

THE ENVIRONMENT AND THE ECONOMY OF CO-OPERATION IN THE TRIPLE AMAZON FRONTIER. THE CASE OF THE TIKUNA PEOPLE IN BRAZIL, COLOMBIA AND PERU

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Abstract

The article summarises an ongoing study of indigenous tribes in Amazonia and how they overcome challenges that include environmental preservation and community sustainability. The problem formulated aims to understand the socio-environmental and cultural impacts emerging from the Tikunas' so-called "economy of cooperation" and global economic flows on the Brazil-Colombia-Peru border. It looks at how this relationship generates conflicts and adaptations, but also reconfigures territories in the midst of forest preservation. The aim is to analyse the interception between the 'economy of cooperation' and economic exploitation that takes place on the triple frontier of the Amazonia (Brazil-Colombia-Peru). This reconfigures socio-environmental and cultural dynamics, determining the mechanisms of adaptation, resistance and conflict in the face of international pressures that affect territorial governance. The research, which is exploratory in nature, follows a multidisciplinary approach that combines perspectives from international relations, ecology and economics, valuing an indigenous epistemology. A bibliographical research and field study were carried out using the qualitative method. In order to analyse the interaction between environmental preservation, Tikuna lifestyles and local economic needs, techniques such as surveys and field studies were carried out. The initial results favour an understanding of the conflicts between economic expansion and management of the Amazon rainforest within the complexities inherent in the



sustainable management of preservation lands, respecting indigenous cultures and regional economic challenges.

Keywords

Tikuna peoples, Amazonia, economy of cooperation, environmental preservation, Triple Frontier.

Resumo

O artigo resume um estudo em curso sobre tribos indígenas da Amazônia e a forma como estas superam os desafios, desde a preservação ambiental até a sustentabilidade das comunidades. O problema formulado tem o intuito de compreender os impactos socioambientais e culturais emergentes da denominada "economia de cooperação" dos Tikunas e os fluxos econômicos globais na fronteira Brasil-Colômbia-Peru. É abordado como essa relação gera conflitos e adaptações, mas também reconfigura territórios em meio à preservação da floresta. O objetivo é analisar a intercepção entre a "economia de cooperação" e a exploração econômica que ocorre na tríplice fronteira da Amazônia (Brasil-Colômbia-Peru), reconfigurando dinâmicas socioambientais e culturais, determinando os mecanismos de adaptação, resistência e conflitos diante das pressões internacionais que afetam a governança territorial. A pesquisa, de caráter exploratório, segue uma abordagem multidisciplinar que associa perspectivas das relações internacionais, ecologia e economia, valorizando uma epistemologia indígena. Foi seguida uma investigação bibliográfica e estudo de campo através do método qualitativo de análise. Para prossecução dos fins de análise da interação entre a preservação ambiental, os hábitos de vida Tikunas e as necessidades econômicas locais, foram utilizadas técnicas como o inquérito e o estudo de campo. Os primeiros resultados favorecem a compreensão dos conflitos entre expansão econômica e manejo da floresta amazônica no meio de complexidades inerentes à gestão sustentável de terras de preservação, respeitando culturas indígenas e desafios econômicos regionais.

Palavras-chave

Povos Tikuna, Amazônia, economia de cooperação, preservação ambiental, Tríplice fronteira.

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[Cooperation] *I helped my brother climb a mountain, and in the end i realised i'd reached the top too*¹

Author unknown

Introduction

The preservation of the Amazon is a global challenge that requires articulation and co-operation between local communities and the international community.

Costa (1992 *apud* Oliveira and Mondardo, 2014) points to a common issue experienced on the triple border, also known as the amazonian trapezium, which connects Brazil, Colombia and Peru. Regardless of their nationality, local communities tend to keep alive the ties and identity elements that they had as places of origin.

The preservation and protection of the Amazon's biodiversity requires co-ordinated action between the different actors, namely the Tikunas, the government and the institutions involved. In this way, consultation makes it possible to design a strategic framework for the development of integrated public policies, promoting a balance between economic growth, social inclusion and sustainability. This understanding comes to light in a year in which Brazil is hosting the United Nations Climate Change Conference, COP30².

Adding this strategic axis to the 17 Sustainable Development Goals (SDGs) established by the 2030 Agenda³ of the United Nations (UN), four direct environmental SDGs were defined and at least three SDGs related to environmental issues⁴.

¹ Translation by the authors.

² Brazil is preparing to host the 30th UN Climate Change Conference (COP30), to be held in Belém (PA) in November 2025. Available at: <https://cop30nopara.com.br/> [accessed on 31st March 2025].

³ The 2030 Agenda (2015-2030) was agreed and established at the 2015 New York Summit when the results of the implementation of the predecessor Millennium Development Goals (2000-2015) were reviewed.

⁴ The environmental SDGs are SDG6 on drinking water and sanitation, SDG13 on climate action, SDG14 on marine life and SDG15 on terrestrial life. At the same time, SDG7 on renewable and affordable energy, SDG11



As Lima (2020, n.p.) points out, the vast biodiversity of the Amazon region makes its conservation a priority for the world's ecological balance. The Amazon's natural resources are threatened by every human act of environmental degradation. On the other hand, they weaken the livelihoods of the people who live in and from the forest, making sustainable economic practices and indigenous peoples' ways of life impossible, preventing them from playing a crucial role in sustainability and living in harmony with the forest.

