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Indigenous environmental governance and climate resilience: a comparative analysis of divergent pathways in Côte d'ivoire and Peru

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ABSTRACT

This study examines the comparative dynamics of indigenous environmental governance and its contribution to climate resilience in Côte d'Ivoire and Peru, two countries with rich indigenous heritage yet facing distinct challenges in integrating traditional knowledge into climate policy. Despite their divergent colonial histories and ecological contexts, both nations grapple with the fundamental question of how indigenous governance systems can be recognized, strengthened, and mobilized to address the climate crisis. The research employs a comparative case study methodology, drawing on policy documents, empirical studies, project reports, and scholarly analyses spanning 2020-2026. Peru has emerged as a global laboratory for indigenous-state co-management models in climate adaptation and forest conservation. The Amarakaeri Communal Reserve (RCA) exemplifies successful co-management between the Peruvian State (SERNANP) and indigenous organizations (ECA-RCA), built on trust and shared responsibility. This model enables the implementation of "Full Life Plans" that articulate indigenous strategic planning with conservation objectives, channel climate funds, and contribute to national emission reduction commitments . The REDD+ Indigenous Amazonian (RIA) initiative demonstrates how indigenous administration contracts can be adapted to implement projects for ecosystem service retribution, with replication potential across 4.5 million hectares of communal reserves . However, challenges persist. Research on Peru's conditional direct transfer (TDC) mechanism reveals gaps between program design and indigenous realities, including lack of cultural awareness, reliance on capitalistic economic indicators that exclude indigenous well-being, and insufficient community engagement in monitoring . The Kichwa people's experience in San Martín illustrates how protected area creation has sometimes excluded indigenous communities from territorial management, prompting counter-mapping initiatives that assert indigenous territorial visions through "speaking maps" . In the Andes, the Potato Park in Cusco demonstrates how biocultural territory models can protect agrobiodiversity while enhancing climate resilience, inspiring the 2016 law on agrobiodiversity zones that recognizes areas of exceptional crop diversity .

Côte d'Ivoire presents a different landscape where indigenous environmental governance is less formally recognized, yet traditional knowledge systems remain vital for climate resilience. While specific Ivorian case studies are limited in available literature, the country faces distinct challenges: deforestation driven by cocoa cultivation, land tenure insecurity for indigenous communities, and limited integration of traditional knowledge into national climate policy. The comparison with Peru illuminates potential pathways—recognizing customary land rights, establishing co-management frameworks for protected areas, and creating legal mechanisms that validate indigenous governance systems. Peru's strength lies in its sophisticated legal frameworks for indigenous co-management, its innovative models for channeling climate finance to indigenous organizations, and its growing recognition of indigenous territorial visions through participatory mapping and biocultural protocols . Its challenge is ensuring that these frameworks translate into genuine empowerment rather than continued exclusion, and that conservation incentives align with indigenous conceptions

of well-being rather than capitalistic indicators . Côte d'Ivoire's advantage is the potential to build on existing traditional knowledge systems and customary governance while learning from Peru's experiences in legal recognition and co-management. Both countries demonstrate that effective indigenous environmental governance for climate resilience requires: (1) legal recognition of indigenous land rights and governance authority; (2) co-management frameworks that respect indigenous autonomy while enabling state partnership; (3) Free, Prior, and Informed Consent (FPIC) as foundation, not just procedural requirement ; (4) culturally appropriate benefit-sharing mechanisms; (5) integration of traditional knowledge into climate monitoring and adaptation; (6) participatory mapping that asserts indigenous territorial visions; (7) capacity-building for indigenous leaders on climate finance and carbon markets ; and (8) recognition that climate justice requires amplifying indigenous voices in policy decisions .

Key Words : Indigenous governance, climate resilience, Côte d'Ivoire, Peru, co-management, traditional knowledge, REDD+, territorial rights, climate justice, biocultural heritage

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RÉSUMÉ

Cette étude examine les dynamiques comparatives de la gouvernance environnementale autochtone et sa contribution à la résilience climatique en Côte d'Ivoire et au Pérou, deux pays au riche patrimoine autochtone mais confrontés à des défis distincts pour intégrer les connaissances traditionnelles dans les politiques climatiques. Malgré leurs histoires coloniales divergentes et leurs contextes écologiques différents, les deux nations sont confrontées à la question fondamentale de savoir comment les systèmes de gouvernance autochtone peuvent être reconnus, renforcés et mobilisés pour faire face à la crise climatique. La recherche emploie une méthodologie d'étude de cas comparative, s'appuyant sur des documents politiques, des études empiriques, des rapports de projets et des analyses savantes couvrant la période 2020-2026. Le Pérou est devenu un laboratoire mondial pour les modèles de cogestion autochtone-étatique dans l'adaptation au climat et la conservation des forêts. La Réserve communale d'Amarakaeri (RCA) illustre une cogestion réussie entre l'État péruvien (SERNANP) et les organisations autochtones (ECA-RCA), fondée sur la confiance et la responsabilité partagée. Ce modèle permet la mise en œuvre de "Plans de Vie Intégrale" qui articulent la planification stratégique autochtone avec les objectifs de conservation, canalisent les fonds climatiques et contribuent aux engagements nationaux de réduction des émissions . L'initiative REDD+ Indigène Amazonien (RIA) démontre comment les contrats d'administration autochtone peuvent être adaptés pour mettre en œuvre des projets de rétribution des services écosystémiques, avec un potentiel de réplication sur 4,5 millions d'hectares de réserves communales . Cependant, des défis persistent. La recherche sur le mécanisme de transfert direct conditionnel (TDC) du Pérou révèle des écarts entre la conception du programme et les réalités autochtones, notamment le manque de sensibilité culturelle, la dépendance à des indicateurs économiques capitalistes qui excluent le bien-être autochtone et un engagement communautaire insuffisant dans le suivi . L'expérience du peuple Kichwa à San Martín illustre comment la création d'aires protégées a parfois exclu les communautés autochtones de la gestion territoriale, provoquant des initiatives de contre-cartographie qui affirment les visions territoriales autochtones à travers des "cartes parlantes" . Dans les Andes, le Parc de la Pomme de Terre à Cusco démontre comment les modèles de territoires bioculturels peuvent protéger l'agrobiodiversité tout en renforçant la résilience climatique, inspirant la loi de 2016 sur les zones d'agrobiodiversité qui reconnaît les zones à diversité culturale exceptionnelle .

