Issue: COP30 Presidency Roadmap for Halting and Reversing Deforestation and Forest Degradation by 2030
Deadline: April 10, 2026

This submission was prepared by Amazon Network of Georeferenced Socio-Environmental Information (**RAISG**), a consortium of civil society organizations from the Amazon countries concerned with the socio-environmental sustainability of Amazonia, by **Instituto Socioambiental**, a Brazilian non-governmental organization that works alongside Indigenous Peoples, quilombola communities, and extractive communities to develop solutions that protect their territories, strengthen their cultures and traditional knowledge systems, and foster sustainable development, and by **Plataforma CIPÓ**, a Brazil-based non-governmental organization that holds observer status with the United Nations Framework Convention on Climate Change (UNFCCC).

Regional Roadmap for Halting and Reversing Deforestation and Forest Degradation by 2030 in the Pan-Amazon

This submission addresses three interrelated elements: the identification of the most critical barriers to to halting and reversing deforestation and forest degradation; the identification of potential levers and enabling conditions to accelerate its implementation; and the identification of relevant experiences, best practices, and lessons learned from the Pan-Amazon region, in line with guiding questions (a), (b) and (d) outlined by the COP30 Presidency in its call for submissions.

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Recommendations

(i) Establish and strengthen transboundary governance agreements aimed at dismantling illicit networks, promoting the management of shared resources, and facilitating the exchange of information and experiences, with support from regional mechanisms such as the Amazon International Police Cooperation Center (CCPI-Amazon), in order to enhance coordination among environmental, law enforcement, and judicial authorities and increase the effectiveness of anti-deforestation efforts across the Pan-Amazon[1].

(ii) Promote agreements among Amazonian countries to address pressures and threats arising from illegal mining, illegal logging, and the trafficking of timber and other natural resources, while ensuring the inclusion of Afro-descendant and Indigenous Peoples and local and traditional communities into transboundary governance initiatives.

(iii) Strengthen coordination among national and regional platforms—such as AMA of the Amazon Network of Georeferenced Socio-Environmental Information (RAISG), and the Amazon Regional Observatory (ORA) of the Amazon Cooperation Treaty Organization (ACTO)—by promoting data interoperability across Amazonian countries, standardizing methodologies for monitoring deforestation, forest degradation, and fire, and enabling comparable analyses and coordinated action across the Amazon. These platforms should also be leveraged strategically to identify priority areas and support decision-making by governments, financiers, and other relevant stakeholders.

(iv) Ensure transparency, open access, and accountability of territorial monitoring data through the guarantee of free, prior, and informed consultation of relevant traditional and local populations, enabling greater social oversight and participation.

(v) Develop and integrate community-based monitoring systems with innovative technologies (including satellite systems and artificial intelligence) to strengthen Indigenous and community brigades and improve coordination with enforcement agencies for rapid response.

(vi) Advance toward near real-time monitoring with rapid response capacity by expanding alert systems (for deforestation, fire, and mining), integrating monitoring with operational enforcement protocols, and prioritizing hotspots, critical areas, and vulnerable populations.

(vii) Incorporate community-based and territorial monitoring into anti-deforestation strategies by supporting Indigenous and community surveillance systems, integrating local data with satellite data, and ensuring access to technology, capacity-building, and financing for Indigenous Peoples, Afro-descendant populations, and traditional and local communities.

(viii) Strengthen the rights and governance of Indigenous Peoples, Afro-descendant populations, and traditional and local communities for ecosystem protection and the sustainable management of their territories and natural resources.

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[1] The term “Pan-Amazon” is used in this document to refer to the entirety of the Amazon region at the transnational scale, encompassing the eight member countries of the Amazon Cooperation Treaty Organization—Bolivia, Brazil, Colombia, Ecuador, Guyana, Peru, Suriname and Venezuela—as well as French Guiana. Unlike the more limited use of the term “Amazon,” which may refer to specific national portions of the biome, “Pan-Amazon” underscores its integrated, interdependent, and shared nature, from ecological, socio-political, and geopolitical perspectives. For the purposes of this document, the terms “Pan-Amazon” and “Amazon” are used interchangeably, while consistently emphasizing their transnational dimension.

(ix) Support and recognize the territorial rights of Indigenous Peoples, Afro-descendant populations, and local communities through the formal recognition of Indigenous lands, titling of Afro-descendant (quilombola[2]) territories, and the establishment of community-protected areas or other legally grounded recognition processes.

(x) Allocate undesignated public lands primarily for conservation and community use by Indigenous Peoples, Afro-descendant populations, and traditional and local communities.

(xi) Recognize and value the knowledge systems of Indigenous Peoples, Afro-descendant populations, and traditional and local communities, as well as their territorial autonomy, including fair and equitable participation in the benefits arising from the use of genetic resources, digital sequence information, and associated traditional knowledge (as mentioned in Goal C of the Kunming-Montreal Global Biodiversity Framework).

(xii) Support self-governance structures (such as associations, councils, and organizations of Indigenous Peoples, Afro-descendant populations, and traditional and local communities) through the implementation of participatory territorial and environmental management, including Indigenous Land Management Plans (PGTAs, in Portuguese), life plans, management plans, collective agreements on natural resource use, and by ensuring free, prior, and informed consent (FPIC) in public and private policies and projects, in accordance with international frameworks and through the exchange of experiences and best practices among Amazonian countries.

(xiii) Strengthen regulatory frameworks and institutional procedures (including monitoring and enforcement) that protect the territorial and water rights of Indigenous Peoples, Afro-descendant populations, and traditional and local communities, which are essential for both climate justice and conservation.

(xiv) Establish direct financing mechanisms for Indigenous Peoples, Afro-descendant populations, and traditional and local communities to expand their participation in REDD+ projects with safeguards, payment for ecosystem services schemes, and international climate funds.

(xv) Implement biocultural and/or ethno-ecological corridors to connect and integrate different types of protected areas.

(xvi) Enhance the governance of protected areas and the territories of Indigenous Peoples, Afro-descendant populations, and traditional and local communities by integrating terrestrial and freshwater conservation to maintain ecological flows and habitat connectivity, while promoting sustainable natural resource management and conservation efforts.

(xvii) Strengthen fire brigades, forest firefighters, and volunteer and community brigades as key actors in Integrated Fire Management (IFM), ensuring decent working conditions, social protection, continuous training, and career pathways, in coordination with regional mechanisms such as the

[2] Quilombola communities are Afro-descendant groups in Brazil who self-identify based on shared ancestry, historical ties to territory, and distinct cultural practices. They are a legally recognized category under Brazilian law (including the Federal Constitution) and hold collective land rights, with specific procedures for the recognition and titling of their territories.

