1 | WHOSE LAND, WHOSE TRANSITION?



CHARTED GROUND

COMBINING TRADITIONAL ECOLOGICAL KNOWLEDGE, CUSTOMARY LAND GOVERNANCE AND GEOSPATIAL DATA

INTERNATIONAL LAND COALITION

AIM4Forests

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CONTENTS

EXECUTIVE SUMMARY **5**

INTRODUCTION **7**

Role and recognition of traditional knowledge *7*
Global appraisal vs. national disregard *8*
Data on land *8*

Need to strengthen evidence and action *10*
Traditional Ecological Knowledge (TEK) *11*

METHODOLOGY **13**

The case studies: led by ILC Members advocating for visibility *13*
Diversity of case studies *14*

Presenting data initiatives *16*

RESULTS **17**

Philippines *19*
Albania *20*
Ecuador *21*
Suriname *23*
Peru *24*

Examples of effective policy *27*
Common barriers and challenges *29*

DISCUSSION, CONCLUSION AND WAYS FORWARD **31**

ANNEXES

Democratic Republic of the Congo (DRC) *35*
Suriname *37*
Albania *39*
Philippines *41*
Tanzania *43*
Burkina Faso *45*
Mongolia *47*
Ecuador *49*
Montenegro *51*
Kyrgyzstan *53*
Palestine *55*
Peru *57*

ABBREVIATIONS

AAA	Arab Agronomists Association
ATH	Tin Hinan Association
CONAP	Confederación De Nacionalidades Amazonicas Del Peru
DI	Development Interlink NGO
EMENA	Europe, the Middle East, and North Africa
ERND	Environnement, Ressources Naturelles et Développement
KBAs	Key Biodiversity Areas
KMGBF	Kunming-Montreal Global Biodiversity Framework
NFCFPA	National Federation of Communal Forests and Pastures of Albania
PAFID	Philippine Association For Intercultural Development
RDF	Rural Development Fund
SIPAE	Corporación Sistema de Investigación sobre la Problemática Agraria en el Ecuador
CISS	Civic initiative Save Sinjajevina
TEK	Traditional Ecological Knowledge
TNRF	Tanzania Natural Resource Forum
UN CBD	United Nations Convention on Biological Diversity
UNCCD	United Nations Convention to Combat Desertification
UNFCCC	United Nations Framework Convention on Climate Change
VSG	Vereniging van Saamaka Gemeenschappen

EXECUTIVE SUMMARY

Our world faces a severe climate crisis, characterized by widespread ecosystem decline, biodiversity loss and accelerating land degradation. Despite decades of well-meaning initiatives, progress has been insufficient, largely due to an extractive economic paradigm that often overlooks more effective, equitable and people-centred approaches.

> *Land plays a pivotal role in addressing this crisis, serving as both a source of greenhouse gas emissions and a crucial contributor to climate change mitigation and biodiversity conservation. Forests, healthy soils, rangelands and oceans function as vital carbon sinks, and their protection and restoration are essential.*

Indigenous Peoples, Afro-descendent communities, pastoralists, small-scale farmers, and other land-dependent customary communities are critical, yet often unrecognised, custodians of the planet's remaining biodiversity and healthy ecosystems. They manage approximately half of the Earth's surface, including 54 percent of intact forests, which are often characterized by lower rates of deforestation and degradation than lands managed by public or private entities.[1] Their *traditional ecological knowledge* (*TEK*) and sustainable land governance practices are key to managing and protecting critical carbon sinks and biodiversity hotspots, offering vital alternative pathways to address global environmental crises.

However, these same communities face significant structural barriers and pressures that constrain their ability to act as ecological custodians. These include insecure land rights, with only 11.4 percent of the world's land legally recognized as belonging to Indigenous Peoples and other customary communities.[2] External threats, such as large-scale logging, mining, road construction, industrial agriculture and urbanization, increasingly encroach on their territories, leading to deforestation, degradation of sacred places and resource depletion. Climate change exacerbates these challenges due to unpredictable weather patterns, droughts and altered ecosystems. Furthermore, technocratic climate interventions often reinforce existing inequities, dismissing or stigmatizing traditional agrarian systems without understanding their environmental benefits.

1 WRI, 2023. Veit et al. Indigenous Forests Are Some of the Amazon's Last Carbon Sinks ***https://www.wri.org/insights/amazon-carbon-sink-indigenous-forests***

2 Rights and Resources Initiative (2023). Who Owns the World's Land? Global State of Indigenous, Afro-descendant, and Local Community Land Rights Recognition from 2015–2020. ***https://doi.org/10.53892/MHZN6595***

Global environmental frameworks, such as the CBD and the UNCCD, increasingly acknowledge traditional knowledge, yet often fail to translate this recognition into robust national policies or integrate community-driven strategies into decision-making processes.

This report contributes to bridging these gaps by providing robust evidence and tangible stories on community-based sustainable land governance at local levels. Through twelve case studies from diverse territories worldwide – encompassing forests, dry-lands, grasslands and crop-lands across Africa, Latin America, Europe, the Middle East, and Asia – we present how Indigenous Peoples, pastoralists, small-scale farmers and other land-dependent local communities harness traditional knowledge and sustainable land governance practices in their efforts to conserve biodiversity, strengthen land rights and address the climate crisis. These initiatives involve Indigenous Peoples, pastoralists, small-scale farmers, one Afro-descendent community and other land-dependent customary communities, with a notable focus on women's leadership in several cases. The most common sustainable practices include the use of medicinal plants, water and forest conservation, invasive species management, rotational farming and grazing, soil rehabilitation, organic fertilization and traditional irrigation systems. Environmental monitoring, including participatory mapping and GIS analysis, supports communities' narratives and provides concrete, quantifiable evidence of the impacts of external threats and/or the benefits of sustainable governance practices, depending on the situation.

The findings underscore that secure rights over land, territories and natural resources are central to successful community-led climate and nature strategies.

A number of case studies illustrate how pressures on managed lands with insecure land tenure undermine sustainable land governance practices, while other case studies highlight the positive impact of secure land rights in supporting these practices. There is an urgent need to recognize and prioritize community-led strategies, which requires strengthening the evidence base and amplifying the voices of Indigenous Peoples, pastoralists, small-scale farmers and other land-dependent communities at both national and international levels, while also translating global commitments into concrete actions that secure land rights and integrate these types of knowledge and governance systems into broader policy frameworks. Supporting and empowering communities is key to unlocking equitable and effective pathways to address the intertwined challenges of climate change and biodiversity loss.

INTRODUCTION

Our world is facing a severe climate crisis, marked by widespread ecosystem decline, biodiversity lossand accelerating land degradation due to human-induced climate change. These environmental shifts are exacerbated by an entrenched extractive economic paradigm that pushes for growth and techno-scientific solutions, which have only produced insufficient progress despite numerous climate initiatives.
The impacts of climate change are particularly devastating for the most vulnerable communities, which, despite contributing minimally to historical greenhouse gas emissions, are disproportionately affected and often excluded from critical decision-making processes. This crisis is manifest in alterations in ecosystems, decreases in land capability and the transformation of carbon sinks into carbon sources, with over 75 percent of Earth's land surface already significantly altered by human activity.[3] Furthermore, large-scale climate mitigation efforts can in fact generate new negative impacts, intensifying resource extraction and potentially reinforcing the very systems contributing to environmental degradation that they are meant to address

ROLE AND RECOGNITION OF TRADITIONAL KNOWLEDGE

Indigenous Peoples, pastoralists, small-scale farmers, Afro-descendent Peoples and other customary communities dependent on land are crucial custodians of approximately half of the Earth's surface, playing a vital role in managing the planet's remaining biodiversity and sustaining healthy ecosystems.[4] As owners or caretakers of 54 percent of the world's intact forests, the areas they manage are often characterized by low rates of deforestation and degradation compared with lands managed by public or private entities.[5] Their *traditional ecological knowledge* (*TEK*) and sustainable land governance practices seem key to managing critical carbon sinks and biodiversity hotspots, offering alternative pathways to address global environmental crises. An increasing recognition of these facts has led to a recent revalorization of traditional lifestyles and associated knowledge systems, with TEK increasingly recognized in scholarly literature and intergovernmental policy processes as fundamental for tackling biodiversity loss.[6]

3 IPBES, 2019: Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. Brondízio, E. S., Settele, J., Diaz, S., & Ngo, H. T.

4 WRI, 2023. Veit & Reytar. ***https://landportal.org/library/resources/8-facts-about-community-land-and-biodiversity-conservation***

5 WRI, 2023. Veit et al. Indigenous Forests Are Some of the Amazon's Last Carbon Sinks ***https://www.wri.org/insights/amazon-carbon-sink-indigenous-forests***

6 Recent developments, such as the adoption of the Traditional Knowledge (TK) indicator on land tenure and land use change at COP16 of the Convention on Biological Diversity (CBD), and the establishment of the 8j Subsidiary Body, reflect growing institutional support for Indigenous Peoples and local communities' contributions to biodiversity.

International climate instruments, such as the IPCC reports, also acknowledge the importance of rural people and secure land tenure for nature conservation and climate change adaptation and mitigation.[7][8] Despite being stewards of over half the world's land, only about 15 percent of land is legally recognized as belonging to Indigenous Peoples and local communities, while another 20 percent is not legally recognized or is of unknown status.[9]

GLOBAL APPRAISAL VS. NATIONAL DISREGARD

Despite this growing awareness in global frameworks, for example in UN environmental processes (UNFCCC, CBD, UNCCD) that increasingly provide space for their participation, knowledge and contributions, these forums often don't allow for the articulation of community-driven strategies, resulting in advocacy on their behalf rather than the integration of concrete, community-driven strategies into decision-making. This disconnect is particularly evident at the national level, where commitments rarely translate into strong policies, institutional change or significant investment (see box DATA ON LAND).

DATA ON LAND: GLOBAL LAND OBSERVATORIES AND MONITORING PLATFORMS

LandMark

LandMark is an online, interactive platform that maps Indigenous Peoples' and local communities' lands globally. Led by a Steering Group of local, regional and international land rights-focused organisations, it is designed to support communities in their advocacy for land rights and secure tenure over their lands. LandMark integrates contextual environmental data on biodiversity value, carbon sequestration, land cover and change and more from a variety of sources to enable analysis of impacts on Indigenous Peoples and local communities' lands. The results show the extent to which their lands, for example, are sustaining biodiversity and sequestering carbon or, conversely, where they are under threat and may lose their valuable resources. The resulting evidence can be a powerful tool that Indigenous Peoples and local communities can use to show the effectiveness of their land governance practices when land rights are strong or, when they are weak, the threats that they face from external pressures.

LANDex

LANDex is a global land governance index that aims to put people at the centre of land data, democratising land monitoring and building a data ecosystem that better captures the complex experience of land governance from diverse perspectives. The platform demonstrates the gap between global commitments, national legal frameworks, the implementation of laws and policies and the concrete outcomes and results on the ground. A recent LANDex assessment of the degree to which land tenure and stakeholder participation are accounted for in the implementation of the Rio Conventions showed that in a number of countries, governments are making only limited efforts to meaningfully consult all relevant stakeholders and target groups– including Indigenous Peoples, local communities, women, land and environmental defenders, pastoralists and youth.[10] In fact, a global analysis of LANDex data reveals a global implementation gap of 22 percent between the existence of national legal frameworks promoting inclusive decision-making and the degree to which rural land-use management is based on public input.[11] The gap is even larger (57 percent) when we consider the legal framework providing for inclusive decision-making and the degree to which existing multi-stakeholder platforms are accessible and inclusive in practice.[12] These findings underscore the need for stronger accountability mechanisms to ensure that global commitments translate into meaningful participation and secure land rights at the national level.

The Land Matrix Initiative

The ***Land Matrix Initiative*** (*LMI*) is the most comprehensive land observatory on large-scale land acquisitions. Related to this study, on a project level, LMI data show that of over 1,500 *large-scale land acquisitions* (*LSLAs*), only 28 percent of projects report FPIC, and among 1,607 deals with information on community reactions, just 26 percent had community consent while 45 percent were rejected. Land conflicts are widespread: of 1,300 LSLAs with available data, 78 percent involve disputes such as protests, intimidation, encroachment, displacement and destruction of property – amounting to significant land and human rights violations. Among 1,663 deals with reported impacts, environmental degradation is most frequent (67 percent), followed by socioeconomic harm (49 percent), displacement (25 percent), cultural loss (18 percent), violence (18 percent), and eviction (14 percent).[13] These findings highlight structural barriers, including insecure land rights, forced displacement, limited resources, inadequate participation in decision-making processes and inconsistent application of the right to *Free, Prior, and Informed Consent* (*FPIC*), continue to hinder meaningful community participation in climate and biodiversity processes.

7 Intergovernmental Panel on Climate Change (IPCC) (2019). "Climate Change and Land". ***https://www.ipcc.ch/srccl/***

8 Intergovernmental Panel on Climate Change (IPCC). (2022). Climate Change 2023: Synthesis report of the Sixth Assessment Report. IPCC. ***https://www.ipcc.ch/report/ar6/syr/***

9 LandMark, 2025. Accessed on 29 September 2025 from ***www.landmarkmap.org***.

10 This is data from the first assessment of LANDex indicator 6B which examines land tenure and stakeholder participation in the implementation of the Rio Conventions. Seven out of the eleven countries (Spain, Burundi, Tanzania, Madagascar, Nepal, Kyrgyzstan and the Philippines) that collected this data in 2025, showed limited participation in decision-making processes for people living and depending on land.

11 Four Year of People's Data on Land

12 Four Year of People's Data on Land

13 The Land Matrix Initiative is the most comprehensive land observatory on large-scale land acquisitions. See ***www.landmatrix.org***

NEED TO STRENGTHEN EVIDENCE AND ACTION

> *There is an urgent need to strengthen the evidence base to demonstrate the effectiveness of community-based sustainable land governance. This need is underscored by recent criticisms regarding the reliability of the often-cited claim that 80 percent of the world's biodiversity is located in Indigenous territories, which calls for more comprehensive recognition and robust data on Indigenous Peoples' contributions.*[14]

Strengthening this evidence, in other words moving beyond ethical remonstrations, is crucial for generating robust data, narratives and analyses that can amplify grassroots engagement in international biodiversity and climate change forums and support Indigenous Peoples and local communities in domestic struggles for self-determination.

