



ANDINA FOUNDATION



Comprehensive Community Forest Surveillance Plan





INTRODUCTION

The relationship of Indigenous peoples with the forests they inhabit is not only about the use of natural resources, but primarily about the exercise of a series of fundamental rights for their survival. Since the forest is the habitat where Indigenous peoples live and thrive, its conservation entails the protection of their rights to life, food security, health, culture, and others.

Therefore, it is essential that Indigenous peoples have legal and technical tools to conserve and sustainably use their forests and thus defend their collective rights as Indigenous peoples.

The protection of forests in Indigenous territories requires not only environmental conservation actions, but also organizational and technical processes that allow the community to exercise effective control over its environment. In regions of high biodiversity such as the Paramillo Massif, where strategic ecosystems, water sources, and ancestral reserves converge, the threats arising from indiscriminate logging, illegal mining, and unauthorized occupation of the territory have highlighted the need to strengthen community-based mechanisms for forest monitoring and environmental governance.

This preliminary study aims to document the Andean Foundation's experience supporting Indigenous communities in Colombia, particularly in ecological restoration processes and participatory forest monitoring. Following methodological approaches similar to those used in comprehensive community-based forest monitoring plans, where local participation, organizational structuring, and the use of technical tools are central, this document presents a specific case study of an intervention carried out in the area of influence of the Paramillo Massif.

More than a compilation of activities, this study seeks to demonstrate the Andean Foundation's institutional capacity to integrate technical knowledge, monitoring technology, and community wisdom, showing that sustainable forest monitoring is viable when consolidated as a collective process supported by clear methodologies, permanent organizational structures, and academic and institutional partnerships that ensure continuity and territorial legitimacy.



LEGAL AND POLITICAL FRAMEWORK

The Comprehensive Community Forest Monitoring Plan, with an ecosystemic, participatory, and collaborative approach within local, regional, and national development, has been built within a legal and political framework.

It is important to recognize that the management of forest resources is the responsibility of the state, but also of civil society. Consequently, to build a comprehensive community forest monitoring system, it will be necessary to understand that there is a natural system and a social system to manage; therefore, the interaction between state institutions and users of forest resources will be fundamental for efficient and sustainable management.

EI The legal framework is primarily defined by the following laws and regulations:

- Law No. 29763 - Forestry and Wildlife Law and its Regulations.
- Law No. 28611 – General Environmental Law.
- Law No. 30215 - Law on Mechanisms for Payment for Ecosystem Services.
- Law No. 27867 - Organic Law of Regional Governments.
- Law No. 27972 - Organic Law of Municipalities.
- Law No. 26505 - Law on Private Investment in the Development of Economic Activities on Lands of the National Territory and of Peasant and Native Communities.
- Decree Law No. 22175 - Law of Native Communities and Agricultural Development of the Rainforest and Cloud Forest.
- Law No. 26821 - Organic Law for the Use of Natural Resources.
- Legislative Resolution No. 26253 - Convention 169 concerning Indigenous and Tribal Peoples of the International Labour Organization.
- Law No. 29785 - Law on the Right to Prior Consultation of Indigenous or Native Peoples, as recognized in Convention 169 of the International Labour Organization (ILO).
- Legislative Resolution No. 26181 - Ratification of the Convention on Biological Diversity (CBD).

The political framework is defined internationally primarily by the Millennium Development Goals, the United Nations Declaration on the Rights of Indigenous Peoples, the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES), and ILO Convention No. 169 concerning Indigenous and Tribal Peoples in Independent Countries, as well as the Political Constitution of Peru. At the national level, the Political Constitution of Peru¹, the National Forestry Strategy, Peru 2002-2021², the National Forestry and Wildlife Policy³, the National Agreement⁴, the National Biodiversity Strategy, and the National Strategy for the Management of Continental Water Resources of Peru. At the regional and local levels, the 2011 Regional Concerted Development Plan and the Concerted Development Plan of the Province of Atalaya can also be considered, as well as the Strategic Plan for Mitigating the Environmental, Social, and Economic Impacts of the Construction of the Atalaya – Puerto Ocopa Highway in Indigenous Community Territories, approved by Municipal Ordinance No. 025-2014-A-MPA.



