



TERRITORIES OF RESILIENCE

How local and traditional communities
are adapting to climate change in the
Amazon and Cerrado.

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1. Context

Climate change poses interconnected challenges – ecological, social, and economic – that demand integrated responses linking mitigation, adaptation, and socio-environmental justice. **Mitigation** involves actions aimed at reducing greenhouse gas emissions and increasing carbon sinks through the conservation and restoration of ecosystems, energy transition, and sustainable land-use practices.¹ **Adaptation**, in turn, refers to the process of adjusting natural and human systems to current and future climate impacts, strengthening their resilience as well as food, water, and territorial security.²

These two pillars are not mutually exclusive but complementary. Under the United Nations Framework Convention on Climate Change (UNFCCC), **co-benefits** refer to the positive impacts that climate actions generate beyond their primary goals of mitigation (reducing greenhouse gases) or adaptation (adjusting to the effects of climate change).

1.1 Co-benefits Between Adaptation and Mitigation

Co-benefits between adaptation and mitigation occur when an action in one of these areas also generates positive impacts in the other. For example, **an adaptation project** that restores ecosystems or promotes sustainable agriculture **may also reduce greenhouse gas emissions** – representing a mitigation co-benefit. Similarly, **mitigation actions** such as reforestation or energy transition **can enhance the resilience of communities and ecosystems** to climate impacts, thus creating adaptation co-benefits. The UNFCCC recognizes these interconnections, and the **Paris Agreement explicitly highlights that adaptation initiatives can generate mitigation co-benefits**, contributing to global emission reduction outcomes.³



1. Intergovernmental Panel on Climate Change (IPCC)(2023). What is climate change mitigation? FAQ 1.2 | Which greenhouse gases (GHGs) are relevant to which sectors? FAQ 1.3. Available at: [Link](#)
2. United Nations Framework Convention on Climate Change. *Adaptation and resilience: The big picture*. Available at: [Link](#)
3. Intergovernmental Panel on Climate Change (IPCC)(2023). Synthesis Report. Available at: [Link](#)

Co-benefits Between Adaptation and Mitigation

1. WHEN ADAPTATION ALSO REDUCES EMISSIONS

Mitigation co-benefits generated by adaptation actions

What it is: Positive effects on greenhouse gas reduction resulting from initiatives aimed at increasing climate resilience.

Examples:

- **Forest and spring restoration initiatives led by local communities** improve access to water and soil fertility while also enhancing carbon sequestration and reducing deforestation.
- **Agroforestry systems and regenerative farming practices** adopted by traditional peoples and communities strengthen food security and reduce emissions associated with burning and deforestation.

2. WHEN MITIGATION ALSO STRENGTHENS RESILIENCE

Adaptation co-benefits generated by mitigation actions

What it is: Positive impacts on the resilience of people and ecosystems that arise from actions aimed at reducing greenhouse gas emissions.

Examples:

- **Integrated and traditional fire management** helps avoid emissions while protecting forests, crops, and homes from extreme fires.
- **Territorial and financial management models based on local and participatory governance** reduce pressure on ecosystems and increase communities’ ability to respond to climate events.

3. WHY IS IT IMPORTANT TO INTEGRATE ADAPTATION AND MITIGATION?

- **More efficiency:** Combining both dimensions allows multiple environmental, social, and economic benefits to be achieved within a single project.
- **More engagement:** Highlighting co-benefits such as food security, territorial strengthening, and biodiversity conservation makes initiatives more relevant and legitimate for communities.
- **More sustainability:** Integration avoids negative trade-offs and promotes long-lasting solutions rooted in local territories and knowledge, even amid climate extremes.

4. WHAT DOES THE UNFCCC SAY?

Historically, adaptation and mitigation have been addressed as distinct pillars within climate negotiations. However, the Paris Agreement explicitly recognizes the interlinkages between adaptation actions and their potential positive effects on mitigation. **Today, the UNFCCC provides dedicated forums and technical processes to discuss and share good practices for identifying and assessing co-benefits across different sectors.**

COP30 AND THE ADVANCEMENT OF THE ADAPTATION AGENDA4

The *Eighth Letter from the COP30 Presidency* (Oct. 2025) **reaffirms that adaptation will be the central axis of the conference**, linking progress on climate finance and the implementation of the Global Goal on Adaptation (GGA). The letter outlines four main priorities:

- **Balance the allocation of resources** between mitigation and adaptation – currently, less than one-third of total global climate finance is directed to adaptation;
- **Reclassify adaptation finance as investment in sustainable development**, with social and economic returns estimated at up to four times the amount invested (according to the World Bank);
- **Define concrete targets** and indicators for the GGA, aligning them with National Adaptation Plans (NAPs) and monitoring and transparency mechanisms;
- **Strengthen international cooperation** to ensure that developing countries have access to predictable, long-term, and fair financing.

The letter establishes that **COP30 should be “the COP of adaptation”**, aiming for tangible results that consolidate the GGA as a pillar of the Paris Agreement’s implementation and usher in a new phase of balance between climate justice, solidarity, and equitable financing.

4. UNFCCC (October 23, 2025). *Eighth Letter from the COP30 Presidency*. Available at: [Link](#)

Indigenous Peoples and Local Communities (IPLCs) experience the interconnection between mitigation and adaptation in their daily lives, **as their ways of life are deeply tied to nature’s cycles and the collective management of territories**. Restoration projects, community forest management, agroecology, and food security initiatives—such as those mentioned in Box 1—**often generate co-benefits between mitigation and adaptation**: they reduce emissions while simultaneously strengthening livelihoods and biodiversity.

These communities demonstrate in practice that effective climate action emerges from integrated care for the territory and the strengthening of well-being, dissolving conceptual boundaries between mitigation and adaptation and offering the world concrete examples of integrated solutions rooted in harmony and reciprocity between people and nature. Therefore, recognizing and valuing these synergies is essential to advancing fair and effective climate solutions.

1.2 Locally Led Adaptation

In this context, **Locally Led Adaptation (LLA)** emerges as a new paradigm for climate action: a model that recognizes that the most effective responses to climate change arise from the territory and those who inhabit it. **LLA** is based on the principle that communities living on the front lines of the climate crisis should have decision-making power, **direct access to resources, and institutional conditions to lead their own adaptation strategies**.⁵

LLA proposes to **transfer authority, resources, and knowledge to local levels**, ensuring that solutions reflect the priorities, knowledge, and sociocultural dynamics of each territory. This approach deeply resonates with the ways of life of **IPLCs**, who have historically practiced forms of adaptation based on collective land management, observation of natural cycles, and reciprocity between people and nature. LLA recognizes that these **communities are not mere beneficiaries of adaptation but protagonists of climate resilience**. In IPLC territories, this translates into strengthening community institutions, expanding direct access to funding, and valuing traditional practices that already constitute effective responses to the climate crisis.

Principles of Locally Led Adaptation

Locally Led Adaptation (LLA) proposes that communities most vulnerable to climate change have **real decision-making power and direct access to resources**. Its principles include:

- **Local autonomy**: decisions made at the level closest to the communities.
- **Equity and justice**: reducing structural inequalities of gender, race, and generation.
- **Accessible and predictable financing**: ongoing and flexible support that strengthens local capacities.
- **Strong institutions**: investment in community organizations and their own governance mechanisms.
- **Combined knowledge**: integration of traditional and scientific knowledge on risks and solutions.
- **Transparency and continuous learning**: mutual accountability and adaptive management.
- **Multiscale coordination**: connection between communities, governments, and partners to maximize results.

5. International Institute for Environment and Development – IIED (2022). *Locally led adaptation: Principles, practices and progress*. Available at: [Link](#)

1.3 The Work of TNC

TNC has increasingly incorporated the **principles of Locally Led Adaptation and the co-benefits between mitigation and adaptation** into its global and regional strategy to address the climate crisis.

In Brazil, the organization works **to integrate mitigation and adaptation in a systemic way**, supporting **community-based climate governance models** that **reconcile conservation, income generation, and territorial security**. In the Amazon and Cerrado, its strategy to strengthen **Nature-Based Solutions (NbS)** has prioritized locally led actions, ranging from the restoration of degraded areas in Indigenous Lands and Extractive Reserves to **community management arrangements of water and fisheries resources**.

These experiences demonstrate that **climate adaptation is more effective and sustainable when grounded in the local knowledge and practices of the territories**. They also show that strengthening the leadership of IPLCs can generate **positive impacts both in terms of mitigation and resilience**, reinforcing the co-benefits mentioned earlier.⁶

In light of this scenario, TNC proposes **an urgent, place-based climate adaptation agenda**, based on:

- **More resilient crops that are less dependent on water;**
- **Recognition and promotion of agroecological systems and local sociobiodiversity;**
- **Strengthening of territorial and land governance;**
- **Integrated fire management as a preventive and adaptive tool.**

More than just diagnosing impacts, this agenda aims to **strengthen climate action in the territory** by aligning **science, public policy, and climate investment to protect the most threatened areas and ensure a viable future for those who directly depend on them**.

Considering TNC’s established areas of operation, this publication aims to **highlight ten concrete adaptation solutions led by Indigenous Peoples and Local Communities**. These initiatives demonstrate how their knowledge, territorial practices, and governance systems **strengthen resilience in the face of the climate crisis, generating both benefits and co-benefits for people, biodiversity, and ecosystem balance**.

6. TNC (2025). *Release – Araguaia Adaptation Study* (internal document, July 2025).

2. Amazon and Cerrado: Strategic Biomes for Climate Adaptation in Brazil

The climate crisis is no longer a forecast; it is already underway, transforming ecosystems and ways of life in Brazil and around the world. Among Brazil's biomes, the **Amazon and Cerrado** stand out not only for their ecological richness but also for their essential role in climate regulation, water security, and food production in the country.

The **Amazon**, the largest tropical rainforest on the planet, plays a decisive role in global climate balance.⁷ It stores enormous amounts of carbon, recycles atmospheric moisture through tree transpiration, and feeds the so-called “**flying rivers**” — vapor currents that carry rainfall to much of South America.⁸ Besides being the world's largest biodiversity reservoir, the forest maintains rainfall patterns and regulates the climate, directly contributing to the stability of agricultural activities and **climate change adaptation**.^{9 10}

However, the Amazon now faces a real threat of reaching a **tipping point**.^{11 12} If deforestation and warming continue, the forest could lose its ability to maintain moisture and rainfall patterns, jeopardizing biodiversity and the livelihoods that depend on it. Studies indicate that this collapse could occur when deforestation reaches between 20% and 25% of its original area— a threshold already close to the current level, around 18%.¹³ In this scenario, the Amazon would cease to provide the socio-environmental services that sustain not only **IPLCs** but also agriculture and climate stability across the entire continent.