La Côte d'Ivoire présente un paysage différent où la gouvernance environnementale autochtone est moins formellement reconnue, mais où les systèmes de connaissances traditionnelles restent vitaux pour la résilience climatique. Bien que les études de cas ivoiriennes spécifiques soient limitées dans

la littérature disponible, le pays est confronté à des défis distincts : déforestation due à la culture du cacao, insécurité foncière pour les communautés autochtones et intégration limitée des connaissances traditionnelles dans la politique climatique nationale. La comparaison avec le Pérou éclaire des voies potentielles—reconnaître les droits fonciers coutumiers, établir des cadres de cogestion pour les aires protégées et créer des mécanismes juridiques qui valident les systèmes de gouvernance autochtone. La force du Pérou réside dans ses cadres juridiques sophistiqués pour la cogestion autochtone, ses modèles innovants pour canaliser le financement climatique vers les organisations autochtones et sa reconnaissance croissante des visions territoriales autochtones à travers la cartographie participative et les protocoles bioculturels . Son défi est de garantir que ces cadres se traduisent par une autonomisation réelle plutôt qu'une exclusion continue, et que les incitations à la conservation s'alignent sur les conceptions autochtones du bien-être plutôt que sur des indicateurs capitalistes . L'avantage de la Côte d'Ivoire est le potentiel de s'appuyer sur les systèmes de connaissances traditionnelles existants et la gouvernance coutumière tout en apprenant des expériences péruviennes en matière de reconnaissance juridique et de cogestion. Les deux pays démontrent qu'une gouvernance environnementale autochtone efficace pour la résilience climatique nécessite : (1) la reconnaissance juridique des droits fonciers autochtones et de l'autorité de gouvernance ; (2) des cadres de cogestion respectant l'autonomie autochtone tout en permettant le partenariat étatique ; (3) le Consentement Préalable, Libre et Éclairé (CPLE) comme fondement, pas seulement comme exigence procédurale ; (4) des mécanismes de partage des bénéfices culturellement appropriés ; (5) l'intégration des connaissances traditionnelles dans le suivi et l'adaptation climatiques ; (6) la cartographie participative affirmant les visions territoriales autochtones ; (7) le renforcement des capacités des leaders autochtones sur le financement climatique et les marchés du carbone ; et (8) la reconnaissance que la justice climatique nécessite d'amplifier les voix autochtones dans les décisions politiques .

MOTS-CLÉS : Gouvernance autochtone, résilience climatique, Côte d'Ivoire, Pérou, cogestion, connaissances traditionnelles, REDD+, droits territoriaux, justice climatique, patrimoine bioculturel

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1. INTRODUCTION

Climate change poses an existential threat to ecosystems, economies, and communities worldwide. Yet its impacts are not evenly distributed. Indigenous peoples, despite contributing minimally to global emissions, are disproportionately affected by climate disruption—their livelihoods, cultures, and territories intimately connected to the natural systems undergoing rapid transformation. Paradoxically, indigenous communities also hold vital knowledge for climate adaptation and mitigation, developed through centuries of interaction with changing environments.

The recognition of indigenous environmental governance as a resource for climate resilience has gained increasing attention in international policy. The Paris Agreement acknowledges the importance of indigenous knowledge, and global climate finance mechanisms increasingly target indigenous territories. Yet the translation of international recognition into effective national policy remains uneven, shaped by colonial legacies, legal frameworks, and political will.

Côte d'Ivoire and Peru, two countries with rich indigenous heritage yet distinct trajectories in recognizing indigenous governance, offer a compelling comparative lens through which to examine these dynamics. Peru has emerged as a laboratory for indigenous-state co-management models. The Amarakaeri Communal Reserve demonstrates how trust and shared responsibility between the state and indigenous organizations can enable effective forest conservation while channeling climate funds to indigenous communities . The REDD+ Indigenous Amazonian (RIA) initiative has pioneered indigenous administration contracts for ecosystem service retribution, with potential for replication across millions of hectares . Yet challenges persist: research reveals gaps between program design and indigenous realities, with conservation incentives sometimes misaligned with indigenous conceptions of well-being .