CHARACTERIZATION OF THE AREA OF INFLUENCE OF THE INTEGRATED COMMUNITY FOREST MONITORING PLAN

The area of influence of the Integrated Community Forest Monitoring Plan is located in the Paramillo Knot region, in northern Colombia, encompassing rural and indigenous territories located primarily in the southern part of the department of Córdoba and the northern part of Antioquia. Geographically, it corresponds to a transition zone between the Abibe, San Jerónimo, and Ayapel mountain ranges, with altitudes ranging approximately from 100 to 1,800 meters above sea level, which generates a high diversity of microclimates and ecosystems. The region plays a strategic role as a biological corridor between the Caribbean and Andean regions, and it is also home to the headwaters of rivers that supply fundamental watersheds such as the Sinú and San Jorge rivers.



From a climatic perspective, the territory has a high rainfall regime, with annual averages that can exceed 2,500 mm, especially in foothills and tropical rainforest areas. Average temperatures range between 24 °C and 28 °C, with variations according to altitude. These conditions favor the presence of dense forests, wetlands, and water recharge areas, but also increase vulnerability to landslides, forest fires during prolonged dry periods, and soil degradation when vegetation cover is removed.

Environmentally, the area is characterized by the presence of tropical rainforests, montane forests, micro-watersheds, and soils of high biological fertility, harboring a remarkable diversity of flora and fauna, including medium and large mammals, migratory birds, and endemic plant species. However, this ecological richness is subject to multiple anthropogenic pressures. Among the predominant problems identified are selective and indiscriminate logging, illegal gold and alluvial mining, the expansion of the agricultural frontier, irregular land occupation, deliberately set forest fires, and the opening of clandestine roads for resource extraction. These activities have led to habitat fragmentation, loss of forest cover, contamination of water sources, and a weakening of community territorial governance.

In the social component, the territory is inhabited by Indigenous communities and peasant populations who depend on the forest for their cultural, food, and economic subsistence. However, they face limitations in access to monitoring technologies, institutional reporting channels, and logistical resources to exercise effective control over their territory.



Biological diversity

The existing flora and fauna record in the Plan's area of influence includes approximately 117 plant species, primarily trees, and approximately 60 wildlife species.

Of the total flora and fauna species recorded, those presented in Tables 1 and 2 are identified as threatened.

Cuadro 1: Principales especies de flora amenazada en el área del proyecto

FAMILIA	ESPECIE	D.S 043 - 2006 AG
Fabaceae	<i>Amburana cearensis</i>	Vulnerable
Meliaceae	<i>Cedrela odorata</i>	Vulnerable
Lecythidaceae	<i>Cariniana pyriformis</i>	Casi Amenazado
Bignoniaceae	<i>Handroanthus chrysanthus</i>	En peligro critico
Moraceae	<i>Clarisia racemosa</i>	Casi Amenazado
Sapotaceae	<i>Manilkara bidentata</i>	Vulnerable
Lauraceae	<i>Mezilaurus itauba</i>	Vulnerable

Fuente: HELVETAS 2015

Cuadro 2: Principales especies de fauna amenazada en el área del proyecto

ORDEN	FAMILIA	ESPECIE	UICN	DS. 004 -2014 MINAGRI
Carnivora	Mamífero	Jaguar – <i>Panthera onca</i>	N	NT
Carnivora	Mamífero	Oso de anteojos – <i>Tremarctos ornatus</i>	VU	NT
Carnivora	Mamífero	Puma – <i>Puma concolor</i>	NT	NT
Primaro	Mamífero	Mono aullador rojo – <i>Alouatta seniculus</i>	VU	DD
Accipitriformes	Ave	Águila crestada – <i>Morphnus guianensis</i>	NT	-
Psittaciformes	Ave	Guacamaya verde mayor – <i>Ara ambiguus</i>	EN	DD
Testudines	Reptil	Tortuga hicotea – <i>Trachemys callirostris</i>	VU	DD
Anura	Anfibio	Rana venenosa – <i>Oophaga lehmanni</i> (registros regionales cercanos)	CR	NT
Carnivora	Mamífero	Jaguar – <i>Panthera onca</i>	N	NT
Testudines	Mamífero	Oso de anteojos – <i>Tremarctos ornatus</i>	VU	EN