This article presents preliminary results from a research project that aims to understand the dynamics created by the Tikunas' experiences in the environment. The role of the Tikuna people in conserving biodiversity is the premise of the research, bearing in mind the pressures from economic groups interested in exploring the wealth of the Amazonian subspaces with the globalised world in a movement of "territorial fluidity" (Arroyo, 2001)⁵. According to Arroyo (2001), modernising actions bring with them natural transitional crises and their consequent spatial repercussions on the triple frontier. This is a region in which there is "free access" for peoples of the region, especially indigenous peoples, to information and capital, where relations of "free trade" and co-operation are established.

Albert and Kopenawa (2010) discussed the impact of environmental and economic policies on indigenous peoples in the Amazon, who do not enjoy proper care, which jeopardises their development, but also that of the biome which is home to unparalleled biodiversity. The forest plays a crucial role in global climate regulation, generating socio-environmental balances.

The research problem seeks to understand how the socio-environmental and cultural impacts resulting from the relationship between the Tikuna peoples' economy of co-operation, anchored in subsistence methods and global economic flows on the triple Amazonian frontier (Brazil-Colombia-Peru) are articulated. This relationship has led to conflicts, adaptations and territorial reconfigurations in a context of preserving the Amazon.

The aim of the article is to analyse how the intersection between the Tikuna community's economy of co-operation and economic discovery on the Amazon's triple frontier reconfigures socio-environmental and cultural dynamics, investigating the mechanisms of adaptation, resistance and conflict against the international pressures that infuse territorial governance.

Specific objectives include:

- a) find out the effect of economic activities such as agribusiness, mining and deforestation on indigenous communities and the environment;
- b) study the practices of sustainable use and conservation of natural resources carried out by the Tikunas; and

on sustainable cities and communities, and SDG12 on sustainable production and consumption all relate to environmental issues.

⁵ In Arroyo (2001), this is understood as the quality of national territories that allows the flows that structure them to accelerate, the set of objects designed to guarantee movement, as is the case in the triple border between Brazil, Colombia and Peru.



c) know the regional policies and international actions, such as the 2030 Agenda and the SDGs, for the conservation of the Amazon and the sustainable development of Tikuna communities.

Methodologically, the exploratory research allowed for the collection of data gathered in the indigenous village and a multidisciplinary conceptualisation of the research problem, incorporating ideas from the fields of International Relations, Anthropology, Ecology and Economics. An indigenous epistemology was valued followed by a literature review with critical analysis and fieldwork.

Based on Elman (2005), the use of "explanatory typologies" was adopted as a methodological tool for qualitative research in international politics. Figueiredo Filho's (2019) suggestion is to choose the appropriate models for the critical interpretation of the results. In "The Interpretation of Cultures" (Geertz, 1978), the concept of "*thick* description" is presented as cultural interpretation aimed at analysing the interpretation of symbols and meanings embedded in social practice.

The techniques used include:

- a) semi-structured interviews with members of the Tikuna community and other actors who work with indigenous people as representatives of environmental and religious organisations;
- b) a documentary analysis of public policies and international agreements related to the preservation of the Amazon;
- c) carrying out fieldwork that included *on-site* observation of environmental and social conditions in the frontier areas, namely visits to Tikuna territory and deforested areas.

The article begins with a presentation of the methodology, objectives and approach to the problem that reflects everyday intersections on the Brazil-Colombia-Peru frontier. Finally, the Magüta people (Tikunas) are introduced from the "tradition of creation", the elements of culture and identity, including language and their relationship with the land. This is conceived as the sacred house for this Amerindian people who inhabit the lands of the Amazon region without demarcation boundaries⁶.

The 2030 Agenda is presented as an international reference model for the goals and targets. The SDGs can be understood as a proposal for sustainable development in its economic, social and environmental dimensions, placing the Tikuna people as collaborators for the protection of terrestrial ecosystems. In this context, SDG 15, which is dedicated to the protection of terrestrial ecosystems (United Nations, 2015), is relevant to the analysis. Finally, the application of local public policies and global initiatives such as the 2030 Agenda is explained.

⁶ "In terms of its specific properties, the Tikuna language has points in common with some other indigenous languages spoken in Brazil, while at the same time offering challenging characteristics, both in terms of phonology and syntax" (Soares, 2008, n.p.). [...] Tikuna is important for knowledge of natural languages and for understanding the history of indigenous peoples and languages spoken in Brazil



An *on-site* research was used to learn more about this group's lifestyle, practices and sustainable use of available natural resources. The Tikunas' economy of co-operation is essential to guarantee the sustainability of the forest, as it is based on the sustainable use of natural resources.

The research involving the environment and indigenous peoples aims to analyse the intersection between the economy of co-operation⁷ and economic exploitation on the Amazonian triple frontier. Knowledge of this reality is achieved by learning to *walk the Amazon trails* with an eye on nature, broadening our understanding of the Tikunas' way of life.

1. Anthropogenic factors in the overuse of nature

The socio-environmental relationship is ancestral, given that nature, in terms of spaces and resources, whether living or inert, fauna or flora, sustains human life. It is in nature that communities find sources of subsistence and maintenance, using it for productive transformation and economic profitability. This relationship doesn't seem to be a problem, as it has accompanied human life throughout the ages.

The concern arises whenever the interaction between human populations, in the multiple forms of intervention - individual, community, corporate and business or state, national, regional or international - result in environmentally intrusive models of action. These tend to generate imbalances that threaten sustainability⁸, particularly in the long term.