This report aims to make visible the perspectives and initiatives of Indigenous Peoples, pastoralists, small-scale farmers, Afro-descendent peoples and other customary communities' perspectives – documenting not only their successes, but also their struggles against marginalisation and dispossession. We propose a hybrid methodology that combines participatory storytelling and the recognition of *traditional ecological knowledge* (*TEK*) with cutting-edge data generated through global land observatories and monitoring platforms such as LandMark, the Land Matrix Initiative and LANDex (see box DATA ON LAND). This dual strategy ensures that the lived realities and practices of communities are placed on equal footing with empirical, verifiable datasets, creating a multi-dimensional evidence base. By combining qualitative narratives and quantitative data, the proposal seeks to generate a more holistic understanding of how communities govern their lands and resources, how they contribute to biodiversity protection and climate resilience and where they face threats from competing land uses. This process not only produces stronger evidence for advocacy and policy engagement at global level, but also builds capacity at community and national level, enabling grassroots actors to use data and stories as tools of resistance, negotiation and self-determination.

The methodology involves documenting territories where International Land Coalition (ILC) members and local partners that represent Indigenous Peoples, pastoralists, small-scale farmers and other land-dependent local communities are engaged in community-led biodiversity and climate action through sustainable land governance practices. The report presents 12 local case studies, highlighting diverse ecosystems, communities and innovative practices from different regions. The selection of case studies was based on their potential to showcase the crucial yet often little recognized community-led strategies for biodiversity conservation, ecosystem restoration and climate resilience, including approaches that address the pressures faced by communities in rapidly changing contexts and offer alternatives to dominant extractive models and techno-scientific solutions. Combining anecdotal evidence of TEK with concrete, quantifiable environmental data provides support for local advocacy efforts.

These examples serve as learning cases that could be scaled up to strengthen the evidence base on community-led biodiversity and climate strategies needed to inform and influence both international forums and national policy dialogues, ensuring that Indigenous Peoples, pastoralists, small-scale farmers, and other land-dependent local communities' contributions are acknowledged at every political level.

TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK)

TEK is a "cumulative body of knowledge and beliefs, handed down through generations by cultural transmission, about the relationship of living beings (including humans) with one another and with their environment" by Indigenous Peoples and traditional communities.[15] Rooted in cultural transmission across generations, TEK embodies a holistic understanding of the relationships among living beings, including humans, and their ecosystems.

More than a set of practical skills, it represents a dynamic knowledge system that integrates ecological insights with cultural values, spiritual beliefs and social institutions. It evolves continuously, and its hybridization with scientific and other knowledge systems can strengthen resilience and provide critical insights for adaptation and mitigation.[16]

TEK has gained international recognition as a vital source of ecological information and a foundation for sustainable resource management, particularly in contexts where community custodianship plays a central role. For examples, the *Kunming-Montreal Global Biodiversity Framework* (*KMGBF*) explicitly acknowledges TEK in Target 22, and its monitoring framework includes traditional knowledge indicators on linguistic diversity, traditional occupations, participation in decision-making and land use and tenure in traditional territories.

Ensuring secure land rights and governance systems that uphold TEK is therefore crucial to sustaining biodiversity and enabling community-led climate solutions.

14 Fernández-Llamazares, Á., Fa, J. E., Brockington, D., Brondízio, E. S., Cariño, J., Corbera, E., ... & Garnett, S. T. (2024). No basis for claim that 80% of biodiversity is found in Indigenous territories. Nature, 633(8028), 32-35. ***https://www.nature.com/articles/d41586-024-02811-w***

15 Berkes, F. (1993). "Traditional ecological knowledge in perspective," in Traditional ecological knowledge: Concept and cases. International program on traditional ecological knowledge and. Editor J. T. Inglis (Ottawa, Canada: International Development Research Centre), 1–9.

16 Gómez-Baggethun, E., Corbera, E., & Reyes-García, V. (2013). Traditional ecological knowledge and global environmental change: Research findings and policy implications. Ecology and Society, 18(4), Article 72. ***https://doi.org/10.5751/ES-06288-180472***

METHODOLOGY

The objective of this research is to document Indigenous and traditional territories where International Land Coalition (ILC) members and local partners are engaged in community-led biodiversity and climate action through sustainable land governance practices. The authors adopted a participatory approach, led by the members, to gather and present 12 territorial case studies. These territorial studies either drew upon major, ongoing work already being operationalised by them or were based on specific, original work implemented independent of their programming but which reflects the same general principles. .

THE CASE STUDIES: LED BY ILC MEMBERS ADVOCATING FOR VISIBILITY

The report provides a platform for Indigenous Peoples, pastoralists, small-scale farmers and other local communities dependent on land – particularly members of ILC and the LandMark initiative – to showcase examples of community-led climate and nature practices and the challenges they face in preserving their traditional ways of life. These cases were selected to underscore the crucial, yet often unrecognised, community-led climate and nature strategies that are vital for climate resilience and biodiversity conservation. The focus includes situations undergoing rapid changes and those in need to preserve their approaches, which often diverge from prevailing extractive economic paradigms and techno-scientific fixes.

The ***twelve case studies*** were developed by various ILC member organisations:

- Environnement, Ressources Naturelles et Développement (ERND) in the Democratic Republic of Congo (DRC);
- Tanzania Natural Resource Forum (TNRF) in Tanzania;
- Tin Hinan Association (ATH) in Burkina Faso;
- Vereniging van Saamaka Gemeenschappen (VSG) in Suriname;
- Confederación De Nacionalidades Amazónicas Del Perú (CONAP) in Peru;
- Corporación Sistema de Investigación Sobre la Problemática Agraria en el Ecuador (SIPAE) in Ecuador;
- Arab Agronomists Association (AAA) in Palestine;
- Civic initiative Save Sinjajevina (CISS) in Montenegro;
- National Federation of Communal Forests and Pastures of Albania (NFCFPA) in Albania;
- Rural Development Fund (RDF) in Kyrgyzstan;
- Development Interlink NGO (DI) in Mongolia;
- Philippine Association For Intercultural Development, Inc. (PAFID) in the Philippines.

DIVERSITY OF CASE STUDIES

The examples used were selected according to criteria aimed at ensuring broad representation across diverse locations, communities, ecosystems, pressures and sustainable land governance practices:

Geographic locations and ecosystems
The case studies span various ecosystems across different geographic contexts: four cases in forests (one in Africa, one in Europe and two in Latin America); three in grasslands (one in Latin America, one in Europe one in Asia); and four in dry-lands (two in Africa, one in Asia and one in the Middle East).

Communities/actors
Most initiatives are led by Indigenous Peoples (six cases), including communities that also identify as pastoralists (two) and farmers (one). Other customary communities represent the other cases (six), including pastoralists (three), farmers (one), Afro-descendant tribes (one), and other land-dependent communities (one). Across these groups, several initiatives highlight the leadership of women (four) and youth (two), primarily in relation to introducing technology in rangeland conservation, indicating a notable gap in youth-led practices.

Pressures
The case studies address a wide range of pressures, including climate change (seven cases), logging (five cases), conflict/security issues (three cases), mining (three cases), encroachment (three cases), overlapping concessions (four cases), agriculture (two cases) and industrial activities (one case).

Sustainable land governance practices
The most frequently mentioned key theme is biodiversity conservation (ten cases), followed by ecosystem restoration (eight cases), climate mitigation (seven cases) and adaptation (six cases). Specific sustainable land management practices embedded in *traditional ecological knowledge* (*TEK*) documented include: medicinal plant use (seven cases), water management (six cases), forest conservation practices (five cases), traditional fishing regulations (three cases), soil conservation (three cases), rotational farming (three cases), rotational grazing (three cases), agroforestry (two cases), traditional hunting regulations (two cases), seasonal farming (two cases), soil rehabilitation (one case), organic fertilization (one case) and traditional irrigation systems (one case).

Table 1: summary of case studies

COUNTRY	ECOSYSTEM	TERRITORY (HA)	PEOPLE	SUSTAINABLE LAND GOVERNANCE PRACTICE	PRIMARY THREATS	ORGANISATION
DR Congo	Peatlands (wetlands) and forests	1,275	Indigenous Peoples	Preserving TEK in forests through documenting Indigenous pharmacopoeia	Logging	ERND
Tanzania	Dry-lands (semi-arid)	560,670	Pastoralists and Indigenous Peoples (focus on women)	Pastoral land governance and rangeland restoration	Encroachment farming and boundary conflicts	TNRF
Burkina Faso	Arid lands	30,218	Pastoralists and Indigenous Peoples (focus on women)	Lake conservation and monitoring, reforestation, and women group land titles	Climate change (desertification), logging and security issues	ATH
Suriname	Forests	1,400,000	Afro-descendent tribal community	Revival of tribal conservation agreements	Road construction and logging	VSG
Peru	Forests	3,440,150	Indigenous Peoples/ smallholder farmers	Community comittee for agroforestry banana production.	Logging concession and climate change (intensifying temperatures)	CONAP
Ecuador	Montane grasslands and shrublands (*páramos*)	4,749	Indigenous Peoples	Páramo governance and regulations by community	Mining, large-scale agriculture and climate change (water shortages)	SIPAE
Palestine	Arid lands	243	Farmers	Wastewater treatment system for irrigation to restore farmland (16 hectares), replanting native trees	Restrictive land policies, conflict, industrial wastewater pollution	AAA
Montenegro	Montane grasslands	48,530	Pastoralists	Pastoral katun rangeland governance system	Military concession and development of wind energy infrastructure	CISS
Albania	Forests	7,064	Local communities	Community oak forest restoration	Logging and climate change (wildfires, floods and droughts)	NFCFPA
Kyrgyzstan	Montane grasslands	118,030	Pastoralists, especially women	Traditional governance system and TEK for rangeland management and use	Illegal logging, mining, tourism and climate change (pastureland degradation)	RDF
Mongolia	Dry-lands	16,533,320	Pastoralists, focus on women	Conservation of 4.6 million hectares of rangeland	Mining of copper/gold and coal (945.000 ha licensed), and climate change (desertification)	DI
Philippines	(tropical) Forests	58,117	Indigenous Peoples	Indigenous forest conservation	Encroachment of farmlands and concessions for infrastructure in protected areas	PAFID

PRESENTING DATA INITIATIVES

The methodology applies a territorial approach that integrates community examples of sustainable land governance practices with geographical and environmental data to strengthen communities' narratives. Case study territories were mapped through consultative and participatory processes led by local organisations either prior to or during the project, with resulting maps used in environmental data analysis.[17] Local organisations also contributed qualitative knowledge on sustainable land governance and traditional ecological knowledge, including practices of resource management, social institutions and world views. Together, these qualitative and quantitative insights demonstrate the positive environmental impacts of community-led biodiversity and climate practices.

17 This kind of community-led mapping of territories, and other kinds of citizen science, are explicitly welcome within the CBD monitoring framework, which recognizes their value to monitor several indicators within the KM-GBF. This means these maps can inform the CBD traditional knowledge indicator on land use and land tenure in the traditional territories of Indigenous and local communities, retained as a headline indicator for Target 22 of the Kunming-Montreal Global Biodiversity Framework (KM-GBF), developed by ILC and other members of the Technical Working Group. For more information, see: A land use and tenure indicator to protect traditional knowledge–ILC (***landcoalition.org***) and the two-page brief prepared for Parties ahead of COP-16.

RESULTS

One of the most important means of defence entails strengthening and securing land tenure and community land governance systems.

In the Kiteto District of northern ***Tanzania***, data indicate that between 2000 and 2020, more than a quarter of the communal land area, nearly 150,000 hectares, was converted from grazing lands or trees to crop-lands.[18] To counter against this encroachment, registered Livestock Keepers Associations intentionally integrate Indigenous knowledge into legal frameworks through jointly designed land-use plans at the village level, , establishing grazing clusters and rotational grazing in management plans. The issuance of *Certificates of Customary Rights of Occupancy* (*CCROs*) has been crucial in securing communal grazing lands, supporting pastoralist land claims against encroachment, and fostering trust in land-use plans, thus motivating communities to restore degraded areas because such areas are recognized as 'theirs.' Similarly, communities in ***Peru*** and ***Ecuador*** have pro-actively established collective agreements to regulate land tenure, restrict land use and protect access to resources through their self-governance systems (see boxes). In another example from the ***Philippines***, the Ikahalan community has been able to successfully conserve their forests for more than 50 years, making it one of the most pristine and biodiversity-rich forests in the region, because they have security of tenure (see box). In ***Montenegro***, local communities successfully intervened to prevent the establishment of a NATO military training ground, with a legally binding cancellation of the plans signed by the Prime Minister of the country on 10 July 2025. The communities continue to press for establishing Sinjajevina as a protected area, taking into account the wishes and claims of local communities and pastoralists. This demonstrates their resolve in protecting their claims to their territories, by proving and documenting continuity and consistency in their management of the land, with very little change over the past 20 years.[19] In ***Burkina Faso***, access to land is primarily governed by customary and religious law, with traditional structures like customary chiefdoms playing a crucial role in land management and conflict resolution, while coexisting with modern state institutions. The customary leadership is key for conserving Lake Darkoye and preventing degradation, while simultaneously supporting women's land rights through a pilot grant of three hectares to a women's group.

18 Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***

19 Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***

Data show that of the 30,218 hectares in the area, nearly 28,000 hectares are natural or semi-natural grasslands, relatively undisturbed rangelands critical to pastoralism.[20] The case study in ***Albania*** also showcases how informal rules and customary institutions remain influential in conservation efforts, even as formal land rights are administered by local and national authorities. These efforts directly resist pressures such as encroachment of farming, logging, large-scale agriculture and mining while conserving oak forests (see box).