Donde:

VU = Vulnerable, LC = Preocupación menor, NT = Casi Amenazado, DD = Datos insuficientes, CR = En Peligro Crítico, EN = En Peligro, LR/cd= bajo riesgo, pero depende de la conservación, EW = Extinto en la naturaleza.



METHODOLOGY

The methodology of the Comprehensive Community Forest Monitoring Plan is based on a participatory-technical approach, combining ancestral knowledge, digital forest monitoring tools, and institutional collaboration. Its purpose is to ensure that forest protection is a continuous, verifiable, and community-led process, not an isolated action. The methodology is developed in interrelated phases:

Participatory Territorial Diagnosis

Community tours, social mapping, and a review of existing environmental information are conducted to identify critical areas of deforestation, illegal mining, forest fires, and priority conservation areas. This phase establishes an environmental and social baseline.

Strengthening Technical Capacities

Training workshops are implemented for leaders, women, and youth on the use of forest monitoring tools, basic georeferencing, photographic evidence recording, and reporting protocols. The objective is to establish permanent local capacities.





Implementation of the Monitoring System

The implementation of the monitoring system is conceived as the central operational phase of the plan, integrating technological tools and community capacities to establish a continuous territorial observation mechanism. This system combines the use of open-access forest data platforms, mobile logging applications, handheld GPS devices, and aerial reconnaissance drones, enabling the early detection of deforestation, forest fires, and unauthorized extractive activities.

The process includes configuring geospatial layers of the territory, delimiting critical surveillance zones, and establishing predefined monitoring routes. Mobile devices allow for the capture of georeferenced photographic and audiovisual evidence, while drones facilitate visual validation in hard-to-reach areas. The collected information is stored in cloud-backed digital databases, ensuring traceability, security, and availability for subsequent analysis. This system does not replace local knowledge but rather complements it, allowing for a more accurate and timely assessment of the forest's condition.

Event Verification and Documentation

Event verification constitutes the technical confirmation component of alerts detected through digital means or community reports. Pre-trained community monitoring teams conduct scheduled patrols and extraordinary surveys when changes in forest cover, the presence of machinery, burning, or road openings are identified.

During these verifications, standardized recording protocols are applied, including GPS coordinate capture, photographic documentation with time stamps, and a description of the type of impact and level observed. This documentation allows for differentiation between legal and illegal activities, preventing misinterpretations and strengthening the technical validity of the reports. The collected information is organized into digital records and comparative maps that facilitate the evaluation of trends and the identification of recurring patterns of environmental degradation.





Institutional Coordination and Reporting

Once the field data and digital records are consolidated, structured technical reports are prepared, including thematic maps, geographic coordinates, visual evidence, and detailed descriptions of the identified events. These reports are sent to environmental authorities, oversight bodies, universities, and partner organizations, strengthening the legal and administrative capacity to respond to illegal activities.

Institutional coordination is not limited to reporting; it also promotes cooperation in ecological restoration processes, environmental education, and the scientific validation of data generated by the community. This exchange of information helps position the community as a legitimate actor in the environmental management of the territory and facilitates the integration of community monitoring into regional conservation plans.

Evaluation and Continuous Feedback

The monitoring system is conceived as a dynamic process subject to periodic review. Quarterly or semi-annual evaluation sessions are established to analyze the results obtained, the quality of the records, and the effectiveness of the monitoring routes. These assessments allow for the identification of technical weaknesses, adjustment of verification protocols, and the redefinition of priority intervention areas.