Amazon Integrated Fire Management Network (RAMIF), in order to promote technical cooperation, exchange of experiences, and coordinated fire response at the Amazon scale.

(xviii) Integrate IFM into Nationally Determined Contributions (NDCs), as well as national and subnational climate, land-use, and risk management plans, ensuring dedicated institutional arrangements and budgets, and the development of territorial plans that bring together government actors and local organizations, in coordination with regional mechanisms such as RAMIF.

(xix) Strengthen fire monitoring, forecasting, and early warning systems, as well as collective monitoring based on the engagement of local organizations, combining geospatial and meteorological data with local fire-use and land management practices, community knowledge, and participation, while ensuring open platforms for decision-making and inter-institutional response.

(xx) Establish transboundary cooperation agreements with common protocols for forest fire prevention, early warning, and coordinated response.

(xxi) Develop and strengthen integrated protection mechanisms for human rights and environmental defenders, recognizing their central role in forest conservation and in combating deforestation. Such mechanisms should include: (a) the creation and expansion of territorially based protection programs, articulating human rights, environmental, and public security institutions; (b) the establishment of early warning and rapid response systems for threats, based on territorial monitoring and integrated intelligence; (c) ensuring effective investigation and accountability for crimes, with a focus on dismantling illegal networks; (d) direct support to Indigenous, Afro-descendant, and community organizations to strengthen their autonomy, security, and territorial monitoring capacities; and (e) the promotion of international and transboundary cooperation for protection in high-risk areas.

1. Introduction

Halting and reversing deforestation and forest degradation by 2030 constitutes one of the central challenges of the global climate agenda, in alignment with Article 5 of the Paris Agreement and the outcomes of the Global Stocktake (GST). The invitation issued by the COP30 Presidency underscores the need to scale up support, investment, technology transfer, and capacity-building, including through mechanisms such as results-based payments and positive incentives, in order to enable a consistent transition towards reducing emissions associated with land use.

In this context, the Amazon plays a strategic role. Across the countries of the region—Brazil, Bolivia, Colombia, Ecuador, Guyana, Peru, Suriname, Venezuela, and French Guiana—a significant share of greenhouse gas emissions is linked to the Agriculture, Forestry and Other Land Use (AFOLU) sector, particularly deforestation and forest degradation.

Notwithstanding the global relevance of the region, the political and institutional landscape in the Amazon remains characterized by asymmetries and insufficient national targets. Only a subset of countries have submitted recent updates to their Nationally Determined Contributions (NDCs), with varying levels of ambition. Brazil, for instance, has committed to eliminating illegal deforestation by 2030, although gaps remain in the consolidation of restoration targets and enforcement. Colombia has advanced towards a net-zero deforestation target within its national policy framework, while Peru, Ecuador, and Bolivia have adopted broader approaches focused on sustainable management and emissions reductions, without explicit zero-deforestation targets. Countries with high forest cover and

historically low deforestation rates, such as Guyana and Suriname, continue to pursue High Forest Cover and Low Deforestation (HFLD) strategies. This landscape highlights the absence of a coordinated and sufficiently ambitious regional target capable of guiding collective action.

In this regard, the absence of a regional target not only constrains coordination among countries but also limits collective ambition. A Regional Roadmap for the Pan-Amazon could play a strategic role in aligning priorities, reducing capacity asymmetries, and generating political incentives for progressively enhancing climate ambition across Amazonian countries. By establishing common reference points, cooperation mechanisms, and shared instruments, such an initiative could directly inform the updating of NDCs, strengthen the implementation of existing commitments, and position the Pan-Amazon as a central actor within the global climate agenda.

In recent years, Pan-Amazon cooperation initiatives have signaled important progress. The Belém Declaration established relevant commitments, including the proposal of an Amazon Alliance to Combat Deforestation, the strengthening of protected areas with due respect for the rights of Indigenous Peoples, Afro-descendant populations, and traditional and local communities, and the creation of cooperation mechanisms within the framework of the Amazon Cooperation Treaty Organization (ACTO), including the Amazon Network of Forest Authorities (RAFO) and the Amazon Integrated Fire Management Network (RAMIF). More recently, the Bogotá Declaration reinforced the region's commitment to the climate agenda and highlighted the establishment of the Amazonian Indigenous Peoples Mechanism (MAPI), while also identifying the fight against deforestation as a priority within ACTO's Programmatic Fund.

Nevertheless, a critical gap persists between commitments and implementation, particularly with regard to advancing key structural instruments such as the Amazon Alliance to Combat Deforestation. In this context, the need for a Regional Roadmap becomes evident—one capable of integrating scientific evidence, public policies, and cooperation mechanisms to align targets, identify barriers, and mobilize solutions at scale. Beyond consolidating diagnostics, such a Roadmap should function as a strategic platform to enhance collective ambition, foster coordination among Amazonian countries, and ensure that the transition towards zero deforestation is aligned with sustainable development, the strengthening of data systems and territorial intelligence, poverty reduction, and the recognition of the rights of forest peoples.

2. The Urgent Need to Address the Drivers of Deforestation

Deforestation in the Amazon results from a combination of diverse and interdependent drivers, requiring differentiated and coordinated responses across countries in the region. These drivers operate in an interconnected manner, often linked to transboundary dynamics and illicit economies, thereby calling for integrated approaches that combine monitoring, territorial intelligence, and cross-border coordination. Evidence from the Amazon Network of Georeferenced Socio-Environmental Information (RAISG)[3] indicates that the main drivers include agricultural expansion, infrastructure development, mining, logging, forest fires, and land grabbing, frequently associated with institutional weaknesses and global market demand.

Recent data underscore the scale of the challenge: approximately 18 per cent of the Amazon forest has already been deforested, while around 38 per cent is degraded, undermining ecological connectivity,

[3] RAISG. 2020. Amazonia under pressure, First Edition. ISA – Instituto Socioambiental. 68p. Available at: https://www.raisg.org/en/ publication/amazonia-under-pressure-2020/.

increasing carbon emissions, and reducing climate resilience[4]. According to data processed by the Amazon Regional Observatory (ORA), approximately 15.5 million hectares were affected by fires in the Amazon in 2024. In addition, illicit economies—such as illegal mining, illegal deforestation, and trafficking—constitute interconnected systems that exacerbate degradation and weaken governance, particularly in transboundary areas.