1

STRENGTHENING AND SECURING LAND TENURE AND COMMUNITY LAND GOVERNANCE SYSTEMS

Securing formal land titles

Customary land governance norms and regulations

Integrating with legal frameworks

2

PRESERVATION, APPLICATION, ADAPTATION AND HYBRIDIZATION OF TRADITIONAL ECOLOGICAL KNOWLEDGE (TEK) AND SUSTAINABLE RESOURCE MANAGEMENT PRACTICES

Documentation and transmission of TEK

Hybridization of TEK with scientific data and methods

Traditional sustainable resource management practices

Conservation and protection of ecosystems

3

INTEGRATING TECHNOLOGIES AND MONITORING SYSTEMS WITH TRADITIONAL PRACTICES

Digital and geospatial monitoring and youth-led technological innovation

Community-based environmental observation

Adaptive land management

4

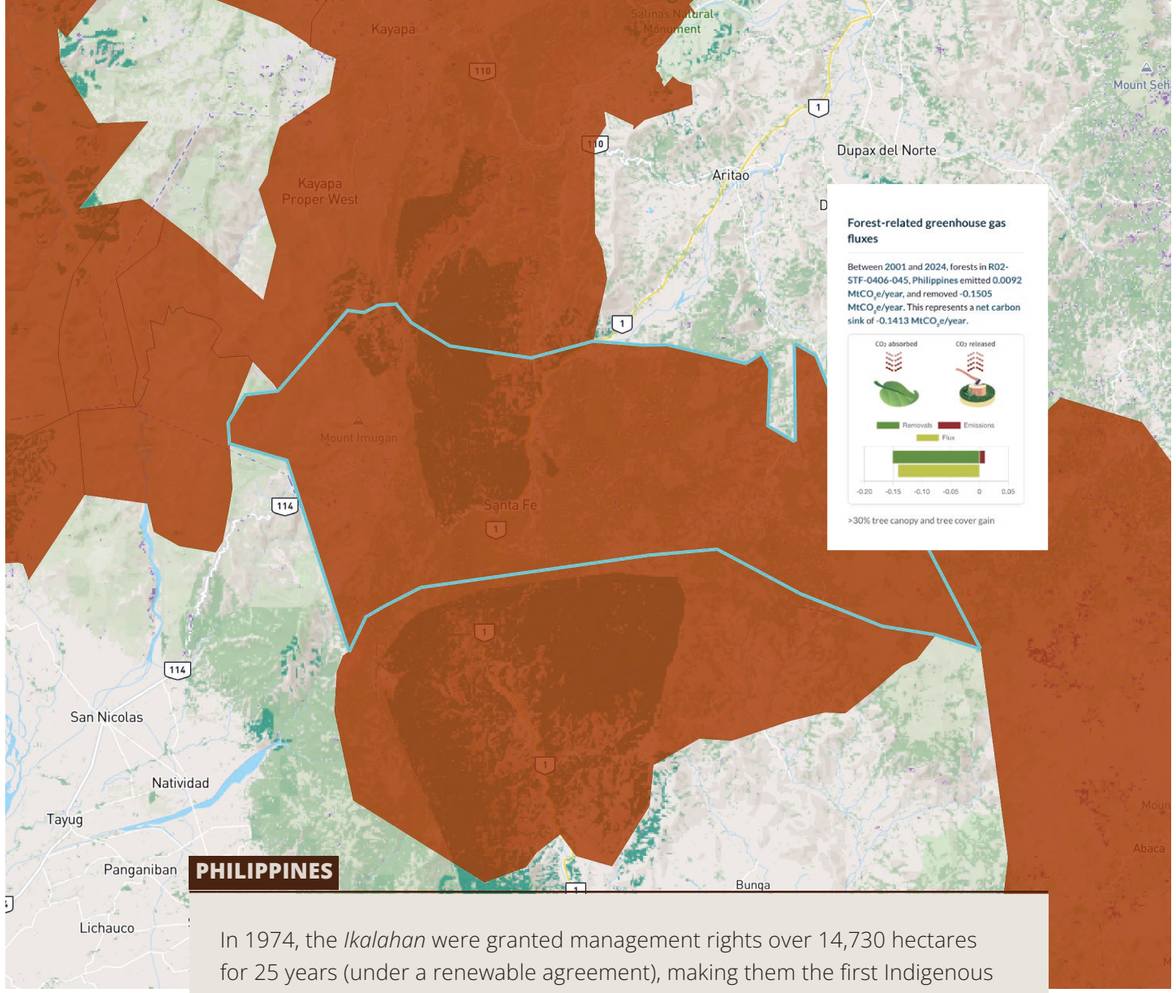
MULTI-STAKEHOLDER COLLABORATION, DIRECT ACTION AND ADVOCACY

Collaborative land and resource governance and government and organisation partnerships

Local mobilisation for direct resistance against external pressures

Advocacy, visibility of local efforts and policy influence

20 Parente, L., Sloat, L., Mesquita, V., et al. (2024). Annual 30-m maps of global grassland class and extent (2000–2022) based on spatiotemporal Machine Learning, Scientific Data. ***http://doi.org/10.1038/s41597-024-04139-6***



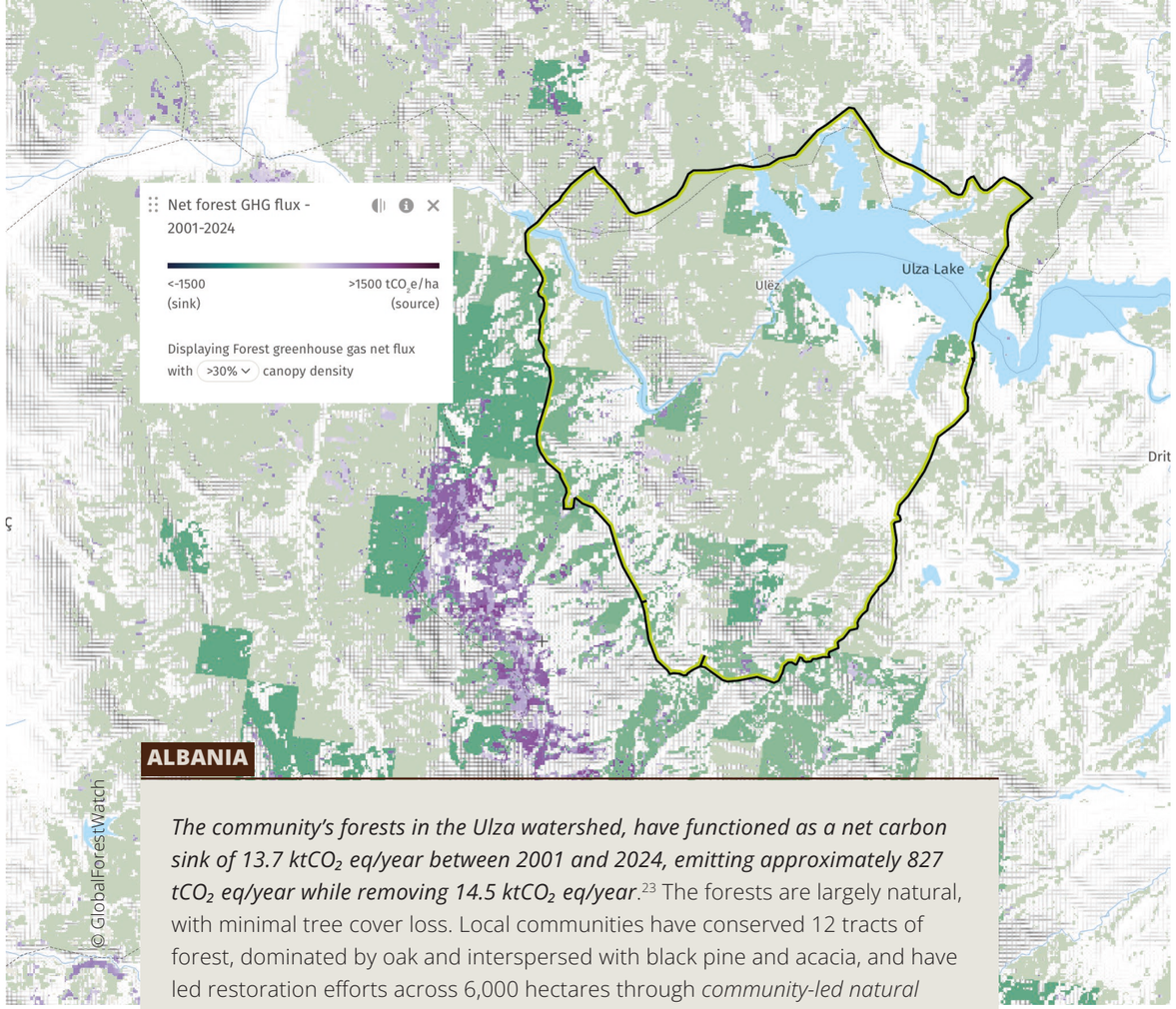
Documented Indigenous Peoples' lands and territories acknowledged by the government in the province of Nueva Vizcaya.

In 1974, the *Ikalahan* were granted management rights over 14,730 hectares for 25 years (under a renewable agreement), making them the first Indigenous community in the Philippines to gain formal tenure security. Because their tenure is secure, the *Ikalahan* community has been able to maintain stable forest cover with minimal tree cover loss within their territory. Analysis of data on greenhouse gas flux within the *Ikalahan* territory on the LandMark platform shows that their ***forests remove a net total of 147.5 kt of carbon dioxide from the atmosphere each year***[21]***, the equivalent of removing more than 31,000 passenger cars off the road each year***[22]. These carbon sequestration figures, which prove the value of tenure security through ancestral domains in mitigating climate change, provided the concrete evidence needed to secure a provincial ordinance that recognizes and supports ancestral domains across the province of Nueva Vizcaya.

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21 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.landmarkmap.org***.

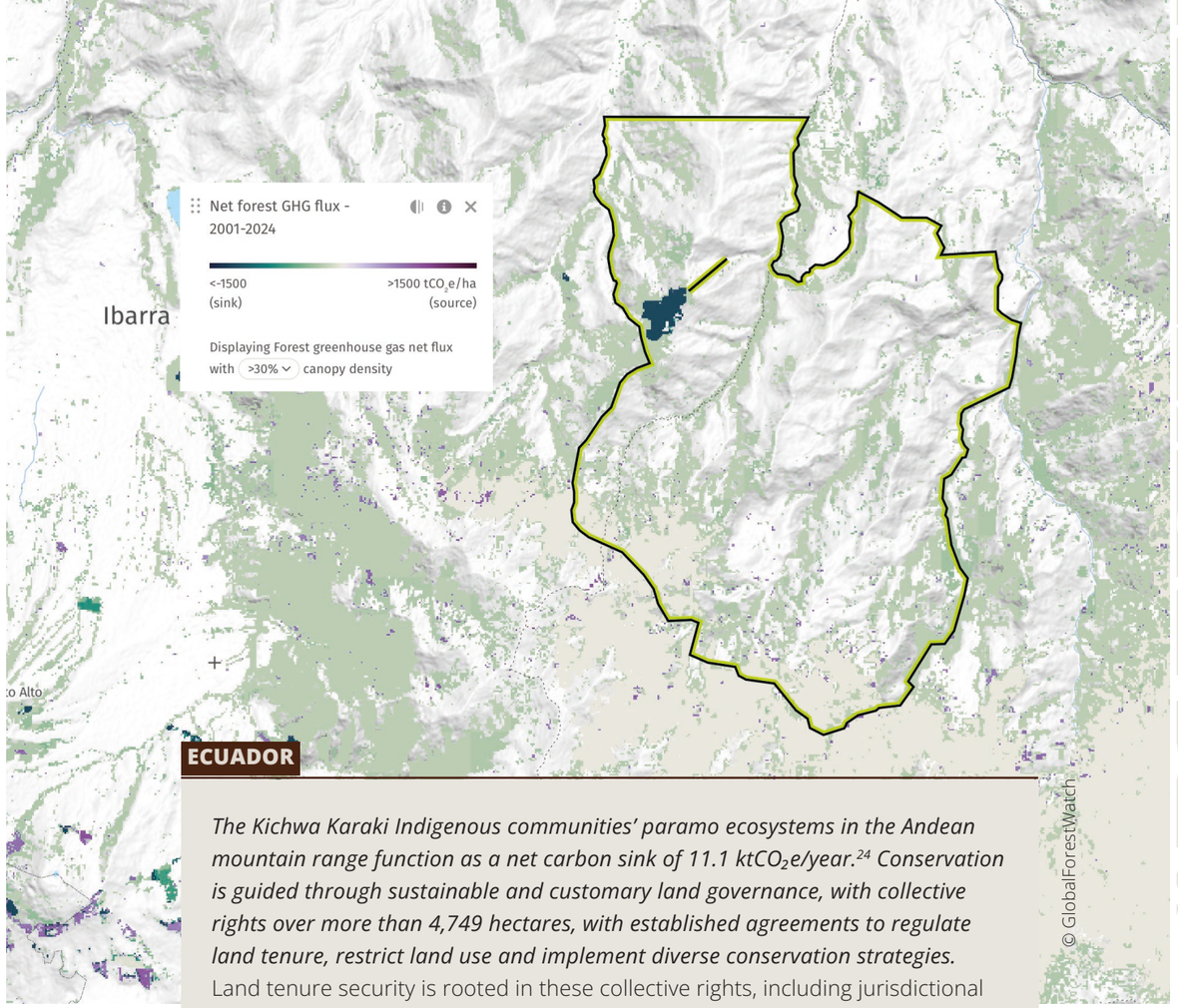
22 U.S. Environmental Protection Agency. Greenhouse Gas Equivalencies Calculator. Accessed from ***https://www.epa.gov/energy/greenhouse-gas-equivalencies-calculator***.



ALBANIA

The community's forests in the Ulza watershed, have functioned as a net carbon sink of 13.7 ktCO_2 eq/year between 2001 and 2024, emitting approximately 827 tCO_2 eq/year while removing 14.5 ktCO_2 eq/year.[23] The forests are largely natural, with minimal tree cover loss. Local communities have conserved 12 tracts of forest, dominated by oak and interspersed with black pine and acacia, and have led restoration efforts across 6,000 hectares through *community-led natural resource management* (*CLNRM*). Informal rules and customary institutions have supported conservation, establishing norms for forest and land management. Decentralization programmes after Communist land reform policies have transferred 80 percent of the land to municipal ownership, resulting in a hybrid tenure system with a lack of clarity over access and use rights. Forests face pressures from logging and climate change, emphasizing the need to strengthen land tenure security and formalise customary land governance mechanisms.

23 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.globalforestwatch.org***



ECUADOR

The Kichwa Karaki Indigenous communities' paramo ecosystems in the Andean mountain range function as a net carbon sink of 11.1 ktCO_2e/year.[24] *Conservation is guided through sustainable and customary land governance, with collective rights over more than 4,749 hectares, with established agreements to regulate land tenure, restrict land use and implement diverse conservation strategies.* Land tenure security is rooted in these collective rights, including jurisdictional authority over the territory through self-governance systems. The *paramos* face ongoing pressures from mining and large-scale agriculture, highlighting the importance of maintaining strong community land governance and management and legal recognition.

Another means of defence employs the preservation, application, adaptation and hybridization of traditional ecological knowledge (TEK) and sustainable resource management practices.