Feedback also includes updating technological knowledge, incorporating new digital tools, and strengthening community participation through workshops and dissemination of results. This continuous improvement cycle ensures that the system maintains its operational relevance, long-term sustainability, and adaptability to new environmental threats, consolidating a culture of forest monitoring based on evidence and territorial co-responsibility.



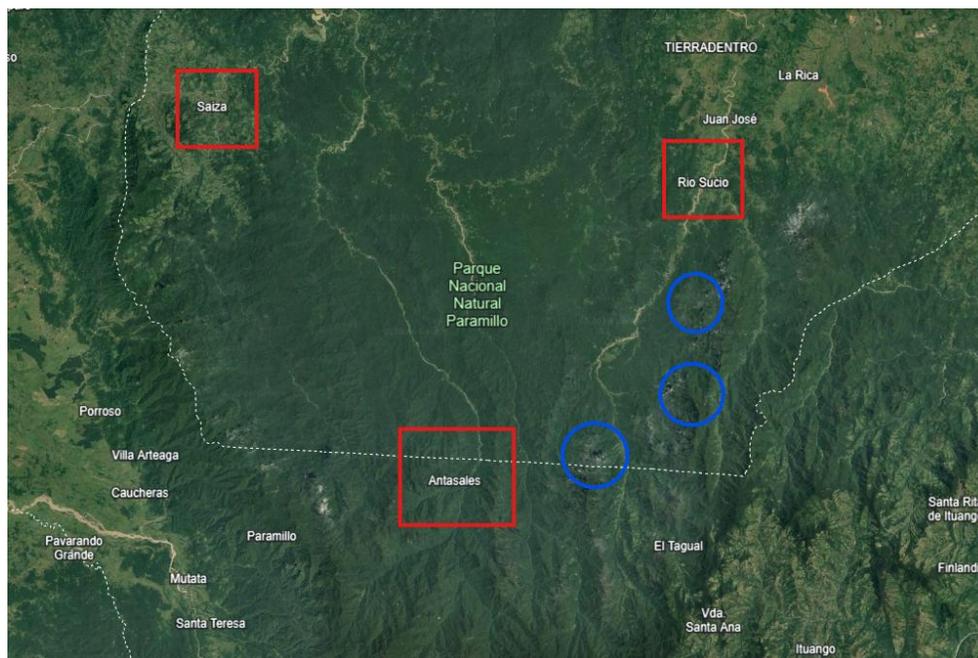


INDIGENOUS COMMUNITIES

The indigenous community used as the basis for developing this project is the Zenú indigenous community. The project's target community is located in the area of influence of the Paramillo Massif, in rural territories with indigenous reserves and peasant settlements distributed between southern Córdoba and northern Antioquia. This population is characterized by a strong cultural and economic relationship with the forest, where traditional productive practices—subsistence agriculture, artisanal fishing, and low-impact forestry—form the basis of their daily sustenance.

From a demographic perspective, the community has an estimated population of between 300 and 800 inhabitants per community nucleus, organized into extended families and traditional leadership structures such as councils or community assemblies. The population composition shows a high proportion of children, youth, and women, which represents significant potential for environmental education and community leadership programs. The majority of the inhabitants belong to indigenous ethnic groups with their own languages and cultural practices, complemented by a mestizo farming population in peripheral areas.

In socioeconomic terms, limitations are identified in access to basic services, intermittent digital connectivity, scarce opportunities for formal employment, and direct dependence on natural resources for subsistence. These conditions increase vulnerability to illegal economies and external pressures on the territory. Nevertheless, the community maintains a strong sense of territorial belonging and social cohesion, factors that favor the implementation of participatory forest monitoring strategies, technical training, and organizational strengthening aimed at the sustainable protection of the forest and biodiversity.





PROBLEM STATEMENT

The Paramillo Massif region faces a complex environmental and social problem that has been intensifying due to a combination of external pressures on natural resources and the limited territorial control capacity of local communities. Forest degradation is not due to a single factor, but rather to a combination of illegal activities and unplanned practices that directly impact biodiversity, water sources, and the cultural stability of the Indigenous peoples settled in the region. Indiscriminate logging, driven primarily by the informal timber trade and the expansion of agricultural areas, has led to a progressive loss of vegetation cover and habitat fragmentation, reducing the forest's natural capacity to regenerate and support threatened flora and fauna species.

