



Mangrove Law and Policy In Practice

2026 Case Studies

Building on the 2023 Mangrove Law and Policy Brief, this publication presents new and updated case studies on legal frameworks, governance mechanisms, and policy approaches supporting mangrove conservation, restoration, and sustainable management across national and regional contexts



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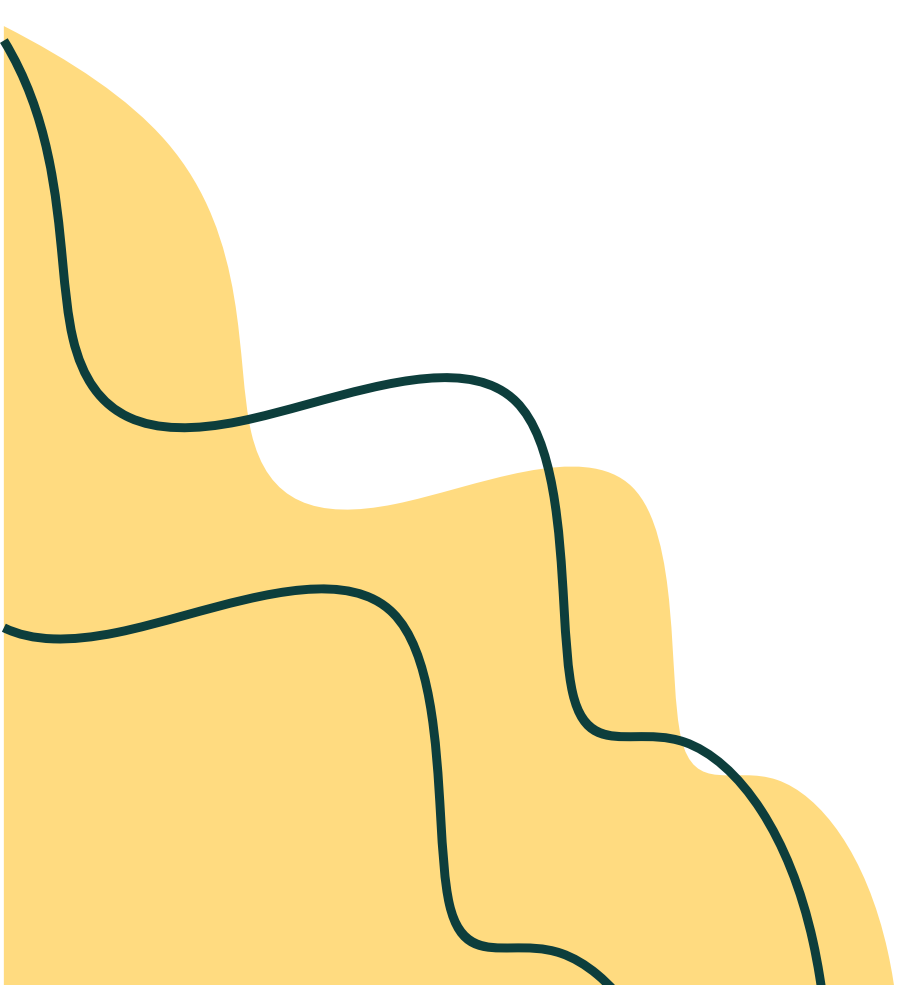
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About this publication

This publication is a companion to the Global Mangrove Alliance's 2023 *Mangrove Law and Policy Brief*, which provides an analytical overview of the legal and governance frameworks that enable mangrove conservation, restoration, and sustainable use. Readers are encouraged to consult that document alongside this one.

The case studies collected here were submitted by GMA Policy Working Group members and partners in 2026, and reflect recent policy developments, implementation experiences, and emerging lessons from a range of national and regional contexts. They are organized by primary policy theme, with a thematic index at the end of the document to help readers navigate across topics. Each case study also notes secondary themes it touches on, allowing readers with a particular policy interest to identify additional relevant cases.

The cases vary in scope, ranging from pilot sites at the local level up to national frameworks and multi-national mechanisms. Most follow the structured template developed for this collection. Case studies from Mexico, Costa Rica, Panama, and Belize provide updates to policies and policy tools featured in the 2023 brief, while the rest feature new contributions and developments in mangrove policy.

Mangrove forest, Tárcoles, Costa Rica
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A number of cross-cutting themes emerge. **Institutional coordination** is consistently identified as both a prerequisite and a challenge: effective mangrove governance rarely sits within a single ministry or sector, and aligning the mandates, data systems, and priorities of multiple agencies is an ongoing task. The **role of civil society, research institutions, and multi-stakeholder platforms** in driving and sustaining policy progress is visible in nearly every case, suggesting that formal policy frameworks tend to be most effective when complemented by active networks capable of providing technical input, monitoring compliance, and maintaining political momentum across changes in government. The importance of **grounding policy in local realities**, including the livelihoods, tenure arrangements, and governance institutions of coastal communities, appears as a consistent lesson regardless of regional context. **The vulnerability of policy continuity to changes in government and funding cycles** emerges as a shared structural challenge, underscoring the importance of embedding mangrove commitments in durable legal and institutional frameworks rather than relying on political will alone.

This collection does not offer a comprehensive survey of global mangrove policy, nor does it claim to represent all approaches or regions equally. It reflects the experience of a specific network of practitioners, institutions, and national chapters working within the GMA Policy Working Group. Readers seeking a broader analytical framework are encouraged to consult the 2023 *Mangrove Law and Policy Brief*, which provides the conceptual and comparative foundations that this collection builds on.¹

1. Slobodian, Lydia and Vidal, Adriana (Lead Authors), *Mangrove Law and Policy*, Global Mangrove Alliance, November 2023. <https://app.box.com/file/2182602810309>



Introduction

From Commitment to Implementation: mangrove policy in a critical decade

The years since the publication of the original Mangrove Law and Policy Brief in 2023 have brought significant developments in the global policy landscape for mangroves. Under the UNFCCC, countries submitted their third generation of Nationally Determined Contributions in 2025, with many incorporating stronger and more specific commitments to mangrove conservation and restoration than in previous rounds.² Under the Convention on Biological Diversity, the Kunming-Montreal Global Biodiversity Framework continues to drive the development and revision of National Biodiversity Strategies and Action Plans, creating new opportunities for countries to embed mangrove-specific targets and governance mechanisms within their national biodiversity agendas.³ The Ramsar Convention's Strategic Plan 2025-2034 reinforces these commitments, with coastal wetlands including mangroves identified as priority ecosystems for conservation and wise-use.⁴ Meanwhile, COP17 under the CBD and COP31 under the UNFCCC, both scheduled for 2026, are set to focus attention on implementation: how the ambitions of global frameworks are translated into national law, policy, and action on the ground.⁵

This implementation challenge is where mangrove policy finds itself today. The foundational question is no longer whether mangroves matter to global climate and biodiversity goals, but how countries are building the legal frameworks, governance mechanisms, financial instruments, and technical systems needed to meet their commitments in practice. The case studies collected here offer a window into that process, drawn from the experience of GMA Policy Working Group members and partners across fifteen national and regional contexts.

Policy in Practice: what the cases reveal

The cases illustrate the diversity of pathways countries are taking. Some are advancing **science-based monitoring systems and baseline assessments** that generate the data needed to design, enforce, and evaluate policy, with robust scientific evidence emerging as a prerequisite for ambitious commitments rather than a follow-on activity. Others are embedding community tenure rights into national climate contributions, recognizing that **secure stewardship arrangements** are foundational to long-term conservation outcomes. Several cases demonstrate how restoration practice is evolving from tree-planting targets toward **ecosystem-based approaches** grounded in hydrology, natural regeneration, and adaptive management. Across multiple regions, countries are experimenting with new **financial mechanisms and market frameworks** designed to channel investment into mangrove management, with a growing emphasis on integrity, equity, and meaningful community benefit-sharing.

2. UNFCCC, "NDC 3.0," <https://unfccc.int/ndc-3.0>. The third round of NDCs, informed by the outcome of the first Global Stocktake at COP28, was due for submission by February 2025, with a September 2025 deadline for inclusion in the UNFCCC NDC Synthesis Report ahead of COP30. For mangrove-specific NDC commitments, see Lecerf, M., et al. (2023), *Coastal and marine ecosystems as Nature-based Solutions in new or updated Nationally Determined Contributions*, Ocean & Climate Platform, Conservation International, IUCN, Rare, The Nature Conservancy, Wetlands International and WWF.

3. Convention on Biological Diversity, COP Decision 15/4, Kunming-Montreal Global Biodiversity Framework, 19 December 2022

4. Ramsar Convention on Wetlands, COP15 Doc. 23.3, Draft Resolution on the Strategic Plan of the Convention 2025-34, Jul 2025

5. CBD COP17 will convene in Yerevan, Armenia, 19-30 Oct 2026, with its central mandate being the first global review of collective progress in implementing the KMGBF. Convention on Biological Diversity, "COP17," <https://www.cbd.int/cop17>. UNFCCC COP31 will be held in Antalya, Turkey, 9-20 Nov 2026, under the theme of implementation of Paris Agreement commitments. UNFCCC, "The Road to Antalya," <https://unfccc.int/cop31/the-road-to-antalya>

1. Restoration protocols and best practice guidelines

Mangrove restoration is receiving increased attention fueled by national and international targets, with the GMA's goal of restoring over 400,000 ha by 2030, as well as commitments under the Kunming-Montreal Global Biodiversity Framework and the UN Decade on Ecosystem Restoration.⁶ Yet ambition alone does not guarantee success. Despite decades of effort, restoration projects have frequently struggled, with some regions seeing failure rates of up to 80%, primarily due to insufficient attention to site hydrology, species selection, and ecological conditions, and a persistent gap in sharing lessons from both successes and failures.⁷ The GMA and the Blue Carbon Initiative's *Best Practice Guidelines for Mangrove Restoration* (2023) represent a collective response to this challenge, bringing together scientific and local knowledge to support more effective and equitable approaches.⁸

The four cases in this section approach the restoration challenge from complementary angles. Indonesia's experience with Ecological Mangrove Restoration demonstrates how an ecosystem-based approach centred on hydrological recovery and natural regeneration, rather than planting targets, can be embedded within national rehabilitation policy and translated into practical field guidance through best management practices and training frameworks. Mexico's Mangrove Monitoring System illustrates how sustained, institutionally anchored data collection underpins restoration planning, with recent developments including a new Mangrove Restoration Observatory and a monitoring guide oriented toward restoration site identification and evaluation. Ecuador's case shows how national restoration policy frameworks can evolve to incorporate mangroves as strategic landscapes for biodiversity, climate resilience, and coastal livelihoods, and how multi-stakeholder platforms, such as national GMA chapters, can shape this process by contributing technical expertise and governance perspectives. Kenya's National Mangrove Ecosystem Restoration Guidelines demonstrate how globally recognised best-practice approaches, including CBEMR, can be formalised into a binding national standard, providing a unified framework for coordinating restoration efforts across government, communities, and civil society. Across all four cases, the quality and durability of restoration outcomes depend as much on the institutional frameworks, monitoring systems, and community arrangements surrounding restoration as on the technical methods applied on the ground.

6. Leal, Maricé and Spalding, Mark (eds.), *The State of the World's Mangroves 2024*. Global Mangrove Alliance, 2024.

7. Wetlands International, "Mangrove restoration: the latest best-practice approaches," 2026, <https://www.wetlands.org/mangrove-restoration-the-latest-best-practice-approaches/>; Leal, Maricé and Spalding, Mark (eds.), *The State of the World's Mangroves 2022*. Global Mangrove Alliance, 2022.