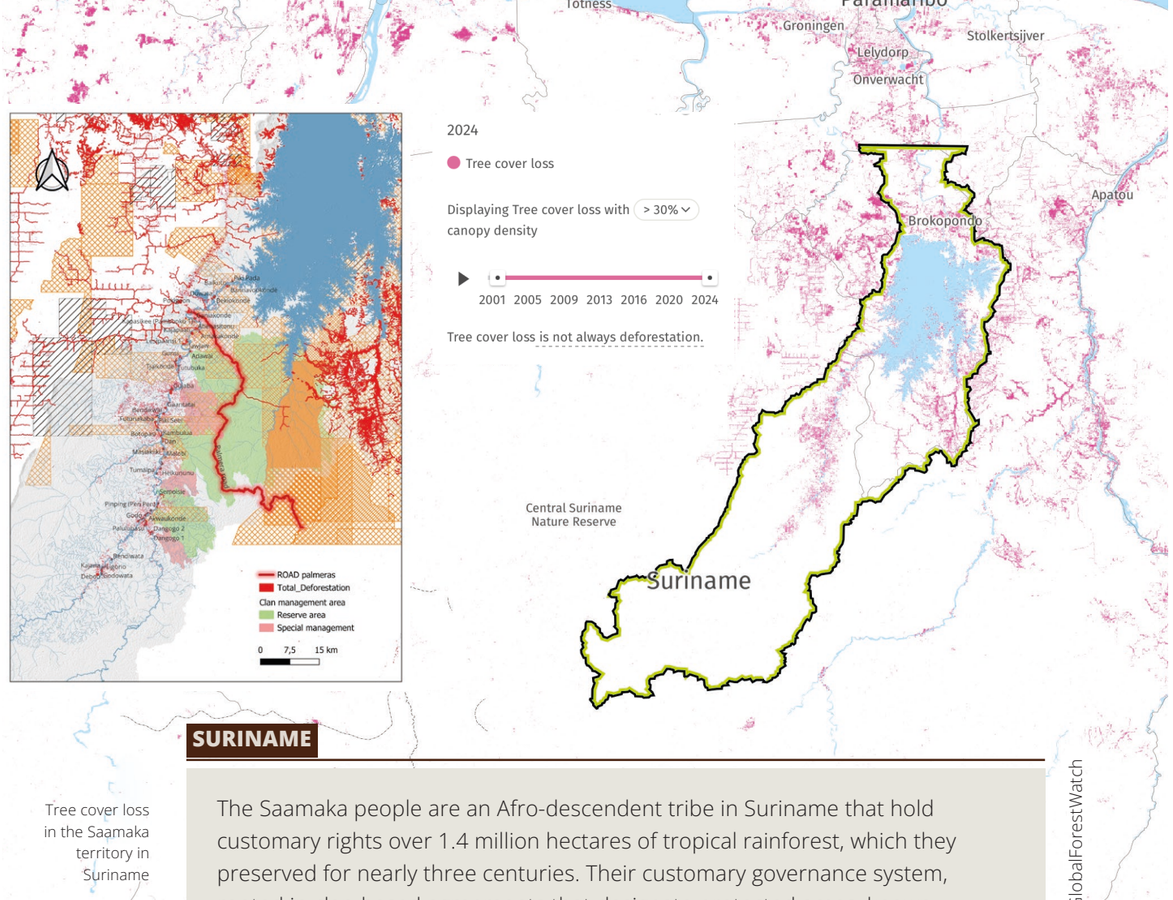
In the ***Democratic Republic of the Congo***, local development committees are dedicated to documenting TEK, including knowledge of medicinal plants, hunting seasons and spiritual beliefs intertwined with nature, recognizing their crucial role in conservation and sustainable resource use (see box).

24 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.globalforestwatch.org***

The *Ikalahan-Kalanguya* community in the ***Philippines*** has maintained ancient composting techniques like *day-og* and *gengen* for soil fertility restoration, alongside methods such as *pang-omis* to expedite fallow periods and *balkah* for erosion control, all passed down through generations and recognized for their sustainability. In ***Kyrgyzstan***, TEK guides female pastoralists in implementing rotational grazing and seasonal livestock migration (*jailoo* and *kyoçh*), allowing pastures to regenerate and supporting soil and plant health. The territory featured in this case study is predominantly grassland with stable tree cover: of 4,400 hectares of tree cover, only 4 hectares (<0.1%) were lost between 2001 and 2024.25 ***Mongolia***n herders similarly rely on ancestral ecological knowledge and customary land-use norms for their seasonal migrations (*otor*), fostering sustainable rangeland management in a *nutag* system. Data show overlaps with several *key biodiversity areas* (*KBAs*), including the Govi Gurvan Sikhan Mountain and Gobi Desert ecosystems, which are home to many rare and endangered species.26 In ***Montenegro***, pastoralists continue to follow ancient *progon* paths with their livestock, travelling drove roads shaped by generations of movement and protected from construction, where animals still instinctively retrace their seasonal routes, reflecting the deep-rooted traditions of transhumant life in the region, which can still be felt, lived and remembered. The Saamaka people in ***Suriname*** demonstrate the importance of documenting oral traditions through clan-based conservation agreements, to ensure inter-generational transmission of knowledge that has preserved 1.4 million hectares of tropical rainforest under customary land governance for nearly three centuries (see box). ***Peru***vian Indigenous communities practice ancestral agroforestry, cultivating crops like the *bellaco hartón* banana for food security and utilizing traditional agricultural methods that adapt to riverine flood cycles on fertile "*bajiales*". In ***Albania***, communities engage in *community-led natural resource management* (*CLNRM*), which builds on TEK about ecosystem functioning, seasonal cycles and long-term ecological changes. TEK, reinforced with scientific data and methods, is used to restore vast forest areas and integrate *sustainable land management* (*SLM*) practices, such as thoughtful thinning in oak forests to enhance long-term biomass accumulation. In ***Burkina Faso***, communities protect Lake Darkoye and its medicinal plants, viewing the health of the lake as a key sign of biodiversity health, and they work to prevent pond pollution and its drying up. These practices directly counter threats such as deforestation, land degradation, climate change and overexploitation.

25 Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. doi: 10.1126/science.1244693.

26 BirdLife International (2025). Digital boundaries of Key Biodiversity Areas from the World Database of Key Biodiversity Areas. Developed by the KBA Partnership: BirdLife International, International Union for the Conservation of Nature, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Global Wildlife Conservation, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World Wildlife Fund. Available at ***http://www.keybiodiversityareas.org/site/requestgis***

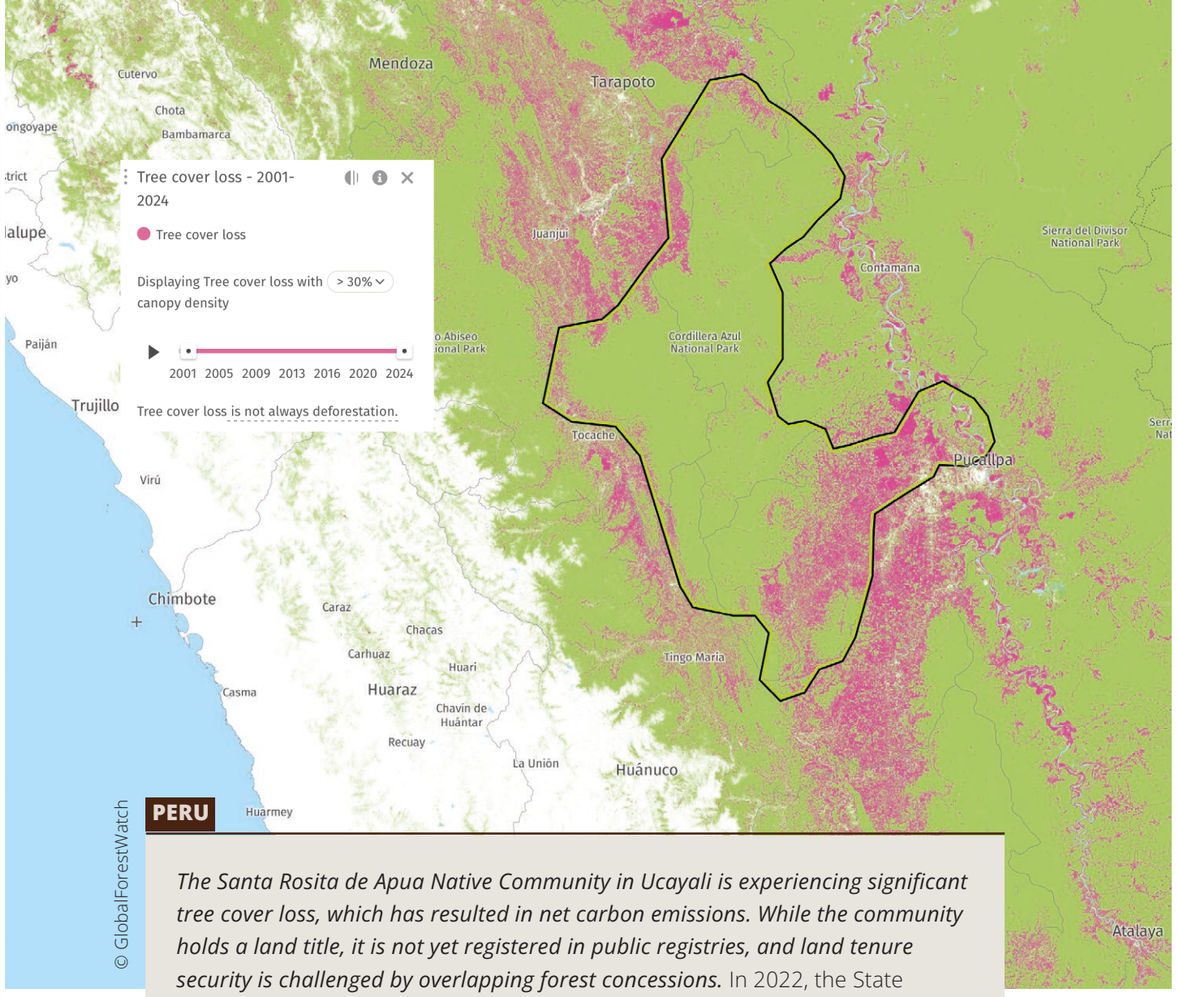


Tree cover loss in the Saamaka territory in Suriname

SURINAME

The Saamaka people are an Afro-descendent tribe in Suriname that hold customary rights over 1.4 million hectares of tropical rainforest, which they preserved for nearly three centuries. Their customary governance system, rooted in clan-based agreements that designate protected areas, known internally as *lös tyubi kamia* or "clan management areas", established an important mechanism to maintain the integrity of those forest lands. *Lös tyubi kamia* regulated resource use, maintained essential livelihood resources and protected the sacred homes of forest spirits, while preserving unique ecosystems and key species. This system remained highly effective until the 1960s, when external encroachment began.

Today, large-scale logging, mining and road construction are driving rapid tree cover loss across Saamaka ancestral lands. Without legal recognition of their land rights, the Saamaka struggle to stop this expansion. In response, traditional leaders are mapping the *lös tyubi kamia* zones and reviving inter-clan agreements to mount a defence to protect the 84.2 percent of intact forest that still remains within their territory.



The Santa Rosita de Apua Native Community in Ucayali is experiencing significant tree cover loss, which has resulted in net carbon emissions. While the community holds a land title, it is not yet registered in public registries, and land tenure security is challenged by overlapping forest concessions. In 2022, the State granted *Aserradero Nueva Requena S.a.C.* more than 8,100 hectares, with 7,367 hectares falling within the limits of the community's territory, putting the titling process on hold. LANDex data show that, although Peru's laws formally recognize diverse tenure systems – including Indigenous, *campesina* and private property regimes – contradictions and overlaps within the legal framework create confusion and weaken enforcement. Ongoing pressures from concessions, logging and climate change in the Santa Rosita de Apua territory mean there is an urgent need to strengthen land tenure security. The community addresses environmental pressures through a plantain producers committee, which promotes traditional agroforestry knowledge, sustainability and agricultural productivity, and strengthens the local economy and territorial protection, with the *bellaco hartón* plantain variety at the centre.

Tree cover loss in Santa Rosita de Apua Native, Ucayali

Integrating technologies and monitoring systems with traditional practices is another evolving defence strategy.

In *Kyrgyzstan*, traditional ecological knowledge is combined with modern tools such as GIS and digital monitoring to improve the early detection of pasture degradation and strengthen adaptive management. This is considered a hybridisation of TEK. Youth in Kyrgyzstan are pioneering innovations like mobile apps for tracking grazing and waste management, while elders provide spiritual guidance for pasture and water management, rooted in the *Tengirchilik* belief system. ***Mongolia*** also sees youth using technology to monitor and enhance mobility, developing new monitoring and early warning systems, with efforts to integrate them with herders' experiential knowledge. In ***Albania***, ***Burkina Faso*** and the ***DR Congo***, ecosystems are locally monitored by community members to note changes in vegetation, natural resource abundance, wildlife and hydrological conditions. In ***Palestine***, smallholder farmers are merging traditional farming knowledge with modern wastewater treatment technologies and enhanced sustainable irrigation systems to restore soil fertility and boost agricultural productivity. This combination of traditional knowledge with monitoring technologies helps communities make their contributions more robust and adaptable to contemporary challenges like climate change and resource scarcity.

Finally, multi-stakeholder collaboration, direct action and advocacy are vital for both resistance and visibilisation.

Communities in ***Palestine*** are engaged in multi-stakeholder collaboration with the Palestinian Ministry of Environment, the Ministry of Agriculture and the *Kafr Jamal* Village Council, all of whom share an interest in responsible resource management and in aligning community-driven efforts with national policy, as demonstrated by the Kafr Jamal Agricultural Cooperative, which has restored soil fertility and asserted rights to land and water management. In ***Montenegro***, local communities successfully organized resistance against a military training ground, showcasing their resolve in protecting their territories. In ***Peru***, members of the Indigenous community in Ucayali are engaged in partnerships and projects that combine ancestral practices with modern strategies to promote sustainability, agricultural productivity and strengthen the local economy and territorial protection, with the *bellaco hartón* plantain variety at the centre. In the ***Democratic Republic of the Congo***, documenting traditional pharmacopoeia strengthens community identity and promotes sustainable resource use, helping in advocacy aimed at recognizing the rights of Indigenous Peoples over their knowledge and resources, especially to respond to logging and urbanization. ***Mongolia***n communities partner with local governments to create locally protected areas, ensuring that conservation efforts are aligned with sustainable livelihoods and to counter mining expansion. These collaborations and direct actions elevate local struggles to broader recognition and seek formal acknowledgement of their land rights and conservation successes.

In the ***Philippines***, the successes of the *Kalanguya–Ikalahan* conservation model have shaped national policy processes supporting community land rights over the past decades. In 2024, the specific use of global environmental data helped convince local legislators of the urgency and importance of institutionalizing *Indigenous and Community Conserved Areas and Territories* (*ICCAs/ICCATs*) at the provincial level, resulting in a unanimous vote by legislators in their favour.