At the same time, the **Cerrado** is the largest savanna in South America and is known as the “**water tower of Brazil**.” The biome hosts springs and drainage systems that feed eight of Brazil's twelve major river basins, playing a crucial role in the country's **water and energy security**. Its diverse vegetation with deep roots contributes to aquifer recharge and regulates water flows that sustain strategic rivers such as the São Francisco, Tocantins-Araguaia, and Paraná.¹⁴

However, the Cerrado is also under intense pressure. The **advance of deforestation and rising average temperatures** have prolonged drought periods, disrupted the water cycle, **and intensified wildfires on an unprecedented scale**. The loss of native vegetation—which already exceeds half of the original coverage— reduces the soil's capacity to store carbon and absorb water, directly impacting the water availability that supports cities, industries, and agribusiness.¹⁵ This degradation threatens not only biodiversity but also the biome's strategic role as a **climate regulator and a foundation for adaptation** across the country.

A new study by TNC Brazil on the Araguaia Basin, in the Cerrado, reveals a consistent **warming trend over the past six decades**. The analyses indicate a continuous increase in average temperature, particularly between August and October — the transition period between the dry season and the onset of rains — when heat intensifies most sharply. The study also identifies a gradual decrease in both total rainfall volume and the number of rainy days and projects that, by 2050, the **Cerrado could experience an increase of more than 3°C in average temperature and a reduction of up to 200 mm in annual precipitation**, even under mitigation scenarios.¹⁶

“Some municipalities have already recorded increases in maximum, average, and minimum temperatures in practically every month of the year. At the same time, there is a gradual decrease in total rainfall volume and in the number of rainy days.”

EDUARDO BARNES (TNC BRAZIL)

The Relationship Between the Amazon, the Cerrado, and Climate Adaptation

The **Amazon** and the **Cerrado** are pillars of climate adaptation in Brazil. The Amazon rainforest acts as a **natural climate regulator** by storing carbon, maintaining atmospheric moisture, and feeding the “flying rivers” that distribute rainfall across much of South America—essential for agriculture and water supply.

Meanwhile, the **Cerrado**, with its deep-rooted vegetation and extensive network of springs, is essential for the **nation's water security**. Conserving these biomes strengthens the country's **climate resilience** by protecting ecosystems and communities against the growing impacts of the climate crisis, enhancing climate regulation and energy security, and reducing negative socioeconomic effects—especially on the most vulnerable groups.

In the same TNC study, the **Araguaia Basin—which connects the Cerrado and Amazon biomes** and harbors one of the country's greatest water resources—is identified as a **strategic area for Brazil's environmental and climate security**. The Araguaia River, one of the main waterways in the Cerrado, carries over 6.5 million liters of water per second and flows through **approximately 400 municipalities across four states (Goiás, Mato Grosso, Tocantins, and Pará)**. Its dynamics directly influence the economic development of more than **100,000 rural producers** and the well-being of millions of people, including Indigenous Peoples, Quilombola communities, other local communities, and urban populations.¹⁷

The protection of these biomes depends largely on the **integrity of Indigenous Lands and traditional territories**, which are among the most well-preserved areas in the country. A study by the Serrapilheira Institute—based on cross-referencing and analysis of various data sources such as MapBiomas, the Brazilian Institute of Geography and Statistics (IBGE), and the National Foundation of Indigenous Peoples (FUNAI)—showed that between 2019 and 2023, only 3% of deforestation in the Amazon occurred within these lands, even though they cover about 23% of the region and contain nearly 30% of the biome's mature forests. These territories, managed by Indigenous IPLCs, ensure not only biodiversity but also the **rainfall cycle** that sustains agriculture and livestock and the continent's climate stability.

7. Ministry of the Environment (MMA, n.d.): *Biomas e ecossistemas brasileiros*. Available at: [Link](#)

8. Science (2023). *A regional approach to save the Amazon*. Available at: [Link](#)

9. Castanho, A. D. et al. (2024): *Managing ecosystem services in the Brazilian Amazon: the influence of deforestation and forest degradation in the world's largest rain forest*. Available at: [Link](#)

10. Gomes, C. V. A. et al. (2023): *Climate change and local adaptation in the Amazon: perspectives from community-based research*. *PLoS Climate*. Available at: [Link](#)

11. In the past four years, we have witnessed a sharp increase in deforestation in the world's largest tropical forest, intensifying the climate emergency and pushing the Amazon closer to the much-feared tipping point — when the climate will no longer be able to sustain the forest, triggering an irreversible savannization process that could affect up to 70% of the Amazon.

12. T. E. Lovejoy, C. Nobre (2018). *Amazon Tipping Point*. *Sci. Adv.* 4, eat 2340. Available at: [Link](#)

13. Watts, J. (2025): *We are perilously close to the point of no return': climate scientist on Amazon rainforest's future*. Available at: [Link](#)

14. MMA (2023). *Plano de ação para prevenção e controle do desmatamento e das queimadas no bioma cerrado (PPCerrado): 4ª fase (2023 a 2027)*. Available at: [Link](#)

15. MMA (n.d.): *Biomas e ecossistemas brasileiros*. Available at: [Link](#)

16. Idem.

17. Idem.

While Indigenous Lands act as protective barriers against deforestation, the rest of the territory shows a worrying trend. The loss of natural areas in Brazil increased from 20% in 1985 to 33% in 2023—**more than 110 million hectares converted in just four decades**. This transformation has drastically reduced the ecosystems’ ability to regulate the climate, sustain the water cycle, and prevent droughts and wildfires, putting biodiversity and the ways of life that depend on it at serious risk.¹⁸

The signs of this instability are already evident. The **year 2023 was the hottest on record in Brazil**, with an average annual temperature of 24.92 °C — 0.69 °C above the 1991–2020 baseline.¹⁹ In 2024, the country faced **nine heatwaves** intensified by the El Niño phenomenon and experienced a **record-breaking September**, 1.7 °C above the historical average.^{20 21} These extremes show that Brazil’s climate variability has already exceeded previous limits, with **direct impacts on water availability, food security, public health, and the frequency of large-scale wildfires**.

The degradation of the Amazon and the Cerrado, therefore, is not just an ecological loss: it has direct consequences for the populations who live in and care for these territories. As the climate becomes more extreme and ecosystems lose their ability to regulate themselves, the **impacts fall disproportionately on IIPLCs**, who maintain close relationships with the land, forest, and water. In this context, the climate crisis ceases to be merely an environmental issue and also reveals itself as a social, cultural, and survival crisis.

For Perspective: What Do 110 Million Hectares Really Mean?

Between 1985 and 2023, Brazil lost 110 million hectares of native vegetation. To put that number into perspective, it is equivalent to:

- **13% of Brazil’s entire territory.**
- **The entire area of Bolivia.**
- **Almost twice the size of Spain.**
- *Approximately half of the Cerrado biome (204 million ha)*
- *More than the total deforested area in the Legal Amazon to date (~86–90 million ha)*

The loss of native vegetation in just four decades is equivalent to “wiping an entire country off the map” — with direct impacts on climate, biodiversity, and ways of life.

3. The Climate Crisis and Its Direct Impacts on Indigenous Peoples and Local Communities

In the context of the territories analyzed in this study, located in the Amazon and Cerrado biomes, the effects of the climate crisis have become increasingly evident in three interconnected critical dimensions: **(i) fire, wildfires, and burning; (ii) droughts and access to water; and (iii) food insecurity**. Although these are not the only possible climate impacts in these regions, these three dimensions represent the most recurrent effects observed in this work, manifesting themselves in particularly intense and unequal ways among IPLCs, whose subsistence depends directly on forests, rivers, and local agricultural cycles.

Fire, Wildfires, and Burnings. The combination of deforestation, forest degradation, and rising temperatures has intensified wildfires. In total, **Brazil lost over 30 million hectares to fire in 2024**—an area larger than Italy—with **58% of that loss occurring in the Amazon alone**.²² This advance directly affects traditional territories, which depend on ecological integrity in natural environments for extractivism, hunting, and the protection of sacred areas. In the Pantanal, riverine and Indigenous communities **have seen entire fishing and gathering areas destroyed by fire**, compromising their health, food security, and income.²³

On the Use of Fire

TNC adopts a technical and historical approach to the topic, recognizing that fire is not inherently a purely destructive element, but a natural and cultural phenomenon with multiple uses. Since 1962, TNC has developed a solid agenda on the subject, promoting **Integrated Fire Management (MIF)** ²⁴ as a tool for conservation and climate adaptation. In accordance with the guide *Forest Fires and Integrated Fire Management* (MMA, 2025), TNC adopts the following definitions:

- **Fire:** a natural chemical reaction ancestrally used by human populations for agricultural, ecological, ritual, food-related, and industrial purposes.
- **Burning: controlled** use of fire, authorized or not, for specific purposes; when unauthorized, it may constitute an environmental violation.
- **Wildfire: uncontrolled** fire with negative effects on people, ecosystems, infrastructure, and the economy

When addressing the use of fire by IPLCs, it is essential to recognize their **ancestral and skilled** uses, based on traditional ecological knowledge and sustainable management practices.²⁵

“The climate crisis brings environmental impact, with loss of biodiversity, but also social impact: it threatens our identity and disrupts our model of community organization.”

LETÍCIA MORAES, NATIONAL COUNCIL OF EXTRACTIVE POPULATIONS (CNS)

“Wildfires invade the fields, destroy crops, and the smoke causes illnesses. This has even greater impacts on women, who are on the front lines of food security.”

TELMA TAUREPANG, UNION OF INDIGENOUS WOMEN OF THE BRAZILIAN AMAZON (UMIAB)

18. MapBiomias (2024). *Em 2023, a perda de áreas naturais no Brasil atinge a marca de 33% do território*. Available at: [Link](#)

19. National Institute of Meteorology (INM, 2024): *Ano de 2023 é o mais quente da história do Brasil*. Available at: [Link](#)

20. O Globo (2024). *Uma por mês: Brasil supera 2023 e registra nove ondas de calor de janeiro a setembro*. Available at: [Link](#)

21. National Institute of Meteorology (INM, 2024): *Brasil tem o setembro mais quente em 63 anos*. Available at: [Link](#)

22. The Guardian (Watts, J., 2025). *Brazil fires consumed wilderness area larger than Italy in 2024 – report*. Available at: [Link](#)

23. G1 (2025). *Fogo no Pantanal: chamas consumiram área de 90 mil campos de futebol nos últimos 40 anos*. Available at: [Link](#)

24. **Integrated Fire Management (MIF)** is a planning and management model that combines ecological, cultural, socioeconomic, and technical aspects in the execution, integration, monitoring, evaluation, and adaptation of actions related to the use of prescribed and controlled burning, as well as the prevention and suppression of wildfires. Its objectives include reducing particulate matter and greenhouse gas emissions, conserving biodiversity, and decreasing wildfire severity, while respecting the traditional and adaptive use of fire. Available at: [Link](#)

25. MMA & Rede Biota Cerrado (2025). *Cartilha sobre Incêndios Florestais e MIF*. Available at: [Link](#)

“The Amazon has the largest freshwater basin in the world, but the communities don’t have potable water to drink.”