8. Beeston, M., Cameron, C., Hagger, V., Howard, J., Lovelock, C., Sippo, J., Tonneijk, F., van Bijsterveldt, C. and van Eijk, P. (Editors). *Best Practice Guidelines for Mangrove Restoration*. Global Mangrove Alliance and Blue Carbon Initiative, 2023.

1. Restoration Protocols and Best Practice Guidelines

Case Study

Integrating Nature and Policy: The EMR Approach to Sustainable Mangrove Rehabilitation in Indonesia

Contributors: Tyas Ayu Lestari, Aji Nuralam Dwisutono, Fransisca Noni Tirtaningtyas, Dea Mutiarani Rahmawati, and Apri Susanto Astra from Wetlands International Indonesia; Reviewed by Susanna Tol from Wetlands International

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: Subnational/National with Local implementation

Climate & Ecological challenges addressed: Floods; Land and forest degradation; Biodiversity loss; Sea level rise; Erosion; Ecosystem Loss

Economic & Social challenges addressed: Infrastructure development/Lack of infrastructure; Lack of public & decision-maker awareness; Lack of technical capacity

Policy Background: The EMR Approach

The Ministry of Environment and Forestry Regulation No. 23/2021 (Peraturan Menteri Lingkungan Hidup dan Kehutanan) on the Implementation of Forest and Land Rehabilitation provides Indonesia's legal framework for mangrove restoration. The regulation mainly reflects conventional approaches focused on planting, monitoring, and maintenance.

Integrating Ecological Mangrove Restoration (EMR) strengthens this framework by introducing an ecosystem-based approach centered on hydrological improvements, topographical restoration, and soil acidity management to recover ecological functions and support natural regeneration, creating enabling conditions for natural recovery. The approach embeds key restoration measures such as minor and major hydrological improvements, topographical restoration, and soil acidity management to recover ecological functions and support natural regeneration processes. By prioritizing site conditions over direct planting, EMR addresses the low success rates of conventional approaches, which often ignore critical biophysical conditions and lead to inefficient use of resources. It also actively involves local communities in restoration planning, implementation, and monitoring, strengthening long-term sustainability and local ownership.

1. Restoration Protocols and Best Practice Guidelines

Policy Strategy

The integration of EMR into Indonesia's national rehabilitation framework has six interconnected components.

- Policy integration and recognition. Wetlands International Indonesia contributed to mainstreaming EMR into national and subnational rehabilitation frameworks through policy engagement, technical support, and on-the-ground implementation, supporting its recognition as a complementary ecosystem-based approach within existing rehabilitation policies.
- Technical guideline development. Best Management Practices for EMR have been developed through collaboration between global and local partners under the GMA, translating ecosystem-based principles into practical implementation tools aligned with current rehabilitation procedures.
- EMR Taskforce. A taskforce comprising practitioners, researchers, and technical experts is being established to provide scientific input, demonstrate best practices, and support policy development at national and subnational levels.
- Capacity building. Wetlands International Indonesia has developed a capacity-building framework including curricula and learning modules at basic, intermediate, and advanced levels, aligned with the Indonesian National Work Competency Standards (SKKNI) to enable implementation across Technical Implementation Units of the Ministry of Forestry nationwide.
- Pilot and demonstration sites. EMR has been implemented across demonstration sites in Central Java (Demak), East Kalimantan (Mahakam Delta), and North Kalimantan (Kayan-Sembakung Delta), generating evidence of improved hydrological recovery and natural regeneration to support wider policy adoption.
- Monitoring and evaluation. Current national monitoring and evaluation systems remain focused on seedling survival rates rather than broader ecosystem recovery. Wetlands International Indonesia has implemented EMR-based monitoring at several demonstration sites, providing an alternative approach that assesses ecosystem quality and functionality alongside survival rates, and the draft Technical Guidelines under finalization already include an EMR-based monitoring and evaluation component.

Enabling Factors & Key Stakeholders

The revision of Regulation No. 23/2021 to incorporate EMR principles provided the primary enabling condition, offering a regulatory reference point for derivative guidelines and technical standards. Demonstration sites in Demak, the Mahakam Delta, and the Kayan-Sembakung Delta have generated field evidence of improved hydrological recovery and natural regeneration, supporting broader policy uptake.

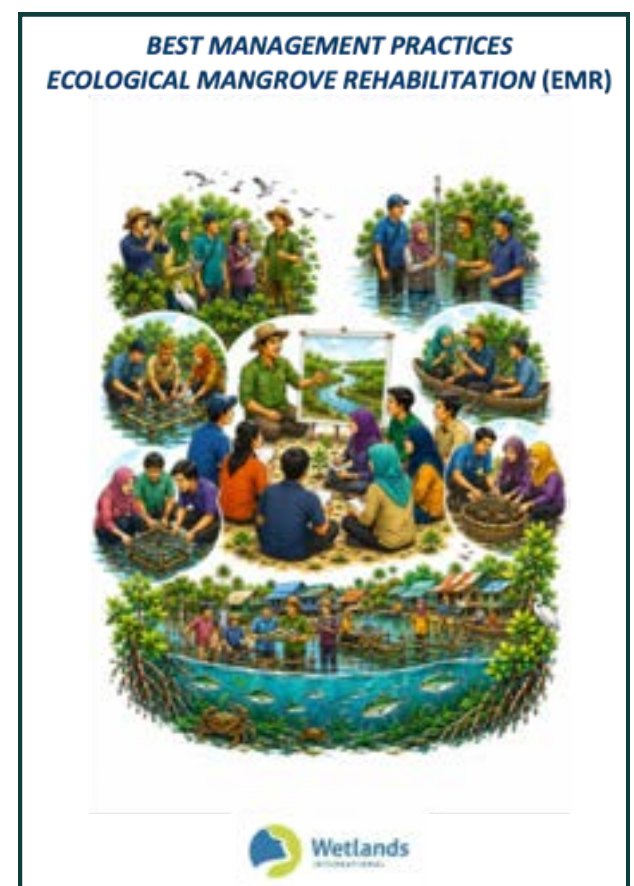


Figure 1. Draft of the EMR Best Management Practices being developed by Wetlands International Indonesia.

1. Restoration Protocols and Best Practice Guidelines

Capacity-building efforts including training of trainers and the development of BMP-EMR guidelines (Figure 1), which translate EMR into practical field implementation. Institutional support from the Ministries of Forestry, Environment, Marine Affairs & Fisheries, and Peatland & Mangrove Restoration Agency (BRGM), alongside international partners including the World Bank, Global Green Growth Institute, and GMA members, has further strengthened knowledge exchange and implementation readiness.

Progress and Next Steps

Since 2016, EMR has progressed from concept to implementation through the Building with Nature project. BMP-EMR guidelines and a structured capacity-building system including curricula modules are being finalized. Demonstration sites across Central Java, East Kalimantan, and North Kalimantan have shown improved hydrological recovery and natural regeneration, encouraging adoption by government institutions and NGO partners including YKAN, YAGASU, and Yayasan Hutan Biru.

Next steps focus on scaling EMR within Indonesia's national framework: further integrating technical guidelines under Regulation No. 23/2021; expanding the evidence base from demonstration sites; scaling capacity-building through Training of Trainers and standardized curricula, proposed for endorsement by the Ministry of Forestry; improving monitoring and evaluation to incorporate ecosystem-based indicators beyond survival rates; and strengthening multi-stakeholder coordination through policy dialogue to embed EMR into national planning and budgeting processes.

Challenges and Limitations

Key challenges include the continued dominance of conventional planting-based approaches, which limits adoption of EMR methods. Limited technical capacity among implementers, particularly in assessing hydrology and site conditions, compounds this. Financing mechanisms remain oriented toward seedling targets rather than ecological outcomes, reducing incentives for EMR, while monitoring systems still focus on survival rates rather than ecosystem recovery. Coordination across institutions at national and subnational levels can be inconsistent, and awareness of EMR among local stakeholders remains uneven.

Lessons for Other Countries

- Mangrove restoration is more effective when it shifts from planting-focused approaches to ecosystem-based methods that restore hydrology and natural regeneration processes for long-term resilience.
- Aligning policy with practical guidance is essential. National regulations provide legitimacy, but practical tools such as Best Management Practices are needed to translate policy into field implementation.
- Demonstration sites are crucial for generating evidence and building confidence among policymakers and practitioners, supporting wider adoption and scaling.
- Strong capacity building and multi-stakeholder collaboration between government, NGOs, communities, and technical partners are key to ensuring consistent implementation and sustainable outcomes.

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Case Study Update

Mexico's Mangrove Monitoring System

Mexico's Mangrove Monitoring System (Sistema de Monitoreo de Manglares de México, SMMM) was featured in the original 2023 Mangrove Law and Policy Brief as an example of how sustained, government-anchored monitoring can inform and strengthen national legal protection for mangroves. This update, submitted by CONABIO in 2026, reports on recent developments in the SMMM's role in supporting mangrove restoration planning, including new tools and spatial analysis products developed since the original publication.

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Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity loss; Sea level rise; Erosion; Ecosystem Loss; Invasive Species

Economic & Social challenges addressed: Infrastructure development; Lack of access to long-term funding

Policy Background: The Mangrove Monitoring System

Mexico's Mangrove Monitoring System (SMMM), operated by the National Commission for the Knowledge and Use of Biodiversity (CONABIO), has provided systematic national mangrove monitoring since 2005. The SMMM has strengthened mangrove legal protection by providing baseline and monitoring data that directly inform policy and legal proceedings. In one landmark case, monitoring data demonstrating continuous mangrove removal around Carpintero's Lagoon in Tamaulipas was used by the Mexican Supreme Court to halt the activity and order rehabilitation, invoking the right to a healthy environment. The SMMM also contributed to the reclassification of mangrove species from special protection to threatened under legal norm NOM-059-SEMARNAT (2010), and to the modification of the General Wildlife Law (2007), which remain the primary national legal tools protecting mangroves against removal and indirect negative impacts.

Despite these advances, deforestation and degradation persist. Insufficient enforcement capacity and coordination among institutions responsible for surveillance and prosecution of environmental crimes remain ongoing challenges.

1. Restoration Protocols and Best Practice Guidelines

Policy Strategy

The SMMM's strategy is grounded in the systematic generation, dissemination, and application of mangrove monitoring data to inform decision-making at national and subnational levels. Its core components are:

- **Data generation and national cartography.** The SMMM has produced six national mangrove assessments obtained systematically (1970-1980, 2005, 2010, 2015, 2020, and 2025), providing the most comprehensive time series of national mangrove extent in Latin America.
- **Science-policy linkage.** Data generated by the SMMM feeds directly into legal and regulatory processes, including court proceedings, species threat assessments, and the development of national norms. Regulatory instruments are reviewed and updated every five years through multi-stakeholder workshops convening government and academic institutions.
- **Restoration planning tools.** In 2025, the SMMM expanded its mandate into restoration by launching the Mangrove Restoration Observatory (ORM), a tool providing spatiotemporal information to support identification of potential restoration areas and monitoring of active restoration sites based on vegetation indices and spatial analysis. A companion document, the "Guide to Monitoring Mangrove Restoration Areas: A Spatiotemporal Approach," was also published to strengthen capacity for project design and monitoring.
- **Network and knowledge sharing.** Since its implementation, the SMMM has promoted coordination among mangrove practitioners through mechanisms including a national directory of people working with mangroves in Mexico.

Enabling Factors & Key Stakeholders

The SMMM's longevity and policy influence rest on its institutional anchoring within CONABIO, a permanent government body, which insulates it from project funding cycles and enables long-term data continuity. Strong coordination with other environmental agencies including SEMARNAT, CONANP, CONAFOR, and PROFEPA, as well as with academic institutions, has been essential to generating regulations and norms with broad legitimacy. Mexico's longstanding engagement with international agreements including Ramsar, the CBD, and the UNFCCC has also supported the prioritization of mangrove monitoring within the public agenda. Key stakeholders include CONABIO, SEMARNAT and its subsidiary bodies, academic and research institutions, and subnational government agencies.