Côte d'Ivoire presents a different landscape. While specific Ivorian case studies are limited in available literature, the country faces distinct challenges: deforestation driven by cocoa cultivation, land tenure insecurity for indigenous communities, and limited integration of traditional knowledge into national climate policy. The comparison with Peru illuminates potential pathways for strengthening indigenous governance in Ivorian contexts.

This study examines the comparative dynamics of indigenous environmental governance and climate resilience in Côte d'Ivoire and Peru. Drawing on policy documents, empirical research, and case studies, it explores how legal recognition, co-management frameworks, and traditional knowledge systems shape

indigenous contributions to climate action. The analysis is organized around four interconnected themes: (1) the conceptual foundations of indigenous environmental governance; (2) legal and policy frameworks in each country; (3) co-management models and their outcomes; and (4) implications for climate resilience.

The study contributes to scholarship on indigenous rights, climate governance, and environmental justice. It argues that effective climate resilience requires not merely technical solutions but recognition of indigenous governance authority, culturally appropriate benefit-sharing, and amplification of indigenous voices in policy decisions.

2. LITERATURE REVIEW

2.1 Conceptualizing Indigenous Environmental Governance

Indigenous environmental governance refers to the systems of rules, institutions, and practices through which indigenous peoples manage their territories and natural resources. These systems are often rooted in traditional knowledge, customary law, and spiritual relationships with land. Research has documented how indigenous governance contributes to biodiversity conservation, forest protection, and climate resilience (Stevens et al., 2014).

The concept of "territorial governance" emphasizes that indigenous peoples' relationship with land is not merely about resource extraction but encompasses cultural identity, spiritual values, and collective well-being. This holistic perspective contrasts with Western approaches that often separate environmental management from social and cultural dimensions (Paredes, 2024).

2.2 Peru's Indigenous Governance Framework

Peru has developed sophisticated legal and policy frameworks for indigenous environmental governance. Key features include:

- **Communal Reserves:** Protected areas established for the benefit of indigenous populations, managed through co-management agreements between the state (SERNANP) and indigenous organizations organized as Executors of Administration Contracts (ECA) .
- **REDD+ Indigenous Amazonian (RIA):** A climate change strategy that contributes to forest conservation in indigenous territories. RIA in the Amarakaeri Communal Reserve represents an innovative co-management experience under an indigenous administration contract approach, contributing to emission reductions while providing security for indigenous territories .
- **Conditional Direct Transfers (TDC):** The National Program for Forest Conservation uses TDCs to incentivize indigenous communities to protect forests. Communities receive 10 soles per hectare per year for conserved forest, requiring community-developed Incentive Management Plans and forest monitoring activities .
- **Agrobiodiversity Zones:** A 2016 law recognizing areas of exceptional agrobiodiversity, inspired by the Potato Park in Cusco. These zones enable communities to protect traditional crop varieties and enhance climate resilience .
- **Indigenous Visions for Climate Justice:** A research initiative documenting indigenous perspectives on climate change, including counter-mapping projects where Kichwa communities created "speaking maps" to assert territorial visions .

2.3 Co-Management in Practice: Amarakaeri and Beyond

The Amarakaeri Communal Reserve (RCA) exemplifies successful co-management. Established to conserve biodiversity for the benefit of Harakmbut, Yine, and Machiguenga peoples, the reserve is co-managed by SERNANP and ECA-RCA, an indigenous organization representing ten native communities. Key elements include:

- **Trust and goodwill:** Fundamental for effective co-management, enabling adaptation of contracts and planning documents .
- **Full Life Plans:** Strategic planning documents articulating indigenous development visions with conservation objectives.
- **Articulation with climate initiatives:** RIA incorporates joint actions with the National Forest Conservation Program and other climate funds .

However, challenges persist. Research on the TDC mechanism reveals gaps between program design and indigenous realities. A 2025 study found that program success indicators do not adequately align with conservation or social realities on the ground, with challenges including lack of cultural awareness and reliance on capitalistic economic indicators that exclude indigenous well-being .

2.4 Kichwa Experiences: Exclusion and Counter-Mapping

The Kichwa people's experience in San Martín illustrates tensions between state-led conservation and indigenous governance. More than a quarter of the region's territory lies within protected areas, including Cordillera Escalera Regional Conservation Area and Cordillera Azul National Park. However, only one indigenous community had registered communal title during the establishment of these areas; others were rendered invisible .

In response, the Indigenous Visions for Climate Justice project facilitated participatory mapping where Kichwa communities created "speaking maps" documenting their relationship with territory, biodiversity, and cultural heritage. These maps became tools for political advocacy, enabling communities to dialogue with the state and assert territorial rights .

2.5 Andean Biocultural Territories

In the Peruvian Andes, the Potato Park in Cusco has pioneered biocultural territory models. Communities have developed governance systems protecting agrobiodiversity while enhancing climate resilience and local economies. This success inspired the 2016 law on agrobiodiversity zones, which recognizes and protects areas of exceptional crop diversity .

Current projects are scaling this approach to other communities in Cusco and Apurímac regions, using community-to-community horizontal learning that recognizes indigenous communities as experts in collectively governed biocultural territories .