LETÍCIA MORAES (CNS)
“Longer droughts and atypical rains are already affecting crops, fishing, and navigation, threatening the food sovereignty and livelihoods of Quilombola communities.”

COORDINATION OF MALUNGU
“On November 14, 2024, we witnessed one of the greatest disasters we have ever seen: 50,000 tons of dead fish in the Aramaná Channel, in Santarém. It was a war-like, desperate scene — we had never experienced anything like this before.”

MANOEL PINHEIRO (MOPEBAM)

Droughts and access to water. The Amazon has been facing **two consecutive years of extreme drought**, resulting from the combination of anomalous warming in the tropical Atlantic and the El Niño phenomenon.²⁶ **Between 2022 and 2023**, the dry season caused a **reduction of 3.3 million hectares in the surface area of water in the Brazilian Amazon**, according to MapBiomias.²⁷ In **October 2023**, the **Rio Negro reached its lowest level since measurements began in 1902, recording 12.89 meters** at the Manaus station, according to the Geological Service of Brazil. What was once an exceptional event has come to **represent a new normal of water collapse**. Navigation has become increasingly difficult, isolating riverside and Indigenous communities and compromising their food sovereignty — marked by the loss of fish, their main source of protein, and other traditional foods.²⁸ ²⁹ In 2024, UNICEF warned that the drought put nearly **half a million children at risk, leaving more than 1,700 schools and 760 health units inaccessible**.³⁰

Food Security. Climate change directly worsens food security, especially among IPLCs. Experiences from **Oiapoque (Amapá)**³¹, the **Xavante people (Mato Grosso)**³² and **Terra do Meio (Pará)**³³ reveal how climate change is intensifying food insecurity for peoples and communities in the Amazon and Cerrado. In Oiapoque, rising temperatures and altered rainfall patterns have favored the spread of witches’ broom disease, a pest that devastated cassava crops—the staple of the local Indigenous diet and economy.

Among the **Xavante Indigenous** people, drought, soil degradation, and advancing deforestation have compromised the production of traditional foods, forcing families to rely on processed products and breaking the ancestral connection between food, territory, and culture. In the **Terra do Meio** region, prolonged droughts and ecological cycle imbalances have reduced the production of Brazil nuts, an essential source of income and nutrition for extractive communities. These three contexts demonstrate that climate change not only affects ecosystems but also food systems and ways of life, increasing inequalities and demanding adaptation strategies that strengthen food sovereignty and the autonomy of local peoples and communities.

These dimensions do not occur in isolation: **deforestation increases the risk of droughts and fires; reduced agricultural production deepens hunger; and food insecurity and lack of income alternatives put even more pressure on the territories**. Thus, a vicious cycle forms that weakens ecosystems and IPLCs, making it urgent to strengthen climate adaptation at both local and national scales.

26. Geological Service of Brazil (SGB, 2023). *Rios da Bacia do Amazonas registram novas mínimas históricas nesta terça-feira (24)*. Available at: [Link](#)

27. MapBiomias & Imazon (2024). *Superfície de água no Brasil voltou a ficar abaixo da média em 2023*. 2024. Available at: [Link](#)

28. Nature (Santos de Lima, L. et al., 2024). *Severe droughts reduce river navigability and isolate communities in the Brazilian Amazon*. Available at: [Link](#)

29. Rainforest Foundation (2025): *Amazon Rainforest Drought*. Available at: [Link](#)

30. The Guardian (2024). *Severe drought puts nearly half a million children at risk in Amazon – report*. Available at: [Link](#)

31. G1 (2025). *Produtores indígenas de Oiapoque recebem tecnologia para combater a praga da mandioca*. Available at: [Link](#)

32. Socio-Environmental Institute (ISA, 2024). *Povo Xavante*. Available at: [Link](#)

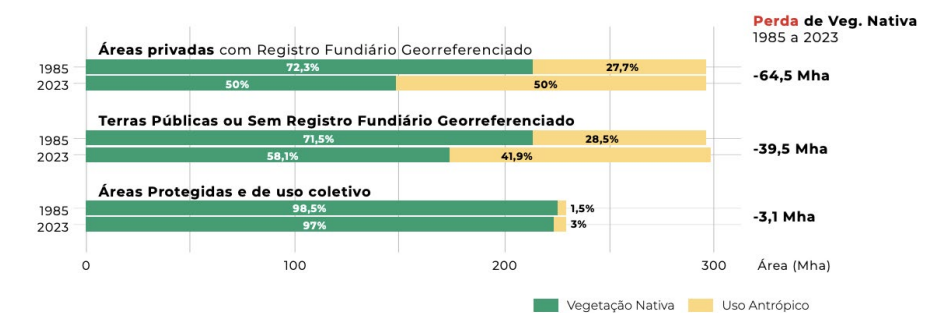
33. Estadão – Agro (2025). *Safra da castanha-do-pará quebra, preço dispara e setor prevê nova crise em 2026*. Available at: [Link](#)

4. Territorial Rights: Peoples and Communities on the Frontline of Adaptation

Fire, droughts, and food insecurity disproportionately impact IPLCs. However, these very groups are the keepers of the ways of life, knowledge, and land management practices capable of keeping forests standing, conserving biodiversity, and regulating the regional climate. Their agricultural practices, gathering, and fire management balance land use with ecosystem regeneration, turning their territories into **living spaces of resilience**. Thus, far from being merely victims of the climate crisis, **IPLCs are key players in adaptation**, demonstrating in practice that it is possible to care for the land, secure food, and protect the climate simultaneously.

The international agenda already recognizes this leadership through the concept of **Locally Led Adaptation**, which values traditional knowledge, territorial governance, and social cohesion. Yet, **less than 1%** of global climate finance directed toward mitigation and adaptation between 2011 and 2020 **reaches these communities directly** — a clear mismatch between urgency and support.³⁴ ³⁵ In Brazil, community-based mechanisms — such as the **Podáali Fund** (Indigenous Peoples) and the **Puxirum Fund** (extractive communities) — demonstrate concrete ways to democratize access to resources and strengthen local governance.³⁶ ³⁷ The evidence is also clear: **legal security of territories reduces deforestation and protects carbon stocks**. Between 2003 and 2016, approximately **90%** of the net carbon emissions in the Amazon occurred outside Indigenous Lands and Conservation Units.³⁸ ³⁹

Image 1: Loss of native vegetation by land tenure category (1985–2023).



Source: [MapBiomias](#)

34. International Institute for Environment and Development – IIED (2023). *Principles for Locally Led Adaptation*. Available at: [Link](#)

35. Rainforest Foundation Norway (2021). *Falling short - Donor funding for Indigenous Peoples and local communities to secure tenure rights and manage forests in tropical countries (2011–2020)*. Available at: [Link](#)

36. [Fundo Podáali](#)

37. [Fundo Puxirum](#)

38. University of Sao Paulo (Walker, W. S., et al, 2020). *The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas. Proceedings of the National Academy of Sciences*. Available at: [Link](#)

39. Baragwanath, K., & Bayi, E. (2020). *Collective property rights reduce deforestation in the Brazilian Amazon. Proceedings of the National Academy of Sciences*. Available at: [Link](#)

“The consolidation and titling of traditional territories is one of the most effective ways to confront the climate crisis. Indigenous Peoples, Quilombolas, and Traditional Communities are not just beneficiaries, but true climate authorities.”

LETÍCIA MORAES (CNS)

“Without demarcation, there is no standing forest. Without forest, there is no water, health, or future for the climate.”

TELMA TAUREPANG, (UMIAB)

“Without collective land titles, our territories remain vulnerable to land grabbing and mining. Land regularization is the foundation of climate justice.”

COORDINATION OF MALUNGU

“How can it feed the country if there is no land? It is necessary to rethink the development model. And this debate passes through the demarcation of Indigenous Peoples’ territories. The answer is us.”

TOYA MANCHINERI, GENERAL COORDINATOR OF COIAB¹

Protected and collectively used areas have been the best preserved, showing minimal loss of vegetation cover. Therefore, **securing territorial rights** is a **key measure to tackle the climate crisis**: each step in the **demarcation** process reduces vulnerability, strengthens governance, and empowers communities to lead their own adaptation practices. The opposite is also evident: areas without formal recognition are targets for invasion, land grabbing, and violence, as seen in the **Ituna/Itatá Indigenous Territory (PA)**, which experienced a 654% increase in deforestation between 2018 and 2019 amid a lack of official recognition.⁴⁰

According to FUNAI, Indigenous Lands cover **13% of the Brazilian territory and contain 112 million hectares of native vegetation**.⁴¹ Despite this, they accounted for **only 1% of the country’s vegetation loss over nearly four decades** — a striking contrast compared to private areas, which lost 28% of their coverage in the same period.⁴²

Territorial rights as a pillar of climate adaptation

- **Proven climate protection**: Indigenous lands and recognized territories experience **up to three times fewer wildfires** and maintain higher humidity and thermal stability, acting as barriers against extreme climate events.⁴³
- **Secure land tenure reduces deforestation**: Studies show that areas without formal land titles experience much higher rates of degradation, while territories with recognized rights ensure the conservation of forests and their climate services.⁴⁴
- **Land demarcation is climate action**: legal land security strengthens community governance and creates conditions for peoples and communities to implement their own adaptation solutions.⁴⁵
- **Territorial rights are not only instruments for ensuring social justice but also a foremost climate policy**. Recognizing and protecting the territories of IPLCs means safeguarding standing forests, water, food, and climate stability for the entire country.

Below, we present stories that show how IPLCs have developed **climate adaptation solutions** based on their own territories and knowledge. These experiences highlight that securing territorial rights is not only a matter of justice but also a concrete adaptation strategy, where caring for the land, forest, and water translates into resilience in the face of climate change.