Progress & Next Steps

The SMMM has produced six systematic national assessments, revolutionizing access to mangrove information in Mexico and contributing directly to legal protection and policy development. The proportion of mangroves under legal protection has grown from approximately 1% to 63% over the period covered by the SMMM's monitoring. Recent advances include the launch of the Mangrove Restoration Observatory, publication of the spatiotemporal restoration monitoring guide, and completion of an inter-institutional exercise to identify potential restoration areas.

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In 2026, CONABIO will publish the updated national mangrove map at 1:50,000 scale covering 2025, bringing the total to six systematic national assessments. Work is also underway to apply Mexico's Risk Assessment Method for wild species extinction to two mangrove species, with results expected in 2026. The SMMM continues to pursue incorporation of new technologies to accelerate cartography processing and publication.

Challenges and Limitations

The SMMM's primary challenge is securing consistent long-term funding to maintain and expand its technical capacity, including in fields such as information technology that would accelerate data processing and publication. Insufficient enforcement personnel within agencies such as CONANP and PROFEPA limits timely surveillance and prosecution of environmental crimes. Further work is also needed to translate technical and scientific information into accessible assessments of the economic impacts of mangrove loss for local communities and decision-makers.

Lessons for Other Countries

- **Embedding monitoring within permanent government institutions rather than project-based structures ensures data continuity and long-term policy relevance**, insulating monitoring systems from funding cycles.
- **Monitoring data is most powerful when it is directly linked to legal and regulatory processes.** Mexico's experience shows that systematic data can support court proceedings, species reclassification, and norm development, not only conservation planning.
- **Expanding monitoring systems into restoration planning, as the SMMM has done through the Mangrove Restoration Observatory, extends their policy utility** and helps bridge the gap between protection and active ecosystem recovery.
- **Inter-institutional coordination and regular review of regulatory instruments are essential** to maintaining the relevance and legitimacy of national monitoring frameworks over time.



The fishing port of **Chuburná** in Yucatán, México
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1. Restoration Protocols and Best Practice Guidelines

Case Study

Mangroves, Governance and National Restoration Policy in Ecuador

Contributors: Xavier Chalén from Conservation International Ecuador

Secondary Themes: Integrating Mangroves into Climate & Development Planning

Scale of implementation: National with local/subnational governance arrangements

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity loss; Sea level rise; Erosion; Conflicting uses/cumulative impacts

Economic & Social challenges addressed: Physical resource extraction; Lack of technical capacity; Poor governance and participation

Policy Background: Restoration with a Landscape Approach

Ecuador is undergoing an important transition in how ecological restoration is understood and incorporated into national public policy. The draft National Ecological Restoration Plan with a Landscape Approach (Plan Nacional de Restauración Ecológica con Enfoque de Paisaje, PNREP), promoted by the Ministry of Environment and Energy (MAE) with technical support from UNDP, TNC, and national partners, marks a shift from isolated reforestation interventions toward an integrated framework that incorporates ecological, social, economic, and cultural dimensions of restoration. The Plan explicitly recognizes mangroves as fragile ecosystems of national importance, incorporating them through specific cartographic analyses, prioritization methodologies, and legal considerations.

The PNREP draws on a strong legal and institutional foundation. Ecuador's Constitution recognizes the rights of nature and establishes the State's obligation to restore degraded ecosystems, including mangroves. The Organic Environmental Code reinforces this by declaring mangrove conservation and restoration a matter of national interest and promoting restoration incentives, territorial planning, and participatory governance. Governance instruments such as the Sustainable Use and Custody Agreements for Mangrove Ecosystems (AUSCEM), which recognize community stewardship over mangrove territories, provide an existing framework for integrating restoration, conservation, and sustainable use under participatory arrangements.

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Policy Strategy

The PNREP's strategy centers on a landscape approach to ecological restoration that moves beyond tree planting toward the recovery of socio-ecological systems. Its key components include:

- **Integrated landscape planning.** The Plan incorporates spatial prioritization of restoration areas based on cartographic analysis, ecosystem service considerations, and climate resilience criteria, with mangroves among the priority ecosystems.
- **Legal and institutional grounding.** Restoration is framed as a constitutional and legal obligation, with the Plan providing the operational framework for fulfilling those commitments across institutions and territories.
- **Community participation and territorial governance.** The Plan emphasizes participatory decision-making and the role of local communities, ancestral users, and ethnic groups in restoration processes, recognizing that mangroves are socio-ecological systems deeply connected to artisanal fisheries, traditional use rights, and coastal livelihoods.
- **Climate and biodiversity integration.** The Plan positions restoration as both a climate adaptation and mitigation strategy, recognizing mangroves' blue carbon potential and their role in protecting coastal communities from erosion, flooding, and sea level rise.
- **Multi-stakeholder process.** The Plan's development included technical workshops, territorial dialogues, and consultations with restoration practitioners, institutions, and local actors, creating an opportunity for the GMA Ecuador Chapter to contribute technical inputs and policy recommendations on mangrove ecosystems and coastal governance.

Enabling Factors & Key Stakeholders

The PNREP's development was enabled by Ecuador's strong constitutional and legal framework for ecosystem restoration, which provides a clear mandate for state action. Technical and financial support from UNDP and international partners including TNC provided capacity for the planning process. The participatory and multi-stakeholder nature of the Plan's development, including territorial dialogues across regions, created legitimate entry points for the GMA Ecuador Chapter and other civil society actors to contribute mangrove-specific expertise. The existence of established governance instruments such as the AUSCEM provided a practical foundation for integrating community stewardship into the restoration framework.

Progress & Next Steps

The PNREP remains in draft form at the time of this case study's submission, representing a significant step in Ecuador's transition toward integrated landscape restoration. The GMA Ecuador Chapter's participation in the Plan's development helped position mangroves not only as ecosystems requiring protection, but as strategic landscapes for sustainable development, climate resilience, and social inclusion. Key contributions from the Chapter included perspectives on ecological restoration methodologies, community participation, blue carbon integration, monitoring and adaptive management, long-term sustainability mechanisms, and the importance of linking restoration with coastal livelihoods.

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Next steps centre on the Plan's finalisation, official adoption, and implementation, including the operationalisation of its spatial prioritisation and participatory governance arrangements. Strengthening the legal definition of beach and bay areas and their connection to mangrove ecosystems remains an important complementary priority, as gaps in this area have historically been exploited to enable the conversion of degraded mangrove territories to other uses.

Challenges and Limitations

A key institutional challenge is the lack of an ecosystem-based legal definition of beach and bay areas that explicitly recognises their connection to mangrove ecosystems. This gap has allowed degraded mangrove territories to be reclassified as beach and bay areas susceptible to privatisation, as demonstrated by recent legislative proposals in favour of unsustainable aquaculture. Ensuring the Plan's continuity across changes in government and maintaining sufficient coordination among the multiple institutions responsible for coastal and environmental management also present ongoing challenges.

Lessons for Other Countries

- **National restoration frameworks are strengthened when they are grounded in constitutional and legal obligations rather than relying solely on policy commitments,** providing a more durable basis for implementation across changes in government.
- **Multi-stakeholder platforms such as national GMA chapters can play an important role in shaping national policy processes,** not only as implementation partners but as contributors of technical expertise and governance perspectives during plan development.
- **Integrating community stewardship arrangements, such as the AUSCEM model, into national restoration frameworks creates practical pathways for linking restoration with livelihoods, tenure security, and long-term ecosystem management.**
- **Addressing legal gaps that create ambiguity around mangrove territory classification is essential to preventing restoration gains from being undermined** by competing sectoral interests.



Egrets and spoonbills in mangrove forest, Ecuador
© Lucas Bustamante

1. Restoration Protocols and Best Practice Guidelines

Case Study

Enabling National Best Practices in Mangrove Restoration in Kenya

Contributors: Abdul Hazeez from Wetlands International Eastern Africa; Susanna Tol from Wetlands International

Secondary Themes: Science, Monitoring, & Data Informing Policy; NBSAPs & National Mangrove Management Plans

Scale of implementation: National with local/subnational governance arrangements

Climate & Ecological challenges addressed: Biodiversity loss; Ecosystem loss

Economic & Social challenges addressed: Lack of technical capacity

Policy Background: The CBEMR Approach

The National Mangrove Ecosystem Restoration Guidelines, formally adopted in 2024 and given regulatory force through Mangrove Forest Management Technical Order No. 1 of 2025, represent Kenya's first national framework for mangrove restoration. Developed through a collaborative process led by the Kenya Forest Service and supported by Wetlands International, The Nature Conservancy, and WWF Kenya, the guidelines make Community-based Ecological Mangrove Restoration (CBEMR) the official approach for all mangrove restoration projects in the country.

CBEMR is a globally recognized, science-based approach that focuses on restoring natural hydrology and other conditions for natural regrowth while embedding strong community co-leadership at every stage. The guidelines domesticate UNEP's 2020 Regional Guidelines on Mangrove Restoration for the Western Indian Ocean Region and the GMA Best Practice Guidelines for Mangrove Restoration to the Kenyan context, aligning with local ecological conditions, governance structures, and restoration challenges. They support the Government's commitment to growing 15 billion trees and increasing national tree cover to 30% by 2032, hosted and overseen by the Kenya Forest Service.

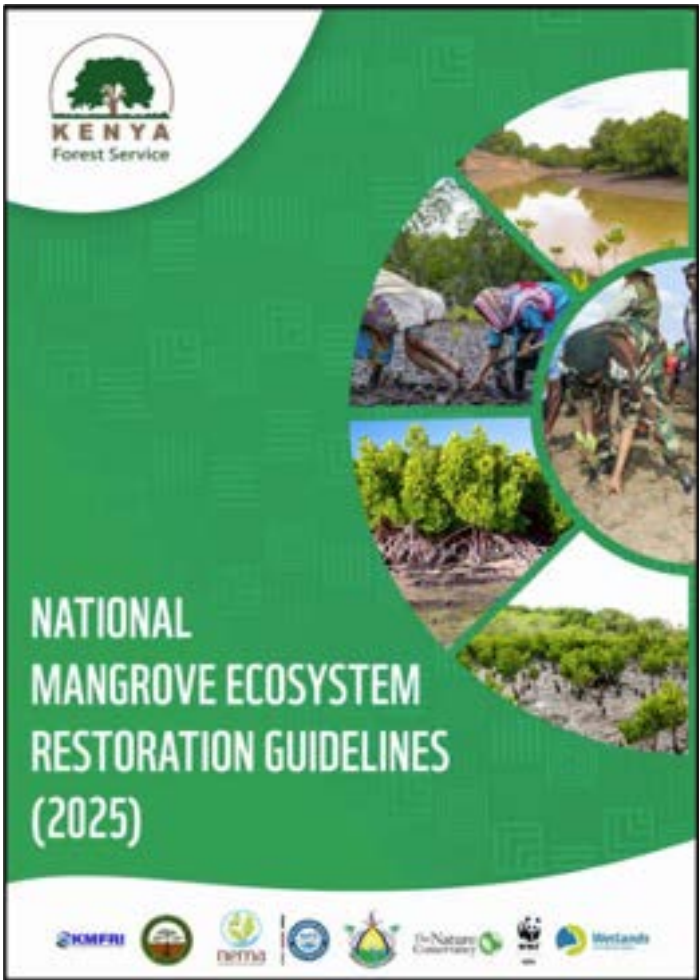


Figure 2. Kenya's National Mangrove Ecosystem Restoration Guidelines (NMERGs), adopted in 2024 and operationalized in 2025

1. Restoration Protocols and Best Practice Guidelines

Policy Strategy

- **National standard setting.** The guidelines provide a comprehensive framework for mangrove restoration that is practical and accessible to communities, government agencies, conservation organizations, and all practitioners. They address common challenges in restoration projects and propose solutions centered on community participation, knowledge management, and stakeholder collaboration.
- **Institutional coordination.** A National Task Force drawn from the Kenya Forest Service, Kenya Marine and Fisheries Research Institute (KMFRI), and Kenya Forestry Research Institute (KEFRI) coordinated the development process, working closely with the National Mangrove Management Committee and a technical working group on coastal and marine resources. Implementation is led by the Kenya Forest Service and Community Forest Associations through National and County Mangrove Management Committees.
- **Science-policy linkage.** The guidelines draw on the GMA Best Practice Guidelines for Mangrove Restoration and UNEP's regional guidelines, translating global best practice into the Kenyan context. Through case studies of successful restoration projects, the guidelines provide practical references and highlight the importance of integrating ecological, social, and economic dimensions.
- **Community engagement and capacity building.** CBEMR places community co-leadership at the center of restoration planning, implementation, and monitoring. Field training has been provided to government institutions, civil society organizations, and local communities, alongside Swahili-language training materials and media outreach to support mainstreaming of best practice approaches nationally.