These successes rely on several important supports:

- First, the ***formalization of rights and agreements***, such as the CCROs in Tanzania and the 1974 Memorandum of Agreement in the Philippines, makes their custodianship formal, legally binding and publicly recognized.
- Second, ***documentation of traditional knowledge*** in the DR Congo and the integration of TEK with modern monitoring systems in Kyrgyzstan and Mongolia translate ancestral wisdom into verifiable data and accessible formats for wider audiences.
- Third, the ***demonstration of tangible environmental outcomes***, such as in the case studies of Suriname and Albania, where community-led management of forests results in functioning carbon sinks, providing measurable evidence of their conservation success.
- Fourth, the ***active participation and leadership of women and youth*** in governance and innovation, particularly in Kyrgyzstan and Mongolia, underscores the inclusive and dynamic nature of these community-led strategies, showcasing them as models for sustainable development.

These diverse community-led strategies highlight the crucial role of secure land rights, traditional ecological knowledge, inclusive governance and the integration of technologies and monitoring systems in sustainable environmental outcomes. Indigenous Peoples, pastoralists, small-scale farmers and other local communities dependent on land have deep cultural and spiritual connections to their lands, which drive their sustainable land governance practices. While these efforts contribute to carbon sequestration, biodiversity conservation and other environmental benefits, they are rarely reflected in national policies and governance frameworks. Enhanced monitoring and data collection across diverse ecosystems are needed to fully capture these contributions and support advocacy for secure land rights to conserve these practices.

The following section analyses which policy and legal frameworks best support community-led strategies and examines common barriers to formal recognition and integration into national policy.

EXAMPLES OF EFFECTIVE POLICY

AND LEGAL FRAMEWORKS THAT SUPPORT COMMUNITY-LED STRATEGIES

Communities worldwide continuously strive for the formal recognition and legal protection of their invaluable contributions to land and resource management, often navigating complex interactions between their established customary systems and national legal frameworks. While some policies have proven effective in supporting these community-led strategies, significant barriers frequently hinder the formal recognition and legal safeguarding of traditional practices and territories.

Successful frameworks often involve the formalization of existing customary rights, the integration of traditional governance into modern systems and the creation of mechanisms that allow communities to directly manage their resources. These approaches can mitigate conflicts and yield considerable sustainable economic and benefits.

One highly effective approach is the direct formalization of land tenure through official documentation.

While the latest global Prindex assessment in 2024 indicates that globally 35 percent of people across the world don't have any kind of documentation–formal or informal–of their land and property rights[27], many efforts have been made at the local level to improve this. In ***Tanzania***, for instance, the issuance of *certificates of customary rights of occupancy* (*CCROs*) to livestock associations has been instrumental in securing communal grazing lands. This legal recognition directly supports pastoralist land claims against further encroachment, ensures tenure security of communal grazing land and prevents land-use conflict. The formalization of these rights clarifies disputes over land use and boundaries. The economic and environmental impact is evidenced by the fact that local communities now invest to restore degraded areas, because they have tenure, which in turn enhances the productivity and sustainability of their grazing lands. Similarly, in the ***Philippines***, the historic 1974 *Memorandum of Agreement* (*MoA*) granted the *Ikalahan* community management rights over 14,730 hectares of their ancestral lands for a renewable 25-year period. This ground-breaking agreement set a precedent for Indigenous tenure security and social forestry in the country, with the issuance of custodianship certificates granting formal recognition of their right to manage their territory. By 2006, they were granted two *certificates of ancestral domain titles* (*CADTs*) totalling 56,131.68 hectares. This formal recognition effectively resolved long-standing competing land claims and empowered the community to continue sustainable practices like *day-og* and *gengen* composting, which restore soil fertility, ensuring long-term agricultural productivity and ecological health, thus providing economic stability. Steady improvements eventually shaped policy-making, including the *Indigenous Peoples' Rights Act* (*IPRA*) of 1997 and related environmental laws, such as the Chainsaw Act and the recent ICCATs ordinance.

27 Prindex: ***https://www.prindex.net/data/***

Beyond direct tenure, the recognition and integration of customary law within contemporary institutions are critical.

In ***Burkina Faso***, access to land is primarily governed by customary and religious law, with traditional chiefdoms playing a crucial role in land management and conflict resolution. This system also supports customary usufruct rights for women, contributing to their economic empowerment. In ***Ecuador***, communities have established common agreements to regulate land tenure and restrict land use, reinforced by their collective rights and jurisdictional authority over their territories through self-governance systems. These internal governance mechanisms serve as robust forms of conflict resolution within the community, ensuring equitable access to resources and promoting sustainable management, which underpins local economies.

Community-led innovation, particularly when supported by multi-stakeholder collaboration, also demonstrates significant economic and environmental benefits.

In ***Palestine***, the Kafr Jamal Agricultural Cooperative, led by local farmers, integrated traditional farming knowledge with modern wastewater treatment technologies working in collaboration with the Palestinian government. This initiative resulted in restored soil fertility, enhanced organic matter content, and improved soil structure, directly boosting agricultural productivity and reinforcing food security for over 6,000 residents. This project not only addressed environmental degradation caused by industrial and settlement waste but also asserted the community's right to land and water management under sustainable governance principles, proving a viable model for local economic resilience and self-determination. In ***Mongolia***, *Locally Protected Areas* (*LPAs*), established by communities in partnership with local governments, play a critical role in aligning conservation with sustainable livelihoods, demonstrating how formal state recognition of community efforts can lead to positive outcomes. Projects like "Titling and Governance for the Conservation of the Territory" in Peru, implemented by CONAP and Rainforest Trust, explicitly aim to close the titling gap and strengthen Indigenous economies, improving the monitoring, control, and surveillance of communal territory to impact conservation efforts.

Devolution has also played a role in empowering communities.

Following independence in 1991, ***Kyrgyzstan*** granted more autonomy to local communities, introducing new governance mechanisms like Jaiyt Committees to manage grazing and natural resources at the local level. The integration of TEK with modern tools like GIS and digital monitoring helps in the early detection of pasture degradation, strengthening adaptive management strategies and supporting practices like rotational grazing that contribute to carbon sequestration and soil health. Although customary rotational patterns do not fully align with digitally issued pasture tickets, the overall aim is to combine systems for more effective resource management, thereby safeguarding the economic basis of pastoralist livelihoods.

COMMON BARRIERS AND CHALLENGES COMMUNITIES FACE IN GAINING FORMAL RECOGNITION AND LEGAL PROTECTION

Despite these successes, communities frequently face considerable obstacles to have their contributions formally recognized and legally protected, often due to a complex interplay of insecure tenure, conflicting legal frameworks, external pressures and resource limitations.

One of the most pervasive barriers is insecure land tenure and the existence of overlapping legal frameworks, which often create ambiguities and conflicts that undermine community rights.

In the ***Democratic Republic of the Congo (DRC)***, Indigenous Peoples frequently possess only secondary land access rights, tied to the inherited rights of local communities, leaving them in situations of exploitation without direct legal recognition. This lack of secure tenure threatens the safeguarding of their traditional ecological knowledge and practices, because they have little or no protection against encroachment from logging and large-scale agriculture. In ***Peru***, there is one example of precisely this type of conflict, in which one Indigenous community with a legal land title cannot fully exercise its rights because its territory overlaps with *permanent production forests* (*BPP*) and a forest compensation area granted to a logging company. This direct conflict has halted the titling process, exposing the community to deforestation, illegal logging and the loss of natural resources vital to their economy and culture. In ***Montenegro***, lands and pastures traditionally managed as commons are formally state-owned, creating legal ambiguities despite customary law governing practical use. In ***Mongolia***, land is state property, and while use rights are regulated by law, it often leads to open-access pressures, tenure insecurity and localized overgrazing because customary norms are not fully integrated into the statutory system. Even in ***Albania***, where informal rules and customary institutions remain influential in conservation efforts, particularly in areas with preserved traditional boundaries, municipalities may enforce statutory land-use plans without fully integrating customary practices, leading to ongoing disputes and legal uncertainties rooted in post-Communist land reforms that did not restore land to pre-Communist owners. In the West Bank, in ***Palestine***, the 600 *dunams* of agricultural land managed by the Kafr Jamal Agricultural Cooperative, led by local farmers, are classified as Area C, meaning they are under full Israeli control. This limits the cooperative's ability to exercise formal land rights, which are otherwise fully recognized under the Palestinian land system, where nearly all plots are privately owned and registered, and farmers hold clear and uncontested rights to their land. This is a situation of systemic institutional failure to resolve conflicts arising from competing legal claims and historical dispossession.

A second major challenge is the lack of formal recognition and integration of customary governance systems within state structures, which often leads to the marginalization of local voices.

In ***Mongolia***, mining licenses are frequently issued bypassing local input, exacerbating land-use conflicts and side-lining herders' voices. The limited coordination between customary and formal state land governance often leads to conflict or the marginalization of herders' perspectives. In ***Burkina Faso***, while customary law is primary, traditional structures and modern state institutions sometimes coexist uneasily, leading to jurisdictional conflicts and competing territorial claims in the absence of effective mediation mechanisms. In ***Kyrgyzstan***, tensions can arise when traditional rotational grazing schedules conflict with digital pasture tickets, illustrating the difficulty in seamlessly integrating customary practices with new technologies and formal administration. Furthermore, leadership roles in governance structures often remain male-dominated, as seen in ***Burkina Faso*** and ***Kyrgyzstan***, limiting the full participation of women in decision-making.

Communities also face immense pressure from external forces and conflicts, which directly undermine their efforts regardless of existing frameworks. These include logging and large-scale agriculture in the ***Democratic Republic of the Congo*** and ***Peru***, farming encroachment in ***Tanzania***, mining in ***Ecuador***, military projects in ***Montenegro***, national development projects, tourism and mining operations in ***Kyrgyzstan*** and ***Mongolia***, and the pervasive impact of climate change, which exacerbates water scarcity and alters grazing patterns across many regions. In ***Burkina Faso***, terrorism has led to forced migration, abandonment of activities and the destruction of natural resources. In ***Palestine***, industrial waste discharge together with wastewater runoff from Israeli settlements have led to water stagnation, soil contamination and declining agricultural productivity, directly threatening food security and traditional sustainable practices. At the Separation Wall there's a high risk that machinery will be confiscated, such as when the cooperative's bulldozer was seized for 45 days in 2022, delaying land preparation.

Finally, resource limitations and capacity gaps present practical barriers.

Communities in ***Burkina Faso*** express a pressing need for human, material and financial resources, as well as capacity building and information exchange, to maintain natural resources amid ecosystem degradation and insecurity. In Mongolia, while communities are actively innovating to adapt to new challenges, formal support structures for these initiatives remain limited. The absence of comprehensive scientific and socioeconomic data also impedes informed policy-making, further hindering effective support for community-led strategies.

DISCUSSION, CONCLUSION AND WAYS FORWARD

Despite decades of programming to respond to climate change, progress has remained insufficient to counter the impacts of climate and land-use changes, largely due to an extractive economic paradigm that prioritizes growth and techno-scientific short-cuts over systemic transformation. Sustainable land and ecosystem management can prevent land degradation, maintain food productivity and contribute to adaptation, biodiversity conservation, restoration and potentially reverse adverse climate impacts.

Indigenous Peoples and other customary communities are increasingly recognized as essential custodians in this context. Their *traditional ecological knowledge* (*TEK*) and sustainable land governance practices are key to protecting critical carbon sinks and biodiversity hotspots, offering alternative pathways to address global environmental crises.

> *The set of case studies examined here collectively support the need for systemic change: placing community-led climate and nature strategies at the centre and addressing the pressures undermining their effectiveness. This shift must transcend symbolic acknowledgment to become deeply embedded in global and national policy frameworks, their implementation and enforcement.*

The report showcases twelve case studies of community-based sustainable land governance across Africa, Latin America, Europe, the Middle East, North Africa and Asia. These examples illustrate how diverse ecosystems – including forests, dry-lands, grasslands – are governed through place-based, people-centred adaptive practices.

1. USING DATA AND KNOWLEDGE TO HIGHLIGHT DYNAMIC COMMUNITY-LED STRATEGIES AND CHALLENGES

These territorial practices are not static traditions, but dynamic systems of governance shaped by ecological, cultural and political realities. The methodology employed in the report places territories at the centre of analysis, re-framing them as socio-political arenas shaped by the interplay of actors, ecosystems and institutions. It emphasizes how TEK is mobilized to define strategies for climate action, resilience, adaptation and conservation, while also situating these narratives within quantitative evidence. Here, people-based data play a crucial role, ensuring that community knowledge and lived realities are not overshadowed by technical datasets, but instead are validated and amplified alongside them.

Participatory mapping, GIS analysis and environmental data confirm the positive impacts of these practices. These data-driven insights strengthen community narratives and enhance visibility of environmental contributions and struggles, reinforcing the urgency of securing land rights and community-led land governance systems.

2. SECURITY OF LAND RIGHTS AND OTHER KEY ENABLERS FOR EFFECTIVE ACTION

A number of strategies are employed by communities to strengthen their sustainable land governance practices and to advocate for their rights to the land. The effectiveness of these strategies depends on a set of enabling factors, with secure rights over land, territories and resources as the most crucial. Land tenure security influences how people invest in and manage land, providing the confidence needed for long-term sustainable custodianship. Access to finance is important to support tenure security, especially for the mechanisms to apply for and enforce formal land tenure ; similarly important is the organisational capacity to sustain governance systems and strategies over time. While Indigenous Peoples and local communities manage about half of the world's land, the portion formally recognized as theirs remains limited, with only a small share enjoying clear legal or use rights. Women, despite being central to food production, face disproportionate insecurity in land tenure, undermining both equity and resilience. Strengthening land rights, particularly for women and youth, is therefore critical not only for justice but also for climate resilience, biodiversity protection and sustainable development.

3. STRENGTHENING THE LEGAL FRAMEWORK AGAINST ENCROACHMENT AND PROMOTING INNOVATION

However, Indigenous Peoples, pastoralists, small-scale farmers, Afro-descendant peoples and other land-dependent local communities' efforts are undermined by multiple pressures. Weak legal frameworks and poor enforcement leave communities vulnerable to land dispossession, forced evictions, resource grabbing and other human rights violations, undermining sustainable land governance practices guided by TEK, despite international commitments such as UNDRIP. Encroachment from logging, mining, infrastructure expansion and agribusiness displaces populations and fragments ecosystems, as seen in Suriname and Mongolia. Climate change further intensifies risks of droughts, floods and shifting rainfall patterns. Moreover, technocratic interventions often marginalize local voices, dismissing practices like mobile pastoralism as outdated despite evidence of their ecological value. Socioeconomic constraints, conflict, and gender disparities further limit resilience, while youth-led innovations remain under-represented, even as they begin to introduce new tools such as digital monitoring for rangelands.