Paul Crutzen and Eugene Stoemer explore the concept of "The Age of Humans" in relation to the Anthropocene approach, translated into the concept that

The world has entered a new geological era, the Anthropocene, which means the era of human domination. It represents a new period in the history of the planet, in which human beings have become the driving force behind environmental degradation and the vector of actions that are catalysing a probable ecological catastrophe (Crutzen and Stoemer, 2000, n.p.).

This is the period that began with the Industrial Revolution (Maldonado, 2017; Crutzen, 2002) and which, over time, has been boosted by economic expansion, which also allows us to associate the more recent concept of the Capitalocene, largely analysed by Andreas Malm (2020; Arons, 2020). In these approaches, the world of capital, understood as a result of business and corporate action, overlaps with the interests of nature, often using it without planning, degrading it and contributing to the depletion of parts or the whole, possibly in an irreversible sense.

Vulnerable ecosystems, either identified as endemic or associated with natural environments that are intensely sought after by extractive, processing and export activities, are the most affected by unplanned human intervention. These are the cases

⁷ The term "economy of co-operation" refers to the activities practised jointly by the Tikunas for the benefit of the group, such as subsistence farming, hunting, fishing and handicrafts.

⁸ Sustainability is understood here in line with the principles presented and defended in the Brundtland Report (Brundtland [1987], 1991), namely systemic interdimensionality and intergenerational solidarity.



of river basins endowed with profitable minerals such as gold, which is mined, or dense and tropical forests that are of extreme interest to the timber sector due to the existence of hardwoods and centenary, large trees that guarantee high profitability margins.

Although it involves planning use, the realisation that there are global limits is increasingly a reality within the scientific community. Will Steffen *et al* (2015) developed this approach, warning of the inherent risks. This concept offers a framework for defining the border zones between global balance and socio-environmental risk based on the identification and characterisation of nine indicators⁹.

Currently, and with reference to the year 2023, of the nine global limits identified, six have been exceeded and are in a situation of risk. In general, it can be considered that four of these global limits are directly related to socio-environmental impacts. The implications for communities living in dependence on the natural environment are impactful, and reversing them is neither easy nor immediate. Climate change, modification in the use of land, models of freshwater use, including quantity, and the integrity of the biosphere in the genetic and functional sense are the dimensions that have direct implications for the lives of local communities. These four dimensions directly affect community life models, particularly if they are considered vulnerable communities due to their ancestry and tradition in the relationship they establish with natural spaces and resources. It should be emphasised that indigenous populations appear to be the ones who feel the impacts of global limits most directly, since they are the ones who maintain a close relationship with spaces and resources, depending on them.

2. The guardians of the forest: resistance to the interventions of modernity

The *Magüta* people are also known as the Ticuna or Tikuna¹⁰. The Tikunas are one of the most numerous indigenous groups in the Amazon¹¹, an Amerindian people who inhabit the border region between the Amazon Trapezium: Brazil (57,571), Colombia (8,000) and Peru (6,982), totalling more than 72,553 natives¹².

⁹ The nine global limits considered are climate change, with emphasis on the continuous rise in air and sea temperatures, extreme weather events and their frequency; the incorporation of new entities, including genetically modified organisms and microplastics; the destruction of atmospheric ozone with the worsening of the hole in the ozone layer; the loading of atmospheric aerosols, namely the contamination of the atmosphere by aerosols produced by humans or microparticles resulting from the burning of fossil fuels and forest fires; the acidification of the oceans, in particular the worsening of coral bleaching with the possibility of extinction in some regions of the world; biochemical flows, including the phosphorus and nitrogen cycles with excessive use of chemical fertilisers in the soil; the use of fresh water, defined as a vital resource, under pressure from intensive agriculture, grazing and livestock farming; the integrity of the biosphere, from a genetic and functional point of view; and the change in land use, reflected in the transformation of forests, grazing land and marshes that are used for intensive agriculture and livestock after deforestation. Available online at: <https://www.science.org/doi/10.1126/science.1259855> [accessed on 31 March 2025].

¹⁰ Cf. National Museum/UFRJ (1985, p. 67-68). It is worth highlighting the origin of the *Magüta* people's creation, told by the elders that Ngutapa, the God of creation, existed before everyone else, having no father or mother.

¹¹ Tikuna studies. Other denominations of the Ticuna language people. "The highest concentration of the Tikuna population is in the group of people aged between 5 and 29, which represents approximately 58 per cent of the total. If we add to this the figure for people under 5 years old, the percentage rises to 70.5 per cent, data which shows that this locality is mostly made up of young people and children" (Nosso Povo, n.d., p. 02).

¹² Cf. <https://pib.socioambiental.org/pt/Povo:Ticuna> [consulted on 31 March 2025] they make up the largest indigenous group in the country.



De La Rosa (2000, p. 296) describes the social-historical situation of these peoples, which was imposed on them by whites as "natural" and the result of divine punishment¹³.

Over generations, these groups have played a central role in protecting the Amazon rainforest, building sustainable ways of life based on the use of natural resources. The environment in which the Tikunas live, incorporating sustainable land practices into their traditional way of life, is a model of harmonious coexistence with nature that must be carefully learnt.