Enabling Factors & Key Stakeholders

The government's tree cover and restoration commitments provided a clear political mandate for the guidelines' development. Funding from The Nature Conservancy through a grant to KMFRI, complemented by the UNEP Go-Blue Project and the Save Our Mangroves Now! 3.0 Project supported by Wetlands International and WWF Kenya, financed the development process. The GMA Best Practice Guidelines for Mangrove Restoration provided a globally recognized scientific foundation that could be adapted to the Kenyan context. Key institutions involved include the Kenya Forest Service, KMFRI, KEFRI, National Environment Management Authority, County Governments through Jumuiya ya Kaunti za Pwani, Kenya Fisheries Service, Community Forest Associations, and GMA Kenya partners.

Progress & Next Steps

The National Mangrove Ecosystem Restoration Guidelines were formally adopted in 2024 and given regulatory force through Technical Order No. 1 of 2025. To date, at least 116 hectares have been restored using CBEMR approaches across key sites in Lamu, and over 60 local professionals from government and community have been trained and equipped to lead future efforts.

Next steps focus on operationalizing the guidelines through National and County Management Committees, site-specific restoration planning, and strengthened monitoring systems. Priority activities include promoting ecological mangrove restoration, community capacity building,

1. Restoration Protocols and Best Practice Guidelines

supporting alternative livelihoods including beekeeping, mangrove-friendly aquaculture, ecotourism, and carbon financing, and strengthening a common monitoring and reporting framework to track progress, improve learning, and support evidence-based decision-making. A simplified popular version of the guidelines including a Swahili translation is planned to improve accessibility and uptake among local communities and practitioners.

Challenges and Limitations

Key challenges include limited financing for large-scale restoration and long-term monitoring, limited enforcement of existing environmental regulations, and continued pressures from pollution, unsustainable harvesting, and land-use change. Limited technical capacity on hydrological restoration, species-site matching, and monitoring may affect restoration success, and in some areas restoration efforts still rely on planting rather than natural regeneration. Sustaining coordination among national agencies, county governments, communities, and conservation partners also presents an ongoing implementation challenge.

Lessons for Other Countries

- **Science-based national guidelines create a unified framework for coordinating mangrove restoration across government agencies, communities, NGOs, and the private sector**, setting a consistent standard that can be applied and monitored nationally.
- **Effective mangrove restoration should prioritize restoring ecological processes, including hydrological restoration and natural regeneration**, rather than relying primarily on tree planting. **Long-term monitoring and adaptive management are critical for sustainability.**
- **Combining the development of national guidelines with field training, community capacity building, and accessible communication materials, including translations into local languages, supports mainstreaming of best practice approaches and improves ecological and social returns.**
- **Collaboration between global and local scientists and policy officers is essential** to translating international best practice into locally relevant guidance that addresses specific ecological and governance challenges.



TNC's George Maina plants mangrove seedlings with the Mtangawanda Women's Association, Lamu County, Kenya
© Roshni Lodhia/TNC

2. NDCs and climate commitments

Nationally Determined Contributions (NDCs) have become one of the most important policy instruments for translating global climate commitments into national action on mangroves. As of June 2026, analysis by the NDC Task Force of the Mangrove Breakthrough found that of 28 national governments that have endorsed the initiative, 15 mention mangrove ecosystems and 13 include mangrove-specific targets, spanning conservation, restoration, and blue carbon accounting.⁹ The third round of NDC submissions in 2025 represented a critical opportunity to strengthen and expand these commitments, informed by the outcomes of the first Global Stocktake and the growing body of science on mangroves' climate mitigation and adaptation value.² The cases in this section reflect the diversity of ways countries are approaching that opportunity, from the integration of community land tenure as a central enabler of mangrove conservation and restoration commitments, to the consolidation of climate, biodiversity, and desertification obligations into a single integrated national framework.

A recurring theme across these cases is the relationship between scientific evidence and policy ambition. Honduras and Jamaica both demonstrate how targeted science and capacity-building projects can enable ambitious coastal wetland commitments in NDCs for the first time. Panama illustrates how carbon stock assessments and multi-stakeholder technical support can strengthen the scientific foundation for NDC targets and unlock new financing opportunities. Cambodia shows how formalizing community tenure can itself become a climate strategy. Costa Rica's update demonstrates how sustained institutional coordination across successive NDC cycles can deepen and operationalize existing commitments over time. The cases presented here illustrate both the progress being made and the institutional investments required to make NDC commitments meaningful in practice, offering lessons for countries developing or strengthening their own mangrove-related climate contributions.

9. Mangrove Breakthrough NDC Task Force, internal communications, June 2026. For broader figures on mangrove inclusion in NDCs across all rounds, see footnote 2.

10. Hamilton, J. et al. (2023), Blue Carbon and Nationally Determined Contributions: Second Edition, The Blue Carbon Initiative.



Mangrove seedlings in
Lamu County, Kenya
© Mwangi Kirubi/TNC

2. NDCs and Climate Commitments

Case Study

Integration of Land Tenure as a Mangrove Conservation and Restoration Strategy in Cambodia's NDC

Contributors: Juan Robalino, Christine Anderson, Sophal Sam, & Rusrann Loeng from Landesa

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National

Climate & Ecological challenges addressed: N/A

Economic & Social challenges addressed: Lack of public & decision-maker awareness; Poor governance & participation

Policy Background: Land tenure as a central strategy

Cambodia's updated Nationally Determined Contribution (NDC 3.0) recognizes that forest management practices are critical for enhancing carbon stocks and maintaining ecosystem integrity. Crucially, the government highlights the centrality of existing local land tenure arrangements as a mechanism to balance sustainable forest management with the livelihoods of forest-dependent communities. These arrangements explicitly include Protected Areas (PAs), Community Protected Areas (CPAs), Community Forests (CFs), and Community Fisheries (CFis), emphasizing the importance of tenurial arrangements as effective tools for natural resource management, particularly for coastal ecosystems with the inclusion of CPAs and CFis.

Fishery vessels from Koh
Kresna CFi, Cambodia
© Landesa



2. NDCs and Climate Commitments

Policy Strategy

To support and advocate for this integration, Landesa conducted targeted assessments and knowledge-sharing workshops on the mitigation and adaptation benefits associated with improved forest management practices under secure tenure systems, focusing on Community Fisheries where Landesa works in partnership with local NGOs. These efforts were critical for quantifying CFis' contribution to NDC targets and strengthening evidence-based policymaking, and were informed by two key studies:

- **Assessing the Mitigation Potential of Strengthening Coastal Community Fisheries' Tenure**. This study demonstrated that strengthening tenure security and resource co-management in coastal CFis is a strategic approach to conserve and sustainably use coastal and marine ecosystems, directly contributing to climate change mitigation. It draws on Global Mangrove Watch data and is available on the GMA Knowledge Hub.
- **Community Fisheries Climate Change Vulnerability Assessment**. This study assessed the climate change vulnerability of five CFis in Cambodia, drawing on climate change exposure, sectoral sensitivities, and adaptive capacity. It underscored the high vulnerability of coastal communities and the importance of coastal ecosystems, and is available on the GMA Knowledge Hub.

Enabling Factors & Key Stakeholders

Throughout 2025, Landesa participated in subnational and national consultation workshops on NDC 3.0 led by the Ministry of Environment, highlighting the importance of Community Fisheries stewardship as a mitigation and adaptation measure. Support from Conservation International Cambodia provided the opportunity to include Landesa's findings in joint CSO inputs for NDC 3.0.

Progress & Next Steps

The explicit recognition of existing local land tenure arrangements across multiple ecosystems, including mangrove forests, is reflected in their inclusion as both a mitigation and adaptation measure in Cambodia's NDC 3.0: **Measure 41** incorporates good and improved forest management practices to enhance forest carbon stocks and ecosystem integrity by bringing all forest land, including PAs, CFs, CPAs, and CFis, under improved Forest Management Plans by 2050, with 60% coverage by 2035. **Measure 17** promotes improved forest management practices, including integrated landscape management and sustainable forestry, under the same coverage targets.

On the ground, Landesa continues to build land and resource tenure security through remapping and classification of zones that support and strengthen CFI plans, complemented by integrated resource monitoring and patrol plans for law enforcement. Identified governance needs include developing inclusive communication platforms, strengthening CFI members' capacity and skills, and bolstering capacity of development programs to cover mangrove conservation expenses.

2. NDCs and Climate Commitments

Lessons for Other Countries

- Landesa's work in Cambodia showcases how **strong local tenurial and resource co-management arrangements can become a strategic approach for climate change mitigation and adaptation.**
- **Building the evidence base and leveraging existing tools such as the Global Mangrove Watch can facilitate advocacy efforts** for policy change.
- Cambodia sets an important precedent for other countries looking to integrate land tenure and **the potential of local community stewardship into their own NDCs.**

CFi member fishing in the Fisheries Management Area, Cambodia
© Landesa



2. NDCs and Climate Commitments

Case Study Update

Costa Rica's Nationally Determined Contribution 3.0

Costa Rica featured in two case studies in the original 2023 Mangrove Law and Policy Brief: one documenting the country's updated Nationally Determined Contribution and its mangrove conservation and restoration commitments, and a second detailing the development and launch of Costa Rica's National Blue Carbon Strategy, the first such policy instrument in the world. This update, submitted by Conservation International Costa Rica, Silvestrum Climate Associates, and The Pew Charitable Trusts in 2026, reports on progress across both fronts since the original publication, including advances in implementing the National Blue Carbon Strategy's action plan, the development of the Program for Marine Ecosystem Services, and the country's strengthened mangrove commitments under NDC 3.0.

Contributors: Anelise Zimmer, Kate Meyer from The Pew Charitable Trusts; Rebeca Brenes from Silvestrum Climate Associates; Sofía Cortés Mesén from Conservation International Costa Rica

Secondary Themes: Finance, Incentives, & Blue Carbon; Restoration Protocols & Best Practices Guidelines; Biodiversity and climate nexus

Scale of implementation: National with Subnational/Local implementation

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity loss; Sea level rise; Storm surges; Tropical storms; Conflicting uses/cumulative impacts; Ecosystem Loss

Economic & Social challenges addressed: Lack of alternative income opportunities; Lack of public & decision-maker awareness

Policy Background: Advancing implementation

Costa Rica's NDC 3.0, submitted to the UNFCCC in November 2025, includes strengthened targets for mangroves and other coastal wetland ecosystems, building on the ambitious commitments made in NDC 2.0 in 2020. Key mangrove-related commitments include restoring 3,900 hectares of mangroves by 2035, developing a baseline inventory of blue carbon coastal wetland ecosystems by 2030, establishing a permanent financing mechanism for the conservation and restoration of blue carbon ecosystems by 2035, and integrating measurement, reporting, and verification systems for blue carbon within the national greenhouse gas inventory.

