of information has been noted as a challenge in multiple aspects. One of the dimensions is the lack of information about the region's products; each region has a wide variety of local products that are unknown in other parts of their own countries, particularly in the Amazon rainforest. Lack of information among the local population regarding the economic possibilities of their region is another crucial factor. Many individuals are driven to traditional industries because they are unaware of other alternatives, particularly local entrepreneurs. The absence of information regarding the biomes is also 'present' for investors and philanthropists who are unaware of the opportunities those regions offer, as evidenced by the case of Precious Woods, which indicated the difficulty of gaining access to domestic and foreign capital due to investors' misconceptions. The disinformation also plays a crippling role by discouraging potential investors and donors who have been exposed to an overly negative narrative depicting these places as backward, violent, and inaccessible.

Policy Recommendation

Information campaigns are the low-hanging fruit. A comprehensive marketing campaign directed at diverse target audiences might substantially benefit by changing the negative narrative and better informing national and international stakeholders about these regions' commercial and investment potential. Moreover, a marketing campaign promoting the region's natural products is essential. Most of these goods are relatively specialized, but an excellent exhibition will increase consumer demand and facilitate widespread adoption. Information campaign has a transversal impact since it addresses the need of the sectors and business from all dimensions.

It would also be important to take advantage from the considerable body of knowledge developed by scientific institutions that manage to gather and maintain rich database on the regions biodiversity and characteristics.

Infrastructure

Challenge

Infrastructural difficulties are particularly daunting in regions such as the Amazon, the Andeans Mountains, and, to a lesser extent, the Pampas Grasslands. Most local enterprises in these regions are highly remote and sometimes do not rely on necessities like electricity, telecommunications, internet access, and roads. Some communities lack essential infrastructure for communal growth, such as schools and hospitals. Café Apuí Agroflorestal case illustrates how a lack of, or crumbling infrastructure can make it challenging to integrate local farmers and other actors in their value chain, as logistics becomes an expensive burden for their competitiveness.

Policy Recommendation

This is probably the most complex argument made in this report. Each region has unique needs and demands a particular policy strategy to minimally cope with the current challenges. Whatever the case, roads in the grasslands, electricity in the mountains, and network in the forest infrastructure are intense capital projects and require considerable time to be properly built. Moreover, given the particular circumstances of these regions, they will require a joint effort from different levels of power. Subnational actors will most probably lack the necessary resources to meet their needs.

Regardless, as previously said, fixing

infrastructure problems requires the public power to take at least two approaches. The first requirement is for vital infrastructure. Building schools, hospitals, airports, sewage systems, and other infrastructure is necessary for any community to prosper. It addresses the social aspects of the green economy by tackling some of the underlying causes of inequality and allowing for the building of social capital.

The second approach emphasizes the need for "connective infrastructure," which represents roads and telecommunications, among other demands. These are also considered crucial infrastructures and are essential in facilitating business in remote areas. Connective infrastructure is key to improve competitiveness by guaranteeing access to markets (especially city centers), creating better connections to other links of the production chain (which allows local enterprises to access other economic initiatives within the region), and reducing transactional costs of production and shipping. Moreover, building infrastructure in those biomes is not trivial, as they could also become drivers of deforestation if they do not follow sustainable standards.

Legal challenges

Challenge

Public policy and regulations are often the most powerful tools to induce incentives, but they also could create significant barriers. Given the remote nature and the general absence of public actors, these regions are often underrepresented in their national congresses, thus receiving less attention. As mentioned in the infrastructure challenge, enabling policies should be tailored for each region and sector, but they should be part of a more extensive and comprehensive policy strategy. This is also the case of the vacuum of legal instruments to ensure the legitimacy of transactions and settling disputes. An illustrative example is —land rights—where businesses have difficulties legalizing land titles, and local communities and indigenous people often have problems formalizing their land claims.

Notwithstanding, policies will only have positive impacts on sustainability behaviors if they share these values. As the Andean Alliance for Sustainable Development demonstrates, if policies are not well crafted, they might lead in the wrong way. One of the Alliance's challenges is dealing with government agricultural technicians that usually promote non-sustainable practices, such as chemical-intensive pesticides and chemical fertilizers, and advocate for mono-cropping schemes.

Recommendations

Developing a policy strategy for enabling development in any of those regions is also a formidable task. It has various dimensions and a wide range of problems to tackle. It appears that a 'Global-Local Approach' is required to meet these issues. This approach would carry itself in two dimensions. The first is the global, which attempts to connect efforts and requires coordination from several key actors in the country. It aims to link various actions/policies to achieve sustainability, such as resource management, bio, and organic commerce, environmental services, green development mechanisms and strategies, and sustainable technological innovation. When these factors are considered together, they may represent a new pattern of sustainable development; one that could test the classic frontier logic of linear resource extraction.