In villages or communities, traditional practices of sustainable management of natural resources are no longer common, and plantations have given way to industrialised foods. Posey (1999) emphasises that the cultural and spiritual knowledge of indigenous peoples is essential for preserving biodiversity. Among the Tikunas, the distribution of areas for cultivation, the enhancement of native species and the sustainable management of natural resources are practices that guarantee the subsistence of families and generate an ecological balance.

The big challenge facing the Tikuna communities living on the triple border is how to face up to the severe challenges arising from devastation activities that threaten this harmonious coexistence with "mother nature". This relationship is therefore threatened by pressure from activities such as deforestation¹⁴, mining and the expansion of agribusiness, which jeopardise both the forest and the communities themselves.

On the triple border¹⁵, the Ticuna language stands out as part of the intangible cultural heritage¹⁶ to be protected, given the importance of safeguarding biodiversity and the cultural legacy of the peoples who live in harmony with the forest. In this context, the preservation of indigenous peoples' culture, traditions and customs is fundamental to environmental balance. Unlike the models of intensive exploitation that have generated major environmental impacts in the region, the traditional practices of indigenous peoples are based on respect and understanding of the natural cycles of biodiversity and the interdependence between living beings.

Indigenous peoples are therefore guardians of the frontier and essential players in the preservation of the Amazon. They inhabit vast areas of forest and possess ancestral knowledge that promotes harmonious coexistence with nature. The rotation of cultivation areas, the use of sustainable management techniques and the enhancement of native

¹³ Cf. De La Rosa (2000) on the myth of the fall of the Ticuna - "it tells that the first human beings, the *magüta*, were powerful and immortal but became deadly and lost their powers by breaking away from the traditional laws instituted by the god Yoi. As a result of this loss of their semi-divine condition, but also as another form of punishment, the *mnagüta*, already converted into the *ticuna*, are dominated by the whites".

¹⁴ Deforestation, logging and forest fires associated with increasingly frequent and intense El Niño events could significantly increase carbon emissions from changes in land use (Moutinho, 2006). Available at: <https://ipam.org.br/entenda/como-o-desmatamento-contribui-para-as-mudancas-climaticas/> [accessed on 31 March 2025]

¹⁵ The border situation combined with the intense migratory flow has meant that municipalities have built up their socio-economic relations over the years. This is the case of the municipality of Leticia in Colombia and the city of Tabatinga in Brazil, or the municipality of Puerto Nariño in Colombia and the city of Caballo Cocha in Peru (Hayashi, 2020; Observatório Regional Amazônico, 2000, p. 2) Available at: <https://oraotca.org/pt/povosindigenas/> [accessed on 31 March 2025].

¹⁶ In this respect, it should be noted, as mentioned in footnote 5, that the Ticuna language has aspects in common with other Brazilian indigenous languages.



species are examples of practices that guarantee the preservation of ecosystems, while at the same time providing subsistence for communities¹⁷.

2.1. The Tikuna people: between forest preservation and exploitation

For the Tikunas, the Amazon rainforest is not just a geographical location, but a sacred home and a source of spiritual and material sustenance. In their study, Da Silva *et al* (2020) found that the vegetation of the Amazon is essentially made up of dense tropical rainforest, open rainforest and *campinarana*.

These forest patterns are favourable for protection, hunting and other Tikuna practices, rooted in ancestral knowledge about the land, biodiversity and natural cycles. At the same time, they offer an effective model in favour of sustainability. The practices developed contrast sharply with the predatory economic activities of multinational companies that promote deforestation and gold mining¹⁸, using mercury, as well as other products that have caused damage to the environment.

The current scenario in the Amazon is marked by rapid global changes, witnessed by the growth of economic activities and the exploitation of natural resources. The growth of these extractive or exploitative activities necessitates a critical analysis of the interrelationship between the environment, the economy and indigenous peoples. These socio-economic and environmental dynamics prove that the sustainability of the Amazon will not be achieved without the active involvement of indigenous peoples.

The Tikuna people not only play a crucial role in safeguarding the Amazon's biodiversity, but also emphasise the imperative of adopting and implementing policies that take into account local and global realities. Strengthening their practices and guaranteeing their territorial rights are essential actions for preserving the forest, making them a key player in achieving the established goals and promoting socio-economic-environmental balance.

The role of indigenous peoples goes beyond mere cultural resistance. They are central players in environmental preservation, contributing to ecological balance and climate change mitigation through their activities to preserve the forest ecosystem and consequently conserve species. Understanding this complex of interrelationships between economic development and sustainability requires an integrated and systemic approach that recognises the value of traditional indigenous knowledge, integrating it into public policies and conservation projects.

Cunha (2009) argues that indigenous culture, which is often underestimated in public conservation policies, contains fundamental knowledge for environmental preservation. Indigenous lands, when properly protected, are more effective at conserving biodiversity than conservation areas managed exclusively by the state (Brush, 1993).

Promoting a balance between economic growth and forest preservation in the Amazon region is therefore urgently needed. The practices of a "cooperative economy" in subsistence agriculture, hunting and fishing and handicrafts used by the indigenous

¹⁷ These elements were observed during the field research and confirmed by the interviews carried out.

¹⁸ Mining is a practice that, rather than being local or community-based, has come to the fore through the activities of organised groups.



people for their livelihoods are fragile in an environment manipulated by predatory activities that invade their lands and appropriate natural resources.