Since 2020, Costa Rica has increased institutional coordination to facilitate the achievement of its coastal wetland goals, most notably through the launch and implementation of the National Blue Carbon Strategy and Action Plan. This strategy also mandates a Technical Board, overseeing coordination across relevant government entities and non-governmental blue carbon stakeholders and providing the governance structure for meeting commitments under the NDC, the Ramsar Convention, and the Convention on Biological Diversity.

2. NDCs and Climate Commitments

Policy Strategy

The National Blue Carbon Strategy, launched in 2023, provides the primary implementation framework for Costa Rica's coastal wetland NDC commitments. The Strategy calls for the establishment of official guidance and criteria for the registration of blue carbon projects, financial mechanisms for coastal ecosystem management, and an ocean environmental account through which Costa Rica's Central Bank would standardize a methodology for the economic valuation of blue carbon ecosystem benefits. Its Technical Board coordinates implementation across the multiple government entities responsible for meeting NDC targets.

Enabling Factors & Key Stakeholders

The existence of the National Blue Carbon Strategy and its Technical Board provided the institutional coordination mechanism needed to develop and advance NDC 3.0 coastal wetland targets across a change in government administration. Technical and financial support from The Pew Charitable Trusts, Conservation International Costa Rica, and Silvestrum Climate Associates complemented government efforts throughout the NDC development/implementation process. Key institutions involved include the National Wetlands Program of SINAC within MINAE, the MINAE Climate Change Department, the National Blue Carbon Strategy Technical Board, Silvestrum Climate Associates, Conservation International Costa Rica, and The Pew Charitable Trusts.

Progress & Next Steps

Costa Rica's NDC 3.0 represents a strengthening of the country's coastal wetland commitments, building directly on the institutional and governance foundations established since 2020. Projects currently underway in support of early implementation include strengthening technical capacities for mangrove delimitation and monitoring within SINAC, identifying financing pathways for mangrove conservation targets and harmonizing policy frameworks to operationalize them, supporting environmental education integrating blue carbon concepts in official materials, strengthening monitoring and restoration protocols through digital platforms, exploring opportunities to implement & scale carbon markets including through Article 6 of the Paris Agreement, and enhancing national capacity to map mangroves for inclusion in the National Wetlands Inventory.

Challenges and Limitations

Like other countries in the region, Costa Rica continues to experience a financing gap for implementing NDC commitments. Addressing this gap is central to ongoing implementation planning following NDC 3.0 publication.

Lessons for Other Countries

- Costa Rica's experience demonstrates how strong governance bodies for coastal wetlands, developed over successive NDC cycles, can sustain policy development and implementation continuity across changes in government administration.
- Inter-institutional coordination is essential to ensure common baselines & departmental buy-in.
- Coastal wetland topics serve as a model for other sectors in NDC development through advocacy from expert technical groups with established baselines, strategies and working relationships.
- Calculating implementation costs ties NDC targets to financial constraints.

2. NDCs and Climate Commitments

Case Study Update

Panama's Nationally Determined Contribution 3.0 and Nature Pledge

Panama's mangrove policy landscape was featured in the original 2023 brief through a case study documenting the Blue Natural Heritage initiative, the development of the Parita Bay Conservation Plan, and the groundwork being laid for a national carbon market and Panama's first Global Mangrove Alliance national chapter. This update, submitted by The Pew Charitable Trusts and Smithsonian in 2026, reports on significant developments since that publication.

Contributors: Anelise Zimmer, Kate Meyer, and Elizabeth Francis from The Pew Charitable Trusts; Hannah Morrisette from Smithsonian Environmental Research Center; Tania E. Romero-Gonzalez, from Smithsonian Tropical Research Institute

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National with Subnational/Local implementation

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity loss; Sea level rise; Storm surges; Tropical storms; Ecosystem Loss

Economic & Social challenges addressed: Lack of technical capacity; Poor monitoring & enforcement

Policy Background: Consolidating commitments

Panama's NDC 3.0, also known as the Nature Pledge or "Pacto de Panamá con la Naturaleza," was submitted to the UNFCCC in November 2025. It is a policy framework consolidating the country's climate, biodiversity, and desertification obligations, and includes the following mangrove-specific targets:

- By 2035, Panama will restore and place under effective conservation 100,000 hectares of ecosystems, including 2,500 hectares of mangroves.
- By 2035, Panama will strengthen the National System of Protected Areas (SINAP) by increasing coverage to 40% of land territory and 60% of marine and inland waters, which includes mangrove areas.
- By 2030, Panama will have implemented the Marine-Coastal Adaptation Plan in priority areas vulnerable to sea-level rise, erosion, mangrove loss, and saltwater intrusion, incorporating green infrastructure and nature-based solutions including mangrove restoration.

The Nature Pledge builds on commitments made in Panama's NDC 2.0, submitted in June 2024, which also included strong mangrove conservation, management, and restoration targets.

2. NDCs and Climate Commitments

Policy Strategy

Two complementary initiatives supported the development of the NDC 3.0 and its implementation conditions:

- **National mangrove carbon stock assessment.** Through a partnership with the Smithsonian Institution, The Pew Charitable Trusts supported the development of a comprehensive national mangrove carbon stock assessment for Panama. Beginning with a field sampling workshop in March 2024 to strengthen local research capacity, the project wrapped up in May 2025 when results were presented to the Government of Panama and other mangrove stakeholders. Project outcomes include a collation of existing mangrove carbon data following IPCC guidance, carbon stock analysis from field work at two sites, a comparative analysis of carbon stock within and outside Panama's protected areas, an analysis of the financial potential of Panama's mangroves for carbon markets, and data made publicly available via the Coastal Carbon Atlas. The partnership also included training for government officials and other stakeholders on data carpentry and long-term data management.
- **Project Finance for Permanence.** In 2024, the Government of Panama launched a Project Finance for Permanence (PFP) initiative to secure long-term financing for the conservation and sustainable use of terrestrial, coastal, and marine ecosystems. Led by Panama's Ministry of Environment in close collaboration with Enduring Earth, The Pew Charitable Trusts, and the National Association for the Conservation of Nature (ANCON), the PFP will leverage public, private, and philanthropic funding to finance protected area management, monitoring, and enforcement, with improved management of existing mangrove protections and expanded protection aligned with NDC targets as a key component.

Enabling Factors & Key Stakeholders

Technical and financial support from The Pew Charitable Trusts, Smithsonian Institution, Audubon Americas, and other partners provided the scientific evidence base and policy capacity underpinning Panama's NDC 3.0 mangrove commitments. Representatives from the Smithsonian Tropical Research Institute, Smithsonian Environmental Research Center, Congreso Guna, Universidad de Panama, Audubon Panama, Panamanglar, ChamExplora, Asociación Nuevo Manglar OBC (ANUMA), and Cooperativa de Pescadores Artesanales de El Salado participated in the mangrove blue carbon field work, reflecting a broad multi-stakeholder engagement in the science underpinning the policy.

Progress & Next Steps

Panama's NDC 3.0 represents a significant strengthening of the country's mangrove commitments, supported by a completed national carbon stock assessment that provides a scientific foundation for future management and conservation decision-making and updated values for international policy and inventories. The Project Finance for Permanence initiative is underway, working to secure long-term sustainable financing for protected area management including mangroves.

Panama has also launched the Panama Mangrove Conservation Action Request (PAMAR), a new initiative through which the Ministry of Environment, in partnership with the International Platform for Ocean Sustainability, aims to harmonize public policies for mangroves by connecting science with society.

2. NDCs and Climate Commitments

Lessons for Other Countries

- Panama's approach to **combining its international climate, biodiversity, and desertification obligations into a single integrated framework provides an example of how countries can align commitments to different treaties while streamlining monitoring, evaluation, and reporting.** This approach streamlines implementation priorities and unlocks potential financing opportunities by consolidating efforts to design, measure, and track targets.
- **Science-based carbon stock assessments**, developed with multi-stakeholder participation and made publicly available, can inform NDC target-setting and strengthen the case for conservation finance.



Representatives from government, local communities, research institutions, and NGOs conducting field work for a mangrove carbon stock assessment in Panama led by the Smithsonian Institution and supported by The Pew Charitable Trusts.
© Anelise Zimmer, The Pew Charitable Trusts

Case Study

Honduras' Nationally Determined Contribution 3.0

Contributors: Kate Meyer from The Pew Charitable Trusts and Alejandra Ramírez from Centro de Estudios Marinos, Honduras

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National with Local/Subnational Implementation

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity Loss; Sea level rise; Storm surges; Tropical storms; Ecosystem loss

Economic & Social challenges addressed: Lack of technical capacity; Poor monitoring and enforcement

Policy Background: New coastal commitments

Honduras' third Nationally Determined Contribution (NDC 3.0), which was published in February 2026, included specific commitments to coastal wetland ecosystems for the first time, in a new section focused on the coastal and marine sector.

Policy Strategy

In its NDC 3.0, Honduras included specific, science-based commitments for coastal wetland ecosystem conservation for the first time.

By 2035, the country aims to have strengthened the sustainable and resilient management of marine and coastal ecosystems through inter-institutional coordination, the expansion of conservation areas, and the implementation of integrated actions for monitoring, conservation, restoration, and protection against the impacts of climate change.

Specifically, Honduras committed to:

- Increase the national marine and coastal area under official conservation schemes by 5% by 2035, to strengthen the resilience of ecosystems and communities.
- Establish a baseline of seagrass coverage by 2035 to identify vulnerable areas and risk zones.
- Take actions to restore at least 10% of mangrove forests by 2035.
- Promote actions to maintain or improve the ecological integrity in at least 65% of conservation areas that include wetlands by 2035.

2. NDCs and Climate Commitments

Enabling Factors & Key Stakeholders

By connecting national science baselines with climate policy, The Pew Charitable Trusts, Centro de Estudios Marinos (CEM), and partners at the Smithsonian Environmental Research Center worked with the Government of Honduras to provide the enabling conditions necessary for the development of these new commitments, including:

- Re-establishing the National Wetlands Technical Committee and National Biological Monitoring Board and supporting the strengthening of these bodies
- Providing insights into the restorable areas of mangroves on the Caribbean coast and the ecosystem services provided by coastal wetlands on the Pacific coast.
- Co-hosting with CEM and the Government of Honduras a technical workshop on coastal wetlands in NDCs to kickstart the NDC process.
- Collaborating with CEM and the government in the development of the targets, including the necessary baseline data.

Key among the groundwork milestones listed above was the reestablishment of Honduras' National Biological Monitoring Board and National Wetlands Technical Committee, whose improved institutional coordination brought multiple stakeholders together for this collaborative process.

Technical and financial support from The Pew Charitable Trusts, CEM, and international partners including the Smithsonian Environmental Research Center, GIZ, and EuroClima were critical to generating the scientific evidence base underpinning the new commitments. NDC Partnership support complemented these efforts. Key institutions involved include SERNA, MiAmbiente, ICF, SAG-DIGEPESCA, NDC Partnership, GIZ, EuroClima, Centro de Estudios Marinos, The Pew Charitable Trusts, Coral Reef Foundation, and CURLA-UNAH.

Progress & Next Steps

The publication of Honduras's NDC 3.0 with strong, science-based commitments for coastal wetland ecosystems represents a significant milestone, based on concerted efforts to coordinate among institutions and stakeholders. Implementation planning is now underway for 2026 and beyond.