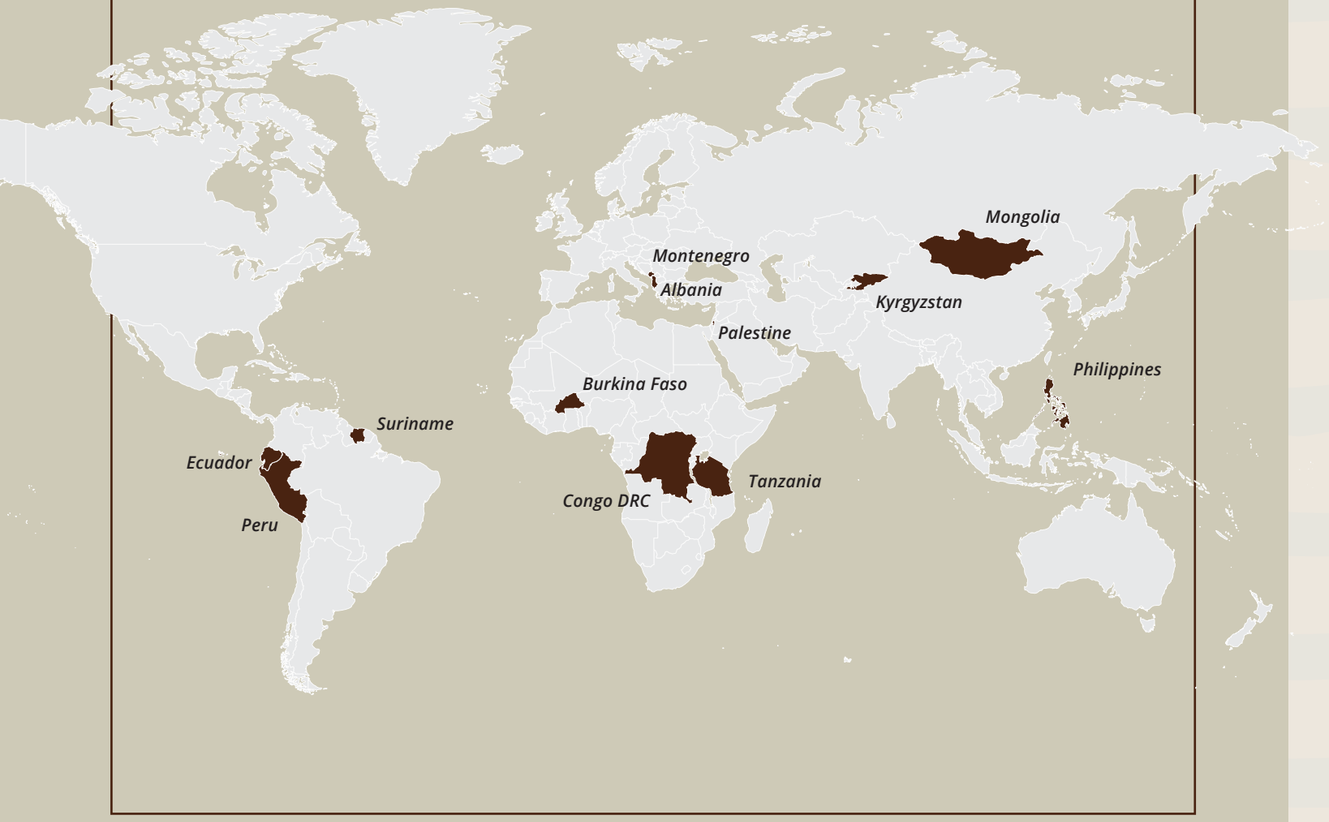
4. RECOMMENDATION TO EXPAND ANALYSIS ACROSS TERRITORIES TO SUPPORT SCALED ACTION

The lessons emerging from these examples indicate a pressing need for systemic change. Recognizing and prioritizing community-led climate and nature strategies is no longer optional but imperative. This requires prioritizing secure land rights and strengthening legal frameworks; actively integrating TEK into policy and governance; and investing in robust, participatory evidence generation. Platforms such as LandMark should be further developed to integrate spatial data with environmental indicators across forests, grasslands, dry-lands and crop-lands. Equally important is the provision of direct and sustained funding, technical resources and political support to ensure that Indigenous Peoples, pastoralists, small-scale farmers and other land-dependent local communities are not sidelined but fully included as rights-holders and indispensable custodians in global, regional and national frameworks, including the Rio Conventions.

For the CBD, the Kunming-Montreal Biodiversity Framework provides a clear and timely opportunity to put these principles into action, with strong language recognizing not only the critical role of Indigenous Peoples and local communities as partners in the conservation of biodiversity, but also the need to employ complementary, third-party and citizen-generated data to monitor the indicators outlined in the KM-GBF. LandMark is considered a potential global data source for indicator 22.1, but is also contributing to an understanding of the contributions of *Indigenous and Traditional Territories* (*ITTs*) to indicators within area-based indicators under Target 2 and Target 3, monitoring restoration and conservation, respectively. The extent to which these Targets support the practices led by Indigenous Peoples and local communities, recognizing their role in spatial planning, restoration and conservation, will be a priority area of work for the recently established CBD Subsidiary Body on Article 8(j).

By combining deep local understanding with empirical data, these efforts demonstrate that community-led approaches are not only effective but essential for bridging the gap between global climate commitments and realities on the ground. They foster more just, inclusive and genuinely sustainable land governance, while strengthening the resilience of ecosystems and communities worldwide.

ANNEXES
COUNTRY PAGES





CASE STUDY 1

DEMOCRATIC REPUBLIC OF THE CONGO (DRC)

Organization: Environnement, Ressources Naturelles et Développement (ERND)
Region: Africa

In the Lokolama and Penzele regions of Équateur Province, ERND works with Indigenous Peoples, fishermen, and farmers to safeguard peat-lands and primary forests that constitute over 90% of the territory. These ecosystems are home to *bonobos*, small primates, and a rich diversity of plant species. The area represents ancestral lands, managed through traditional ecological knowledge passed down across generations that navigates sustainable land management practices such as crop rotation, peat-land monitoring and seeds adapted to local conditions. Decisions regarding resources are made jointly by all members of the village, which strengthens mutual aid and a sense of responsibility. They have rules and customs, passed down from generation to generation, to protect certain areas and control the use of local resources.

The communities face multiple pressures, large scale logging is the most pressing. The DRC's 2002 Forest Law seeks to ensure sustainable forest management and exploitation, and the 2021 law in the Equateur Province recognizes the rights of Indigenous Peoples to their lands and resources according to their traditions. However, local authorities lack the financial and technical capacity to enforce them and cope with the influx of logging companies.

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As a result, logging companies operate largely unchecked, leaving ecologically rich and carbon storage peat swamp forests highly vulnerable to land grabbing and deforestation, despite their critical role as carbon sinks in climate change mitigation. Insecure tenure compounds these challenges: Indigenous Peoples often hold only secondary rights tied to local communities' systems and lack formal recognition of customary ownership rights, leaving them vulnerable to exclusion, discrimination, and exploitation in the absence of formal legal recognition. This is particularly marginalizing Indigenous women that lack inheritance right despite their important role in sustainable management, agriculture and traditional ecological knowledge.

The quantitative impact of these pressures is significant. Between 2001 and 2024, 495 hectares, or 39%, of forest in Lokolama and Penzele were lost, most of it after 2016.[28] This deforestation has generated net annual carbon emissions of approximately 5.78 ktCO2e, illustrating the global importance of local forest custodianship.[29]

Despite these threats, traditional practices continue to sustain biodiversity and cultural continuity. Communities maintain farming, hunting, and fishing systems adapted to local conditions, while knowledge of animal behaviour, cultivation techniques, and medicinal plants is transmitted across generations. Ecological understanding is reinforced through stories, songs, rituals, and ceremonies, which also strengthen spiritual ties to the land. Seasonal harvesting and natural regeneration underpin the sustainable use of peat-lands and medicinal plants.

ERND has worked to consolidate these practices by establishing over 140 local development committees, organized around community huts. These committees document Indigenous pharmacopoeia, reinforce cultural ties to history and territory, and promote biodiversity conservation through sustainable forest management. At the same time, ERND engages in advocacy to ensure that Indigenous custodianship of natural resources is formally recognized. By pressing for the implementation of sustainable management policies and alignment of national legislation with international commitments, ERND supports both local resilience and global environmental goals.

28 Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. doi: 10.1126/science.1244693. Accessed from ***www.landmarkmap.org***.

29 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.landmarkmap.org***.



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CASE STUDY 2

SURINAME

Organization: Vereniging van Saamaka Gemeenschappen (VSG)
Region: Latin America and the Caribbean

The Saamaka tribal peoples, descendants of enslaved Africans, live in over 74 villages along the Suriname River. Their ancestral territory spans 1.4 million hectares of tropical rainforest, legally recognized as early as 1762 by Dutch colonial authorities. Over the course of more than two centuries, the Saamaka have preserved this forest through a governance system rooted in customary norms, a rich cultural and spiritual life, and subsistence practices of hunting, fishing, gathering, and small-scale agriculture. Their close relationship with the forest defines both their livelihoods and their cultural identity.

Despite this legacy, the Saamaka face mounting pressures. Since the 1960s, large-scale logging, mining, and road construction have progressively encroached on their lands, undermining traditional conservation systems and causing direct deforestation. Gold mining has destroyed numerous sacred sites, while a dam project led to the loss of at least ten more. Infrastructure projects such as the Palmera road have cut through their forest areas. Insecure tenure exacerbates these challenges. Although the Inter-American Court of Human Rights recognized their collective land rights in the landmark 2007 Saamaka Judgment, the Surinamese state has yet to legally recognize these rights, leaving the community vulnerable to external concessions and exploitation.

The quantitative impacts are stark. Concessions now cover 447,000 hectares, approximately 32% of Saamaka territory. Since the 2007 ruling, 60,855 hectares of forest have been degraded, with 77% of all deforestation and degradation since 1990 occurring after the judgment. Forestry concessions alone account for more than half of this loss. Yet, despite these pressures, the Saamaka territory still maintains 1.1 million hectares of standing forest, characterized by high carbon sequestration, high biodiversity intactness, and 84.2% stable tree cover[30]. As a result, the territory functions as a net carbon sink of 692 ktCO2e per year.[31]

Traditional ecological knowledge continues to guide Saamaka land use and conservation. Land rights are organized through matrilineal clan membership, with each clan responsible for managing a specific forest area. Women play central roles in inheritance, food security, and conservation. Historical agreements designate preserved zones for future generations, in memory of ancestors, for exchange with neighbouring communities, or for spiritual purposes. Rules governing these areas vary, from strict no-use zones to limited use areas, and violations are considered an affront to ancestral agreements. Elders stress the importance of documenting oral traditions to ensure intergenerational transmission of knowledge and to reinforce forest custodianship.

The VSG plays a key role in defending Saamaka rights and ensuring the continuity of sustainable practices. It advocates nationally and internationally for the legal recognition of collective land rights as the foundation for effective conservation and community well-being. By combining customary governance with legal strategies, the Saamaka continue to protect one of the most intact tropical forest landscapes in the region, demonstrating the effectiveness of Indigenous-led land management in maintaining carbon sinks and biodiversity hotspots.

30 Hill, S.L.L., A. Arnell, C. Maney, S.H.M. Butchart, C. Hilton-Taylor, C. Ciciarelli, C. Davis, E. Dinerstein, A. Purvis, and N.D. Burgess. 2019. "Measuring Forest Biodiversity Status and Changes Globally." Frontiers in Forests and Global Change 2 (November). doi:10.3389/ffgc.2019.00070. Accessed from ***www.landmarkmap.org***.

Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***. Accessed from ***www.landmarkmap.org***.

31 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.landmarkmap.org***.



CASE STUDY 3

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ALBANIA

Organization: National Federation of Communal Forests and Pastures of Albania (NFCFPA)
Region: Europe

The Ulza Watershed in Albania is characterized by forests dominated by oak and interspersed with black pine and acacia, alongside grazing lands, crop-lands, rivers, and the Ulza Lake. Across three villages, the territory encompasses 12 forest parcels. This landscape provides biodiversity habitat, regulates water and climate, and sustains local livelihoods through fuel-wood, timber, grazing, non-timber forest products, livestock, and small-scale cultivation. Soils in the territory are rich in organic matter while forests are important for carbon sequestration.

Historically, customary institutions shaped resource governance, establishing norms for forest and land management. During the communist period, lands were reorganized into collective farms, and post-communist reforms redistributed land without reinstating pre-communist owners, creating long-standing disputes and legal ambiguities that persist today. Decentralisation efforts by the national government have transferred approximately 60% of forest and pasture-land to municipal ownership, resources upon which nearly one million people depend. The hybrid tenure system present in the territory results in a lack of clarity over access and use rights.

The landscape faces mounting environmental pressures. Illegal logging and over-harvesting of firewood have led to deforestation, while abandoned farmland has accelerated erosion, with 30% of the soils showing a exceptional high level of soil erosion. Overgrazing, water pollution, and biodiversity decline compound these pressures, alongside increasing climate-related threats such as floods, droughts, and wildfires. Governance gaps and poor infrastructure, including the absence of adequate sewerage, water supply, and road systems, further hinder sustainable management.

Despite these challenges, communities continue to play a central role in natural resource management. Customary institutions remain influential in everyday management and conflict resolution, with villagers respecting informal boundaries that have contributed to the preservation of forest parcels. *Community-led natural resource management* (*CLNRM*) and *Sustainable Land Management* (*SLM*) practices have become key in fostering local participation and collaborative decision-making. Villagers have engaged in forest tending works, thinning of young oak stands, and afforestation with acacia and stone pine. Scientific studies and local examining confirm that selective thinning enhances long-term biomass accumulation in oak forests and carbon storage potential. These efforts are complemented by a large-scale carbon sequestration project, which restored approximately 6,000 hectares of degraded forest in 24 municipalities. Other practices include agroforestry, assisted natural regeneration, climate-smart agriculture, and sustainable grazing, with some supported through carbon credit programs. Monitoring ecosystem health is done through both scientific methods and community-based observations. Geospatial tools are employed and key indicators include forest health, soil quality, water quality, biodiversity, crop and grazing productivity, and fire/degradation risk, with community proxies such as availability of firewood, crop vigour, fish abundance, seasonal species sightings, livestock weight gain, and reports of wildfires.

The environmental outcomes of these initiatives are measurable. Between 2001 and 2024, Ulza's forests functioned as a net carbon sink of 8.77 $ktCO_2e$ per year, removing 9.21 $ktCO_2e$ annually while emitting just 434 tCO_2e.[32] The forests remain largely natural, with very little tree cover loss, though biodiversity is assessed as having moderate intactness.[33] These findings underscore both the fragility and the promise of Albania's communal forest management, where traditional governance and community-led restoration and adaptation offer a pathway to ecological sustainability and climate resilience.

32 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.landmarkmap.org***.