2.2 The Tikuna forest, the sacred home

The preservation of the Amazon rainforest is one of the most challenging tasks for Brazilian society, which requires collaboration between society, the government and the Amazonian people, including international institutions that have an interest in the riches of the Amazon.

The deforestation taking place in the region is compounded by rampant mining, climate change, forest fires and illegal activities. Despite the Brazilian government's efforts to implement projects such as the *Amazon: Security and Sovereignty Plan* (AMAS)¹⁹.

The AMAS demonstrates the Brazilian government's commitment to the 17 Sustainable Development Goals, making it a normative framework for the development of policies aimed at environmental protection, the reduction of inequalities and the promotion of sustainable economic practices.

In particular, the Tikuna People agree with SDG15, which aims to "ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in accordance with obligations under international agreements" (United Nations, 2015, n.p.)

By setting a target of 2030, Brazil is demonstrating its commitment to conserving *Permanent Preservation Areas* (PPAs), *Legal Reserves* (LRs) and *indigenous lands* as native vegetation. The *Tikunas forest* is the area hardest hit by the lack of effectiveness of government policies and the indigenous peoples are the most affected.

In recent years, Brazil has failed to fulfil its commitment to use preservation systems such as the *National System of Conservation Units* (SNUC), *Permanent Preservation Areas* (APPs), *Legal Reserves* (RLs) and other categories²⁰, to preserve - including - the 30% of indigenous lands in the Amazon, requiring urgent measures to meet the target. The need for national policies and international commitments, such as the Paris Agreement, must increasingly be in line with each other and put into practice.

It is worrying that the indigenous peoples, in this case the Tikunas and the riverside communities, defined as the *Amazonian man*, inhabitants of the border areas between

¹⁹ AMAS is one of the main implementation strategies of the *Action Plan for the Prevention and Control of Deforestation in the Legal Amazon* (PPCDAm) and was set up with the aim of strengthening the State's presence in the Amazon Region and intensifying the fight against environmental and related crimes. [Consulted on 02.11.2024]. Available at: <https://www.gov.br/planalto/pt-br/acompanhe-o-planalto/noticias/2024/06/plano-amazonia-seguranca-e-soberania-sera-fortalecido-com-injecao-de-r-318-milhoes> [accessed on 31 March 2025].

²⁰ By 2020, at least 30 per cent of the Amazon will be conserved, through systems of conservation units provided for in the National System of Conservation Units (SNUC) Law, and other categories of officially protected areas such as Permanent Preservation Areas (APPs), Legal Reserves (RLs) and indigenous lands with native vegetation, 17% of each of the other terrestrial biomes and 10% of marine and coastal areas, mainly areas of special importance for biodiversity and ecosystem services, ensuring and respecting demarcation, regularisation and effective and equitable management, with a view to guaranteeing interconnection, integration and ecological representation in wider terrestrial and marine landscapes. Available at www.ipea.gov.br [accessed on 31 March 2025].



Brazil, Colombia and Peru, (on the fringes of the cities of Tabatinga, Leticia and Santa Rosa Island (see Map 1), have to live daily with the impacts generated by the advance of predatory activities such as deforestation, logging, mining, extensive agriculture and livestock farming, as well as fires caused by criminal groups.

Map 1. Socio-environmental diagnosis of the triple frontier: Tabatinga (Brazil), Leticia (Colombia) and Santa Rosa (Peru).



Source: https://www.researchgate.net/figure/Figura-1-Localizacao-da-triplice-fronteira-entre-Tabatinga-Brasil-Leticia-Colombia_fig31_358686796 [consulted on 31 March 2025]

As Castro (2002, p. 162) points out in *"The Inconstancy of the Savage Soul"*, the thinking of the indigenous people follows a different cognition from Western man, especially in this relationship with nature. For the author, this is an intriguing and innovative way of thinking that is exemplified in the characterisation and recursion of dualism and the internationalising and self-referential formulation of the Amerindian.

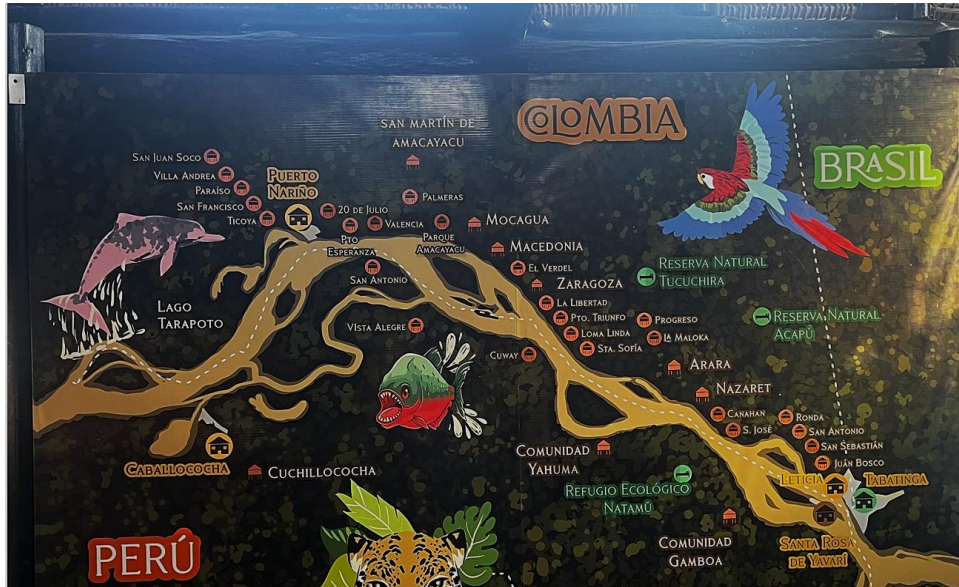
The Tikunas' relationship with nature is an experience that strengthens their culture and from natural resources they obtain everything necessary for the survival and well-being of the indigenous community. This dynamic is part of what Castro (2002) calls the "fight against the intellectual automatisms of our tradition"²¹.