2.6 Carbon Markets and Indigenous Leadership

The Awajún Tajimat Pujut Initiative represents one of the few indigenous-led carbon projects globally. A 2025 report by Landesa identifies key insights for responsible carbon projects involving indigenous peoples:

- Free, Prior, and Informed Consent (FPIC) is necessary but not sufficient; consultation processes must involve structured, multistep approaches.
- Addressing differences between communal land rights and individual perceptions is important for effective benefit-sharing.
- Gender issues must be tackled explicitly, recognizing that successful conservation requires safety and justice for all community members .

2.7 Capacity-Building for Indigenous Leaders

Profonanpe's work in Datem del Marañon Province demonstrates the importance of strengthening indigenous technical capacities on climate change and carbon markets. By developing pedagogical content adapted to local cultural contexts and training young indigenous leaders as tutors, projects can ensure that climate action reflects indigenous values and knowledge systems .

2.8 Côte d'Ivoire's Indigenous Governance Context

While specific Ivorian case studies are limited in available literature, the country faces distinct challenges. Cocoa cultivation has driven significant deforestation, with forest cover declining from 16 million hectares in 1900 to approximately 2 million hectares today. Indigenous communities, including the Agni, Baoulé, and Bété peoples, have customary claims to forest lands often unrecognized in formal law. Land tenure insecurity undermines both conservation and indigenous livelihoods.

Climate change compounds these challenges. The World Bank projects temperature increases of 1-2°C by 2050, with more variable rainfall threatening cocoa production and food security. Indigenous knowledge of forest management, water conservation, and crop diversification could contribute to adaptation strategies, yet remains largely unrecognized in national policy.

3. RESEARCH QUESTIONS

This study addresses the following research questions:

1. How do legal and policy frameworks for indigenous environmental governance differ between Côte d'Ivoire and Peru, and what historical factors explain these differences?
2. What models of co-management and indigenous-state partnership exist in each country, and how effectively do they integrate indigenous governance systems?

3. What lessons can Côte d'Ivoire draw from Peru's experience in indigenous co-management and climate governance?

4. METHODOLOGY

This study employs a comparative case study methodology to examine indigenous environmental governance and climate resilience in Côte d'Ivoire and Peru. The research design integrates document analysis of primary sources with synthesis of secondary literature to develop a comprehensive understanding of governance dynamics in both countries.

Primary sources analyzed include: PANORAMA solution documentation of Amarakaeri Communal Reserve co-management ; PUCP's Indigenous Visions for Climate Justice project materials ; Landesa's report on the Awajún Tajimat Pujut Initiative ; Regions4 case study of AMARCY ; GRADE project documentation on territorial resilience ; IIED's biocultural territories project ; Intercultural Innovation Hub's Profonanpe case study ; MDPI research on conservation incentives in Peru ; and SciELO analysis of climate resilience in the Peruvian Andes .

The comparative framework examines four dimensions of indigenous environmental governance: (1) legal recognition and policy frameworks; (2) co-management models and indigenous-state partnerships; (3) integration of traditional knowledge; and (4) outcomes for climate resilience.

The analysis covers the period from approximately 2020 to 2026, capturing recent developments including the RIA initiative, Indigenous Visions for Climate Justice project, and emerging research on conservation incentives.

5. RESULTS

5.1 Legal and Policy Frameworks

Peru: Peru has developed sophisticated legal frameworks recognizing indigenous governance. Key features include:

- **Communal Reserves Law:** Establishes protected areas managed for indigenous benefit through co-management agreements. The Amarakaeri Communal Reserve, co-managed by SERNANP and ECA-RCA, demonstrates this model .
- **Agrobiodiversity Zones Law (2016):** Recognizes areas of exceptional crop diversity, enabling communities to protect traditional varieties. Inspired by the Potato Park in Cusco .
- **National Forest Conservation Program:** Uses conditional direct transfers (TDC) to incentivize indigenous forest conservation. Communities receive 10 soles per hectare for conserved forest, requiring community-developed management plans .
- **REDD+ Indigenous Amazonian (RIA):** A climate strategy implemented through indigenous administration contracts, with replication potential across 4.5 million hectares .
- **Prior Consultation Law:** Requires consultation with indigenous peoples on legislative and administrative measures affecting their rights, though implementation remains uneven.

Côte d'Ivoire: Côte d'Ivoire's legal framework for indigenous governance is less developed. Key features include:

- **Land Tenure:** The 1998 Land Law recognizes customary rights but requires formal registration, a process often inaccessible to rural communities. Indigenous communities face land tenure insecurity.
- **Forest Code:** Recent reforms aim to reduce deforestation, with emphasis on protected areas and commercial plantations rather than community-based management.
- **Climate Policy:** The National Climate Change Action Plan acknowledges the role of local communities but lacks specific mechanisms for integrating indigenous knowledge.
- **Customary Governance:** Traditional authorities continue to exercise de facto governance over many rural areas, but their authority lacks formal legal recognition.

Table 1: Comparative Legal and Policy Frameworks

Dimension	**Peru**	**Côte d'Ivoire**
Constitutional recognition of indigenous rights	Yes; prior consultation law	Limited; customary rights recognized but weakly implemented
Land tenure framework	Titled native communities; communal reserves	1998 Land Law recognizes customary rights but requires formal registration
Protected area co-management	Formal co-management agreements (SERNANP-ECA)	Limited; state-managed protected areas dominate

Climate finance mechanisms	Conditional direct transfers; RIA	Limited; donor-driven projects
Agrobiodiversity protection	Agrobiodiversity Zones Law (2016)	Not addressed
Indigenous mapping initiatives	Counter-mapping; "speaking maps"	Limited documentation

5.2 Co-Management Models and Indigenous-State Partnerships

Peru: Peru has developed diverse co-management models.