33 Hill, S.L.L., A. Arnell, C. Maney, S.H.M. Butchart, C. Hilton-Taylor, C. Ciciarelli, C. Davis, E. Dinerstein, A. Purvis, and N.D. Burgess. 2019. "Measuring Forest Biodiversity Status and Changes Globally." Frontiers in Forests and Global Change 2 (November). doi:10.3389/ffgc.2019.00070. Accessed from ***www.landmarkmap.org***.



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CASE STUDY 4

PHILIPPINES

Organization: Philippine Association for Intercultural Development, Inc. (PAFID)
Region: Asia

In the Caraballo Mountains of Nueva Vizcaya and Nueva Ecija, the Ikalahan–Kalanguya Indigenous community safeguards an ancestral domain covering approximately 58,117 hectares of tropical forest. This territory forms a vital watershed, supplying water to millions of hectares of rice paddies in the central plains of the Philippines. For centuries, the Ikalahan–Kalanguya have cultivated their land and relied on the forest for hunting, resisting assimilation for more than three hundred years while developing Indigenous systems of conservation that remain relevant today. Their pioneering role in community-based forest management and sustainable agriculture has earned them recognition both nationally and internationally.

The community's territory faces persistent threats. Encroachment, speculative land claims, and renewed mining interests put constant pressure on their forests and farmlands. Infrastructure development has also accelerated environmental degradation, most notably through the construction of a by-pass road cutting directly across the ancestral domain. These external pressures threaten not only biodiversity and ecosystem services but also the community's cultural and territorial integrity.

Despite these challenges, the Ikalahan–Kalanguya maintain a highly sophisticated system of land management rooted in traditional ecological knowledge.

Their Indigenous farming techniques nurture soil fertility and reduce disaster risks. The gen-gen system uses rotational farming with long fallows to restore land productivity, while day-og applies controlled burning of undergrowth to prevent wildfires and regenerate grasslands. Pang-omis, developed by an elder, accelerates soil fertility recovery, and balkah relies on contour planting of deep-rooted species to trap eroded soil. These practices are complemented by *Forest Improvement Technology* (*FIT*), a selective thinning method that strengthens forest growth. Customary rules enshrined in the *Ancestral Domain Sustainable Development and Protection Plan* (*ADSDPP*) prohibit harmful practices such as the use of chemicals in fishing, the introduction of exotic species, and commercial over-harvesting. The community also designates at least one-third of its domain as sanctuaries and wildlife reserves, underscoring its long-term commitment to conservation.

Legal recognition has reinforced these efforts. The Ikalahan ancestral domain is covered by two *Certificates of Ancestral Domain Title* (*CADTs*) and is further supported by a historic Memorandum of Agreement signed in 1974, which granted the *Kalahan Educational Foundation* (*KEF*) management rights over 14,730 hectares. This agreement became the foundation of the social forestry movement in the Philippines. Today, the territory is also recognized as an *Indigenous Community Conserved Area* (*ICCA*), where elders ensure compliance with land use zones and conservation regulations. With the support of PAFID, the community continues to strengthen recognition of its governance systems and works with local authorities to institutionalize Indigenous forest management.

Monitoring and data collection form another pillar of territorial defense. Through inventories of natural resources and careful documentation, the community has been able to resist external development pressures and assert evidence-based claims over its lands. Environmental outcomes are significant: between 2001 and 2023, forests under Ikalahan management sequestered far more carbon than they emitted, removing an estimated 147.5 $ktCO_2$ from the atmosphere each year.[34] Stable forest cover and minimal loss further highlight the effectiveness of Indigenous-led conservation in this critical watershed.

34 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***. Accessed from ***www.landmarkmap.org***.



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CASE STUDY 5

TANZANIA

Organization: Tanzania Natural Resources Forum (TNRF)
Region: Africa

In the Kiteto district of Northern Tanzania, 15 communities of Indigenous pastoralists, agro-pastoralists, smallholder farmers, and hunter-gatherers depend on semi-arid dry-lands dominated by Acacia species. These communities are organized into four interconnected clusters—Kimbo, Napalai, Olengapa, and Alole—whose livelihoods are rooted in natural resource use. For generations, Indigenous knowledge has guided the sustainable management of forests, rangelands, and water sources, providing resilience in a challenging semi-arid environment. Youth and women are particularly central to the vitality of these systems and to ongoing governance efforts.

The pressures on these territories have grown acute. Encroachment on grazing lands by non-resident farmers, population growth, and armed group activity have significantly undermined pastoralist land use. Climate change further compounds these stresses: erratic rainfall patterns, prolonged droughts, and flooding have degraded rangelands and accelerated deforestation and desertification. The quantitative impact is striking. Between 2000 and 2020, nearly 150,000 hectares—over a quarter of the communal land area—were converted from grazing lands and tree cover to crop-lands, eroding the ecological base of pastoralist livelihoods.[35]

35 Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***

Against these challenges, communities continue to draw on traditional ecological knowledge to maintain territorial resilience. Sustainable land management practices include rotational grazing, soil and water conservation, forest protection, and carefully adapted seasonal farming. Customary rules around shared resources underpin these practices, helping to sustain biodiversity and rangeland health.

A major innovation has been the integration of customary systems with formal legal frameworks. *Certificates of Customary Rights of Occupancy* (*CCROs*) have been issued to livestock associations, legally securing communal grazing lands—including *alalis*, areas reserved for vulnerable animals such as calves and milking cows. Communities have successfully defended their territories in court using these instruments, creating important precedents for pastoralist land governance in Tanzania. Their experiences have influenced national policies, with the government adopting guidelines and regulations that support pastoralist land use planning.

Organizational strengthening has also been central to community resilience. Through approaches such as *Joint Village Land Use Planning* (*JVLUP*), *Participatory Rangeland Management* (*PRM*), and piloting Indigenous *Community Conserved Areas* (*ICCAs*), communities have built governance systems that blend traditional knowledge with legal recognition. Registered Livestock Keepers Associations develop and implement management plans that formalize grazing clusters while maintaining flexibility rooted in Indigenous systems. Women now hold more than 40% of leadership positions in cluster boards and committees, strengthening inclusive governance and reshaping decision-making on land and resource management.

Environmental monitoring tools are increasingly used to document rangeland changes and demonstrate restoration progress, empowering communities to hold external actors accountable. These efforts have delivered concrete outcomes: improved tenure security has increased trust in land use plans, motivating communities to invest in restoring degraded rangelands while protecting territories from land grabbing and speculative pressures. By linking Indigenous governance to legal instruments, the Kiteto clusters illustrate how community-driven strategies can counter threats and secure dryland ecosystems for future generations.



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CASE STUDY 6

BURKINA FASO

Organization: Tin Hinan Association (ATH)
Region: Africa

In Darkoye Kel Essouk, northern Burkina Faso, Tamasheq pastoralists and some Fulani families live on 30,218 hectares of arid lands shaped by the proximity of the Sahara desert. The territory includes prairies, shrub savannah, meadows, limited farmland, and Lake Darkoye, a Ramsar wetland that regulates water, sustains biodiversity, and provides essential resources for local livelihoods. For generations, communities have governed this land through customary practices rooted in sustainability, cohesion, and peace. Women play a vital role in land use and ecosystem management, despite the region's difficult environmental and political context.

The pressures on the territory are severe. Climate change intensifies recurrent droughts, water scarcity, and desertification, while local practices such as overgrazing, over-harvesting of timber, artisanal gold panning, poaching, and unsustainable farming accelerate degradation. Communities observe shrinking water resources, declining tree cover, and changes in fish populations in Lake Darkoye. In addition, insecurity linked to terrorism has forced the displacement of communities, abandonment of productive activities, and neglect of natural resources. Armed groups exacerbate these threats by destroying resources directly, burning crop-lands and forests, and kidnapping community members.

The quantitative impact reflects this convergence of pressures. Of the 30,218 hectares, nearly 28,000 hectares remain as natural or semi-natural grasslands critical to pastoralist systems[36], but parts of the territory have been abandoned and left vulnerable to degradation. The area overlaps with the Key Biodiversity Area of Lake Oursi–Lake Darkoye, underlining its ecological importance beyond the local scale.[37]

Despite these challenges, communities continue to apply traditional ecological knowledge and governance. Local practices emphasize ecological balance and protection of biodiversity, including ponds, which are treated as critical indicators of ecosystem health. These ponds are safeguarded through selective digging and careful maintenance to preserve water quality and prevent drying, while medicinal plants and sacred sites are protected under customary norms.

Land governance in Darkoye is guided by customary and religious law, where land is seen as a collective good managed in the public interest. Families retain intergenerational rights even within nomadic lifestyles, and women hold usufruct rights to cultivate land. Customary authorities—canton chiefs and land chiefs, oversee land allocation, conflict resolution, and the safeguarding of sacred places. Integrating these governance systems into state planning is recognized as essential for stability and sustainable management.

Recent innovations have reinforced women's roles in land custodianship. For the first time, customary leaders granted three hectares to women's groups on a permanent basis, acknowledging their knowledge and contributions to ecosystem management while promoting economic empowerment. With support from ATH, communities have also engaged in participatory mapping of the Darkoye territory, strengthening recognition of their governance systems and rights.

Environmental monitoring relies on local indicators, such as the presence and quality of water and plant cover near Lake Darkoye. However, communities emphasize the urgent need for additional support, human, material, and financial resources, as well as capacity-building and information exchange, to respond to escalating insecurity, displacement, and climate threats. Strengthening integration of customary practices into broader climate and land governance strategies is viewed as key to protecting Lake Darkoye, its ecosystems, and the pastoralist livelihoods that depend on them.

36 Parente, L., Sloat, L., Mesquita, V., et al. (2024). Annual 30-m maps of global grassland class and extent (2000–2022) based on spatiotemporal Machine Learning, Scientific Data. ***http://doi.org/10.1038/s41597-024-04139-6***

37 BirdLife International (2025). Digital boundaries of Key Biodiversity Areas from the World Database of Key Biodiversity Areas. Developed by the KBA Partnership: BirdLife International, International Union for the Conservation of Nature, American Bird Conservancy, Amphibian Survival Alliance, Conservation International, Critical Ecosystem Partnership Fund, Global Environment Facility, Global Wildlife Conservation, NatureServe, Rainforest Trust, Royal Society for the Protection of Birds, Wildlife Conservation Society and World Wildlife Fund. Available at ***http://www.keybiodiversityareas.org/site/requestgis***



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CASE STUDY 7

MONGOLIA

Organization: Development Interlink NGO (DI)
Region: Asia

In the Gobi Desert of Mongolia's Ömnögovi province, pastoral communities sustain life in one of the world's most extreme dry-land ecosystems. This landscape of desert plains, sand dunes, rocky massifs, and rangelands is marked by climatic variability and scarce water resources. Here, 6,233 herder households, 43.1 percent of which are led by women, manage over two million livestock, including the country's largest camel population. For generations, herders have stewarded the rangelands through the '*nutag*' system, which recognizes rangelands as both grazing land and cultural territory, with seasonal migration and ecological adaptation at its core. Youth are increasingly engaged, contributing to both continuity and innovation in pastoral life.

The territory faces intensifying pressures from industrial expansion and climate change. Large-scale mining projects, notably *Oyu Tolgoi* (copper-gold) and *Tavan Tolgoi* (coal), have fragmented pastures, depleted groundwater, and heightened governance tensions. By 2024, nearly 945,000 hectares were licensed for mining, creating population densities in affected *soums* three to six times higher than the national district average. Climate change accelerates desertification, alters rainfall patterns, reduces water availability, and drives rising temperatures, further undermining ecological balance. At the same time, rural outmigration and declining youth interest jeopardize the resilience of pastoral systems.

Governance frameworks compound these challenges. State ownership of land, as defined by the 2002 Land Law, and centralized licensing under the 2006 Minerals Law leave little space for herders' input in land governance. Limited coordination between customary and statutory systems creates ambiguities and tenure insecurity, often resulting in open-access pressures and localized overgrazing. Social and health impact assessments for mining remain optional, leaving herders' concerns under-addressed.

Nevertheless, herder communities continue to rely on traditional ecological knowledge and adapt through innovation. The practice of *otor* (seasonal herding) remains a cornerstone of resilience, guided by negotiated social agreements over land use. Communities also engage in ecological restoration, rehabilitating areas around wells in Tsogt-Ovoo, planting oats in Bayandalai, and setting aside significant budgets, such as the MNT 200 million allocated in Mandal-Ovoo, for fodder reserves. Families collectively manage reserves, subsidies, and hayfields to ensure equitable access to feed.

Legal and governance strategies are also evolving. Ömnögovi province has placed 4.5 million hectares under state protection and 4.6 million under local protection, designating national parks, nature reserves, and monuments. Tripartite agreements between mining companies, local governments, and herders offer a framework for negotiating land use, though tensions remain. Herders have also engaged in political mobilization, opposing infrastructure projects such as new ports and roads near Tsagaan Del that threaten grazing lands.

Technology and diversification play an increasing role in resilience. Youth are adopting solar power, mobile phones, GPS, and livestock microchips to improve mobility and market access. While climate adaptation technologies such as cloud seeding remain contested, new monitoring and early warning systems are being piloted, with efforts to integrate them with herders' experiential knowledge. Economic diversification has also become a critical strategy, with herders moving from subsistence toward eco-friendly production of cashmere, dairy, and cultural tourism. Initiatives such as livestock redistribution (*Myangatyn Khishig*), branding campaigns (e.g., "Red Camel"), and communal livestock banks strengthen economic resilience. Local environmental efforts, pasture zoning, greenbelt fencing, well-drilling, and forage restoration, further support sustainable land use.

Movements such as "eco-*soums*" in Sevrei and Bulgan represent integrated approaches that balance urbanization, herding, and infrastructure while resisting unchecked mining expansion. These innovations highlight the adaptability of pastoralists, who continue to view rangelands as both ecological commons and cultural territory. The entire Ömnögovi territory remains natural land, overlapping with several key biodiversity areas, underscoring the global importance of sustaining Mongolian pastoral systems amidst industrial and climatic pressures.



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CASE STUDY 8

ECUADOR

Organization: Corporación Sistema de Investigación sobre la Problemática Agraria en el Ecuador (SIPAE)
Region: Latin America and the Caribbean (LAC)

In the central highlands of Ecuador, Indigenous Peoples govern the *páramos*—high-altitude grasslands and shrub-lands that sustain life far beyond their borders. These neo-tropical ecosystems serve as critical sources of water storage, regulation, and carbon sequestration, while also embodying ancestral knowledge, spiritual practice, and collective memory. The Union of Indigenous and Peasant Communities of Mariano Acosta (UCICMA) brings together 14 communities in Pimampiro canton, overseeing 1,790 hectares of cultivable land. Men and women alike participate in communal work, reinforcing traditions of reciprocity and solidarity.