For the Tikunas, the forest is also a source of spiritual knowledge, which means that, for them, there is a symbolic relationship that transcends the material world, forming part of a complex system of consolidation in which nature and the spirits interact directly in the people's daily lives. This respect for nature is a valuable lesson in the era of climate change and deforestation. The Tikunas have a model of sustainable existence that contrasts with the exploitative use of forest resources by foreign companies or groups that are invading the Amazon rainforest.

²¹ Translation by the authors.



Map 2. Illustration of the Amazon region inhabited by the Tikunas on the Triple Frontier: Brazil, Colombia and Peru



Source: Painting by a local craftsman in the city of Puerto Nariño - Colombia, own record.

The Amazon rainforest is more than a geographical area for the Tikunas (see map 2), it is the birthplace of the sacred genus and the material and spiritual support of this group. They have a customary use of resources in combination with the ecosystem, which reveals an extensive knowledge of biodiversity. This respect for nature is an important lesson in times of climate change and environmental destruction, as the Tikunas present a model of sustainable living that contrasts with the predatory use of Amazonian resources by companies or external groups that exploit the forest. They use traditional resource management techniques that are in harmony with the ecosystem, including subsistence farming, hunting and gathering. These practices are sustainable because they do so in such a way as to guarantee the renewal of resources, while ensuring the preservation of the forest.

It is in this space, characterised as a sacred home, that the indigenous build the spiritual and material sustenance of their collectivity or, according to Castro (2002), preserve the imagination as a non-canonical factor of thought and deconstruct pre-formed models, conjecturing others.

3. The Tikunas and the 2030 Agenda

By proposing sustainable development in its economic, social and environmental dimensions, the 2030 Agenda places indigenous peoples at the centre of discussions. SDG15, which deals with the protection of terrestrial ecosystems, is a relevant issue for the Tikunas, whose social organisation is intrinsically linked to the integrity of the forest (United Nations, 2015). Descola (2012) argues that indigenous practices should be recognised as models of sustainability, as they are based on the balanced management of natural resources and the preservation of native species. In addition, these challenges



are also linked to other SDGs, such as the fight against poverty (SDG1), food security (SDG2) and the promotion of actions to combat malnutrition in traditional communities.

Many of the SDG targets address the most eminent dangers facing children and adolescents, one of the most relevant being malnutrition, which threatens children's lives and jeopardises their health and physical growth, their education and their future. Chronic malnutrition is still a problem in the most vulnerable groups, such as indigenous people, quilombolas and riverine communities. According to the Ministry of Health, in 2018 the prevalence of chronic malnutrition among indigenous children under five was 28.6 per cent (UNICEF Executive Summary, 2019, p. 6). The figures vary between ethnic groups, reaching 79.3 per cent of Yanomami children (Abrinq Foundation, 2023, p. 28)²².

Brush (1993, p. 151) emphasises that Indians have a solid knowledge of local ecosystems and that this knowledge has been collected over centuries. This wisdom encompasses practices capable of extending the diversity of the landscape and facilitating the reconstruction of biodiversity in degraded ecosystems. The set of practices followed by the Tikunas for the preservation of biodiversity is the result of a historical experience of experiments and trials, currently reflecting a benevolent adaptation of man to the environment.

If ecosystems and biodiversity are to be managed sustainably, it is imperative that the complex knowledge-practice-belief of indigenous peoples is recognised and valued. Encouraging resource management systems based on the community is a strategic way of preserving this knowledge and guaranteeing environmental sustainability.

The fight against global climate change cannot just be reduced to external actions, but must actively incorporate communities living in vulnerable ecosystems. The Tikunas' traditional experience in sustainable land use, biodiversity management and fire control can be added to sustainable development strategies and contribute effectively to mitigating climate effects. This integration is especially fundamental in the Amazon ecosystem, where the forest plays a key regulating role in the global climate balance.

Maintaining sustainable communities in the Amazon, such as those of the Tikuna, is a complex but crucial task for the fulfilment of the SDGs and the commitments made under the 2030 Agenda. This goal requires a concerted and unprecedented effort from all the stakeholders involved, including governments, international organisations and civil society. In particular, SDG13 - Action against global climate change - has important synergies with other SDGs, such as SDG6 - Clean water and sanitation, SDG7 - Affordable and clean energy, SDG9 - Industry, innovation and infrastructure, and SDG11 - Sustainable cities and communities. Maintaining a sustainable community is a chimera, but it is necessary and imperative if the SDGs are to be achieved, knowing that this mission requires an unrivalled effort from everyone. In this sense, it is worth remembering that it is not enough to demand effective public policies, but it is necessary

²² Translation by the authors.



to ensure that they are applied on a geographical and foreign relations scale so that they are manageable.