At the same time, illegal mining and the extraction of alluvial materials have altered river and stream channels, increasing sedimentation and affecting the quality of water used for human consumption and productive activities. Added to this are deliberately set forest fires, the opening of clandestine roads, and the irregular occupation of land—practices that accelerate environmental degradation and facilitate the entry of outside actors without community authorization. These dynamics not only transform the natural landscape but also weaken territorial governance, generate social conflicts, and increase the economic vulnerability of families who depend on the forest for their livelihoods.

Among the factors that exacerbate this problem are:

- **The lack of technological tools for monitoring and georeferenced recording.**
- **Limited coordination with environmental authorities for formal reporting.**
- **Insufficient technical training in community forest monitoring.**
- **Intermittent digital connectivity that hinders information transmission.**

In this context, the problem is not limited to the loss of trees or biodiversity but involves a broader process of institutional and cultural weakening, where the lack of structured territorial control mechanisms prevents a timely response to illegal activities. The situation highlights the need to strengthen community capacities, integrate technological monitoring tools, and consolidate permanent organizational structures that allow for the sustainable protection of the forest and guarantee the environmental and social resilience of the territory.





STRATEGIC PLANNING

The Comprehensive Community Forest Monitoring Plan is based on a participatory approach that integrates the ancestral knowledge of Indigenous communities with technical tools for environmental monitoring and territorial governance mechanisms. Its strategic orientation seeks to transform forest monitoring into a permanent, organized, and technically supported process, where biodiversity protection depends not only on external interventions but also on the community's capacity to detect, document, and promptly report activities that threaten the integrity of the territory. This approach recognizes the forest as an ecological and cultural heritage and the community as a central actor in its defense and sustainable management.



Vision

To consolidate, in the medium term, a community territory in the Paramillo Massif recognized for its autonomous capacity for forest monitoring, biodiversity protection, and sustainable use of natural resources, where Indigenous communities exercise environmental leadership through participatory monitoring systems supported by technology and institutional partnerships that guarantee ecological sustainability and social well-being.

Mission

To strengthen the technical, organizational, and territorial capacities of the Indigenous communities in the Paramillo Massif area of influence to implement an evidence-based community forest monitoring system, integrating technological tools, environmental training, and inter-institutional collaboration to prevent, detect, and report illegal activities, promoting forest conservation and the socio-environmental resilience of the territory.



Strategic Objectives

Strengthen community technical capacity in forest monitoring

Develop training and support processes that enable leaders, women, and youth to acquire skills in the use of digital tools, georeferencing, evidence recording, and basic environmental data analysis.

Implement a community-based monitoring and early warning system

Establish permanent mechanisms for the detection, verification, and reporting of deforestation, illegal mining, and forest fires through territorial patrols, monitoring technology, and defined action protocols.

Consolidate local organizational structures for environmental governance

Promote the creation and strengthening of community environmental committees or secretariats responsible for information management, coordination of monitoring activities, and liaison with environmental authorities and academic partners.

Promote the conservation and restoration of strategic forest areas

Promote community actions aimed at the recovery of degraded areas, protection of water sources, and preservation of threatened flora and fauna species, integrating traditional practices and technical sustainability criteria.





PROGRAMMATIC PLANNING

To achieve the strategic objectives, the following have been defined: Strategies, Programs, Program Objectives, and Results. Within each subprogram, specific actions have been proposed.

The planning horizon for the Comprehensive Community Forest Surveillance Plan is 2035, providing a 10-year vision that includes short-, medium-, and long-term actions.