40. G1 (2020). Terra Indígena mais desmatada do país tem mil hectares devastados somente em janeiro de 2020, aponta o MPF. Available at: [Link](#)

41. FUNAI (2025). Dia Mundial do Meio Ambiente: FUNAI defende ações conjuntas e reconhecimento dos Povos Indígenas como guardiões da biodiversidade. Available at: [Link](#)

42. MapBiomas (2024). Mapeamento anual de cobertura e uso da terra no Brasil de 1985 a 2023. Available at: [Link](#)

43. Mongabay (2024). New study reaffirms Indigenous lands’ key role in mitigating climate change in Brazil. Available at: [Link](#)

44. Walker, W. S. et al. (2020). The role of forest conversion, degradation, and disturbance in the carbon dynamics of Amazon indigenous territories and protected areas. Proceedings of the National Academy of Sciences (PNAS), 117(6). Available at: [Link](#)

45. Fa, J. E. et al. (2022). Protected areas and Indigenous lands are critical for sustainability and climate change mitigation. Nature Sustainability, 5, 283–289. Available at: [Link](#)

1. COIAB (2025). G9 da Amazônia indígena pede financiamento climático direto e fim da exploração de petróleo na Amazônia. Available at: [Link](#).

5. Locally Led Adaptation Solutions Based on Territorial Knowledge

This section presents **ten locally led adaptation experiences in the Cerrado** and the **Amazon**, carried out by peoples and communities who combine **traditional knowledge, technological innovation, and community cooperation**. The solutions emerge from diverse contexts — from the humid forests of **Oiapoque**, where Indigenous Peoples blend science and tradition to revive cassava cultivation; to the territories of the **Xavante people** in the Mato Grosso Cerrado, where women lead regenerative agricultural practices and ecological restoration projects. In **Tapajós**, riverside communities and Indigenous peoples strengthen water governance and integrated fire management, while in **Terra do Meio**, extractivists and Indigenous peoples weave cooperation networks that ensure food security, forest conservation, and sustainable income.

These initiatives — ranging from **agroecological and regenerative agriculture** to the **management of fire and water**, including the **training of youth and women, strengthening local governance, and accessing public policies** — highlight a common principle: **climate adaptation is most effective when led by those who live in and care for the land**.

5.1 Oiapoque (AP): Regeneration and Adaptation Led by Indigenous Peoples

The Territory. The municipality of Oiapoque, one of the largest in the state of Amapá, covers about 23,000 km² and has 27,000 inhabitants.⁴⁶ Known for its intense sociocultural dynamics, it is home to Indigenous Peoples, riverine communities, quilombolas, and migrants who coexist in a territory marked by strong cross-border relations. The region concentrates 71% of the state’s Indigenous population, gathering approximately 10,000 people from the **Karipuna, Palikur-Arukwayene, Galibi Marworno, and Galibi Kali’na** ethnic groups, within the **Uaçá, Juminã, and Galibi** Indigenous Lands.⁴⁷ These territories cover around 500,000 hectares and are organized into five axes — **BR-156, Oiapoque River, Uaçá River, Urukawá River, and Curipi River** — connecting communities along rivers, forests, and coastal zones.⁴⁸ This territorial mosaic, which integrates fields, igarapés (small forest streams), and mangroves, constitutes one of the most strategic areas for the sociocultural and environmental conservation of the Amazon.

Impacts of Climate Change. In recent years, shifts in **climate patterns have altered rainfall and dry-season cycles**, creating more favorable conditions for the spread of agricultural pests and threatening the livelihoods and food security of Indigenous communities in Oiapoque. Local studies indicate that changes in the **rainfall regime have been perceived by communities as one of the factors associated with the emergence of new agricultural pests**, including cassava “witch’s broom” disease, identified for the first time in Brazil in 2024 in

46. IBGE (2024). Cidades e Estados: Oiapoque (AP). Available at: [Link](#)

47. G1 (2023). Oiapoque concentra 71% de toda a população indígena do Amapá, aponta Censo. Available at: [Link](#)

48. Socio-Environmental Institute (ISA, 2024). Povos Indígenas no Brasil: Oiapoque (AP). Available at: [Link](#)

“Our country needs public policies that value our knowledge and way of life. Indigenous ways of living are not from the past—in fact, they are the future.”

ELIANE XUNAKALO, PRESIDENT OF FEPOINT



“I plant my field, the manioc plants start growing nice and strong. When I return some time later, the entire crop is lost.”

MARINELSON DOS SANTOS,
INDIGENOUS SOCIO-
ENVIRONMENTAL AGENT (AGAMIN),
AÇAIZAL VILLAGE.¹

1. Iepé Institute (2023). Praga mata plantações de mandioca nas terras indígenas do Oiapoque. Available at: [Link](#)

northern Amapá.^{49 50} Since then, the pest has severely affected cassava fields — the foundation of local diets and economies — devastating entire crops and jeopardizing the production of flour, beiju, and tucupí, foods central to both traditional diets and economic exchanges among communities.⁵¹ With the scarcity of cassava, many families have been forced to reduce or abandon their fields, highlighting the vulnerability of traditional agricultural systems to environmental changes and the lack of technical alternatives suited to Indigenous contexts. This crisis underscores **the urgent need to strengthen productive autonomy and promote climate adaptation strategies** that ensure food resilience in the face of pests, diseases, and changes in rainfall patterns.

At the same time, the **traditional use of fire**, historically employed for clearing and preparing the soil, has come to represent an increasing risk for the communities. The rise in droughts, intensified winds, and changes in rainfall patterns have caused more frequent and uncontrollable wildfires. In 2023, the fires affected around **48,000 hectares** within the Indigenous Lands of the region. Reports indicate that the fires are starting earlier and spreading rapidly, hindering forest regeneration and damaging the crops and homes.⁵²

TNC’s Role. For over 20 years, TNC has collaborated with the communities of Oiapoque in developing and implementing their **Life Plans and Territorial and Environmental Management Plans (PGTAs)**, as well as in strengthening local Indigenous organizations such as the **Association of Indigenous Women in Mutual Aid (AMIM)** — one of the pioneers in promoting the gender agenda in the region — and the **Council of Chiefs of Indigenous Peoples of Oiapoque (CCPIO)**, which has played a central role in political coordination and in defending territorial and environmental rights. In the face of new challenges, TNC’s work in the region has focused on building collaborative initiatives for regeneration and strengthening territorial governance through adaptation strategies led by Indigenous Peoples. The work also includes **supporting the diversification and strengthening of sustainable value chains, such as açai and handicrafts**, promoting income-generating alternatives aligned with conservation and community autonomy.

49. Iepé Institute (2025). Pesquisa sobre mudanças climáticas no Oiapoque é apresentada na Conferência de Bonn da ONU. Available at: [Link](#)
50. Embrapa Amapá & Ministry of Agriculture and Livestock (2024). Praga quarentenária da mandioca é detectada pela primeira vez no Brasil, no norte do estado do Amapá. Available at: [Link](#)
51. G1 (2024). Praga inédita no país é registrada em plantações de mandioca no AP; governo decreta estado de emergência. Available at: [Link](#)
52. Iepé Institute (2024). Indígenas do Oiapoque criam cartilha para uso responsável do fogo. Available at: [Link](#)

The Solutions.

Solution 1: Combining traditional knowledge and technology in collective cassava cultivation

In 2023, faced with the crisis caused by the spread of the witch’s broom disease, the **Karipuna, Palikur-Arukwayene, Galibi Marworno, and Galibi Kali’na** communities—organized by **the Council of Indigenous Chiefs of Oiapoque (CCPIO) and the Indigenous Environmental Agents (AGAMIN)**—joined forces to restore their cassava fields, which are the foundation of their local diet and economy.

Community mobilization was the starting point. In response to the cassava shortage, local leaders organized collective meetings to set priorities, map the most affected areas, and plan actions to recover traditional agricultural systems, which had been compromised by the pest and changing rainfall patterns. This movement led to an institutional collaboration involving the Government of Amapá, Embrapa, FUNAI, the Amapá Institute for Rural Development (Rurap), and the CCPIO itself, **with a focus on restoring cassava crops and rebuilding production in a sustainable and safe way.**⁵³

In response to community demands, in 2024, the government of Amapá organized an **emergency initiative** to support Indigenous communities in recovering their cassava fields. Over **175,000 cassava cuttings were distributed to around 500 families across 12 communities, accompanied by technical assistance provided by Rurap.** The initiative aimed to restore devastated areas, ensure food supply, and strengthen traditional crop management, while communities resumed their agricultural practices and exchanged knowledge on cassava cultivation and the selection of varieties more resistant to climate change

The process advanced with the introduction of **technology adapted to the local context.** In 2025, Embrapa delivered an **automated** thermal chamber for the sanitization and multiplication of disease-free cassava seedlings. Installed in the **Manga Village** and operated by **Indigenous Environmental Agents** under the management of the **Council of Chiefs** and with technical support from FUNAI, the equipment allows for controlled temperature and humidity, eliminating fungi and pathogens from the seedlings and **ensuring healthier, more productive plants.**⁵⁴

This innovation is part of the **Reniva Indigenous Project**, which empowers communities and distributes **certified seedlings**, strengthening autonomy in the production of high-quality plant genetic material. The project combines **science and tradition:** Indigenous farmers participate in all stages — from selecting varieties to replanting — applying practices aligned with their cosmologies and traditional land management. Additionally, the program includes training of **local multipliers and the expansion of restored areas**, enhancing the resilience of agricultural systems in the face of climate change.

The community replanting of adapted varieties, combined with science and collective management, has established itself as an example of climate **adaptation led by Indigenous Peoples.** The experience demonstrates that strengthening traditional production systems is essential to ensure the future of the fields and the continuity of the food cultures of Oiapoque.

53. Amapá Government (2024). Governo do Amapá envia 175 mil sementes de mandioca para atender 500 famílias em comunidades indígenas de Oiapoque. Available at: [Link](#)
54. G1 (2025). Produtores indígenas de Oiapoque recebem tecnologia para combater a praga da mandioca. Available at: [Link](#)

“This difficulty brought a lot of wisdom and knowledge so that we could start selling other products to sustain ourselves. Now we also sell crafts, such as gourds, paddles, and brooms. We also began selling more bananas, sugarcane juice, corn, and açai.”

CHIEF CREUZA, AHUMÃ VILLAGE,
UAÇÁ INDIGENOUS LAND¹

1. Iepé Institute (2025). Feira Indígena do Oiapoque celebra resultados apesar da crise da mandioca. Available at: [Link](#)

“This activity is important not only for me but for the community, for my children and grandchildren. I do this because I believe it’s very important. I am a veteran, and now I am a professional; I can teach the young people to work in my place in the future.”