In this context, an effective strategy requires differentiated responses tailored to each driver. Agricultural expansion calls for the promotion of deforestation-free supply chains, sustainable intensification, and economic incentives aligned with conservation. Illicit economies should be addressed through strengthened enforcement, intelligence systems, and international cooperation aimed at dismantling criminal networks. Forest fires and degradation require the implementation of integrated systems for prevention, fire management, and continuous monitoring. Infrastructure development should be guided by strategic territorial planning in order to avoid opening new deforestation frontiers.

The cumulative impacts of these drivers indicate that the Amazon may be approaching a tipping point, with projections suggesting that up to 47% of the forest could be affected by systemic changes by 2050 if current trends persist[5].

In light of the above, the Regional Roadmap for the Pan-Amazon should be structured around three complementary pillars: (i) economic and financial incentives to support bioeconomies and large-scale restoration; (ii) strengthened governance and enforcement, supported by near real-time monitoring systems; and (iii) enhanced regional cooperation, which is essential to address transnational drivers and align public policies across Amazonian countries. By integrating scientific evidence, local knowledge, and international coordination, this approach can help to target more effective and scalable interventions, thereby increasing the likelihood of halting and reversing deforestation by 2030.

3. The Current Status of Protected Areas and Traditional Territories in the Amazon

Protected areas (PAs) and the territories of Indigenous Peoples, Afro-descendant populations, and traditional and local communities constitute fundamental pillars for the conservation of the Amazon, covering approximately 50 per cent of the region (Figure 1) and playing a decisive role in maintaining biodiversity and carbon stocks[6][7]. Beyond their importance for conservation, these areas represent essential socio-ecological infrastructure for regional climate stability, the maintenance of ecological connectivity, and the containment of deforestation. Evidence indicates that these areas hold more than

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[4] Peña-Claros, M., Nobre, C., Armenteras, D., Athayde, S., Barlow, J., Bustamante, M., Encalada, A.C., Mena, C., Moutinho, P., Poveda, G., Roca, F., Saleska, S., Silva, L.V.N., Trumbore, S.E., Val, A.L., Varese, M., Brondizio, E.S., Espinoza, J.C., Esquivel-Muelbert, A., Ferreira, J.,Garzón, J.C., Gómez Soto, M., Hirota, M., Josse, C., Marengo, J. A., Mirabal, J.G.D., Moreira de Carvalho, B., Schmink, M.C., de Souza Hacon, S., Szabo, I., Witteveen, N.H. 2025. Science Panel for the Amazon. 2025. Amazon Assessment Report 2025 - Connectivity of the Amazon for a Living Planet. New York, USA. Available at: www.sp-amazon.org/ar2025. DOI: 10.55161/WZHB2034.

[5] [3] Flores, B.M. et al. 2024. Critical transitions in the Amazon forest system. *Nature* 626, 555-564.

[6] RAISG. 2023. Amazônia 2023 – Áreas protegidas e territórios indígenas – Floresta Estável. Available at: https://www.raisg.org/pt-br/publicacao/amazonia-2023-areas-protegidas-e-territorios-indigenas/

[7] Oviedo, A. F. P., Lima, W. P., Souza, F. C. 2025. Amazônia Quilombola: ampliando a cartografia sobre os quilombos na Amazônia legal, Nota Técnica. Nota Técnica. Brasília: Instituto Socioambiental, 48p. Available at: https://amazoniaquilombola.org.br/.

half of the forest carbon (58%)[8] and that approximately 94% of historical deforestation has occurred outside them, underscoring their effectiveness as barriers to forest conversion[9].

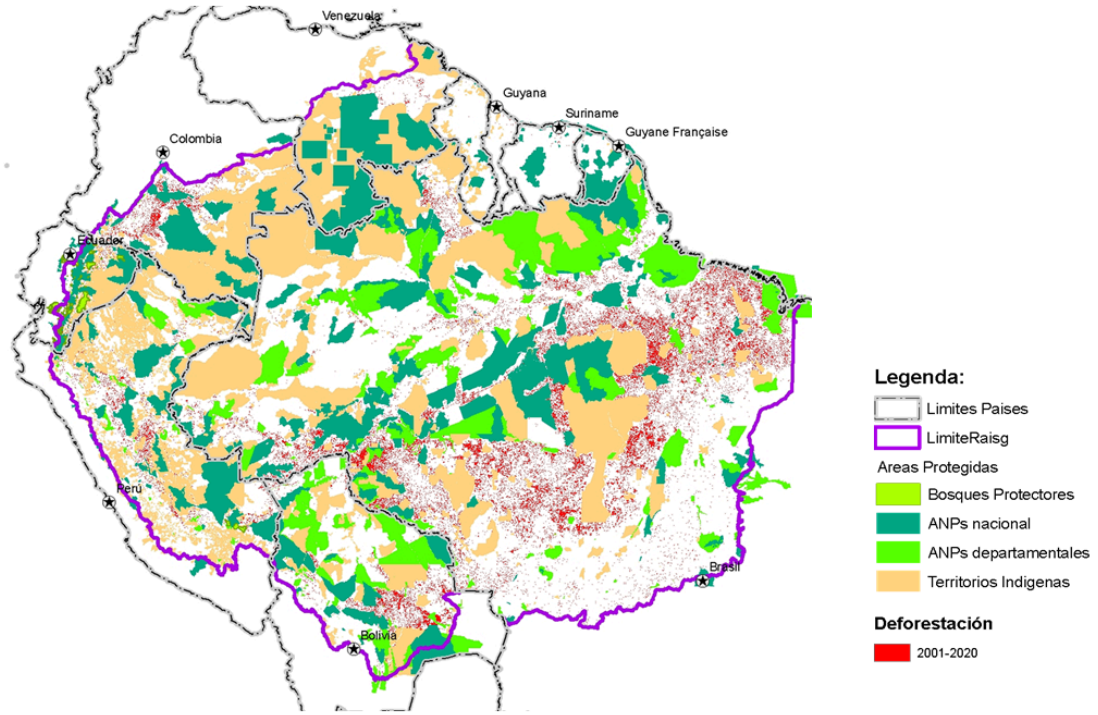

Figure 1. Protected areas in the Amazon. Source: RAISG.