The Pew Charitable Trusts and CEM continue to support the Government of Honduras with implementation planning through 2026, including: standardizing protocols for monitoring and restoration of mangroves and seagrass at the national level; supporting development of the NDC implementation roadmap; conducting a pre-feasibility analysis for NDC targets on marine protected area expansion and effective management of areas with mangroves and seagrass; and supporting long-term sustainability of the National Biological Monitoring Board and Technical Wetlands Committee.

2. NDCs and Climate Commitments

Challenges and Limitations

Like other countries in the region, Honduras continues to experience a financing gap for implementing NDC commitments. Discussions surrounding financing are being integrated into the implementation planning process following NDC 3.0 publication.

Lessons for Other Countries

- Honduras's NDC for coastal wetlands represents a **model for countries that have not historically included specific national goals for coastal wetland conservation but have ample baseline data to support the development of key targets.**
- **Inter-institutional coordination is essential to ensure common baselines and departmental buy-in.**
- **There is a pathway for inclusion of coastal wetland targets in NDC updates regardless of baseline data availability, as the NDC can be used to guide key next steps for baseline development (for example, on seagrass).**
- **The identification of key stakeholders is crucial when developing NDC targets, especially those who will be responsible for advancing and implementing them.**

Mangrove tunnel in Roatán, Honduras
© Woody Hibbard, Wikimedia Commons



2. NDCs and Climate Commitments

Case Study

Jamaica's Nationally Determined Contribution 3.0

Contributors: Loureene Jones and Kristinia Dougherty from The Nature Conservancy; Kim Jensen, Peter Edwards, and Stacy Baez from The Pew Charitable Trusts

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National with Local/Subnational Implementation

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity Loss; Sea level rise; Storm surges; Tropical storms; Ecosystem loss

Economic & Social challenges addressed: Lack of technical capacity; Poor monitoring and enforcement

Policy Background: New coastal commitments

Jamaica's third revised Nationally Determined Contribution (NDC 3.0) to the Paris Agreement includes science-based and measurable commitments to coastal wetland ecosystems for the first time in the country's history. This is a significant change from Jamaica's NDC 2.0, which did not include any specific commitments for coastal wetlands. The inclusion of these targets was assisted by a two-year collaborative project between the Government of Jamaica, The Nature Conservancy, The Centre of Marine Sciences at the University of West Indies at Mona, and The Pew Charitable Trusts, focused on generating the scientific baseline needed to justify and design credible national commitments.

Jamaica's NDC 3.0 includes the following mangrove-specific commitments and activities:

- Protect approximately 67% of the island's mangrove forests by 2033. Building on the 5,800 hectares of mangroves currently under protection, protect at least a further 4,400 hectares of Government of Jamaica-owned forested wetlands by 2030.
- Restore and protect 7,000 hectares of mangrove forests by 2027. Restore at least 2,200 hectares of mangroves, including within local communities, by 2030, with an additional 1,000 hectares of modified or degraded forested wetlands by 2035.
- Finalise and implement the national ecosystems restoration plan by 2035.
- Develop and formalise a no-net-loss policy for coastal wetlands by 2035 (conditional).
- Work to include mangroves in the country's National Greenhouse Gas Inventory and other relevant reports by 2030 (conditional).

The updated NDC also includes numerous other coastal commitments for seagrass ecosystems.

2. NDCs and Climate Commitments

Policy Strategy

The joint project focused on four key objectives to enable Jamaica's coastal wetland NDC commitments:

- **Mapping and carbon assessment.** A national-scale seagrass and mangrove mapping and carbon assessment provided Jamaica's first national seagrass map and an updated mangrove map, replacing a previous map that combined mangrove and swamp forests. The mangrove mapping refined existing data and assessed carbon stocks at the national level.
- **Capacity building.** Trainings strengthened in-country research, policy, and financing capacities relevant to the management of mangroves and seagrasses.
- **Technical guidance.** Partners provided guidance on integrating blue carbon habitats into national climate frameworks.
- **Financing pathways.** The project supported identification of appropriate financing mechanisms for coastal wetland protection and restoration.

Enabling Factors & Key Stakeholders

Critical to the success of the project was sustained engagement with expert stakeholders and consistent guidance from the Government of Jamaica throughout the two-year process. Regular coordination with the Climate Change Branch, Forestry Department, Climate Change Advisory Board, and other government agencies ensured that technical research was aligned with policy needs. The multi-institution collaboration between government, academia, and NGOs helped accelerate the integration of blue carbon ecosystems into the NDC. Key institutions and stakeholders include the Climate Change Branch, Forestry Department, Climate Change Advisory Board, National Environment and Planning Agency (NEPA), Ministry of Water, Environment and Climate Change, The Nature Conservancy, The Pew Charitable Trusts, and the Centre of Marine Sciences at the University of the West Indies at Mona.

Progress & Next Steps

The project has generated blue carbon stock data, Jamaica's first national-level seagrass map and carbon assessment, and an updated mangrove map. The work found that Jamaica has 11,978 hectares of mangroves, storing approximately 4,700,000 MgC. Jamaica's nearshore waters (within 30m of shore) hold 55,678 hectares of seagrass, storing more than 7,320,000 MgC. These data will be added to the Jamaica Systemic Risk Assessment Tool (JSRAT) and are being used to evaluate the country's progress toward the Sustainable Development Goals. A seagrass mapping and carbon assessment commitment included in the NDC has also already been fulfilled through this project.

The Project Team is in discussions with the government about next steps related to implementation of the country's coastal wetland NDC targets and how project partners might be helpful to the implementation of these commitments.

Challenges and Limitations

Like many countries, Jamaica will need financial support in order to implement several of its NDC coastal wetland commitments. Project partners are assessing how this joint project could support that process.

2. NDCs and Climate Commitments

Lessons for Other Countries

- **The importance of robust science to inform NDC commitments:** National-scale mapping and carbon assessments created a credible evidence base to justify and design measurable conservation targets.
- **Support in-country capacity early:** Training across coastal wetlands mapping and carbon research enabled Jamaica to translate data into policy and help to build national expertise in this area.
- **Use partnerships and sustained stakeholder engagement to accelerate progress:** The multi-institution collaboration (government, academia, NGOs) helped align technical research with policy needs, speeding the integration of blue carbon ecosystems into the NDC.



Below: Mangroves in the Port Royal Protected Area near Kingston, Jamaica
© The Pew Charitable Trusts

Above: Participants in a December 2024 climate finance capacity-building workshop learn how carbon is sampled from mangrove soil, Port Royal, Jamaica.
© The Pew Charitable Trusts



2. NDCs and Climate Commitments

Case Study Update

Belize's Nationally Determined Contribution 3.0

Belize's Nationally Determined Contribution was featured in the original 2023 Mangrove Law and Policy Brief as an example of how science-based carbon assessments and inclusive stakeholder processes can translate ambitious NDC commitments into concrete implementation arrangements. This update, submitted by The Pew Charitable Trusts and WWF Belize in 2026, reports on progress since the original publication, including the submission of NDC 3.0 with strengthened mangrove targets and an emphasis on nature-based solutions, completion of a national mangrove land tenure analysis, and development of key action plans for restoration and conservation.

Contributors: Michael Latimer and Kim Jensen, The Pew Charitable Trusts; Nadia Bood, WWF Belize; Dominic Andradi, WWF US

Secondary Themes: Science, Monitoring, & Data Informing Policy

Scale of implementation: National with Subnational/Local implementation

Climate & Ecological challenges addressed: Land and forest degradation; Biodiversity loss; Sea level rise; Storm surges; Tropical storms; Ecosystem Loss

Economic & Social challenges addressed: Lack of technical capacity; Poor monitoring and enforcement

Policy Background: Coastal wetland targets

Belize submitted its third NDC to the UNFCCC Paris Agreement in June 2025. A central feature of the NDC is its emphasis on nature-based solutions, including ambitious targets for the protection and restoration of mangroves, seagrasses, and other coastal wetlands, recognized not only for their blue carbon potential but for their critical role in protecting shorelines, sustaining fisheries, and supporting biodiversity. Key mangrove-related commitments include:

- Protecting a minimum of 6,000 hectares (ha) of mangroves by 2030 and 2,000 ha by 2035.
- Restoring at least 2,000 ha of mangroves by 2030 and 500 more ha by 2035.
- Exploring opportunities for new and improved public conservation areas and partnerships with private mangrove landowners and local communities.
- Implementing and enforcing the 2018 Forests Regulations related to mangrove protection and creating a dedicated Mangrove Unit within the Forest Department by 2030.
- Adopting and implementing the Belize National Mangrove Restoration Action Plan by 2026.
- Revising/adopting the Belize Mangrove Alliance Action Plan by 2030, implementing it by 2040.

2. NDCs and Climate Commitments

Policy Strategy

Since 2019, The Pew Charitable Trusts and WWF have supported the Government of Belize in developing and implementing its NDC commitments for coastal wetlands, with the overall project designed in partnership with government. Support has focused on strengthening technical and research capacity, providing data for target setting, and offering policy and financing support to ensure NDC commitments translate into impact on the ground. Three workstreams are central to this strategy:

- **Land tenure analysis.** The Lands and Surveys Department, with support from WWF and funding from The Pew Charitable Trusts, has completed a national mangrove land tenure analysis identifying which mangrove lands are in public or private ownership, providing a critical baseline for targeting conservation and restoration investments.
- **Restoration planning.** The Belize National Mangrove Restoration Action Plan, developed by the Belize Forest Department, WWF, and others with support from Pew, identifies critical areas for restoration on public and private lands.
- **Multi-sector engagement.** Multi-sector engagement, partnership development, and platform building led by WWF with support from The Pew Charitable Trusts are driving the creation of agreements and tools to advance mangrove conservation actions, including an engagement strategy for private landowners and collaboration with Silvestrum Climate Associates to identify additional conservation pathways on private lands.

Enabling Factors & Key Stakeholders

Partnership with government throughout the project's design and implementation has been central to its success, ensuring that technical activities are aligned with government priorities. The completion of the land tenure analysis provided the foundational data needed to identify priority conservation and restoration areas. Key institutions and stakeholders include the Ministry of Sustainable Development, Climate Change, and Solid Waste (including the National Climate Change Office, Forest Department, and National Biodiversity Office); Ministry of Blue Economy and Marine Conservation; Lands and Surveys Department; WWF; The Pew Charitable Trusts; and the Smithsonian Environmental Research Center.

Progress & Next Steps

Key milestones since 2023 include completion of the national mangrove land tenure analysis, finalization of the Belize Mangrove Alliance Action Plan with outputs focused on strengthening legislative frameworks, reducing illegal clearance, engaging the public, and restoring and protecting mangroves, and development of a private landowner engagement strategy that has already resulted in commitments from some owners to dedicate portions of their mangrove holdings to conservation.

With the land tenure analysis complete, the government and stakeholders must now advance conservation and restoration of priority mangrove areas on both public and private lands. The Belize Mangrove Alliance Action Plan and the National Mangrove Restoration Action Plan both require formal government adoption and implementation. The Resilient Bold Belize Project Finance for Permanence initiative includes mechanisms for mangrove conservation and restoration, with final details still under negotiation and expected later in 2026.

2. NDCs and Climate Commitments

Challenges and Limitations

Like many developing countries in the region, Belize faces a significant financing gap for NDC implementation. The estimated cost of implementing NDC 3.0 is US\$1.5 billion, with a funding gap of approximately US\$1.3 billion; the forestry sector, within which mangroves are classified, is estimated to require US\$331 million. Additional challenges include weak enforcement of existing regulations and strong pressure from coastal development and land-use conflicts.

Lessons for Other Countries

- **Sustained government partnership throughout project design and implementation ensures that technical activities are aligned with national priorities** and increases the likelihood that outputs will be formally adopted and acted upon.
- **A national mangrove land tenure analysis is a critical enabling step for countries with unclear or contested coastal land ownership.** Understanding who owns mangrove areas is fundamental to designing effective conservation and restoration strategies for both public and private lands.
- **Multi-sector engagement initiatives that bring together government, civil society, and private landowners can generate voluntary conservation commitments** that complement formal regulatory frameworks, particularly in contexts where enforcement capacity is limited.