MANOEL SEVERINO DOS SANTOS, AGAMIN VETERAN, GALIBI MARWORNO ETHNICITY ¹

1. Indigenous Peoples in Brazil News (PIB, 2022). *Agentes ambientais indígenas recebem certificação como técnicos em meio ambiente*. Available at: [Link](#)

Solution 2: Community training in integrated fire management (MIF)

In the Uaçá, Juminã, and Galibi Indigenous Lands, the Galibi-Marworno, Karipuna, and Palikur peoples mobilized **to transform the traditional use of fire into a tool for adaptive management and territorial strengthening**. Faced with the increase in wildfires and changes in rainfall patterns, the communities understood that **managing fire is also about caring for their culture and territory** — and that passing this knowledge on to new generations is essential for climate adaptation.⁵⁵

From this movement emerged the **Oiapoque Indigenous Environmental Agents program (AGAMIN)**, created by the Iepé Institute in partnership with Indigenous leaders and the Federal Institute of Amapá (IFAP). The **training sessions covered topics ranging from the role of fire in traditional agriculture to the impacts of climate change on local ecosystems**. Leaders and elders participated in field activities, sharing ancestral stories and practices, while teachers and young people connected this knowledge to discussions about climate, public policies, and environmental management.

The training process evolved and became established as a **permanent Indigenous education program for climate adaptation**, lasting five years. The results are already visible in the communities. Indigenous Environmental Agents of Oiapoque are now employed by public agencies—such as the Institute for Rural Development of Amapá (RURAP) and the Special Indigenous Health District (DSEI)—working as environmental technicians and rural extension agents. The **participation of women** has also increased significantly, strengthening their presence in leadership and environmental governance spaces.

Among the educational materials produced, the booklet **on Fire Use and Climate Change in Oiapoque** stands out, collectively developed by AGAMIN and the Indigenous Women’s Association in Mutual Aid (AMIM). Aimed at Indigenous schools, the publication offers guidance on sustainable fire management, the risks of uncontrolled wildfires, and the benefits of traditional use combined with preventive practices.⁵⁶

The AGAMIN program is supported institutionally and financially by TNC, the Rainforest Foundation Norway, the French Development Agency (AFD), the Environmental Defense Fund (EDF), as well as FUNAI and the Chico Mendes Institute for Biodiversity Conservation (ICMBio), all of which contribute to consolidating the network and strengthening Indigenous environmental management in Oiapoque. The AGAMIN experience demonstrates that **building local capacities is an essential community-led climate adaptation strategy**. By bringing together youth, traditional knowledge, and innovative pedagogy, the program strengthens Indigenous autonomy in environmental management and inspires new forms of territorial governance in the face of climate challenges.

55. Iepé Institute (2025). *Agentes Ambientais Indígenas se formam em curso sobre mudanças climáticas*. Available at: [Link](#)

56. Association of Indigenous Women in Collective Action (AMIM) & Iepé Institute (2024). *Fogo: Usos e Cuidados*. Available at: [Link](#)

5.2 Xavante People (MT): Governance and Climate Autonomy in the Cerrado

The Territory. The Xavante people live in the Cerrado biome, in the center of Brazil, in a transitional zone with the Amazon. With a population of **26,000 people**, they maintain a rich cultural heritage, based on the transmission of knowledge and traditional practices between generations. Their territory consists of **nine demarcated Indigenous Lands, located in the basins of the Araguaia and Xingu rivers**.⁵⁷ In recent decades, the expansion of agriculture and livestock farming, coupled with illegal logging and mining, has heavily pressured their lands. **Deforestation and wildfires have transformed vast areas of the Cerrado and forest into pastures**, reducing the space available for farming, hunting, and fishing. Today, Xavante lands form true islands of native vegetation surrounded by vast fields of soybeans and cattle.⁵⁸

The Impacts of Climate Change. The region where the Xavante live is subject to long periods of drought and increasingly irregular rainfall. This **climatic variability affects water availability and food cultivation in the villages**, reducing the diversity of the fields and the supply of traditional products such as cassava, corn, and native fruits. Changes in the water regime also **compromise fishing and subsistence animal husbandry**, activities central to Xavante food security. As a result, dependence on industrialized foods—which are more expensive and less nutritious—increases, worsening cases of malnutrition and diseases associated with poor diet.⁵⁹

In this context, strengthening financial autonomy and territorial governance has become essential to enhance the Xavante people’s capacity to respond. However, **direct and unbureaucratic access to financial resources remains a challenge**—not only for the Xavante but also for many Indigenous organizations across Brazil. Traditional funding structures, marked by complex formal requirements, language barriers, and deadlines incompatible with community dynamics, limit the effective participation of those on the front lines of conservation and climate adaptation.⁶⁰

TNC’s Role. TNC collaborates with the **Xavante people**, in partnership with the **Mato Grosso state government and the Federation of Indigenous Peoples and Organizations of Mato Grosso (FEPOIMT)**, aiming to strengthen sustainable territorial and environmental management of their lands. A notable example of this collaboration is the **Xavante Award**, a pilot initiative developed within the **REDD+ Early Movers (REM MT)** program, in partnership with the Podáali Fund and Xavante leaders, detailed in Solution 5.

“Feeding is also a political act. For Indigenous people, when we stop eating taro or corn, we are losing part of ourselves, part of our history.”

ELIANE XUNAKALO, PRESIDENT OF FEPOIMT

57. Ministry of Health (2024). *População Indígena no Brasil*. Available at: [Link](#)

58. TNC (2024) *Canalizando o Financiamento Climático: Experiência do Fundo Podáali e do Povo Xavante no Mato Grosso*. Available at: [Link](#)

59. Ministry of Health. Secretariat of Indigenous Health (2024). *Plano Distrital de Saúde Indígena – DSEI Xavante, 2024-2027*. Available at: [Link](#)

60. TNC (2024). *Economia dos Guardiões da Natureza*. Available at: [Link](#)

The Solutions.

“The bean seed comes from our ancestors. Today we are the descendants and we take care of this seed to ensure the continuity of our food — which is very nutritious.”

RABI WAUTOMOTSITSATÖRI,
XAVANTE PEOPLE, MARECHAL
RONDON INDIGENOUS LAND
“Women are often forgotten. But within Indigenous peoples, we play a fundamental role in conservation — we are the guardians of agrobiodiversity, species, and language. As women, it is we who carry the culture.”
DIANA NASCIMENTO, KAINGANG
PEOPLE, TNC BRAZIL

Solution 3: Training Xavante women in regenerative practices and food security ⁶¹

In the **São Marcos Indigenous Land**, **Xavante women** have taken a leading role in restoring traditional fields and recovering native species, becoming **seed guardians and agroforestry leaders**. Faced with species loss and shrinking cultivation areas, they began training in regenerative agricultural practices adapted to the **Cerrado**, combining agroforestry techniques with ancestral knowledge to restore ecological balance and strengthen the **food sovereignty** of their families.

The project trained Xavante women as **agroecological multipliers**, responsible for the implementation and management of agroforestry areas in their communities. These spaces became **centers of collective learning**, where traditional knowledge interacts with contemporary regeneration practices, strengthening intergenerational bonds and networks of solidarity between women, elders, and youth.

Women’s engagement was crucial to the success of the initiative. They **lead planting efforts, seed exchanges, and decision-making processes** regarding land use, combining knowledge of cultivation, nutrition, and spirituality. The project also fostered **moments of listening and community planning**, increasing women’s participation in territorial and political governance within the villages. These actions are directly connected to **climate adaptation** by restoring resilient species, improving soil fertility, and diversifying food production in the face of droughts and extreme heat. The **revival of traditional food and native plants** strengthens food security and values women’s knowledge as pillars of ecological resilience.



61. TNC (2025). Acordo de Cooperação Técnica e Financeira entre o Instituto de Conservação Ambiental The Nature Conservancy do Brasil (TNC Brasil) e Flor de Ibez – Instituto de Vida Integral. Source: Internal contract.



Solution 4: Ecological restoration and community strengthening

In the **Marãiwatsédé Indigenous Land**, **Xavante families**—with support from **TNC, Operação Amazônia Nativa (OPAN)**, and the **Xingu Seed Network (RSX)**—carry out **collective ecological restoration** efforts based on the muvuca technique and integrated fire management. Participatory reforestation has recovered degraded areas, restored soil fertility, and improved water availability, reducing fire risks and strengthening the **ecological and cultural resilience of the Cerrado**.^{62 63}

Guided by the **Territorial and Environmental Management Plan (PGTA)**, the process brings families and leaders together around **environmental and productive regeneration**.⁶⁴ Under the **Restaura Brasil** program (an initiative by TNC Brazil), the community combines ecological restoration, food production, and strengthening **Indigenous governance**.⁶⁵ In a participatory manner, men, women, and youth define priority areas and engage in all stages—from planning and planting to maintenance and monitoring—uniting the community around the goal of **restoring the territory and rebuilding the spiritual bond with the land**.

The collaboration with the **National Center for Prevention and Combat of Forest Fires (Prevfogo)** and the **Brazilian Institute of Environment and Renewable Natural Resources (Ibama)** integrates Indigenous and non-Indigenous brigades in fire management and restoration efforts, enhancing the capacity to respond to extreme climate events. In addition to working with public authorities, a significant innovation was the creation of a community nursery for the production of fruit species with recalcitrant seeds—essential for traditional food and local wildlife. Containment fences and technical training ensure the success of regeneration and strengthen **community autonomy** in territorial management.

With monitoring planned until **2027**, the results are already visible: the resurgence of native species, the recovery of degraded soils, and the gradual return of wildlife. More than restoring ecosystems, the project **revitalizes cultural, dietary, and economic practices**, consolidating a local economy based on seeds and forest products.

“The Cerrado offers everything we need: many fruits we eat, medicinal herbs to cure illnesses, and so many other precious things. We need to take care of it; we cannot let what it gives us die.”

ISOLINA REDZAWE TSITOMOWE,
XAVANTE PEOPLE, SANGRAOIRO
INDIGENOUS LAND

62. TNC (n.d.). O Restaura Brasil é uma campanha para mobilizar pessoas e empresas em um movimento coletivo para restaurar 1 bilhão de árvores no país até 2030. Available at: [Link](#)
63. The “muvuca seeds” technique is an ecological restoration method that consists of mixing seeds from dozens of native species with green manure and planting them simultaneously in degraded areas through direct seeding. Available at: [Link](#)
64. Native Amazon Operation – OPAN (2021). Plano de Gestão Territorial e Ambiental da Terra Indígena Marãiwatsédé (PGTA Marãiwatsédé). Available at: [Link](#)
65. TNC (2025). Restaura Brasil. Available at: [Link](#)

“Funds need to adapt to the territory; bureaucracy prevents Indigenous Peoples, especially women, from accessing resources.”