Amarakaeri Communal Reserve (RCA): The RCA exemplifies successful co-management. Key features include:

- **Governance structure:** Co-management between SERNANP (state protected areas agency) and ECA-RCA (indigenous organization representing ten communities) .
- **Trust as foundation:** Trust and goodwill enable adaptation of contracts and planning documents .
- **Full Life Plans:** Articulate indigenous strategic planning with conservation objectives.
- **RIA integration:** The REDD+ Indigenous Amazonian initiative operates through an addendum to the administration contract, facilitating climate fund implementation .
- **Replication potential:** Model is being replicated in other communal reserves covering 4.5 million hectares .

AMARCY (Yanesha Communal Reserve): The Association for the Management and Conservation of the Yanesha Communal Reserve works alongside SERNANP to co-manage over 75,000 hectares of ancestral territory. The model leverages traditional knowledge and innovative agroforestry practices to balance environmental stewardship with economic opportunity .

Conditional Direct Transfers (TDC): The TDC mechanism engages indigenous communities in forest conservation through payments for standing forests. Communities sign five-year agreements, develop Incentive Management Plans, and conduct forest monitoring. However, research reveals challenges:

- Lack of cultural awareness in program design
- Reliance on capitalistic economic indicators that exclude indigenous conceptions of well-being
- Insufficient community engagement in monitoring
- High rates of community suspension due to compliance difficulties .

Awajún Tajimat Pujut Initiative: One of the few indigenous-led carbon projects globally. Key insights:

- FPIC is necessary but not sufficient; structured, multistep consultation processes are essential
- Differences between communal land rights and individual perceptions must be addressed
- Gender issues must be tackled explicitly .

Potato Park (Cusco): A community-governed biocultural territory protecting agrobiodiversity while enhancing climate resilience and local economies. The model has inspired agrobiodiversity zones legislation and is being scaled to other communities through horizontal learning .

Côte d'Ivoire: Côte d'Ivoire lacks formal co-management frameworks comparable to Peru's. Key features include:

- **Protected area management:** Primarily state-managed, with limited indigenous participation.
- **Community forestry:** Recent reforms allow for community forests, but implementation is nascent and often excludes indigenous governance systems.
- **Cocoa sector initiatives:** Public-private partnerships promote sustainable cocoa, with some attention to community engagement, but rarely recognize indigenous governance authority.
- **Customary governance:** Traditional authorities continue to manage land and resources informally, but operate outside formal legal frameworks.

Table 2: Comparative Co-Management Models

Dimension	**Peru**	**Côte d'Ivoire**
Formal co-management structures	SERNANP-ECA agreements	Limited
Indigenous-led initiatives	RIA; Awajún carbon project	Not documented
Conservation incentives	TDC mechanism; results-based payments	Limited; donor-driven
Biocultural territories	Potato Park; agrobiodiversity zones	Not documented
Community governance of protected areas	Amarakaeri; Yanesha	Limited

Indigenous participation in climate finance	RIA; Profonanpe capacity-building	Limited

5.3 Integration of Traditional Knowledge

Peru: Peru has made progress in recognizing traditional knowledge, though challenges persist.

- **Full Life Plans:** Indigenous strategic planning documents articulate traditional knowledge and values alongside conservation objectives .
- **Speaking maps:** Kichwa communities have created counter-maps documenting their relationship with territory, biodiversity, and cultural heritage, used for political advocacy .
- **Biocultural protocols:** Communities in the Potato Park have developed protocols governing access to traditional knowledge and genetic resources.
- **Climate knowledge:** Research documents indigenous observations of climate change and traditional adaptation strategies, including water harvesting techniques and agrobiodiversity management .
- **Capacity-building:** Profonanpe's work trains indigenous leaders on climate change and carbon markets, ensuring technical knowledge reflects indigenous values .

Côte d'Ivoire: Traditional knowledge integration in Côte d'Ivoire is less documented but potentially significant.

- **Forest knowledge:** Indigenous communities possess knowledge of forest species, medicinal plants, and sustainable harvesting practices.
- **Climate adaptation:** Traditional farming practices include crop diversification, soil conservation, and water management techniques relevant to climate resilience.
- **Knowledge transmission:** Elders and traditional authorities maintain knowledge systems, but youth out-migration threatens transmission.
- **Policy recognition:** Limited formal mechanisms for integrating traditional knowledge into climate policy.

Table 3: Comparative Integration of Traditional Knowledge

Dimension	Peru	Côte d'Ivoire
Documentation of traditional knowledge	Speaking maps; participatory research	Limited documentation
Knowledge in planning	Full Life Plans incorporate indigenous values	Limited
Climate adaptation knowledge	Documented; water harvesting; agrobiodiversity	Traditional practices exist but undocumented
Knowledge transmission mechanisms	Community-to-community learning; capacity-building	Informal; threatened by youth out-migration
Policy recognition	Agrobiodiversity zones; prior consultation	Limited

5.4 Outcomes for Climate Resilience

Peru: Measured outcomes from Peru's indigenous governance models demonstrate both achievements and challenges.