Despite their importance, these territories face increasing pressures. According to the *Amazon Under Pressure* Atlas[10], 51% of protected areas and 48% of Indigenous territories are subject to moderate to high levels of pressure due to aggressive agricultural expansion, illegal logging, mining, and infrastructure development. Agricultural expansion—responsible for a significant share of deforestation—has already advanced considerably into protected areas, with agricultural occupation within these areas increasing by more than 100 per cent between 2001 and 2023. In addition, illegal activities such as mining directly affect up to 17% of protected areas and 10% of Indigenous territories in some Amazonian countries, highlighting the fragility of governance and enforcement systems[11]. These drivers are contributing to widespread deforestation and environmental degradation

[8] RAISG. 2025. Dinámica del carbono aéreo almacenado en los bosques de la Amazonía biogeográfica al 2030. Reporte 2025. Available at: https://www.raisg.org/pt-br/publicacao/dinamica-del-carbono-aereo-almacenado-en-los-bosques-de-la-amazonia-biogeografica-al-2030/.

[9] Josse, C., Tupinambá, R., Viscarra, F.E., Armenteras, D., Barreto Filho, H.T., Guzmán León, A., Cípio Aureliano, I., Martins Machado, A., Heilpern S., Begotti, R.A., Kambeba, M.W. 2024. Protected Areas and Indigenous Territories: Pillars for Achieving Conservation Goals in the Amazon. Policy Brief. Science Panel for the Amazon, United Nations Sustainable Development Solutions Network, New York, USA. Available at: https://www.sp-amazon.org/publications/#policy-briefs.

[10] RAISG. 2020. Amazonia under pressure, First Edition. ISA – Instituto Socioambiental. 68p. Available at: https://www.raisg.org/en/ publication/amazonia-under-pressure-2020/.

[11] Josse, C., Tupinambá, R., Viscarra, F.E., Armenteras, D., Barreto Filho, H.T., Guzmán León, A., Cípio Aureliano, I., Martins Machado, A., Heilpern S., Begotti, R.A., Kambeba, M.W. 2024. Protected Areas and Indigenous Territories: Pillars for Achieving Conservation Goals in the Amazon. Policy Brief. Science Panel for the Amazon, United Nations Sustainable Development Solutions Network, New York, USA. Available at: https://www.sp-amazon.org/publications/#policy-briefs.

across the region. The combination of weak governance, inadequate policy frameworks, socio-economic pressures, global market demand, and extreme climate events is further exacerbating these challenges, undermining measures aimed at safeguarding these critical areas.

A further area of concern relates to the existence of territories inhabited by Indigenous Peoples, Afro-descendant populations, and traditional and local communities, as well as extensive priority areas that remain without formal protection, including undesignated public lands, which are often associated with the highest levels of deforestation. Studies indicate that a significant share of the most strategically important areas for climate and biodiversity remains unprotected, underscoring the need for the planned expansion of conservation systems and the formal designation of these areas as territories of Indigenous Peoples, Afro-descendant populations, and traditional and local communities. In Brazil alone, 32.7 million hectares of undesignated public forests are at risk of land grabbing and deforestation due to irregular occupation by private actors[12].

In this context, the present Roadmap highlights the need for an integrated approach structured around four key axes: (i) the strategic expansion of protected areas, including the allocation of public lands; (ii) the effective implementation of management plans and territorial governance, supported by adequate resources; (iii) the strengthening of the governance of Indigenous Peoples, Afro-descendant populations, and traditional and local communities, recognizing their demonstrated role in conservation; and (iv) the integration of economic incentives, enforcement measures, and regional cooperation, particularly to address transboundary drivers and illicit economies. By combining scientific evidence, institutional strengthening, and local leadership, this approach can significantly enhance the capacity of protected areas and traditional territories to maintain standing forests and contribute to climate targets by 2030.

4. The Importance of Connectivity in the Amazon

The global target of protecting 30% of marine and terrestrial areas by 2030 will be insufficient, on its own, to fully safeguard biodiversity without more integrated management and the maintenance of connectivity among ecosystems[13]. In the present Roadmap, connectivity is understood as a multidimensional, socio-ecological, and functional concept, extending beyond the mere physical continuity of forests. It refers to the capacity of systems to sustain ecological, hydrological, climatic, and socio-cultural flows across territories, thereby ensuring ecosystem integrity and resilience. In the Amazon, biodiversity conservation and the provision of ecosystem services to populations depend on a well-connected network of protected areas. At present, these areas maintain high levels of functional connectivity across many protected area mosaics and terrestrial and freshwater ecosystems in the region[14].

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[12] IPAM. 2025. Florestas Públicas não Destinadas no Bioma da Amazônia. Terceiro Boletim do Observatório das Florestas Públicas. Available at: https://deolhonasflorestaspublicas.org.br/.

[13] Allan, J. R., Possingham, H. P., Atkinson, S. C., Waldron, A., Di Marco, M., Butchart, S. H. M., Adams, V. M., Kissling, W. D., Worsdell, T., Sandbrook, C., Gibbon, G., Kumar, K., Mehta, P., Maron, M., Williams, B. A., Jones, K. R., Wintle, B. A., Reside, A. E., Watson, J. E. M. 2022. The minimum land area requiring conservation attention to safeguard biodiversity. *Science* 376: 1094-1101. doi: 10.1126/science.abl9127.

[14] Brennan, A., Naidoo, R., Greenstreet, L., Mehrabi, Z., Ramankutty, M., Kremen, C. 2022. Functional connectivity of the world's protected areas. *Science* 376: 1101-1104. doi: 10.1126/ science.abl8974.

Human populations are also deeply interconnected with these systems, both culturally and economically, through cosmologies, cultural practices, and food systems[15] [16]. Maintaining connectivity across multiple dimensions—ecological, hydrological, and socio-cultural—is therefore essential both within and between protected areas. Given the strong relationship between the knowledge systems of Indigenous Peoples, Afro-descendant populations, and traditional and local communities and the integrity of forests, it is essential to broaden the concept of connectivity to fully incorporate these dimensions.

The Amazon basin encompasses some of the longest free-flowing rivers in the world, originating in the Andes, crossing lowland regions, and discharging into the Atlantic Ocean. This longitudinal connectivity is essential for the life cycles of numerous species[17] [18]. In addition, strong lateral connectivity exists between rivers and forests, with nutrient exchanges that fertilize floodplains and support the movement of species that depend on these environments for food and shelter[19].

The loss of connectivity in Amazonian forest ecosystems, driven by deforestation and degradation, generates systemic impacts that undermine both biodiversity and the region's climatic and hydrological functions. Evidence indicates that nearly 25% of forest systems, rivers, and wetlands already exhibit compromised connectivity, while approximately 38% of the remaining forest is degraded, reducing ecological integrity and increasing vulnerability to fires and extreme climate events[20]. Fragmentation—further exacerbated by the effects of the climate crisis—disrupts essential flows of water, nutrients, sediments, and species, which are critical for sustaining migratory fish cycles and the productivity of Amazonian floodplains, while also undermining food webs, reducing ecosystem resilience, and directly affecting local food security[21].