TELMA TAUREPANG (UMIAB)

Solution 5: Strengthening financial autonomy and Indigenous governance

The Xavante people, with support from FEPOIMT, developed their own **model of financial management and territorial governance**, ensuring direct access to resources and autonomy in fund allocation. Launched in 2020 by the Coordination of Indigenous Organizations of the Brazilian Amazon (COIAB), the **Podáali Fund is the first fund created, managed, and led by Indigenous Peoples** that covers the entire Brazilian Amazon, with the purpose of strengthening self-determination and the sustainability of territories.⁶⁶ In the first public call (2022–2023), with support from **TNC Brazil** and other partners, the Fund received **over 300 proposals** and supported **47 projects**, totaling **R\$ 2.35 million** invested (approximately **US\$ 427,000**).⁶⁷ The results revealed both the widespread reach of the Indigenous movement and the historical **lack of direct and accessible funding** for grassroots initiatives.

The Podáali Fund is a partner of the **REM Mato Grosso Program (REDD+ Early Movers)**, an international results-based payment mechanism that rewards governments and local actors for proven reductions in deforestation. **The program allocates part of its resources to an Indigenous subprogram** aimed at strengthening the territorial and environmental management of the peoples of the state. In this context, a portion of REDD+ funds is **transferred to the Podáali Fund**, allowing Indigenous Peoples themselves to **autonomously** decide how to invest in their territories, according to their priorities and governance mechanisms.

In partnership with **FEPOIMT, TNC**, and Xavante leaders, an innovative model for **participatory resource management was created—the Xavante Award**—which recognizes and strengthens existing community initiatives with proven impact potential.⁶⁸ The mechanism replaces traditional competitive calls for proposals with a **selection process based on collective criteria, such as community reach, cultural relevance, and environmental benefits**.

The awarded projects included actions on **food sovereignty, native species management, cultural strengthening, and territorial protection**, led by local families and associations. Among them, standout initiatives include **agroforestry gardens, native seed nurseries, and projects that highlight traditional women’s knowledge**—practices that strengthen food security and ecosystem regeneration.

5.3 Tapajós (PA): governança das águas e manejo comunitário do Fogo

The Territory. The **Tapajós Basin, located in western Pará**, covers nearly 500,000 km² and hosts one of the greatest biological diversities in the Amazon. It is also **home to about 2 million people**, including riverine communities and Indigenous Peoples who depend directly on the rivers and forests for their survival, food, and cultural identity.⁶⁹ Despite this ecological and sociocultural wealth, the region faces intense pressures from advancing deforestation, the expansion of soy farming and cattle ranching, illegal logging and mining, as well as land conflicts that threaten traditional ways of life. This combination of factors makes the region a **symbol of the Amazon’s contradictions: a territory of extremely high biodiversity but also of increasing environmental and social vulnerability**.

Impact of Climate Change. The effects of climate change in the Tapajós Basin have manifested severely in the **management and quality of water resources**. Reduced rainfall, rising temperatures, and prolonged droughts have altered the hydrological patterns of rivers and streams, causing **unprecedented droughts and fish die-offs in several areas**. In 2023, an extreme drought drastically lowered river levels in the western Pará region, compromising water oxygenation and resulting in the death of thousands of fish, according to specialists from the Institute of Forest Development and Biodiversity (Ideflor-Bio). In 2024, new fish mortality events were reported in floodplain areas of Santarém, threatening the food security and economic well-being of riverine communities that rely on fishing for subsistence.^{70 71}

Besides water scarcity, **rising temperatures and reduced humidity** have intensified the occurrence of wildfires in the Lower Tapajós, causing devastating impacts on biodiversity and local ways of life. In 2023, one of the hottest years on record, **mega-fires burned approximately 300,000 hectares of forest**, driven by the El Niño phenomenon and a combination of illegal burns and prolonged drought. The flames spread across protected areas and traditional territories, compromising the natural regeneration of the forest and air quality in riverine and Indigenous communities. This episode underscores the urgent need for fire prevention and response strategies that integrate community fire management, strengthen local brigades, and value traditional knowledge about fire use and control in the Amazon.⁷²

TNC’s Role. For nearly 10 years, TNC has partnered with local organizations in the Lower and Middle Tapajós and Lower Amazon regions to strengthen sustainable fishing and alternative activities such as community tourism and crafts. Together with fishing colonies, more than 10 Fishing Agreements have been formalized, and riverine communities have been engaged in strategies that integrate their actions with scientific approaches, involving citizens in **participatory monitoring of aquatic biodiversity**.

66. TNC (2024). *Relatório do Podáali Xavante*. Available at: [Link](#)
67. For conversion purposes, this report used an exchange rate of R\$ 5.50 per US\$ 1.00. This rate is illustrative and does not necessarily reflect the actual or historical exchange rate for the periods analyzed.
68. TNC (2024) *Canalizando o Financiamento Climático: Experiência do Fundo Podáali e do Povo Xavante no Mato Grosso*. Available at: [Link](#)

69. TNC (2021). *Projeto Águas do Tapajós*. Available at: [Link](#)
70. G1 (2023). *Mortandade de peixes: biólogo explica como a seca severa tem influenciado na morte das espécies em municípios do oeste do Pará*. Available at: [Link](#)
71. G1 (2024). *Mortandade de peixes em canal na região de Várzea em Santarém ameaça alimentação de ribeirinhos*. Available at: [Link](#)
72. Piauí Magazine (2023). *Megaincêndios atingiram 300 mil hectares de floresta no Baixo Tapajós*. Available at: [Link](#)

The Solutions.

“We reforest the lakeshore with trees that bear fruit for the fish: it’s good for the climate and brings the fish back.”

MANOEL PINHEIRO, MOPEBAM

Solução 6: governança comunitária e conservação dos rios

The riverine communities of the Tapajós Basin, organized by the **Movement of Fishermen and Fisherwomen of Lower Amazonas (MOPEBAM)**, have taken a central role in water management and the conservation of local ecosystems. Through community fishing agreements and riverbank reforestation actions, these communities restore aquatic ecosystems, ensure the return of fish populations, and diversify sources of income and food, strengthening climate adaptation through the **self-management of natural resources**.

Since 2018, the **Águas do Tapajós Project** has been strengthening these local initiatives, promoting the integration of environmental conservation, community well-being, and the sustainable use of aquatic resources. Created in partnership between **MOPEBAM, TNC**, and other local organizations, the project is based on the recognition that **riverine communities are the main guardians of the rivers**, capable of combining traditional knowledge, practical experience, and innovation in the protection of the territories they inhabit.⁷³

The actions developed prioritize **community governance** and the formalization of **fishing agreements recognized by law** (*State Decree No. 1,686/2021*), ensuring that the communities themselves define, monitor, and enforce the management rules. In partnership with universities such as the **Federal University of Western Pará (UFOPA)**, fishermen and fisherwomen also participate in **environmental education programs and participatory monitoring initiatives** that investigate the causes of fish die-offs and collaboratively track water quality.

Care for the rivers extends to their banks. Communities promote the **reforestation of riverbank areas** with fruit-bearing species – known as “living fences” – which feed the fish, restore riparian forests, and improve the local microclimate. They have also diversified their productive activities through **hanging gardens, community fish farming, and locally based tourism**, strengthening the economic and food autonomy of families. The **participation of women fishers** is increasingly prominent, consolidating their presence in decision-making spaces and access to public policies. Community tools such as the **Tapajós 3D Atlas** support territorial planning and decision-making from the perspective of the communities themselves.⁷⁴

Community leadership is at the heart of this experience. Decisions about management areas, fishing rules, and restoration actions are made collectively, involving fishermen’s associations, riverine leaders, women, and youth. Partner organizations—such as TNC and research institutions—act as allies in this process, providing technical support, institutional coordination, and visibility to initiatives that emerge from the territories themselves.

73. National Water Agency (ANA, 2024). ANA declara situação de escassez hídrica na Bacia do Tapajós (PA). Available at: [Link](#)

74. TNC (2024). Atlas Tapajós 3D. Available at: [Link](#)



Solution 7: Indigenous brigade in fire prevention and Integrated Fire Management (MIF)

The **Tapajós and Arapiuns Indigenous Council (CITA)** mobilized leaders and communities to create the **Kumarua Indigenous Brigade**, formed by men and women Indigenous people trained in **integrated fire management**. The brigade operates in the prevention and combat of fires in vulnerable villages, combining traditional knowledge, technique, and intercommunity cooperation. By reducing the risks of extreme fire and strengthening local organization, it became a symbol of **climate adaptation based on ecosystems and Indigenous governance**.⁷³ The strategy was led by CITA—representing 14 Indigenous Peoples from the Tapajós and Arapiuns regions—with technical and logistical support from **TNC and ICMBio**. The initiative combined **technical training, community mobilization, and humanitarian support**, valuing local knowledge and the role of Indigenous leaders in caring for the land.

The brigadistas were trained in **fire control techniques, safety, first aid, and integrated management**, receiving equipment that ensures greater autonomy and safety during operations in remote areas—such as flame-resistant clothing, backpack pumps, fire suppressors, hoses, and communication radios. At the same time, **community workshops on prevention and environmental education** were held, involving entire families in reflecting on fire use, sustainable farming practices, and early warning systems

The leadership of CITA was decisive at all stages—from the diagnosis of the most vulnerable areas to the mobilization of villages and the management of training and equipment. The community-led approach ensured that the actions respected **local protocols and the authority of local leaders**, strengthening **Indigenous governance** over the land. Families actively participated in the workshops, and the brigadistas became **knowledge multipliers** within the villages, building networks of vigilance and cooperation between communities. The initiative also encouraged the involvement of **youth and women** in prevention strategies and land care, expanding the reach and sustainability of the actions. **The formation of the Kumarua Brigade** and the establishment of a **community-based fire prevention system** represent concrete expressions of **climate adaptation led by Indigenous Peoples**.

“The Brazil nut is what holds our life in the forest. When it fails, everything gets unbalanced — our livelihood, the exchanges, and even the timing of planting.”