Mangrove hedges at Naia Resort in Placencia, Belize.

Naia was recognized by WWF for its innovative use of mangrove hedges as an alternative to concrete seawalls, and are part of their larger initiative to identify additional conservation pathways on private lands.

© Jaime Rojo/WWF-US



3. Finance, incentives, and blue carbon

The challenge of mobilizing sustained, equitable finance for mangrove conservation and restoration remains one of the most significant constraints on translating policy commitments into action. Innovative financial mechanisms, from payments for ecosystem services to blue carbon markets, have long been recognized as important tools for bridging this gap, but designing them to be effective, high-integrity, and genuinely beneficial to coastal communities requires both enabling policy frameworks and careful institutional design.¹¹ The Mangrove Breakthrough Financial Roadmap, launched at COP28, estimates that approximately US\$4 billion in investment by 2030 could unlock sustainable long-term flows of capital in regenerative models that ensure mangroves are more valuable standing than destroyed.¹²

The case in this section illustrates a practical approach to building those enabling conditions for mangrove finance. The Blue Carbon Enabling Conditions Index, developed by Fair Carbon across Indonesia, the Philippines, and Myanmar, is a diagnostic tool that assesses country readiness for high-integrity blue carbon project development, identifying the specific policy, tenure, and regulatory gaps that most constrain investment and implementation. Rather than a fully established policy framework, it represents an approach to strengthening the conditions under which finance can flow to mangrove conservation and restoration at scale, offering lessons for governments and practitioners working to develop their own enabling environments for blue carbon.

11. Leal and Spalding (2024), *The State of the World's Mangroves 2024*, Section 7.1.

12. Global Mangrove Alliance, Mangrove Breakthrough Financial Roadmap, launched at UNFCCC COP28, December 2023. <https://www.mangrovealliance.org/mangrove-breakthrough/>

Koh Kresna Lok Community Fishery (CFi) member standing next to restored mangroves within the CFi, Kampot Province, Cambodia
© Landesa



Case Study

How Asia is Shaping the Policy-Enabling Conditions for High Integrity Blue Carbon Projects

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Secondary Themes: NDCs and Climate Commitments; Integrating Mangroves into Planning & Governance Frameworks

Scale of implementation: Multi-national; Global

Climate & Ecological challenges addressed: Land & forest degradation; Ecosystem loss

Economic & Social challenges addressed: Lack of access to long-term funding; Lack of alternative income opportunities; Lack of public & decision-maker awareness; Lack of technical capacity; Poor monitoring & enforcement; Poor governance & participation

Policy Background: The policy foundations of blue carbon

The Blue Carbon Enabling Conditions Index, developed by Fair Carbon, is a practical diagnostic tool for assessing and strengthening the policy foundations for high-integrity blue carbon projects across Asia. Its purpose is to help governments, investors, and communities navigate complex legal and regulatory landscapes by providing a clear, data-driven assessment of country readiness. Applied across countries such as Indonesia, the Philippines, and Myanmar, the Index evaluates key enabling conditions including authorization processes, carbon rights, land tenure, benefit-sharing, and MRV systems. It highlights both strengths and gaps, offering a transparent basis for decision-making and targeted policy reform. The initiative addresses critical challenges that hinder blue carbon development in the region, including unclear regulations, fragmented governance, and limited legal certainty, which can delay projects and deter investment. By identifying these barriers and opportunities, the Index supports countries in developing more coherent, equitable, and credible policy frameworks to scale blue carbon with integrity and impact.

3. Finance, Incentives, & Blue Carbon

Policy Strategy

The strategy combines policy analysis, institutional strengthening, and project guidance across four key areas:

- **Structured diagnosis and best practice guidance.** The Index provides a structured assessment of country readiness, linking blue carbon to NDCs, forestry policies, and coastal management plans to support countries in embedding blue carbon within broader climate and development agendas while aligning with emerging global standards.
- **Data-driven policy insights.** The Index assesses critical elements including the existence and quality of national carbon registries and MRV systems, and the integration of blue carbon into national climate targets, helping countries understand their current readiness, track progress, and strengthen transparency and accountability.
- **Inclusive governance.** The strategy encourages governments to place communities at the center of project design and implementation, highlighting the importance of secure tenure, recognition of customary rights, participatory governance, and equitable benefit-sharing.
- **Capacity building and implementation support.** The Index is complemented by targeted workshops and technical support that help governments interpret results, prioritize actions, and strengthen coordination, approval processes, and institutional capacity, ensuring that identified gaps translate into concrete policy and operational improvements.

Enabling Factors and Key Stakeholders

Key enabling conditions identified through the Index include political commitment to climate and coastal ecosystem protection through alignment with national climate targets such as NDCs, and institutional coordination across environment, forestry, and carbon market authorities. Technical support from international standards bodies and partners including Verra, Gold Standard, and Plan Vivo has helped countries build experience and align domestic systems with global markets. Growing project pipelines and early implementation experience have allowed governments to refine regulations based on practice, while increasing recognition of the role of communities through FPIC, benefit-sharing, and local stewardship supports more inclusive and durable policy approaches. Fair Carbon leads the analysis by reviewing policies from national institutions responsible for environment, forestry, and coastal management, with external experts supporting the review process and government stakeholders engaged through targeted workshops.

Progress & Next Steps

The initiative has produced more than 20 country profiles through the Blue Carbon Enabling Conditions Index, offering the first structured assessment of country readiness to develop high-integrity blue carbon projects, strengthening investor due diligence and informing decision-making. The analysis has also delivered targeted policy recommendations supporting governments to address regulatory gaps, and has raised awareness among governments, project developers, and investors about the importance of clear, coherent policy frameworks for scaling blue carbon.

The next phase focuses on moving from analysis to action through a dedicated capacity-building program for governments. Fair Carbon will guide senior officials and technical experts to better understand blue carbon opportunities, strengthen cross-agency coordination, and integrate high-integrity blue carbon regulation and legislation into climate, biodiversity, and finance strategies.

3. Finance, Incentives, & Blue Carbon

A key outcome is the identification of concrete policy reforms, institutional improvements, and coordination actions each country can take to improve its enabling environment for blue carbon at scale.

Challenges and Limitations

For the country profiles, a key limitation is the limited transparency and accessibility of government information on carbon markets and blue carbon regulations, and the challenge of keeping analyses current as policies evolve rapidly. For the capacity-building component, risks include limited availability of senior officials, slow institutional processes, and staff turnover. Uptake may be constrained if efforts remain too conceptual, while changing political contexts can affect continuity. These challenges are mitigated through partnerships with trusted organizations, targeted engagement, and a practical, action-oriented approach.

Lessons for Other Countries

- **Countries benefit from understanding their level of readiness through structured, data-driven assessments that identify regulatory gaps, risks, and priorities, allowing for more targeted and effective reforms.**
- **Policy clarity on carbon rights, land tenure, MRV, registries, and authorization processes is essential** to reduce investor uncertainty, strengthen integrity, and attract finance for blue carbon.
- **Strong outcomes depend on coordination across institutions and on bridging the gap between national strategies such as NDCs and operational systems on the ground,** requiring engagement of both senior decision-makers and technical experts.
- **Inclusive governance through FPIC and benefit-sharing, combined with hands-on capacity building, ensures that reforms are not only well-designed but equitable, feasible, and durable over time.**



Indonesian mangroves,
TNC Photo Contest 2022
© Xiong Xiong/TNC

4. National biodiversity strategies and mangrove management plans

National Biodiversity Strategies and Action Plans (NBSAPs) have emerged as a critical vehicle for translating the targets of the Kunming-Montreal Global Biodiversity Framework into national mangrove policy. Under Target 2 of the GBF, countries are committed to ensuring that at least 30% of degraded ecosystems are under effective restoration by 2030, while Target 3 calls for the conservation and management of at least 30% of terrestrial, inland water, and coastal and marine areas.³ For mangroves, which are explicitly referenced in GBF complementary indicators, NBSAPs offer an opportunity to set ecosystem-specific targets, designate institutional responsibilities, and align biodiversity commitments with those made under the UNFCCC and Ramsar Convention.

At the same time, many countries govern mangroves through a patchwork of sectoral regulations and policies that cut across forestry, fisheries, coastal management, and climate ministries, making dedicated national mangrove management plans an important complementary instrument. Colombia's case illustrates both dimensions: a country with significant mangrove resources and longstanding governance experience that is using the NBSAP process and a suite of updated regulatory instruments to establish a coherent national roadmap for mangrove management through 2030 and beyond.



Mangrove restoration areas in Cispatá Bay,
San Antero municipality, Córdoba, Colombia.
© Héctor Tavera, MinAmbiente

4. NBSAPs & Mangrove Management Plans

Case Study

Updating Policy and Regulatory Instruments for Mangrove Management in Colombia

Contributors: Hector Tavera, Milena Benavides, and Francisco Alvarez from the Colombian Ministry of Environment (MinAmbiente); Gustavo Castellanos-Galindo and Luis Zapata from WWF Colombia

Secondary Themes: Integrating Mangroves into Planning & Governance Frameworks; Science, Monitoring, & Data Informing Policy

Scale of implementation: National, Subnational, Local

Climate & Ecological challenges addressed: Land & forest degradation; Biodiversity & Ecosystem loss; Conflicting uses & cumulative impacts; Invasive Species; Pollution

Economic & Social challenges addressed: Infrastructure development; Lack of access to long-term funding; Lack of alternative income opportunities; Physical resource extraction; Poor monitoring & enforcement; Poor governance & participation; Unemployment & poverty

Policy Background: A national roadmap for mangrove management

Colombia has worked in recent years to update the policy and regulatory frameworks guiding the management of mangrove ecosystems. Three instruments now constitute the core of this framework at national, subnational, and local levels: the updated National Program for the Sustainable Use, Management, and Conservation of Mangrove Ecosystems in Colombia (updated in 2023), Law 2243 of 2022, and Resolution 1263 of 2018.

The updated National Program defines the vision for mangrove ecosystems in Colombia by 2030, with eight strategic lines and 46 actions structured around an adaptive implementation process. Law 2243 and Resolution 1263 prohibit land-use changes in mangrove areas, establish technical guidelines for environmental land-use planning, and adopt guidelines for mangrove ecosystem restoration and monitoring, as well as the mangrove management information system SIGMA. These instruments reaffirm Colombia's commitment to protect and manage this critical ecosystem, and their implementation is formally embedded in Colombia's NDC commitments and Law 2169 of 2021.

4. NBSAPs & Mangrove Management Plans

Policy Strategy

The updated National Program is structured around eight strategic lines, which seek to holistically integrate the local and national needs for the management of mangrove ecosystems in Colombia:

- **Planning** defines categories, management units, and the mangrove use regime, incorporating criteria to address threats posed by climate change, biodiversity loss, pollution, and sectoral developments.
- **Bioeconomy** offers livelihood options that promote mangrove conservation while strengthening the social and economic resilience of ethnic groups, smallholder farmers, and local communities.
- **Restoration** seeks to recover lost natural habitats, increase mangrove resilience to coastal and riverine erosion, floods, and storms, and increase carbon stocks and the availability of hydrobiological resources for local food and economic security.
- **Protected Areas** raise the level of protection for mangroves, reducing human pressures and nature loss while increasing adaptive capacity to global change.
- **Knowledge and Research** provides up-to-date information for decision-making, guiding mangrove management across various global change scenarios.
- **Governance** establishes the participatory mechanisms and institutional arrangements necessary for decision-making, enabling the social-ecological system to proactively adapt to emerging challenges.
- **Education** promotes, through a differentiated and inclusive approach, education, capacity development, and public awareness of the benefits of integrated mangrove management.
- **Financing** seeks to enable the timely mobilisation of sufficient resources, economic, social, cultural, political, and technical, to address integrated mangrove management in Colombia.