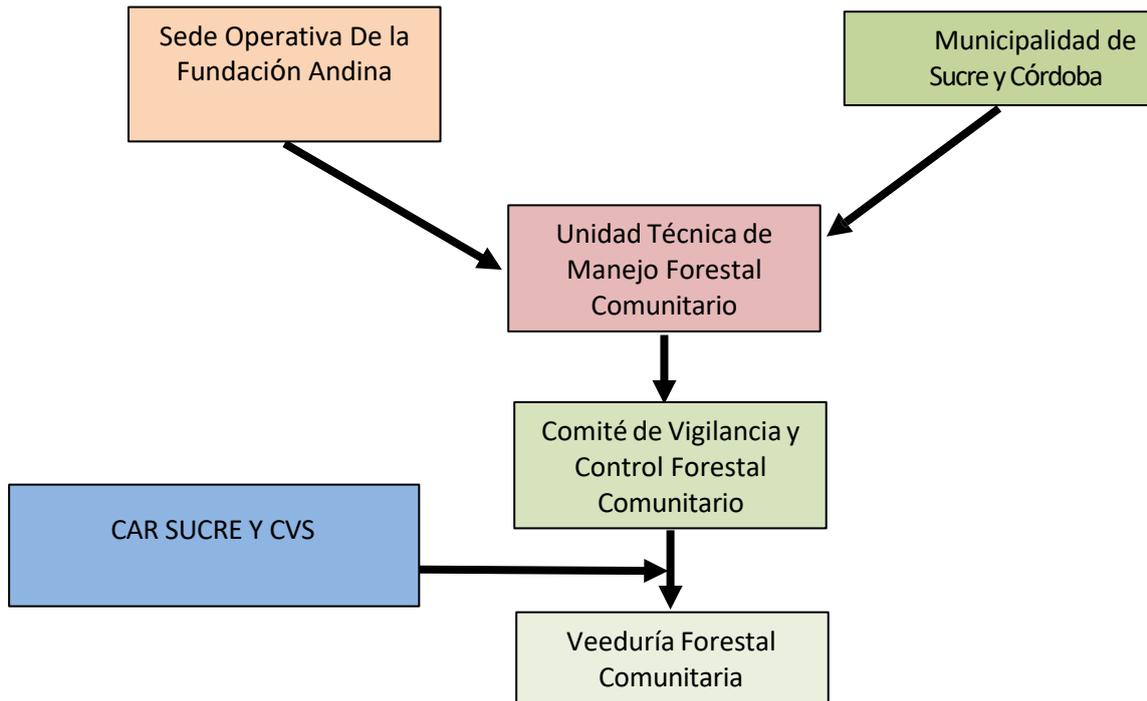
A schematic table is presented to better visualize the sequence of actions in the programmatic planning.





ORGANIZATIONAL STRUCTURE

It has been considered that the organizational structure for community forest control and surveillance should be made up of all institutions related to the issue, such as: The Andean Foundation, CAR Sucre, Regional Autonomous Corporation of the Sinú and San Jorge Valleys, Community Forest Oversight, Community Forest Management Technical Unit and municipal administrations of the departments of Sucre and Córdoba.



The Community Forest Oversight Committee is responsible for technically implementing community forest monitoring and control activities in coordination with the Community Forest Monitoring and Control Committee.

The Community Forest Monitoring and Control Committee is responsible for carrying out community forest monitoring and control activities. To this end, it must request assistance from the Regional Forestry and Wildlife Authority, the Public Prosecutor's Office, the National Police of Peru, the Armed Forces, and the local government, as appropriate to their respective jurisdictions.

The Community Forest Management Technical Unit facilitates technical advice and the participation of the indigenous communities.

The municipalities of Sucre and Córdoba provide political and logistical support.

The CVS (Regional Autonomous Corporation of the Sinú and San Jorge Valleys) is the main environmental authority in the project area. It validates deforestation/mining reports, receives complaints, provides technical support, and coordinates control and enforcement actions. CAR Sucre: Entity providing technical and institutional support in matters of environmental education, restoration and regional coordination when the project involves shared basins or ecological corridors.