RAIMUNDA RODRIGUES,
EXTRACTIVE LEADER, RIO NOVO
COMMUNITY, RIO IRIRI EXTRACTIVE
RESERVE

5.4 Terra do Meio (PA): Cooperation and Productive Regeneration in Network

The Territory. Between the Xingu and Iriri rivers, in the state of Pará, lies the region known as **Terra do Meio** — one of the most emblematic areas of the Amazon rainforest. Covering approximately **22.9 million hectares**, the territory forms a vast network of **Conservation Units (UCs) and Indigenous Lands (TIs)** that harbor extraordinary ecological and cultural diversity.⁷⁵ The region is home to **Indigenous Peoples** — such as the Xipaya, Parakanã, Kuruaya, Xikrin, Kayapó, Arara, Araweté, and Assurini — as well as to **extractivist communities** recognized for their strong social organization and sustainable production of **Brazil nuts, native rubber, vegetable oils, flour, beiju, honey, and products from traditional swidden agriculture**. Among these communities, those of the *Rio Iriri*, *Riozinho do Anfrísio*, and *Rio Xingu* Extractive Reserves stand out.⁷⁶

The Impacts of Climate Change. Despite its ecological and cultural importance, Terra do Meio faces **strong pressures** from land grabbing, illegal logging, mining, invasions of protected areas, and the expansion of the agricultural frontier. Located in one of the most active zones of the **deforestation arc**, the mosaic is surrounded by major infrastructure corridors—such as highways **BR-163 and Transamazon (BR-230)**—which drive landscape fragmentation and increase the vulnerability of local communities.^{77 78}

Amid these changes, the **Brazil nut** remained a central pillar of the economy and culture of the extractive families, serving as a source of food, income, and community exchange. However, the **extreme drought of 2024** caused one of the greatest crises ever recorded in Brazil nut production. The intense heat and lack of rain compromised the flowering and fruiting of the Brazil nut trees, drastically reducing the harvest and affecting the livelihood of hundreds of families. The prolonged drought also harmed subsistence gardens and agroforestry systems, worsening **food insecurity** and the challenges of staying in the communities.^{79 80}

The Brazil nut crisis exposed the vulnerability of an economy dependent on seasonal cycles but also spurred **innovative responses**: the communities strengthened their governance structures, diversified their crops, and developed **climate adaptation strategies** based on cooperation and traditional knowledge.⁸¹

TNC’s Role. TNC, in partnership with other organizations such as the Instituto Socioambiental (ISA) and SAMA – Health in Harmony, supports the **Terra do Meio Network (RTM)** — an alliance formed by riverside dwellers, Indigenous Peoples, and smallholder farmers who **promote sustainable forest management and the valorization of socio-biodiversity products**.

75. Socio-Environmental Institute (ISA, 2024). *Estação Ecológica da Terra do Meio*. Available at: [Link](#)

76. Socio-Environmental Institute (ISA, 2024). *Rede Terra do Meio inova e busca novas trilhas para produtos e serviços da floresta*. Available at: [Link](#)

77. Imazon. (2022). *Pará lidera ranking de desmatamento da Amazônia em julho*. Available at: [Link](#)

78. Socio-Environmental Institute (ISA, 2024). *Na Amazônia, rodovias impulsionam queima de área duas vezes maior que o desmatamento*. Available at: [Link](#)

79. Socio-Environmental Institute (ISA, 2024). *Emergência climática deixa ribeirinhos sem safra da castanha na Terra do Meio*. Available at: [Link](#)

80. Mongabay Brasil (2025). *Colheita da castanha-do-brasil despenca após seca extrema e preços disparam*. Available at: [Link](#)

81. Estadão – Agro (2025). *Safra da castanha-do-pará quebra, preço dispara e setor prevê nova crise em 2026*. Available at: [Link](#)

The Solutions.

Solution 8: Agroecological diversification and food security in extractive reserves

The drought and the loss of Brazil nut production confirmed what the Terra do Meio Network already knew: **there is no resilience without diversity**. Based on this understanding, families from the **Rio Iriri, Riozinho do Anfrísio, and Verde para Sempre Extractive Reserves** mobilized to rebuild their **food security** and reduce dependence on a single product. With support from TNC, the Terra do Meio Network, and other organizations, the communities **developed agroecological diversification plans, restoring fields and productive home gardens** adapted to drought and extreme heat. Production began to include crops such as cassava, squash, sweet potato, banana, corn, and native fruit trees — combining traditional knowledge with agroforestry techniques.

These practices regenerate the soil, provide food year-round, and strengthen the role of **extractivist women**, who have taken a leading role both in production and in managing community kitchens. **Planting collective efforts, local markets, and exchanges of traditional seeds** have deepened community bonds and encouraged **agroecological innovation**. In just a few years, families have transformed crop diversity into an effective climate adaptation strategy, restoring soil fertility and food security. The experience has shown that **traditional agroecology is a concrete way to adapt to climate change**—by regenerating the land and social fabric, it strengthens the communities’ ability to resist and reinvent themselves in the face of extreme events.

“With the drought, the Brazil nut didn’t grow. But now we have beiju, flour, and corn from the farm. That’s what guaranteed food on the families’ tables.”

AURILETE DA SILVA MACIEL, SÃO FRANCISCO COMMUNITY, RIO IRIRI EXTRACTIVE RESERVE



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“The Network gives us strength because no one negotiates alone. Even with a poor Brazil nut harvest, we managed to maintain contracts and hold the price. This is how we ensure the livelihood of the villages.”

CHIEF KWAIN ASURINI OF THE ASSURINI INDIGENOUS LAND, ITAGA VILLAGE, TERRA DO MEIO

Solution 9: Community governance and cooperation within the Terra do Meio Network

Long before the 2024 Brazil nut crisis, the communities of Terra do Meio had already understood that **collective organization is synonymous with resilience and adaptation to climate change**. It was in this context that, in 2013, the **Terra do Meio Network (RTM) was created** — a cooperative arrangement that brings together **39 local organizations**, including associations, cooperatives, storehouses, and community canteens from the Extractive Reserves and Indigenous Lands of Terra do Meio.⁸²

RTM was born to **strengthen territorial governance and enhance socio-biodiversity value chains**, ensuring that the forest’s benefits would return to the communities themselves. Over the years, it has built a productive cooperation infrastructure, coordinating planning, marketing, and access to public policies, in partnership with **TNC, ISA, and SAMA – Health in Harmony**. Annual gatherings, such as the **Extrativism Week (SEMEX)**, bring together leaders and families to discuss harvests, prices, logistics, and strategies for coping with extreme climate events.

During the 2024 harvest collapse, RTM proved its strength: **it coordinated stock management, renegotiated contracts, and maintained income flows through access to the Food Acquisition Program (PAA)**, preventing the economic crisis from turning into a humanitarian one. It also organized collective work efforts and trainings on financial management and storage, strengthening collective learning and the communities’ response capacity. More than a market structure, RTM has become a governance system in which cooperation and community solidarity serve as adaptation strategies in the face of the environmental and economic instabilities brought on by the climate crisis.



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Solution 10: Engagement with public policies

Strengthened governance opened a new horizon for Terra do Meio: **connecting the forest to public food and supply policies**. With the support of the **Terra do Meio Network** and institutional partners, the communities began supplying food to programs such as the **Food Acquisition Program (PAA)** and the **National School Feeding Program (PNAE)**, integrating forest production into food security chains.

Between 2023 and 2024, the region carried out the **largest PAA project of the National Supply Company (CONAB)**, delivering over **500 tons of food** and mobilizing around **R\$ 1.5 million (US\$ 272,700)** in public funds.⁸³ Flour, beiju, fruits, honey, Brazil nuts, fish, and other products from traditional swidden agriculture **reached schools in Altamira, São Félix do Xingu, and especially those within the communities themselves** — bringing food from the forest to students’ plates and reviving the ancestral knowledge of traditional farming practices.

These partnerships expanded stable income sources, reduced dependence on Brazil nuts, and strengthened the territory’s institutional recognition, which will begin to inform the development of **Pará State’s Payment for Environmental Services (PES) Program**. By connecting **sustainable production, public policies, and institutional markets**, the communities have transformed social and productive inclusion into an **adaptation strategy** — enhancing their ability to thrive amid the climate crisis and ensuring that the forest continues to generate life, food, and stability.

“When our production goes to the school, we feel proud. It’s the food from the forest feeding our children. That gives us the strength to keep going.”

JOÃO BATISTA, EXTRACTIVIST FROM THE VERDE PARA SEMPRE EXTRACTIVE RESERVE

“These initiatives are strategies of struggle to ensure that our territories remain — for the well-being of Indigenous Peoples and for the well-being of all humanity.”

ROSE MEIRE APURINÃ, VICE-DIRECTOR OF THE PODÁALI FUND



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82. **The community canteens** are spaces for trade and exchange, where extractivist producers deliver and store their forest products — such as Brazil nuts, rubber, and oils — in exchange for money or supplies. They also serve as gathering points for social interaction and community organization. **The storehouses (paiois)**, in turn, are family or community structures for storing and processing forest products, designed to ensure good practices in handling, drying, and storage. Both make up the socioeconomic infrastructure of the *Terra do Meio Network*, strengthening the autonomy and governance of local communities.

Sources: Instituto Socioambiental (ISA, 2023). *In the Xingu, the economy of the future lies two days upriver by boat*. Available at: [Link](#); Imaflora (2016). *Boletim Terra do Meio*. Available at: [Link](#).

83. For conversion purposes, this report used an exchange rate of R\$ 5.50 per US\$ 1.00. This rate is illustrative and does not necessarily reflect the actual or historical exchange rate for the periods analyzed.