- **Forest conservation:** The TDC mechanism engaged communities overseeing ~2.9 million hectares, with a calculated 30.2% decrease in projected deforestation rates in participating areas .
- **Emission reductions:** RIA contributes to national emission reduction commitments through avoided deforestation .
- **Agrobiodiversity protection:** The Potato Park maintains over 1,300 potato varieties, providing genetic resources essential for climate adaptation .
- **Indigenous well-being:** Research indicates that conservation incentives must align with indigenous conceptions of well-being; current capitalistic indicators often fall short .
- **Territorial security:** RIA provides legal security through recognition, demarcation, and titling of indigenous territories .
- **Governance strengthening:** Co-management models have strengthened indigenous organizational capacity and territorial governance .

Challenges:

- **Implementation gaps:** Program success indicators do not adequately align with conservation or social realities .
- **Community exclusion:** Some indigenous communities have been excluded from protected area management, as in the Kichwa case .
- **Suspension rates:** Many communities struggle to maintain compliance with TDC requirements, leading to suspension .
- **Cultural misalignment:** Conservation incentives often rely on capitalistic indicators that exclude indigenous well-being .

Côte d'Ivoire: Outcomes from Côte d'Ivoire's indigenous governance are less systematically documented.

- **Forest loss:** Deforestation continues at high rates, driven primarily by cocoa expansion.
- **Community vulnerability:** Indigenous communities face land tenure insecurity, limiting long-term investment in sustainable management.
- **Adaptation potential:** Traditional knowledge of forest management and crop diversification could enhance climate resilience but remains underutilized.

- **Governance gaps:** Absence of formal recognition for customary governance undermines community-led conservation.

Table 4: Comparative Outcomes for Climate Resilience

Dimension	**Peru**	**Côte d'Ivoire**
Forest conservation	2.9M hectares under TDC; 30.2% deforestation reduction	Ongoing deforestation; cocoa-driven
Emission reductions	RIA contributes to NDCs	Limited measurement
Agrobiodiversity protection	1,300+ potato varieties in Potato Park	Not documented
Indigenous well-being	Mixed; program indicators misaligned with indigenous values	Not systematically assessed
Territorial security	Strengthened through RIA and titling	Weak; land tenure insecurity
Governance capacity	Strengthened through co-management	Limited formal recognition

5.5 Summary of Comparative Findings

Table 5: Comprehensive Comparative Analysis

Dimension	**Peru**	**Côte d'Ivoire**
Legal recognition of indigenous governance	Strong; communal reserves; agrobiodiversity zones; prior consultation	Limited; customary rights recognized but weakly implemented
Co-management frameworks	SERNANP-ECA agreements; indigenous-led initiatives	Limited; state-managed protected areas dominate
Indigenous participation in climate finance	RIA; TDC; Profonanpe capacity-building	Limited; donor-driven
Traditional knowledge integration	Speaking maps; Full Life Plans; biocultural protocols	Limited documentation; informal transmission
Key achievements	2.9M hectares under TDC; 30.2% deforestation reduction; 1,300+ potato varieties	Potential for community forestry; traditional practices exist
Key challenges	Program-indigenous reality gaps; community exclusion; suspension rates	Land tenure insecurity; deforestation; limited policy recognition
Lessons for Côte d'Ivoire	Legal frameworks enable co-management; indigenous-led carbon projects; FPIC as foundation; counter-mapping as advocacy tool	Need for land tenure reform; co-management frameworks; traditional knowledge documentation

6. DISCUSSION OF RESULTS

6.1 Explaining Divergent Pathways: Colonial Legacies and Indigenous Mobilization

The differences between Peru's and Côte d'Ivoire's approaches to indigenous environmental governance reflect distinct colonial histories, post-independence trajectories, and indigenous mobilization.

Peru's indigenous governance frameworks emerged from decades of indigenous organizing and strategic engagement with international processes. The 1920 Constitution first recognized indigenous communities, and subsequent reforms created legal categories for native communities and communal reserves. Indigenous federations like AIDESEP and FENAMAD have been instrumental in shaping policy, advocating for co-management models, and asserting territorial rights. The Amarakaeri Communal Reserve's co-management agreement, modified to accommodate RIA implementation, demonstrates how sustained advocacy can produce institutional innovation .

Côte d'Ivoire's trajectory has been different. French colonial policy emphasized assimilation rather than recognition of distinct indigenous identities. Post-independence governments prioritized national unity over ethnic recognition, and the cocoa economy created powerful interests resistant to land tenure reform. Indigenous communities have mobilized around land rights, particularly in the context of the 1998 Land Law, but have not achieved the legal recognition or institutional infrastructure present in Peru.

The comparison suggests that legal recognition is not merely symbolic but creates pathways for co-management, climate finance, and territorial security that are largely absent in contexts where indigenous governance remains unrecognized.

6.2 Trust as Foundation for Co-Management

The Amarakaeri experience highlights that effective co-management requires more than legal frameworks—it requires trust built through sustained collaboration. The PANORAMA solution documentation emphasizes that "trust and goodwill are fundamental for effective co-management between the State and the Management Contract Executors" . This trust enabled the adaptation of administration contracts to accommodate RIA implementation, demonstrating that co-management can evolve as circumstances change.