Moreover, the loss of connectivity interferes with so-called "flying rivers," reducing moisture transport and altering rainfall patterns at a continental scale, thereby reinforcing degradation processes

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[15] Oviedo, A. F. P., Bursztyn, M. 2017. Decentralization and fisheries management in the brazilian amazon: resource rights and accountability. *Ambiente & Sociedade*, v.20, p.169 – 190. doi: 10.1590/1809-4422asoc0029r1v2042017.

[16] Oviedo, A. F. P., Bursztyn, M., Drummond, J. 2015. Agora sob nova administração: acordos de pesca nas várzeas da amazônia brasileira. *Ambiente & Sociedade*, v.18, p.119 - 138. doi: 10.1590/1809-4422ASOC985V1842015.

[17] Caldas, B., Thieme, M. L., Shahbol., N., Coelho, M. E., Grill, G., Van Damme, P. A., Aranha, R., Cañas, C., Fagundes, C. K., Franco-León, N., Herrera-Collazos, E. E., Jézéquel, C., Montoya, M., Mosquera-Guerra, F., Costa, M. O., Paschoalini, M., Petry, P., Oberdorff, T., Trujillo, F., Tedesco, P. A., Ribeiro, M. C. L. B. 2023. Identifying the current and future status of freshwater connectivity corridors in the Amazon Basin. *Conservation Science and Practice* 5: e12853. doi: 10.1111/csp2.12853.

[18] Goulding, M., Venticinque, E., Ribeiro, M. L. B., Barthem, R. B., Leite, R. G., Forsberg, B., Petry, P., Silva‐Júnior, U. L., Ferraz, P. S., Cañas, C. 2018. Ecosystem‐based management of Amazon fisheries and wetlands. Fish and Fisheries 20 (1), 138-158. doi: 10.1111/faf.12328.

[19] Encalada A. C., Val, A. L., Athayde, S., Espinoza, J. C., Macedo, M., Marmontel, M., Miranda, G., Fernandez Piedade, M. T., da Mota e Silva, T., & Arieira, J. 2024. Conserving the Amazon's freshwater ecosystems' health and connectivity. Policy Brief. Science Panel for the Amazon. Available at: https://www.sp-amazon.org/publications/#policy-briefs.

[20] [18] Marengo, J.A., Espinoza, J.C., Esquivel Muelbert, A., Anderson, E., Armenteras, D., Bilbao, B.A., Fleischmann, A.S., Guayasamin, J.M., Lapola, D., Libonati, R., Mercado, L., Ribas, C.C., Sierra, J. P., Vilanova, E., Vale Wapichana, S. 2025. Chapter 1: Amazon connections from regional to global: impacts and vulnerabilities. In Amazon Assessment Report 2025 - Connectivity of the Amazon for a Living Planet (eds Peña-Claros, M. et al.). Science Panel for the Amazon, Sustainable Development Solutions Network, New York, USA. Available at: https://eng-ar25.sp-amazon.org/260129_AR2025%20Chapter1_ENG.pdf?utm_source=chatgpt.com.

[21] Goulding, M. 1980. The fish and the forest: Explorations in Amazonian natural history. University of California Press. 280p.

and potentially pushing the forest towards tipping points[22]. In this sense, the progressive disconnection of Amazonian ecosystems is not only a consequence of deforestation but also a driver that amplifies its impacts, compromising climate stability, biodiversity, and socio-ecological systems across the region.

Maintaining an approach grounded in the connectivity of terrestrial and freshwater ecosystems is therefore essential to sustain ecological flows, habitat networks, biological and cultural diversity, the water cycle, climate balance, and system resilience. The integration of management measures across protected areas, through participatory planning, co-management, and inclusive governance, can strengthen this multidimensional connectivity, promoting the expansion of sustainable-use landscapes, ecological corridors, and community-based conservation areas across the region.

From this perspective, the identification of connectivity gaps, critical fragmentation areas, and strategic nodes should guide territorial planning, conservation, and investment decisions, enabling more effective action at the Pan-Amazon scale.

5. The Diversity of Peoples, Cultures and Knowledge Systems Across Thousands of Territories

The Amazon is home to an extraordinary diversity of peoples, cultures, knowledge systems, and languages, distributed across thousands of interconnected territories, constituting one of the most complex socio-cultural and ecological systems on the planet. In the Brazilian Amazon alone, according to the Socio-Environmental Institute, the region is inhabited by 230 Indigenous Peoples (including in the state of Maranhão)[23], 2,494 Afro-descendant communities[24], and 225 protected areas occupied by hundreds of traditional and local communities[25], whose knowledge systems are fundamental to biodiversity conservation and the maintenance of ecosystem services, including the water cycle and climate regulation. These knowledge systems are not merely sets of information, but ways of inhabiting, perceiving, and interacting with the territory, deeply rooted in cultural practices and ways of life.

Indigenous Peoples, Afro-descendant populations, and traditional and local communities are not separate from nature. Rather, they live in intrinsic relationship with it, generating knowledge through their continuous and practical engagement with the environment, emerging from lived relationships with their territories[26]. These socio-ecological systems are complex systems in which traditional

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[22] Peña-Claros, M., Nobre, C., Armenteras, D., Athayde, S., Barlow, J., Bustamante, M., Encalada, A.C., Mena, C., Moutinho, P., Poveda, G., Roca, F., Saleska, S., Silva, L.V.N., Trumbore, S.E., Val, A.L., Varese, M., Brondizio, E.S., Espinoza, J.C., Esquivel-Muelbert, A., Ferreira, J.,Garzón, J.C., Gómez Soto, M., Hirota, M., Josse, C., Marengo, J. A., Mirabal, J.G.D., Moreira de Carvalho, B., Schmink, M.C., de Souza Hacon, S., Szabo, I., Witteveen, N.H. 2025. Science Panel for the Amazon. 2025. Amazon Assessment Report 2025 - Connectivity of the Amazon for a Living Planet. New York, USA. Available at: www.sp-amazon.org/ar2025. DOI: 10.55161/WZHB2034.

[23] Instituto Socioambiental. Povos Indígenas no Brasil. https://pib.socioambiental.org/pt/P%C3%A1gina_principal. Access: 25.03.2026.

[24] CONAQ, Instituto Socioambiental. Amazônia Quilombola. https://amazoniaquilombola.org.br/#introducao. Access: 25.03.2026.