CONCLUSIONS

The process of implementing community forest monitoring and strengthening technical capacities in the Nudo del Paramillo area has demonstrated a progressive transformation of the territory from a condition of environmental and organizational vulnerability to a scenario of greater territorial control, community co-responsibility, and ecological sustainability. The observed evolution is not limited to the localized recovery of impacted areas, but is reflected in the consolidation of a participatory monitoring system that integrates local knowledge, technological tools, and institutional coordination as complementary pillars of environmental management.

From an environmental perspective, continuous monitoring has contributed to a decrease in unauthorized logging in priority areas, as well as to the early identification of fire outbreaks and illegal extractive activities. The incorporation of georeferenced records, systematic surveys, and comparative analyses of vegetation cover has generated verifiable technical evidence, strengthening communication with environmental authorities and improving the capacity to respond to threats. Although ecological restoration processes require long-term timeframes, initial signs of soil stabilization, natural regeneration in micro-areas, and recovery of local biological corridors have been identified, especially in sectors where the community has adopted internal protection agreements.

In the social and organizational component, one of the most significant results has been the strengthening of community territorial governance. Training in environmental monitoring, basic use of digital tools, and reporting protocols enabled leaders, women, and youth to assume active roles in forest management, reducing their exclusive dependence on external actors. This process fostered the creation of internal environmental coordination structures and improved community cohesion around the defense of the territory. Intergenerational participation also contributed to the transmission of traditional forest management knowledge, integrating it with contemporary technical practices.

From an institutional perspective, the systematization of environmental information generated by the community allowed for the establishment of stronger communication channels with environmental and academic entities, increasing the legitimacy of the reports and facilitating joint verification and monitoring actions. This progress represents a qualitative shift from previous scenarios where reports lacked technical support or operational continuity.

In terms of sustainability, the process demonstrated that forest monitoring is more effective when conceived as a permanent mechanism for observation, prevention, and environmental education, rather than as a one-off intervention. Building local capacity, gradual technological adoption, and collaboration with strategic partners enabled the community to develop greater autonomy in decision-making related to the protection of its natural resources.

In short, the experience shows that the positive evolution of the territory depends not only on the physical restoration of the forest, but also on the consolidation of a culture of environmental monitoring based on evidence, community organization, and institutional co-responsibility. This model strengthens the ecological and social resilience of the Paramillo Massif, creating favorable conditions for the continuity of long-term conservation processes and positioning the community as a leading actor in the sustainable defense of its natural environment.



PROSPECTS

The prospects for the community forest monitoring process in the Nudo del Paramillo area of influence are geared towards consolidating a sustainable, autonomous, and technically strengthened territorial model, where forest protection evolves from reactive actions to permanent preventative systems. Based on the progress achieved in training, community organization, and participatory monitoring, a medium- and long-term scenario is projected in which the community has stable environmental governance structures, accessible technological tools, and institutional alliances that support the continuity of the process.

In the environmental component, a progressive improvement in vegetation cover and the recovery of degraded microecosystems are anticipated, provided that early monitoring and timely intervention against illegal activities are maintained. The integration of satellite monitoring technologies, drones, and geographic information systems will allow for expanded territorial observation coverage and optimize the detection of landscape changes, generating comparative data that facilitate evidence-based decision-making.

From a social perspective, the project aims to strengthen intergenerational community leadership, with greater participation of women and youth in technical and organizational roles, consolidating a culture of shared environmental responsibility. This process can lead to the creation of permanent management bodies—such as environmental secretariats or committees—capable of sustaining monitoring beyond the duration of specific projects.

In the institutional sphere, greater collaboration with environmental authorities, universities, and cooperation organizations is projected, facilitating access to technical resources, specialized training, and formal reporting mechanisms. This network of alliances will allow the model to be scaled to other nearby territories and strengthen the community's legitimacy as an active participant in biodiversity protection.

In general terms, the project's outlook for the region indicates that, if training, monitoring, and community organizing processes are maintained, the Paramillo Massif can become a regional benchmark for participatory forest monitoring, where forest conservation becomes a structural pillar of sustainable local development, climate resilience, and the territorial autonomy of the communities that inhabit it.





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