Trust is built through:

- Consistent engagement over time
- Respect for indigenous autonomy and decision-making processes
- Transparency in financial management
- Delivery on commitments
- Recognition of complementary roles and responsibilities

The Kichwa experience in San Martín illustrates the consequences when trust is absent. The creation of protected areas without meaningful indigenous participation left communities feeling excluded and rendered invisible in official cartography .

6.3 The Gap between Program Design and Indigenous Realities

Research on Peru's TDC mechanism reveals persistent gaps between program design and indigenous realities. Despite good intentions, conservation incentive programs can perpetuate colonial dynamics when they impose external indicators, ignore cultural contexts, and fail to engage communities as partners.

Key findings from the MDPI study include:

- Program success indicators do not adequately align with conservation or social realities .
- Lack of cultural awareness undermines program effectiveness.
- Reliance on capitalistic economic indicators excludes indigenous conceptions of well-being.
- Communities struggling to perform become suspended, losing access to benefits .

These findings resonate with critiques of payments for ecosystem services as extending capitalist logic into domains governed by different value systems. The implication is that conservation incentives must be co-designed with indigenous communities, reflecting their priorities and measures of success.

6.4 Counter-Mapping as Resistance and Advocacy

The Kichwa "speaking maps" project demonstrates how participatory mapping can challenge exclusion and assert indigenous territorial visions. When official cartography rendered Kichwa communities invisible within protected areas, counter-mapping became a tool for political advocacy. As Maritza Paredes explains, "Those maps are their voice on paper. Each line, each mark tells a story of resistance and survival" .

The maps document biodiversity, cultural heritage, and territorial relationships that official maps ignore. They enable communities to dialogue with the state from a position of strength, asserting rights based on documented knowledge and presence.

This experience offers lessons for Côte d'Ivoire, where indigenous territorial claims often go unrecognized. Participatory mapping could document customary land use, support tenure claims, and provide evidence for policy advocacy.

6.5 Biocultural Territories and Agrobiodiversity

The Potato Park model demonstrates how indigenous governance can protect agrobiodiversity while enhancing climate resilience. By collectively managing traditional crop varieties, communities maintain genetic resources essential for adaptation while generating economic benefits through value-added products and ecotourism. The model's inspiration of national legislation on agrobiodiversity zones shows how community innovation can shape policy .

For Côte d'Ivoire, where agricultural biodiversity includes traditional cocoa varieties, yams, and other food crops, similar approaches could protect genetic resources while supporting indigenous livelihoods.

6.6 Indigenous-Led Carbon Projects

The Awajún Tajimat Pujut Initiative offers lessons for responsible carbon projects involving indigenous peoples. The Landesa report emphasizes that FPIC is necessary but not sufficient; consultation processes must be structured, multistep, and attentive to differences between communal and individual perceptions. Gender issues must be tackled explicitly, recognizing that conservation outcomes require safety and justice for all community members .

These insights are relevant for Côte d'Ivoire as carbon markets expand and REDD+ initiatives emerge. Ensuring that projects are genuinely indigenous-led, not merely consultative, is essential for both rights and outcomes.

6.7 Implications for Côte d'Ivoire

The comparison with Peru illuminates potential pathways for strengthening indigenous environmental governance in Côte d'Ivoire:

First, legal recognition is foundational. Peru's experience demonstrates that constitutional recognition, land titling, and specific legal categories for indigenous territories create enabling conditions for co-management and climate finance. Côte d'Ivoire's 1998 Land Law provides a starting point, but implementation gaps must be addressed, and customary rights more fully recognized.

Second, co-management frameworks enable partnership. Peru's SERNANP-ECA agreements provide models for shared governance that respects indigenous autonomy while enabling state partnership. Côte d'Ivoire's protected areas could benefit from similar arrangements, with indigenous communities as co-managers rather than passive subjects.

Third, climate finance must reach communities. Peru's TDC mechanism and RIA initiative demonstrate how climate funds can be channeled to indigenous organizations. Côte d'Ivoire's participation in REDD+ and emerging carbon markets should ensure that indigenous communities are direct beneficiaries, not merely consultation subjects.

Fourth, traditional knowledge must be documented and valued. The speaking maps, Full Life Plans, and biocultural protocols developed in Peru offer methodologies for documenting indigenous knowledge and asserting territorial visions. Côte d'Ivoire could support similar processes, building an evidence base for policy advocacy.

Fifth, capacity-building enables indigenous leadership. Profonanpe's work training indigenous leaders on climate change and carbon markets demonstrates how technical capacity can be developed in culturally appropriate ways. Côte d'Ivoire's indigenous organizations could benefit from similar investments.

Sixth, FPIC must be foundation, not formality. The Awajún experience shows that meaningful consultation requires structured, multistep processes attentive to community dynamics. Côte d'Ivoire's emerging carbon projects must prioritize FPIC as ongoing practice, not one-time event.

7. CONCLUSION

This comparative analysis of indigenous environmental governance and climate resilience in Côte d'Ivoire and Peru reveals two distinct pathways shaped by colonial legacies, legal frameworks, and indigenous mobilization. Peru has developed sophisticated models for co-management, climate finance, and traditional knowledge integration, providing lessons for countries seeking to strengthen indigenous governance. The Amarakaeri Communal Reserve demonstrates how trust and shared responsibility between state and indigenous organizations can enable effective conservation while channeling benefits to indigenous communities . The Potato Park shows how biocultural territories can protect agrobiodiversity while enhancing climate resilience and local economies . The Awajún carbon project illustrates pathways for indigenous-led participation in emerging markets .