[25] Instituto Socioambiental. Unidades de Conservação no Brasil. https://uc.socioambiental.org/pt-br. Acess: 25.03.2026.

[26] Ingold, T. 2000. *The perception of the environment: Essays on livelihood, dwelling and skill*. Routledge, 465p.

knowledge plays a central role in building resilience and enhancing adaptive capacity in the face of environmental and climatic changes[27].

Beyond their socio-cultural richness, Indigenous Peoples, Afro-descendant populations, and traditional and local communities play a demonstrably decisive role in curbing deforestation and maintaining forest integrity through their territorial management practices. Evidence shows that Indigenous territories and areas under traditional use consistently exhibit lower rates of deforestation and degradation, functioning as effective barriers against forest loss[28]. This protective capacity sustains high levels of biodiversity through practices such as integrated landscape management, agroforestry systems, controlled use of fire, protection of headwater areas, and respect for ecological cycles. In the Amazon, this is reflected in culturally managed landscapes—including enriched forests, productive mosaics, and territories governed by social norms—that reduce pressure on forests and enhance resilience to external threats. Strengthening these knowledge systems and territorial governance structures is therefore not only a matter of rights, but also an essential, evidence-based strategy to halt and reverse deforestation.

6. Connecting and Sharing Knowledge Systems to Support Sustainable Pathways

The development of sustainable pathways in the Amazon increasingly depends on the integration of diverse knowledge systems—scientific, technological, and traditional—in order to generate territorial intelligence capable of preventing, monitoring, and responding to deforestation. Initiatives such as the *Amazonía Bajo Monitoreo* (AMA) platform of the Amazon Network of Georeferenced Socio-Environmental Information (RAISG)[29] exemplify this effort by consolidating geospatial data on deforestation, degradation, infrastructure, and territorial pressures at the Pan-Amazon scale, enabling comparable analyses across countries and the identification of critical areas (Figure 2).

These platforms contribute to the generation of strategic territorial intelligence, enabling not only monitoring but also risk anticipation, the prioritization of critical areas, and informed decision-making by a range of stakeholders. Complementarily, the Amazon Regional Observatory (ORA) of the Amazon Cooperation Treaty Organization (ACTO)[30] strengthens regional cooperation by promoting the integration of official data and the sharing of strategic information among Amazonian countries, thereby enhancing the capacity for coordinated responses to transboundary threats.

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[27] Folke, C. 2004. Traditional knowledge in social–ecological systems. *Ecology and Society* 9(3): 7. Disponível em: http://www.ecologyandsociety.org/vol9/iss3/art7/.

[28] Baragwanath, K., Bayi, E. 2020. Collective property rights reduce deforestation in the Brazilian Amazon. *PNAS* 117(34). doi: 10.1073/pnas.1917874117.

[29] RAISG. Plataforma AMA de RAISG. https://ama.raisg.org/. Access: 26.03.2026.

[30] Organização do Tratado de Cooperação Amazônica – OTCA. Observatório Regional Amazônico. https://www.oraotca.org/pt. Access: 26.03.2026.

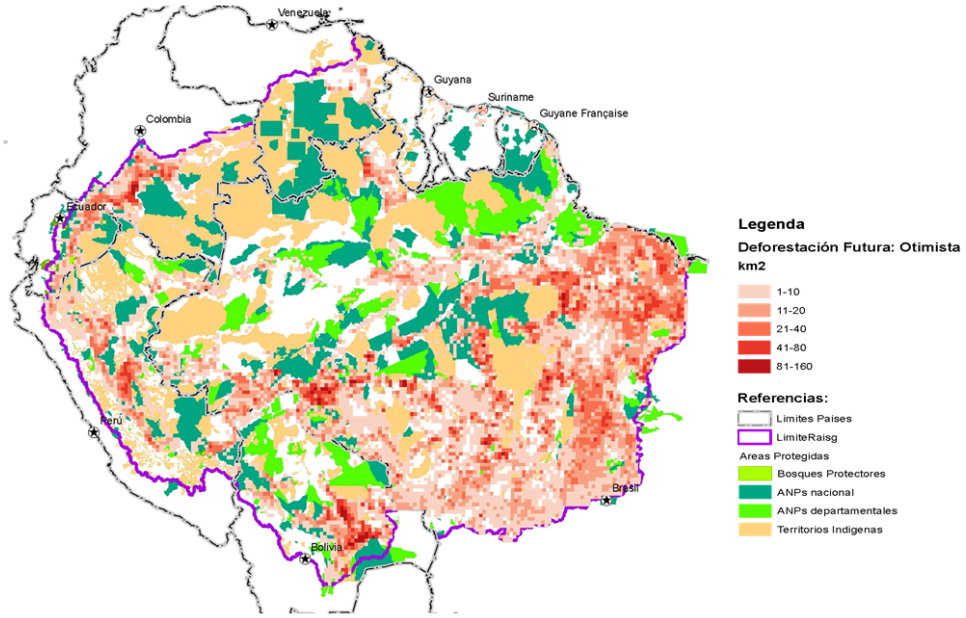

Figure 2. Estimated future deforestation in 2025 in the Amazon, as presented on the RAISG AMA platform. Source: RAISG.

This monitoring ecosystem is complemented by initiatives aimed at protecting vulnerable populations, such as the Observatory for the Human Rights of Indigenous Peoples in Isolation[31], which systematizes information on risks and violations in the territories of isolated peoples, contributing to preventive action and territorial protection policies. In Brazil, the Amazônia Quilombola initiative of the National Coordination for the Articulation of Black Rural Quilombola Communities (CONAQ)[32] seeks to expand mapping efforts and enhance the visibility of quilombola communities in the Brazilian Legal Amazon, informing the formulation of public policies that incorporate the quilombola dimension within the region. As a result, data generated by CONAQ have enabled the assessment of the role of quilombola territories within the climate agenda—particularly with regard to forest protection and carbon stocks—and supported the development of a Quilombola NDC[33] proposal that complements the commitments established under Brazil's NDC. Another relevant initiative is the Observatory of Community and Family Forest Management[34], which brings together a range of organizations and extractive associations to promote monitoring, forest management, and sustainable development models in the Brazilian Amazon.