The second local factor relates to the effort required to construct "policy packages" tailored to the specific demands of each region/sector/profile. To construct such policy packages, feasibility studies and impact assessments are essential. These packages may be able to facilitate investment, assist emerging segments, enhance local value chains, and establish a local productive identity for these communities.

That said, here we shall concentrate on the issues raised during the interviews for the project.

First, one of the most mentioned issues is indeed legal insecurity. Uncertainty is a key obstacle to business. As mentioned in the Pampa's Rice case, it may range from regulatory instability to vagueness with land rights, sanitary regulations, labor norms, and fiscal responsibilities, creating an inhospitable environment for business, increasing general costs, and reducing overall competitiveness. Therefore, enacting precise regulation, transparency procedures, and supportive policies are crucial for the growth of these regions.

Another critical aspect is the need for a tailored fiscal policy for these actors. Enterprises taking place in remote regions and adopting sustainable practices already face significant barriers, especially their counterparts from the city center and the brown economy. Therefore, they require special fiscal incentives to succeed. This is especially true for community-based businesses that often compete with large-scale enterprises. Establishing distinct taxes layers to incentive these community-based businesses is key not only for their success but also because they have a cascade effect spurring development in remote regions.

An important additional incentive is creating a demand for bioeconomy certificated products. Stable and guaranteed demand for these products is essential for small and big businesses to thrive. Public and private actors could carry out several vectors of demand creation. The Brazilian National School Feeding Program is a government initiative that relies on local producers. The program's purpose is to assist local farmers in increasing their yield. Such policies might also demand comparable sustainability certifications to ensure a market for food producers in the green economy. Public procurement is a powerful instrument as the public sector is often the largest purchaser in every country. From a personal perspective, traders may also assist green economy farmers. This is the case with the conservation coffee Café Orígines, which is grown by local farmers in the Andean regions. Even though their coffee is a specialized product, they do not charge extra since they have secure buy deals with trades that ensure the stability of their production process.

Engagement with subnational actors

○ Challenge

As previously stated, given the isolation of most businesses and communities in the analyzed regions, most of the policies designed for them are developed by the federal government. Therefore, it is unsurprising that most external actors (both foreign and domestic) focus on the federal as their key stakeholders. State, municipal, and local civil society are often excluded from most initiatives' planning and execution, resulting in frequent noise on the ground.

A further essential part of the engagement is the government's awareness of the local communities and local business capabilities. As the Andes Ecotour in Peru shows, many local businesses lack the skill to apply for specialized assistance programs or available funds, preventing them from gaining access to these resources. A similar issue was identified with Aliança Guaraná de Maués, where local family farmers have encountered many obstacles in applying for existing policies, such as the "Política Nacional de Assistência Técnica e Extensão Rural" from the Brazilian government, as the plan does not seem to consider the reality of the communities. Small businesses and local communities are usually unaware of existing policies. They lack qualified personnel to draft the project and delve into the bureaucracies. Local governments are exceptionally well placed to identify their communities' shortcomings and offer support to reduce the policies' steep entry barriers.

● Recommendation

Ownership is one of the essential elements of the public policy lexicon. Critical to a policy's effectiveness is the perception that its intended audience is a part of the process, not just the result. In this regard, decentralization

is probably an excellent place to formulate policies. Consultations and the involvement of local leaders are required at all levels of policy development. These actors can share local knowledge and shed light on the extraordinary diversity of objectives on the ground. Local producer communities are the fundamental pillar of a new sustainable development paradigm. They are best positioned players to produce with the following sustainability standards and distribute income efficiently.

Thus, forging a mutually respectful and robust relationship between governments and local actors is the baseline for a partnership in designing sustainable development strategies.

The role of the local actors may vary between regions and sectors. In the mining sector in the Andean regions, the partnership between Peruvian mining firms and the local inhabitants has achieved remarkable success. This relationship appears crucial for addressing the social challenges posed by mining activities. Initiatives in the Amazon, such as the Instituto Gesto's 'Programa Plantar Educação,' attempt to strengthen the local communities by educating children and adolescents on the economic potential of the regional bio industry. Initiatives focusing on educations are also to be understood as key capacity building actions, but with a longer term maturity process. Initiatives of this nature are paramount for producing and distributing local knowledge and fostering the growth of essential local players. The social component of sustainability is a solid enabler for green economy initiatives and a new sustainable development paradigm.

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