Yet Peru's experience also reveals persistent challenges. Research on the TDC mechanism documents gaps between program design and indigenous realities, with capitalistic indicators failing to capture indigenous well-being . The Kichwa experience in San Martín shows that even progressive frameworks can exclude communities when implementation falls short . These challenges underscore that legal recognition alone is insufficient; genuine partnership requires trust, cultural respect, and ongoing adaptation.

Côte d'Ivoire's indigenous governance landscape is less developed but holds potential. Customary governance systems continue to manage land and resources informally, and traditional knowledge of forest management and crop diversification could contribute to climate resilience. The comparison with Peru suggests pathways: land tenure reform that recognizes customary rights, co-management frameworks for protected areas, mechanisms for channeling climate finance to indigenous organizations, and support for documenting traditional knowledge.

Several cross-cutting conclusions emerge from this analysis.

Legal recognition is foundational**.** Peru's indigenous governance frameworks emerged from constitutional recognition and specific legal categories that enable titling, co-management, and access to climate finance. Côte d'Ivoire's 1998 Land Law recognizes customary rights but requires stronger implementation and complementary frameworks for indigenous governance.

Trust enables co-management**.** The Amarakaeri experience demonstrates that effective partnership requires trust built through consistent engagement, respect for indigenous autonomy, and delivery on commitments. Trust cannot be legislated; it must be earned.

Program design must align with indigenous realities**.** The TDC mechanism's limitations illustrate that even well-intentioned programs can fail when they impose external indicators and ignore cultural contexts. Co-design with communities is essential.

Counter-mapping empowers territorial advocacy**.** Kichwa "speaking maps" demonstrate how participatory mapping can document indigenous knowledge, assert territorial visions, and support political advocacy. This methodology could strengthen Côte d'Ivoire's indigenous communities.

Biocultural territories protect agrobiodiversity**.** The Potato Park model shows how indigenous governance can safeguard genetic resources essential for climate adaptation while generating economic benefits.

Carbon projects must be indigenous-led**.** The Awajún experience demonstrates that FPIC is necessary but not sufficient; consultation must be structured, multistep, and attentive to community dynamics, including gender equity.

Capacity-building enables indigenous leadership**.** Profonanpe's work training indigenous leaders on climate change and carbon markets shows how technical capacity can be developed in culturally appropriate ways.

For Peru, the path forward involves addressing implementation gaps, strengthening community engagement in program design, and ensuring that conservation incentives align with indigenous conceptions of well-being. The Indigenous Visions for Climate Justice project's emphasis on amplifying indigenous voices in policy decisions points toward more inclusive governance .

For Côte d'Ivoire, the priority is building the legal and institutional infrastructure that enables indigenous governance—land tenure reform, co-management frameworks, climate finance mechanisms, and support for documenting traditional knowledge. Learning from Peru's experiences while adapting them to Ivorian contexts could accelerate progress.

For the broader community of scholars and practitioners, this comparison underscores that climate resilience is not merely a technical challenge but a governance question. Indigenous peoples, as custodians of vast forest territories and holders of vital traditional knowledge, must be recognized as partners in climate action, not merely consultation subjects. The experiences of Peru—both achievements and challenges—offer lessons for countries seeking to build climate resilience rooted in indigenous governance, territorial rights, and respect for traditional knowledge.

8. LIMITATIONS OF THE STUDY

This study has several limitations that should be acknowledged. First, the comparative analysis relies primarily on secondary sources and project documentation rather than primary data collection. Direct fieldwork in both countries, including interviews with indigenous leaders, government officials, and project implementers, would strengthen comparative insights.

Second, data availability differs dramatically between the two countries. Peru benefits from extensive research, project documentation, and policy analysis. Côte d'Ivoire-specific literature on indigenous environmental governance is limited, requiring reliance on general contextual information and extrapolation from comparative analysis.

Third, the study focuses on indigenous governance with limited attention to the broader political economy of deforestation, land use change, and climate policy in each country.

Fourth, the voice of indigenous community members—particularly women, youth, and those in remote areas—is mediated through reports rather than captured directly.

Fifth, the study covers a period of rapid policy evolution; findings may require updating as new frameworks and projects emerge.

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10. AUTHOR CONTRIBUTIONS

The author conceived the study, designed the comparative framework, conducted the literature review and document analysis, synthesized findings across countries, and drafted the complete manuscript. The author takes full responsibility for the accuracy of information presented and interpretations offered.

11. COMPETING INTERESTS

The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential competing interest.

12. AUTHORS' CONTRIBUTIONS

As sole author, I performed all roles including conceptualization, methodology development, investigation, formal analysis, writing, review, editing, and project administration.

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14. DATA AVAILABILITY

All sources analyzed in this study are publicly available documents, including project reports, academic publications, policy documents, and media reports. Primary sources are cited in the references and accessible through the referenced publications and organizations.

15. DISCLAIMER

The views expressed in this article are solely those of the author and do not necessarily reflect the views of any institution or organization with which the author may be affiliated. The analysis is provided for scholarly purposes and should not be construed as policy guidance or investment advice. Indigenous environmental governance and climate resilience are subject to change, and readers should consult current official sources for specific information about Côte d'Ivoire, Peru, and climate policy.

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