Community governance of the *páramos* is deeply rooted, with records of collective management dating back to 1764. Yet, these territories face mounting pressures. The advance of agricultural and livestock frontiers, prolonged droughts, and metal mining—particularly gold extraction in water recharge zones—directly degrade fragile ecosystems. Climate change exacerbates these threats, intensifying drought cycles, altering hydrological systems, and multiplying environmental shocks. Territorial disputes and governance conflicts further complicate efforts to ensure sustainable management.

In response, Indigenous communities rely on traditional ecological knowledge and collective agreements to regulate land tenure, restrict harmful land uses, and safeguard access to páramo resources. Management is structured through both formal and non-formal regulatory tools, ensuring flexibility and resilience. Organizational and economic strategies reinforce these governance practices. Communities have established protection zones, strengthened water management systems, and developed livelihood opportunities aimed at reducing youth outmigration. These initiatives not only sustain families but also conserve territory and enhance community identity. By combining ancestral governance systems with modern legal tools, communities maintain jurisdictional authority over their lands, affirming collective rights to self-government. The ecological outcomes are significant. The *páramos* under community management function as a vital carbon sink, absorbing approximately 11.1 $ktCO_2e$ per year, while continuing to regulate water cycles for downstream populations[38]. These results underscore the importance of community-led governance in sustaining one of the most critical ecosystems of the Andes.

Community-based management of páramos has specific models that vary from one organization to another, even from one community to another. Added to this are the actions, policies, regulations, and lack of institutional frameworks operating in each locality. However, they also have common elements. The conditions for community-based management of *páramos* are shaped by a complex balance between agreements and actions on the ground. This may vary depending on the local and community context, due to changes in leadership, changes in sectional authorities, the occurrence of conflicts, or specific problems such as water scarcity, among other socio-organizational factors.

Community *páramo* management is the management, administration, and decision-making regarding the resources, values, and ecosystem services provided by the *páramo*, by communities and organizations exercising their collective rights and as an expression of direct and community democracy, recognized in the Ecuadorian Constitution. In Ecuador, the *páramo* communities are present in the territories of 15 indigenous peoples of the Kichwa de la Sierra nationality. In the Andean mountain range, these peoples are: Pasto, Karanki, Otavalo, Kayambi, Kitu Kara, Panzaleo, Chibuleo, Tomabela, Salasaka, Quisapincha, Puruha, Waranka, Kañari, Saraguro, and Palta.

38 Harris, N.L., D.A. Gibbs, A. Baccini, R.A. Birdsey, S. de Bruin, M. Farina, L. Fatoyinbo, M.C. Hansen, M. Herold, R.A. Houghton, P.V. Potapov, D. Requena Suarez, R.M. Roman-Cuesta, S.S. Saatchi, C.M. Slay, S.A. Turubanova, A. Tyukavina. 2021. Global maps of twenty-first century forest carbon fluxes. Nature Climate Change. ***https://doi.org/10.1038/s41558-020-00976-6***.



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CASE STUDY 9

MONTENEGRO

Organization: Civic Initiative Save Sinjajevina (CISS)
Region: Europe, Middle East, North Africa (EMENA)

The Sinjajevina-Durmitor mountain range in Montenegro encompasses approximately 1,000 km^2 of mountain grasslands and pasture-land, making it the second-largest continuous grazing area in Europe. This territory lies within the Tara Canyon Biosphere Reserve, an EMERALD site, an Important Plant Area (IPA), and a proposed Natura 2000 site. Archaeological evidence indicates continuous pastoral use since prehistoric times, establishing Sinjajevina as both an ecological and cultural heritage landscape. Approximately 200 families, around 2,000 people, directly depend on the territory for grazing, agriculture, bee-keeping, and medicinal plant collection, while over 22,000 people inhabit the lower lands.

Sustainable land governance practices are routed in pastoral commons and TEK, for example through the following of the *progon* paths, which are ancient, unalterable drove roads carved by generations of animal movement that were protected spaces where no construction was allowed, and animals were so used to them that they instinctively followed the same trails each season, reflecting the deeply rooted traditions of transhumant life in the region which can still be felt, lived and remembered. There is also regulated seasonal access to grazing lands, fostering plant growth and maximizing fodder production with thinker organic soils that stores carbon underground, protecting it from escaping to the atmosphere in the case of forest wild fires or wood cutting. Environmental monitoring demonstrates the effectiveness of long-standing communal custodianship. Data on land cover change between 2000

and 2020 indicate that the territory under pastoral management has experienced very little change in forests and grasslands over the past 20 years[39], reflecting the resilience of adaptive community-based management in maintaining ecological integrity while sustaining livelihoods.

However, the territory faces significant pressures. In 2019, a military project was proposed to install a training and weapons testing polygon on a large portion of Sinjajevina, effectively blocking the creation of a Natural Regional Park. The project, linked to Montenegro's NATO accession, involved live-fire exercises and explosives within a Biosphere Reserve without prior environmental impact assessments, contravening the UN Aarhus Convention. These activities posed direct threats to biodiversity and pastoral livelihoods. The community resistance has successfully halted all violent military exercises since 2020, though NATO was threatening again in 2023 to reactivate the military ground. On 10 July 2025, the Montenegrin Prime Minister stated a legally binding cancellation of the military ground, and early declarations about making Sinjajevina a future protected area taking into consideration local communities and pastoralists. Besides this military ground, wind energy infrastructure development forms another pressure to the territory.

Compounding these pressures, land tenure is legally divided between state and private ownership, often conflicting with historical communal governance. While much of the land is formally state-owned, local populations continue to manage it according to customary law, with tenure arrangements managed commonly and with the presence of *katuns* (temporary seasonal pastoral settlements for transhumance), varying in customary regulations of use and management across the territory. CISS continues to advocate for participatory, community-rooted protection of Sinjajevina, ensuring that conservation and land management decisions reflect local needs.

39 Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***



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CASE STUDY 10

KYRGYZSTAN

Organization: Rural Development Fund (RDF)
Region: Asia

The Suusamyr Valley in central Kyrgyzstan encompasses high-altitude mountain grasslands that have long supported pastoral communities. These communities, including women and youth, have been pivotal in conserving pastures and restoring degraded lands through traditional ecological knowledge (TEK) and community-based governance. Their practices are grounded in the spiritual world-view of Tengirchilik, which regards nature as sacred, guiding both daily activities and long-term custodianship of ecosystems.

Historical disruptions, particularly during the Soviet era, stripped communities of traditional land rights and governance structures. Post-1991 reforms introduced new mechanisms such as *Jaiyt Committees* (community-led pasture users' unions), yet the valley continues to face complex pressures. Internal challenges include overuse of certain pastures due to increased livestock numbers and fuel-wood driven deforestation for cooking and heating. External pressures, climate change, national development projects, and mining operations, exacerbate water scarcity, alter seasonal grazing patterns, and accelerate degradation. Areas such as Kyzyl-Jar and Tash-Dobo have experienced soil erosion, reduced water access, and biodiversity loss, with over 70% of Kyrgyz pasturelands reported as degraded.

Communities maintain resilient management systems that integrate TEK with modern approaches. Rotational grazing, seasonal livestock migration (*jailoo* for summer pastures, *kyoçh* for seasonal movement), and community-managed pasture committees ensure sustainable use. Elders and Aksakal councils guide decision-making on pasture rotation, water management, and restoration, while sacred sites (*mazars*) serve as conservation zones where grazing and resource extraction are restricted. Youth contribute innovations such as mobile apps for tracking grazing, waste management, and integration with GIS mapping and satellite monitoring, enhancing early detection of pasture degradation and adaptive management. The Electronic Pasture Committee (EPC) system is being implemented to further strengthen governance and monitoring.

Governance is gradually becoming more inclusive. Women participate actively in Jaiyt Committees, contributing knowledge of plants, medicinal herbs, and water systems, while RDF provides capacity-building and culturally appropriate tools to integrate TEK with technology. Community-led monitoring relies on observational indicators, including plant cover, livestock health, medicinal herb presence, and water flow, reflecting an adaptive, participatory approach.

Environmental outcomes demonstrate the effectiveness of these combined practices. Data show that the Suusamyr Valley remains predominantly grassland with stable tree cover; of 4,400 hectares of tree cover, only 4 hectares (<0.1%) were lost between 2001 and 2024[40]. Rotational grazing, pasture restoration, and community custodianship contribute to carbon sequestration, soil health, and biodiversity protection, highlighting the resilience and sustainability of Kyrgyz pastoral systems.

40 Hansen, M. C., P. V. Potapov, R. Moore, M. Hancher, S. A. Turubanova, A. Tyukavina, D. Thau, S. V. Stehman, S. J. Goetz, T. R. Loveland, A. Kommareddy, A. Egorov, L. Chini, C. O. Justice, and J. R. G. Townshend. 2013. "High-Resolution Global Maps of 21st-Century Forest Cover Change." Science 342 (15 November): 850–53. doi: 10.1126/science.1244693.



CASE STUDY 11

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PALESTINE

Organization: Arab Agronomists Association (AAA)
Region: Europe, Middle East, North Africa (EMENA)

The Wadi Al Shami valley in Kefryat-Tulkarem, West Bank, encompasses crop-lands, grasslands, built-up areas, and short vegetation. Historically, smallholder farmers in the valley have cultivated olives, citrus, almonds, and diverse crops, sustaining over 6,000 residents. Following the Al-Aqsa Flood war in October 2023, many residents returned to farming as a critical survival strategy after losing formal employment, reaffirming the valley's role as a foundation for food security and livelihoods.

The territory faces multiple pressures. Industrial wastewater and untreated effluents from nearby factories have contaminated soils, reduced fertility, and contributed to biodiversity loss. Water scarcity is exacerbated by restrictive land policies in Area C, deep well extraction by nearby Israeli settlements, and the presence of the Separation Wall, which diverts groundwater from Palestinian wells. Settlement expansion and strict permit regimes further restrict land access, limiting the ability of local farmers to cultivate sustainably. Conversion of natural land to built-up areas occurred on 7.5% of the case study area between 2000 and 2020, illustrating the pressure of infrastructure development.[41]

41 Potapov, P., Hansen, M.C., Pickens, A., Hernandez-Serna, A., Tyukavina, A., Turubanova, S., Zalles, V., Li, X., Khan, A., Stolle, F. and Harris, N., 2022. The global 2000-2020 land cover and land use change dataset derived from the Landsat archive: first results. Front. Remote Sens. 3: 856903. doi: 10.3389/frsen. ***https://doi.org/10.3389/frsen.2022.856903***

Communities have responded with a combination of traditional ecological knowledge and technological innovations. A decentralized wastewater treatment system now supplies irrigation water through a 2,100-meter pipeline, revitalizing 64 *dunums* (16 hectares) of farmland and directly benefiting 35 farmers. A 250-cubic-meter storage tank and 11 subsidiary water networks ensure efficient distribution while reserving freshwater for high-value crops. Farmers integrate traditional practices such as crop rotation, inter-cropping, and organic composting with modern wastewater reuse techniques to enhance soil fertility and ecosystem resilience. Ecosystem restoration efforts, including clearing invasive vegetation, replanting native trees, and improving habitats for pollinators, further strengthen local ecological health.

Organizational and institutional mechanisms support these practices. The Kafr Jamal Agricultural Cooperative, formed by local farmers, oversees water distribution, infrastructure maintenance, and coordination with external partners. A community-led advisory committee reinforces participatory governance, ensuring local knowledge and priorities shape interventions.

These interventions have produced measurable environmental and socio-economic outcomes. Treated wastewater reuse has improved soil fertility, boosted microbial activity, increased crop resilience, and enhanced overall agricultural productivity. Sustainable irrigation techniques have facilitated the regeneration of native plant species, supported biodiversity, and strengthened food security. Collectively, these practices demonstrate how smallholder farmers, through integrated management of water, land, and knowledge systems, can assert rights to land and water under sustainable land governance principles, while restoring degraded farmland and ecosystem health.



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CASE STUDY 12

PERU

Organization: Confederación De Nacionalidades Amazónicas Del Perú (CONAP)
Region: Latin America and the Caribbean (LAC)

In the Santa Rosita de Apua Native Community in Ucayali, Indigenous Peoples manage crop-lands and forests through agricultural practices deeply embedded in cultural and ecological relationships. The community produces *bellaco hartón* bananas, combining ancestral knowledge with modern strategies. Their cultivation is organized around three interdependent spaces—the forest, water, and farm—which provide food and resources across seasonal cycles and maintain ecological balance. Lowland agriculture (*bajiales*), an ancestral practice, leverages fertile soils deposited by annual flooding to sustain crops and livelihoods.

The territory faces multiple pressures. Climate change disrupts seasonal cycles and water availability, requiring adjustments to traditional agricultural methods to maintain food security. Land tenure insecurity is exacerbated by overlapping forest concessions. In 2022, the State granted Aserradero Nueva Requena S.A.C. a forest compensation area of over 8,100 hectares, 7,367 hectares of which overlap with the communal territory. This overlap prevents full exercise of territorial rights, exposes the community to deforestation and illegal logging, and threatens natural resources essential to their economy and culture. Tree cover loss in the territory has contributed to net carbon emissions, highlighting the ecological risks of unresolved tenure conflicts.

Communities rely on traditional ecological knowledge to navigate these challenges. Agroforestry practices incorporate soil selection, crop rotation, organic fertilization, and staggered harvesting aligned with seasonal cycles and rainfall. The interdependence of forest, water, and farm spaces dictates careful management, ensuring that none are overexploited when conditions are unfavourable. Knowledge of hunting, fishing, farming, and medicinal plants continues to inform sustainable land custodianship.

Legal and organizational strategies support these practices. Although the community is titled, registration in public registries is pending due to overlaps with Permanent Production Forests (BPP). CONAP's "Titling and Governance for the Conservation of the Territory" project seeks to resolve these gaps, strengthen the Indigenous economy, and enhance territorial monitoring and surveillance. In 2024, a banana producers' committee was established with 16 participating families to coordinate production, transport, and marketing, including the shared use of a boat to access urban markets. Income is reinvested in productive activities while maintaining forest conservation practices. Territorial surveillance by local custodians protects areas near two protected zones, deterring illegal entry and safeguarding biodiversity.

These integrated approaches reinforce sustainable land use, biodiversity conservation, and climate adaptation, while strengthening collective governance and Indigenous territorial rights. By combining ancestral knowledge, legal strategies, and community-led economic initiatives, the Santa Rosita de Apua community works to reverse tree cover loss, mitigate carbon emissions, and ensure the long-term resilience of their territory.

Back Cover

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