The UN's 2030 Agenda, which aims to achieve sustainable development in its three economic, social and environmental dimensions, contains the conservation of terrestrial ecosystems as one of its main objectives (SDG15 - Terrestrial Life). In addition, other SDGs directly address the challenges facing the indigenous peoples of the Amazon, such as the fight against poverty (SDG1), food security (SDG2), access to quality education (SDG4) and the enactment of peaceful and inclusive societies (SDG16). In this way, indigenous peoples such as the Tikunas not only appear as recipients of global goals, but also as protagonists in implementing sustainable solutions for the Amazon.

The preservation of the Amazon has gone from a local challenge to a global concern, but ultimately needs a process of articulation to allow local communities to move forward in co-operation with the international community. The implementation of integrated policies promotes economic development along the lines of sustainable development, so that these policies are not just written in the 2030 Agenda, but form part of national, regional and international policies for social inclusion and environmental sustainability.

It is therefore worth emphasising that the preservation of indigenous lands is the gateway to the conservation of iniquitous areas of the forest. Research has shown that indigenous lands are more efficient at conserving biodiversity than conservation units under the administration of the Brazilian government.

3.1 How can the Tikuna people help achieve the 2030 agenda?

Over generations, the Tikuna groups have been responsible for preserving the Amazon rainforest, developing lifestyles based on the sustainable use of natural resources.

The Brundtland Report ([1987] 1991) was the hegemonic impetus in opening up the academic discussion of sustainable development, initiating the concept that served as the basis for the SDGs. It is these models, often overlooked by traditional development practices, that can be the basis for sustainable management and conservation at a global level.

According to Sachs (2015) it is important to encourage citizens to use a holistic way of dealing with global problems that today seem unsolvable, such as extreme and persistent poverty. In this sense, it is important to explore the principles of the SDGs and understand how innovative practices can promote sustainable development.

When researching the presence of plurilingualism in the Triple Frontier region, Viana and Margotti (2021, p. 40) noted the high rate of violence against the original communities that helped decimate hundreds of indigenous groups and, as a consequence, the extermination of the languages they spoke. However, the same authors (Idem, p. 43) note that the Ticuna language has been used predominantly. Consequently, the continuity, or persistence in the use of the language, is the cultural development of the alternate generations. A mere example can be found in the case of children and adults laughing and arguing in the native language.



In addition to their rich cultural and linguistic heritage, the Tikunas also live in an environment where conservation of the Amazon rainforest is becoming increasingly important. In this border triangle, the Tikuna language is a piece of intangible cultural heritage. There is no doubt that it needs to be protected, in defence of the need to preserve biodiversity and the heritage of people who live in complete harmony with the forest.

As for knowledge of Spanish, almost the entire indigenous population has the ability to speak it (around 84.5%), and a small percentage (8%) has no knowledge of it, i.e. they only speak Tikuna. These large percentages indicate that the literacy process in Tikuna is not recent. (...) With regard to the ability to read and write in Tikuna, approximately half of the people belonging to this people know how to read in their language, and an additional 34.5% also know how to write it. These high percentages indicate that the process of reading and writing in Tikuna is not new (Nosso Povo, n.d., pp. 2-3)²³.

To this extent, preserving the culture, traditions and customs of indigenous people is crucial to maintaining environmental balance. Posey (1999, p. 4) emphasises that the cultural and spiritual knowledge of indigenous people plays a fundamental role in the conservation of biodiversity. The spatial organisation of cultivation areas, the enhancement of native species and the sustainable management of natural resources are practices that guarantee the subsistence of these communities. Despite the imminently pragmatic nature of these conservation and management techniques, traditional indigenous peoples often understand them as intrinsic elements of a spiritual basis that permeates their relationship with the environment.

All of creation is sacred, and the sacred and the secular are inseparable. Spirituality is the highest form of consciousness, and spiritual consciousness is the highest form of awareness. In this respect, one dimension of traditional knowledge is not local knowledge, but knowledge of the universal as expressed in the local.

In indigenous and local cultures, there are specialists who are peculiarly aware of the organising principles of nature, sometimes described as entities, spirits or natural laws. Thus, knowledge of the environment depends not only on the relationship between humans and nature, but also between the visible world and the invisible spiritual world (Posey, 1999, p. 4)²⁴.

In the Tikuna culture, management and conservation practices have this pragmatic character, which is normally understood as knowledge coming from a spiritual base. Unaware of the patterns of intensive exploitation, which can be defined as anthropogenic factors (Crutzen, 2002) that have caused huge environmental impacts in the region, the traditional practices of the Tikunas of the Triple Frontier and the other indigenous peoples

²³ Translation by the authors.

²⁴ Translation by the authors.



are based on a deep respect and knowledge of natural cycles, biodiversity and the interdependence between living beings.

Indigenous people are thus the protagonists in the defence of the Amazon, working to achieve the goals of the SDGs and in particular SDG15. These actors not only inhabit immense jungles, but also have the old and precious memory that sets in motion a respectful inhabitation of the natural world. An alternation of cultivated land, the adoption of sustainable management practices and the enhancement of local species are just a few cases of an activity that preserves ecosystems while offering livelihoods to communities. These practices, often ignored by conventional development approaches, can be used as models for global management and conservation, in line with the principles outlined by the SDGs and adopted at the 2015 New York Summit.

From this, it becomes clear how inattention to circumstances such as maintaining the culture, traditions and habits of indigenous populations is relatively responsible for environmental degradation, and jeopardises not only the Amazonian ecosystem, but also the very livelihoods of the populations that benefit from the forest, as well as the direct implications for other ecosystems beyond the border.