At the local level, instruments such as Indigenous Peoples' Territorial and Environmental Management Plans (PGTAs), as well as Quilombola Territorial and Environmental Management Plans

[31] Observatório dos Povos Indígenas Isolados. https://povosisolados.org/sobre-o-opi/. Access: 26.03.2026.
[32] CONAQ, Instituto Socioambiental. Amazônia Quilombola. https://amazoniaquilombola.org.br/#introducao. Access: 25.03.2026.
[33] CONAQ. 2025. NDC dos Quilombos no Brasil: Anexo à Contribuição Nacionalmente Determinada (NDC) do Brasil. Available at: https://www.socioambiental.org/sites/default/files/noticias-e-posts/2025-10/CONAQ_LIVRETO_NDCQUILOMBOLA_28PAGS_final.pdf.
[34] Observatório do Manejo Florestal Comunitário e Familiar. https://observatoriomfcf.org.br/. Aceess em: 26.03.2026.

(PGTAQs) and management plans of traditional and local communities, play a central role in knowledge production, guiding the sustainable use of natural resources, territorial monitoring, and social organization in response to external pressures.

The convergence across these scales—from local to regional—enables a transition from reactive monitoring approaches to proactive territorial intelligence capable of anticipating deforestation drivers, informing public policies, and guiding investment decisions. By connecting satellite data, regional information systems, traditional knowledge, and field-based evidence, a robust foundation is created for more effective and legitimate decision-making.

To this end, it is essential that monitoring systems be linked to response mechanisms, territorial prioritization processes, and coordinated action frameworks, ensuring that generated information effectively contributes to reducing deforestation and forest degradation. This approach not only enhances the effectiveness of efforts to combat deforestation but also strengthens territorial governance, recognizes the leadership of forest peoples, and promotes solutions aligned with the socio-cultural diversity of the Amazon.

In this sense, strengthening and enhancing coordination among regional and national monitoring platforms, as well as integrating diverse knowledge systems, are essential conditions for transforming data into actionable inputs, supporting the prioritization of measures, and narrowing the gap between commitments and their effective implementation.

7. Experiences and Inspiring Pathways

The Amazon already hosts a wide range of inspiring initiatives that demonstrate, in practice, that it is possible to reconcile forest conservation, income generation, and territorial strengthening. These experiences show that efforts to combat deforestation are most effective when grounded in local governance, traditional knowledge, and their articulation with science and public policy.

Integrated fire management in Indigenous territories[35] [36] (for example, Xingu, Kadiwéu, and Pimentel Barbosa) illustrates how ancestral practices of controlled burning contribute to reducing large-scale fires and maintaining landscape integrity, having historically functioned as a barrier to deforestation—although increasingly challenged by climate change and extreme droughts. Similarly, the community-based management of *pirarucu* (*Arapaima gigas*), led by the Mamirauá Institute, has become a globally recognized example: over more than two decades, fish stocks increased by approximately 620 per cent, involving more than 1,300 families and combining monitoring, locally defined rules, and community-based enforcement[37]. This experience demonstrates that sustainable use

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[35] Rodovalho, F., Alencar, A., & Berlinck, C. N.. (Orgs.). 2025. Fronteiras do fogo: Um panorama do fogo na região amazônica. Organização do Tratado de Cooperação Amazônica (OTCA) & Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Available at: https://otca.org/wp-content/uploads/2025/12/PT_Fronteiras-do-Fogo-DIGITAL_C.pdf.

[36] Oliveira, M. R., Ferreira, B. H. S., Souza, E. B., Lopes, A. A., Bolzan, F. P., Roque, F. O., Pott, A., Pereira, A. M. M., Garcia, L. C., Damasceno Jr., G. A., Costa, A., Rocha, M., Xavier, S., Ferraz, R. A., Ribeiro, D. B. 2022. Indigenous brigades change the spatial patterns of wildfires, and the influence of climate on fire regimes. *Journal of Applied Ecology* 59(5): 1279-1290. doi.org/10.1111/1365-2664.14139.

[37] Franco, C. L. B., El Bizri, H. R., Souza, P. R., Fa, J. E., Valsecchi, J., Sousa, I. S., Queiroz, H. L. 2021. Community-based environmental protection in the Brazilian Amazon: Recent history, legal landmarks and expansion across protected áreas. *Journal of Environmental Management* 287, 112314. doi.org/10.1016/j.jenvman.2021.112314.

can reverse degradation processes, generate income for communities, and be successfully replicated across multiple regions of the Amazon[38].

Other initiatives further underscore the central role of territorial governance. Quilombola agricultural systems (*roçados quilombolas*) maintain diversified agroecological practices that conserve biodiversity and reduce pressure on forests[39] [40]. In the Araribóia Indigenous Territory, the so-called "forest guardians" play a direct role in territorial monitoring and in addressing invasions, often under high-risk conditions, highlighting Indigenous leadership in territorial protection[41]. In partnership with the Socio-Environmental Institute, Indigenous monitors have used deforestation alert maps to support reporting and field operations. Similarly, territorial monitoring carried out by Indigenous Peoples such as the Waorani, using participatory mapping technologies, strengthens the defense of ancestral territories and supports evidence-based advocacy[42].

Experiences in territorial planning also stand out, such as the Life Plan of the Jaguares de Yuruparí macro-territory, supported by Fundación Gaia Amazonas[43], which integrates Indigenous governance, territorial planning, and conservation at a regional scale. In parallel, the work of RAISG has been instrumental in strengthening technical capacities and standardizing monitoring methodologies, enabling platforms such as MapBiomas Peru[44], MapBiomas Ecuador[45], MapBiomas Colombia[46], MapBiomas Bolivia[47], and MapBiomas Venezuela[48], which enhance transparency and analytical capacity regarding land-use change across the Amazon.

These experiences offer key lessons for the Regional Roadmap: (i) local governance is decisive, with territories characterized by strong community organization achieving better conservation outcomes; (ii) the integration of traditional knowledge and science generates robust solutions; (iii) participatory monitoring enhances effectiveness in combating deforestation; and (iv) network-based cooperation—at regional and transnational levels—enables the scaling up of impact.

These promising pathways demonstrate that viable and scalable solutions already exist. The central challenge is not to create new models, but to recognize, strengthen, and expand those that are already

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[38] Oviedo, A. F. P., Bursztyn, M., Drummond, J. 2015. Agora sob nova administração: acordos de pesca nas várzeas da amazônia brasileira. *Ambiente & Sociedade*, v.18, p.119 - 138. doi: 10.1590/1809-4422ASOC985V1842015.

[39] Leão, V. M., Steward, A. M., 2022. Agrobiodiversidade dos roçados da comunidade quilombola de Proviência, município de Salvaterra, Ilha Do Marajó -Pa, Brasil. *Revista Etnobiología* 20(1): 27-48.