Summary Table of Climate Adaptation Solutions

Nº	Title / Territory	Thematic Area	Adaptation Solution		Main Benefits	Implementation
1	Union of traditional knowledge and technology in the collective cultivation of manioc (Oiapoque/AP)	Food security and socio-bioeconomy	Integration of science and traditional knowledge in manioc cultivation with the use of clean technologies (thermal chamber and resistant seedlings).		Restores agricultural systems affected by pests and changes in rainfall patterns, ensuring food security and productive autonomy in the face of extreme climate events.	Installation of thermal chambers and execution of the Indigenous Reniva Project for the multiplication of resistant seedlings; community management via CCPIO and AGAMIN, with support from Embrapa, FUNAI, the Government of Amapá, and TNC.
2	Community training in integrated fire management (Oiapoque/AP)	Territorial management and sustainable management	Traditional fire management associated with intercultural climate education programs.		Reduces fire risks during drought periods and strengthens territorial governance and the adaptive management of fire as an environmental care tool.	Training of Indigenous Environmental Agents (AGAMIN) in partnership with the Iepé Institute, IFAP, and TNC; creation of educational booklets on climate and fire; increasing the participation of women and youth.
3	Training Xavante women in regenerative practices and food security (MT)	Food security and socio-bioeconomy	Agroforestry systems and regenerative farming led by women.		Revitalizes degraded soils and recovers native drought-resistant species, strengthening food security and women's leadership as a driver of adaptation.	Training of agroecological multipliers and collective planting efforts in Indigenous Lands, coordinated by FEPOIMT and TNC, based on regenerative practices and traditional knowledge.
4	Ecological recovery and community strengthening (MT)	Ecological restoration and conservation	Ecological restoration with native species and traditional techniques (muvuca and fire management).		Promotes ecological and productive regeneration of areas affected by wildfires and prolonged droughts, enhancing water and ecological resilience.	articipatory reforestation using the muvuca technique, community nurseries, and integrated fire management; partnership between TNC, OPAN, Xingu Seed Network, Ibama, and Prevfogo.
5	Strengthening financial autonomy and Indigenous governance (MT)	Institutional and cultural strengthening	Accessible financial mechanisms for Indigenous Peoples and Local Communities (IPLCs) to implement their own climate adaptation solutions.		Reduces economic vulnerability and creates conditions for autonomous and long-term adaptation through direct, simplified access to climate resources.	Implementation of the Podáali Fund and the Xavante Award within the REM-MT Program context, with direct transfers and collective selection criteria, supported by FEPOIMT and TNC.
6	Community Governance and River Conservation (Tapajós/PA)	Water Security and Natural Resources	Fishing agreements and reforestation of riverbanks with native species.		Addresses reduced rainfall and degradation of aquatic ecosystems, ensuring food and water security for riverside communities.	Formalization of fishing agreements, riverbank reforestation, and participatory water monitoring. Executed by MOPEBAM with support from TNC and UFOPA.
7	Indigenous Brigade for Fire Prevention and Integrated Management (Tapajós/PA)	Territorial Management and Sustainable Practices	Indigenous brigades and community fire prevention plans based on traditional knowledge.		Increases the response capacity against droughts and fires intensified by El Niño and climate change; protects forests and homes.	Creation of the Kumaruara Brigade by CITA, with technical training and equipment; environmental education workshops and strengthening indigenous leadership with support from ICMBio and TNC.
8	Agroecological Diversification and Food Security (Terra do Meio/PA)	Food Security and Socio-Bioeconomics	Productive diversification with agroecological practices adapted to drought and extreme heat.		Reduces vulnerability to drought and the loss of Brazil nuts, promoting diversified food systems adapted to the new climate regime.	Agroecological plans in the Resex Rio Iriri, Riozinho do Anfrísio, and Verde para Sempre; planting cooperatives and collective management with support from ISA, TNC, and the Rede Terra do Meio.
9	Community Governance and Cooperation in the Rede Terra do Meio (PA)	Institutional and Cultural Strengthening	Network governance of associations and extractivist cooperatives for collective management and productive adaptation to new climate patterns.		Strengthens collective adaptive capacity, enabling coordinated responses to climate and economic crises, such as crop failures.	Structuring of the Rede Terra do Meio (39 organizations) for productive coordination, storage, and solidarity-based marketing; supported by TNC, ISA, and SAMA - Health in Harmony.
10	Articulation with Public Policies (PA)	Food Security and Socio-Bioeconomics	Integration of forest products cultivated with adaptive practices into public food policies (PAA/PNAE).		Enhances economic and social resilience by connecting sustainable forest production to food security and public supply policies.	Supply of sociobiodiversity foods through PAA/PNAE and influence in the state PSA; executed by Rede Terra do Meio and extractivist associations with support from TNC and local governments.

6. Overview of Climate Finance for Adaptation in Brazil

“The Quilombolas are guardians of the forest, water, and biodiversity. Climate justice will only be possible with the guarantee of our territories and direct access to funding for our solutions.”

COORDINATION OF MALUNGU

“The demarcation and titling of territories are fundamental to combating the climate crisis, but without the necessary funding for Indigenous Peoples, we cannot implement initiatives in the territories that strengthen our contributions, our identity, community economy, and our own Indigenous organizations.”

TOYA MANCHINERI, GENERAL COORDINATOR OF COIAB

“The consolidation and titling of traditional territories is one of the most effective ways to face the climate crisis. Indigenous Peoples, Quilombolas, and Traditional Communities are not just beneficiaries, but true climate authorities.”

LETÍCIA MORAES, CNS

The planet is **racing against time to finance climate adaptation** — especially in territories where the crisis is already a daily reality. On a global scale, the gap between needs and resource flows remains alarming: the **United Nations** estimates that developing countries will need more than **\$300 billion per year by 2030**, while current flows are five to ten times smaller than what is necessary.⁸⁴ Furthermore, less than **10% of international climate finance effectively translates into local adaptation actions**, according to assessments by the International Institute for Environment and Development (IIED).⁸⁵

This global scarcity resonates in Brazil, where Indigenous Peoples and Local Communities bear the weight of extreme events — historic droughts, fires, and water and food insecurity — without proportional access to resources. As mentioned earlier, in 2024, Brazil led the **global ranking of burned areas** (30.8 million hectares), a **79% increase** from 2023, signaling rising costs for prevention, management, and response.⁸⁶ In the Amazon, the 2023–2024 drought brought rivers to record lows, isolating communities and disrupting essential services such as **education and healthcare**. The situation underscores the urgency of expanding **climate adaptation financing with a focus on equity** — capable of responding in an integrated way to the region’s environmental, social, and economic challenges.⁸⁷

For the leaders of the territories, access to financing is a matter of climate justice. These voices express the fundamental principle of **Locally Led Adaptation, which stipulates that resources must be increasingly predictable, direct, and flexible in the hands of territorial organizations**, respecting their governance models, timelines, and knowledge. Representative organizations of IPLCs have been **organizing in various forums, bringing clarity on ‘where’ and ‘how’ the resources should flow:**

84. United Nations Environment Programme – UNEP (2023). *What you need to know about COP27 Loss and Damage Fund*. Available at: [Link](#)

85. International Institute for Environment and Development – IIED (2022). *Locally led adaptation: Principles, practices and progress*. Available at: [Link](#)

86. MapBiomass (2024). *MapBiomass Fogo: Plataforma de Monitoramento Anual do Fogo no Brasil*. Available at: [Link](#)

87. UNICEF Brasil (2024). *Mais de 420 mil crianças são afetadas por seca recorde na região amazônica*. Available at: [Link](#)

6.1 Barriers to Climate Financing

From the ten solutions analyzed, **five recurring structural barriers** emerge that continue to restrict the access of IPLCs to climate financing resources.

- 1. Bureaucracy and Inadequate Design:** Calls for proposals and funds require formalized organizations with consolidated operations, negative debt certificates, financial contributions, invoices, and extensive technical reports that are incompatible with the reality of many grassroots associations.
- 2. Excessive Intermediation:** A large portion of the resources passes through several national and international layers before reaching the territories, diluting the amounts and imposing targets that are disconnected from the seasonality of rivers, extractive harvests, and community time.
- 3. Volatility and Short-term Focus:** Annual proposals do not align with production and adaptation cycles (such as those for Brazil nuts, fire management, restoration, and fishery governance), which require working capital and multi-year contracts.
- 4. Low Eligibility for Structural Actions:** Essential costs for the sustainability of organizations and communities (such as navigation fuel, maintenance of canteens, purchase of food for public programs, funding for brigades, continuous training, well being, mental health etc.) are rarely eligible for funding.
- 5. Limited Digital and Technical Infrastructure:** Online reporting and digital platforms continue to be barriers, particularly for fisherfolk colonies, extractive associations, and women’s organizations.



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6.2 Catalysts for Climate Financing

From the gathered experiences, **six catalytic elements** emerge, inspired by the ten solutions presented, to guide the construction of more effective and accessible adaptation financing mechanisms for IPLCs.

- 1. Direct and Simplified Access:** Direct transfers to grassroots associations with simplified reporting, eligibility for field expenses (e.g., navigation, fuel, equipment maintenance), and the adaptation of requirements to the local context.
- 2. Timelines and Rhythms of the Territory: Multi-year programs (3-5 years)** with disbursements that respect harvest calendars, flood/drought cycles, and critical fire seasons. Additionally, the allocation of resources for organizational strengthening should be a long-term objective.
- 3. Working Capital and Climate Risk Management:** Creation of **credit lines** aimed at supporting inventory, quality, and logistics in socio-biodiversity value chains (such as Brazil nuts, rubber, and oils), combined with **countercyclical mechanisms and climate insurance** to offset losses in years of crop failure due to drought.
- 4. Governance Costs:** Financing for in-person meetings, translations, community communication, ongoing training (e.g., brigades, fishing agreements, agroecology), and salaries for technicians/community members. Adaptation is, above all, a **collective process**.
- 5. Integration with Public Policies:** Deliberate connection with Payment for Environmental Services (PSA), Food Acquisition Program (PAA), National School Feeding Program (PNAE), territorial regularization, sanitation, energy, rural internet, in addition to formal education and technical training. Adaptation requires a **policy ecosystem**, not isolated projects.
- 6. Leadership of Women and Youth:** Selection criteria and governance structures that **ensure participation and budget allocation** for the engagement and continued training for women and youth (whether for leadership programs, scholarships, covering logistical costs, etc.), recognizing the central role that these groups already play in local responses.

7. Recommendations

The solutions for climate adaptation implemented in the territories have demonstrated that it is possible to ensure access to water, food, biodiversity, and local governance even in the face of climate crises. The central issue is not the lack of initiatives, but the absence of **adequate financing for the territory and the full recognition of their territorial and political rights, as well as their leadership in the design and implementation of strategies**.

Adjusting the flow of resources, valuing community leadership, and ensuring territorial rights are not only measures of justice but also conditions for transforming local solutions into **systemic resilience for people, biodiversity, and climate**. To align national and international adaptation and financing agendas with local needs, the following recommendations are made:

- 1. Ensure territorial rights as the foundation of adaptation.** Accelerate the demarcation, titling, and effective protection of Indigenous Lands (TIs) and Quilombola territories. Without territorial security, there are no conditions for lasting climate adaptation.
- 2. Ensure direct, agile, and predictable financing for IPLCs.** Establish direct funding transfers, with simplified accountability and multi-year contracts (3-5 years). New mechanisms, such as the Tropical Forest Forever Facility (TFFF), should prioritize community flows, reduce intermediaries, and reach the territory quickly.
- 3. Scale up existing solutions.** Support proven experiences—community brigades, fishing agreements, agroecology, and extractivist networks—with additional resources for working capital, technical assistance, logistics, and infrastructure, strengthening their capacity to develop new adaptation solutions grounded in their own territories and knowledge.
- 4. Integrate adaptation and mitigation initiatives into public policies.** Connect local actions to existing public policies to ensure coherence, continuity, and scalability of adaptation initiatives.
- 5. Strengthen institutional capacity and community governance.** Allocate resources for local teams, communication, logistics, and funding for meetings and training. Ensure effective participation of women and youth as leaders and managers of adaptation.
- 6. Place IPLCs at the center of decision-making and metrics.** Ensure seats with voting power in councils and climate funds. Use metrics that make sense locally (navigable days during the dry season, active firefighters, food delivered to schools, hectares restored) instead of indicators that are disconnected from community realities.



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