3.2 Environmental conflicts and pressures on indigenous communities: Challenges for sustainability

The triple border between Brazil, Colombia and Peru is one of the areas most impacted by the illegal exploitation of natural resources associated with deforestation, mining and arson. These practices, in addition to affecting biodiversity, generate challenging consequences for environmental management and impact the survival of indigenous communities, whose economic, social and traditional practices are jeopardised by environmental degradation (Cunha, 2019).

The expansion of these predatory anthropogenic activities exacerbates the loss of biodiversity and ecological imbalance, sharpening social conflicts and the marginalisation of indigenous populations, who are forced to abandon their traditional ways of life in search of viable economic alternatives.

Ramos (1998, p. 276) argues that indigenism in Brazil has been characterised by a sequence of all-encompassing public policies, without reference to the actual needs of the populations. And he emphasises the ambiguity of Brazilian society in relation to indigenous populations, who were both celebrated as symbols of national maturity and fought against as obstacles to development. This dual aspect manifests itself in public policies that appear to be enveloping and often fail to meet the real needs of these communities

In the border areas, such as between the cities of Tabatinga (Brazil), Leticia (Colombia) and Santa Rosa Island (Peru), this issue materialises, with the expansion of agribusiness, deforestation of timber, contamination of water resources, mining and livestock farming putting pressure on local populations.

According to Almeida (2020), Santos (2019) and Little (2021), the challenges facing the Tikuna peoples in implementing the preservation of the Amazon are increasingly



sophisticated, especially in border areas. The loss of biodiversity and environmental degradation not only jeopardise ecosystems, but also the food security, health and culture of indigenous communities, whose ways of life are intrinsically connected to the integrity of the forest. The preservation of traditional indigenous practices helps to guarantee the sustainability of the Amazon and the achievement of the Sustainable Development Goals (SDGs) set out in the 2030 Agenda. It is therefore essential to recognise and strengthen the role of indigenous communities in environmental preservation, encouraging public policies that integrate traditional knowledge. With a collaborative approach, it will be possible to overcome the environmental and social challenges that threaten the Amazon and its indigenous peoples.

Final considerations, even if partial

We present two points that were addressed based on the research carried out with the Tikuna communities, bearing in mind the concern to clarify the balance between economic development and the preservation of the Amazon rainforest through practices inherent in a "cooperative economy". Culturally, the ecosystem with its biodiversity is one of the richest in the world, straddling the triple Amazonian frontier between Brazil, Colombia and Peru.

Economic relations are characterised by the presence of an "indigenous economy of cooperation" very similar to what Godbout (1992) called community economies. Co-operation can be understood as a system articulated with cosmovision, territorial management and cultural reproduction. Sustainable government requires a dialogue for "good living", in line with criticism of hegemonic sustainable development (Acosta, 2010) in contrast to global agendas such as the SDGs.

Subject to highlighting the complex interaction between the environment, the economy and indigenous communities, as well as their interdependence, it is necessary to adopt an integrated approach that considers both the tradition of conservation practices and the economic and social pressures imposed by modernisation (UNDP, 2020, p. 188).

The various challenges faced in the territory range from environmental conservation to the sustainability of indigenous communities, while focussing on nature-based solutions that can address the effects of extreme weather conditions on health, among other aspects (UNDP, 2020, p. 188).

In understanding the theory of resource dependency, it can be seen that the incorporation of global flows puts pressure on the autonomy of indigenous communities. In this regard, the encouragement of unsustainable economic activities, such as deforestation, mining and logging, and the pollution of water resources. Consequently, these actions threaten the protection of the integrity of the forest and the survival of the Tikunas. The fight against the preservation of the Tikunas' culture, traditions and customs is a quest not only for social justice, but also for a policy of biodiversity conservation and the promotion of effective sustainable development (UNDP, 2020, p. 188).

The lack of effectiveness of public policies and vulnerability in the implementation of international agreements, such as the 2030 Agenda with the Sustainable Development



Goals, are expressed in the Tikuna communities due to the lack of public policies in general and focussed on environmental conservation.

The government bodies have had political programmes called *Bolsa Verde* on the Brazilian side and *Pagamento por Serviços Ambientais* on the Colombian side, but although these governments show an effort to protect indigenous territories and recognise their fundamental rights, investments are needed to ensure the conservation of the Amazon and the sustainable development of border communities (UNDP, 2020, p. 189).

"Global incentives also matter" in the service of the sustainable natural resource management habits that the Tikunas have adopted and which are the key to the decisive role of preserving the forest and fauna. Subsistence farming, fishing and handicrafts, combined with an intrinsic respect for natural cycles, offer a coexistent model intertwined with the harmony of nature. It is through proper contact with this theme that throughout the article they have been compared with the ill-fated activities of river pollution, illegal logging and mining. These Tikuna practices not only guarantee the communities' livelihoods, but also contribute to conserving biodiversity and controlling the effects of climate change (UNDP, 2020, p. 188).

In principle, the protection of the Amazon triple frontier requires effective international and regional co-operation, the implementation of sound policies and respect for the value of traditional indigenous knowledge. A holistic and inclusive approach is required to preserve the Amazon rainforest and guarantee the well-being of the communities that depend on it, in accordance with the principles of the 2030 Agenda (UNDP, 2020, p. 189) and with a focus on building a sustainable future for both human life and nature.

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