[40] Brandão, L. C., Santana, E. J., Machado, E. F. 2024. Roças na comunidade quilombola de Médio Itacuruçá: um espaço de preservação cultural e segurança alimentar. Anais do XII Congresso Brasileiro de Agroecologia, v. 19 n. 1, Rio de Janeiro, RJ.

[41] Instituto Socioambiental. 2019. Araribóia Indigenous Land suffers with violence, invasions and deforestation. Available at: https://site-antigo.socioambiental.org/en/noticias-socioambientais/arariboia-indigenous-land-suffers-with-violence-invasions-and-deforestation.

[42] Fundación Ecociencia. 2024. Monitoramento pela Nacionalidade Waorani do Equador. Available at: https://www.maapprogram.org/pt-br/maap-204-portugues/.

[43] Fundação Gaia Amazonas. 2025. Planes de vida de los territorios indígenas que conforman en Macroterritorio de los Jaguares de Yuruparí. Available at: https://gaiaamazonas.org/recursos/planes-vida-macroterritorio-jaguares-yurupari/

[44] Instituto del Bien Común – IBC. 2026. MapBiomas Peru. Available at: https://peru.mapbiomas.org/.

[45] Fundación Ecociencia. 2026. MapBiomas Equador. Available at: https://ecuador.mapbiomas.org/.

[46] Fundação Gaia Amazonas. 2026. MapBiomas Colômbia. Available at: https://colombia.mapbiomas.org/en/.

[47] Fundación Amigos de la Naturaleza – FAN. 2026. MapBiomas Bolívia. Available at: https://bolivia.mapbiomas.org/en/.

[48] Provita, Wataniba. 2026. MapBiomas Venezuela. Available at: https://venezuela.mapbiomas.org/en/

delivering results, placing Indigenous Peoples, Afro-descendant populations, and traditional and local communities at the center of strategies to halt and reverse deforestation in the Amazon.

8. Governance

The governance of the Regional Roadmap will be anchored in the institutional architecture of the Pan-Amazon, with the Amazon Cooperation Treaty Organization (ACTO) playing a central role as a platform for political and technical coordination among member countries.

In this regard, a **multi-level governance structure** is proposed. **High-level political coordination**, at the ministerial level (environment, foreign affairs, and strategic sectors), will serve as the decision-making instance responsible for defining common guidelines, aligning regional priorities, and ensuring coherence with global climate agendas, including the NDC process. In this context, the **Amazon Special Commission on Environment and Climate** and the **Amazon Cooperation Council (ACC)** may play central roles.

Technical coordination by ACTO will be mandated to support the implementation of the Roadmap, facilitate cooperation among countries, promote the integration of data, methodologies, and monitoring systems, and act as a regional hub for knowledge and territorial intelligence.

Regional networks and mechanisms, including the **Amazon Network of Forest Authorities (RAFO)** and the **Amazon Integrated Fire Management Network (RAMIF)**, may function as platforms for the implementation of priority actions. At this level, the role of the **Amazon International Police Cooperation Center (CCPI-Amazon)** is also highlighted as an operational coordination instrument among law enforcement agencies of Amazonian countries to address environmental crimes and transnational illicit economies. Complementarily, initiatives such as the **Amazon Network of Georeferenced Socio-Environmental Information (RAISG)** contribute to strengthening the production, integration, and analysis of regional data, as well as to generating comparable territorial intelligence at the Pan-Amazon scale, thereby supporting decision-making and the effective implementation of strategies to combat deforestation.

Finally, **Indigenous Peoples, Afro-descendant populations, and traditional and local communities** should participate in a structured manner in the decision-making, implementation, and monitoring processes of the Roadmap, including through the strengthening of existing mechanisms such as the **Amazonian Indigenous Peoples Mechanism (MAPI)**, as well as the development of complementary arrangements to ensure the effective inclusion of other social and territorial groups across the Pan-Amazon.

With regard to transparency and access to information, the governance of the Roadmap should include **accountability mechanisms, independent auditing, and social oversight**, ensuring that data and decisions are public, verifiable, and accessible. It is also essential to ensure the recognition of **data sovereignty** and **free, prior, and informed consent (FPIC)** for information originating from Indigenous and community territories. By combining transparency, participation, and regional coordination, this governance structure can strengthen trust, improve decision-making, and enhance the effectiveness of actions to halt and reverse deforestation in the Amazon.

9. Technical and Financial Instruments

The effectiveness of the Regional Roadmap will depend on the mobilization and coordination of technical and financial instruments capable of enabling coordinated action at the regional scale, taking into account the diverse capacities and national circumstances of Amazonian countries.

Among the technical instruments, particular emphasis will be placed on **integrated regional monitoring platforms**, which establish a basin-wide environmental and health monitoring system. Coordinated by the Amazon Cooperation Treaty Organization (ACTO), this system is intended to promote the real-time sharing of information on land use and land cover, deforestation, climate, fires, air quality, water resources, water quality, biodiversity, and illicit activities. It should ensure data interoperability and standardization by linking national and regional platforms (including the AMA platform of RAISG, the ACTO Amazon Regional Observatory (ORA), and the MapBiomas network), enabling comparable analyses, strengthening polycentric arrangements among Amazonian countries, and supporting decision-making processes at the regional level.

Advancing **near real-time monitoring and rapid response** will require the integration of alert systems (for deforestation, fire, and mining), linking monitoring with operational enforcement protocols and prioritizing critical areas and vulnerable populations. A key element in strengthening this system is the effective incorporation of **community-based monitoring**, alongside the use of innovative technologies such as high-resolution remote sensing imagery, artificial intelligence and machine learning, drones, participatory mapping, and in situ environmental sensors. These approaches can enhance the capacities of Indigenous and community brigades and improve coordination with enforcement authorities, while also supporting the implementation of territorial planning instruments that integrate conservation, infrastructure, and sustainable land use.

With regard to financial instruments, the implementation of the Roadmap in the Amazon will rely on the coordinated mobilization of financial resources at the regional scale, combining public, private, and multilateral sources. Multilateral development banks, including the Inter-American Development Bank (IDB) and the Development Bank of Latin America and the Caribbean (CAF), can serve as key pillars of financing by supporting integrated regional programmes, transboundary projects, and institutional capacity-building. Complementarily, international climate funds, such as the Green Climate Fund (GCF) and the Global Environment Facility (GEF), can enable initiatives related to conservation, restoration, climate adaptation, and monitoring systems, as well as support the implementation of NDCs in Amazonian countries. Emerging financial instruments and arrangements may also be considered, including the Tropical Forests Forever Facility (TFFF), formally launched at COP30.