Enabling Factors and Key Stakeholders

Technical and political interest in mangrove management, sustained over three decades, has enabled Colombia to develop a comprehensive suite of policy and regulatory instruments. This interest gained momentum in the mid-1990s through the Colombian Mangroves Project co-financed by the International Tropical Timber Organization, and has been maintained through institutional persistence at central and regional levels. Elevating the policy's update and implementation to the highest national and international commitments has renewed political interest over the past five years. The collaboration between the Ministry of Environment and Sustainable Development (MinAmbiente) and WWF Colombia has been crucial to the recent policy update.



Figure 3. Local communities co-creating the management plan for mangrove ecosystems in the Nuquí municipality of Chocó, Colombia. © Héctor Tavera, MinAmbiente

4. NBSAPs & Mangrove Management Plans

Key institutions and stakeholders include MinAmbiente as the body responsible for policy and regulations; regional and district environmental authorities responsible for implementing planning instruments; National Natural Parks of Colombia; research institutes INVEMAR and IIAP; universities; ethnic groups, rural communities, and other local communities; and NGOs and conservation partners.

Progress & Next Steps

Overall progress of **37.1%** has been achieved in implementing the updated National Program in accordance with the implementation plan established under Law 2169 of 2021. Key achievements include:

- **43.8% of regional and district environmental authorities** making progress in updating or formulating their mangrove management instruments
- **3,263 hectares undergoing restoration** with participation of ethnic groups, farmers, & local communities
- **strengthening of green businesses** and community organizations in beekeeping, aquaculture, shellfish harvesting, and sustainable tourism
- **two new protected areas** designated with mangroves among their conservation objectives
- **37.5% of authorities** conducting participatory mangrove monitoring and strengthening of SIGMA through the design & operation of a blue carbon module
- **two regulatory instruments & technical guidelines** for conservation incentives in mangroves and blue carbon; **four local governance agreements** for mangrove management and a **national governance mechanism** for the implementation of blue carbon technical guidelines; and
- **US\$20M mobilized** for integrated mangrove management.

Over the next five years, 100% of the updated National Program must be implemented in accordance with its 2030 vision, NDC commitments, the long-term climate strategy, and Law 2169 of 2021. This requires mobilizing approximately **US\$15M per year**, coordinating efforts at local, subnational, national, and international levels, and ensuring the active participation of ethnic groups, rural communities, and other local communities. Implementation of the strategic policy governance framework and the national blue carbon governance mechanism will strengthen ties among actors and enable better coordination and collaboration.

Challenges and Limitations

Ensuring sustained political, institutional, and technical commitment to mangrove management is the primary challenge, both at the national level given the upcoming change in government, and internationally given current geopolitical dynamics. Mobilizing timely, sufficient, and sustained resources to address integrated mangrove management is imperative to achieving the 2030 objectives, and investment in mangrove management must be increased and made permanent.

4. NBSAPs & Mangrove Management Plans

Lessons for Other Countries

- **Mangroves are social-ecological systems:** their management must be approached with an understanding of the close ecological, economic, social, and cultural ties that have been woven with ethnic groups, rural communities, and other local communities in coastal areas.
- **Mangrove policy instruments alone are insufficient:** their implementation must be grounded in political, institutional, technical, and community will, and must be elevated to the highest levels of international and national commitments, such as the biodiversity action plan, the long-term climate strategy, and the nationally determined contributions (at the international level), as well as the national development plan, laws, and resolutions (at the national level).
- **Ethnic groups, smallholder farmers, and local communities are the cornerstone of mangrove management:** ensuring a fair and equitable distribution of conservation responsibilities and benefits will help reduce pressures and mitigate the vulnerability of the social-ecological system to global changes.
- **The poverty traps** frequently faced by ethnic groups, smallholder farmers, and local communities, which are exacerbated by global change (climate change, biodiversity loss, pollution, and pandemics), can be resolved or mitigated through the **management of the social-ecological system in a way that promotes an adequate flow of benefits from mangroves to support the livelihoods and well-being of households.**



Below: Mangrove cockle (*Anadara tuberculosa*) collectors in a monitoring exercise, Nuqui municipality, Chocó, Colombia
© Héctor Tavera, MinAmbiente



Above: Community-based mangrove monitoring in areas of the community council Bajo Mira y Frontera, San Andrés de Tumaco municipality, Nariño, Colombia
© Héctor Tavera, MinAmbiente

5. Integrating mangroves into planning and governance frameworks

Effective mangrove conservation and restoration depends not only on dedicated mangrove policies but on how mangroves are integrated into the broader planning and governance frameworks that shape land use, coastal development, and natural resource management. Where mangroves are recognized as priority ecosystems within spatial planning instruments, protected area systems, and territorial governance arrangements, the conditions for sustained conservation and restoration are considerably stronger than where they rely on sector-specific regulation alone. The cases in this section illustrate two distinct but complementary dimensions of this integration challenge.

The Bahamas case examines how a small island nation is strengthening mangrove governance through the development of a national restoration framework and climate resilience planning, embedding mangrove conservation within broader coastal and environmental planning processes. Brazil's São Paulo case illustrates how a state-level protected area system can serve as the institutional foundation for integrated mangrove management, combining science-based monitoring, invasive species control, community engagement, and blue carbon inventory within a single territorial governance framework. Indonesia's Kera-kera case demonstrates how a long-standing customary open-close system governing mangrove resource use has been formally codified within a village governance framework in West Papua, providing legal legitimacy to an existing community-based management practice. Together, these cases illustrate that effective mangrove governance can be anchored at very different scales: national restoration frameworks, state-level protected area systems, and village-level customary regulations. What they share is the embedding of mangrove management within durable institutional structures rather than treating it as a standalone conservation target.

Mangroves in Jalisco, México
© CONABIO



5. Integrating Mangroves into Planning and Governance Frameworks

Case Study

Strengthening Mangrove Governance through Restoration and Climate Resilience in The Bahamas

Contributors: Bruce Myers, Animals | Environment PLLC (AELaw); Martin A. Lundy II, Lundy Law; Rashema Ingraham, Bonefish and Tarpon Trust; and Ranique Forbes, The Bahamas Mangrove Alliance

Secondary Themes: Science, Monitoring, & Data Informing Policy; NBSAPs & Mangrove Management Plans; Finance, Incentives, & Blue Carbon

Scale of implementation: Primarily National with Local dimensions

Climate & Ecological challenges addressed: Ecosystem loss (hurricane-driven); Tropical storms

Economic & Social challenges addressed: Infrastructure development; Lack of access to long-term funding; Poor monitoring & enforcement; Lack of public & decision-maker awareness

Policy Background: Moving restoration into long-term governance

The Bahamas has some of the largest mangrove areas in the Caribbean, but existing legal protections are fragmented across forestry, environmental permitting, fisheries, land-use planning, wetlands, protected areas, and climate and carbon frameworks, and are not always well understood or consistently enforced. The Bahamas Mangrove Alliance Restoration and Policy Advancement initiative, anchored by the 2025 *Mangrove Policy Paper: Prioritised Policy Pathways and Advocacy Frames*, aims to strengthen mangrove protection in the country. The paper identifies policy options for mangrove protection, reviews current Bahamian laws and international commitments, and recommends eight priority pathways for government action, including a national mangrove policy grounded in a **no net loss** principle, stronger enforcement of existing laws, forestry protections, compensatory mitigation, education, conservation finance, and blue carbon.

The initiative aims to move mangrove restoration into long-term governance by improving permitting transparency, strengthening implementation, and linking mangrove protection to climate resilience, biodiversity, fisheries, coastal protection, and sustainable development.

5. Integrating Mangroves into Planning and Governance Frameworks

Policy Strategy

The strategy is built around the 2025 *Mangrove Policy Paper*, which provides a practical roadmap for strengthening mangrove protection in The Bahamas. Since Bahamian law already contains several relevant protections, the strategy focuses on improving coordination, implementation, and enforcement across existing frameworks rather than relying on new legislation.

A central component is advancing a written, science-backed national mangrove policy grounded in **no net loss**, meaning mangrove loss should be avoided, minimized, and where unavoidable, offset through restoration or compensation. The paper also recommends fully implementing existing legal requirements, strengthening protected species and area provisions under forestry law, assessing compensatory mitigation, expanding education and outreach, engaging international commitments, pursuing conservation finance, and clarifying the role of blue carbon in carbon market policy.

The strategy connects mangrove protection to wider planning frameworks including national climate adaptation, development planning, environmental impact assessment, forestry management, fisheries habitat protection, and international commitments under Ramsar, the CBD, the Paris Agreement, UNCLOS, and the Commonwealth Blue Charter. Science, data, and monitoring are key implementation tools, with the policy paper highlighting the need for mapping, habitat assessments, restoration monitoring, ecosystem service valuation, and better use of land-use and environmental data to guide decision-making.

Coordination is advanced through The Bahamas Mangrove Alliance, which brings together NGOs, scientists, government agencies, local experts, and community partners. The strategy also includes community education and financing mechanisms, with public awareness, youth engagement, and local stewardship complemented by exploration of conservation & climate finance, and blue carbon as tools for long-term sustainability.

Enabling Factors and Key Stakeholders

Key enabling factors include the existence of The Bahamas Mangrove Alliance as a strong coalition platform bringing together NGOs, scientists, restoration practitioners, legal and policy experts, and community partners. Growing national attention to climate resilience, biodiversity protection, coastal development impacts, and blue carbon opportunities has also supported the initiative, as has the foundation of existing legal frameworks, which creates opportunities for improving implementation and coordination rather than starting from scratch. Financing and technical support from BMA partners and philanthropic funders enabled legal research, policy analysis, stakeholder engagement, and communications tools.

Key stakeholders include The Bahamas Mangrove Alliance, Bonefish and Tarpon Trust, Perry Institute for Marine Science, Waterkeepers Bahamas, FRIENDS, Cape Eleuthera Institute, University of The Bahamas, Bahamas National Trust, BAMSI, Blue Action Lab, The Nature Conservancy, the Ministry of Environment and Natural Resources' Forestry Unit and Department of Environmental Planning and Protection, ORG Bahamas, local communities, schools, guides, and volunteers.

5. Integrating Mangroves into Planning and Governance Frameworks

Progress & Next Steps

The initiative has produced the 2025 *Mangrove Policy Paper* outlining eight prioritized policy pathways and four advocacy frames to guide national mangrove protection, helping shift mangrove work from restoration alone toward a broader governance agenda focused on no net loss, stronger implementation of existing laws, permitting transparency, conservation finance, and blue carbon. It also supported development of a public-facing environmental permitting and Certificate of Environmental Clearance process tool, with stakeholder testing through focus groups identifying practical gaps around EIA and EMP requirements, public consultation, agency roles, and access to information. Alongside the policy work, the Northern Bahamas Mangrove Restoration Project has planted over 600,000 mangroves toward a one million mangrove goal, linking on-the-ground restoration with long-term policy protection, education, outreach, community engagement.

Next steps include refining the permitting and CEC process tools into more publicly accessible formats including checklists, decision pathways, and online resources, and continuing to advance priority policy asks, especially a national no net loss mangrove policy and greater transparency in development permitting. Further work is needed to align mangrove protection with national climate, biodiversity, forestry, land-use, and coastal planning processes, including the anticipated National Mangrove Management Plan. Longer-term mechanisms including compensatory mitigation, conservation finance, and blue carbon will continue to be explored alongside ongoing restoration, monitoring, and community outreach.

Challenges and Limitations

Key challenges include fragmented legal protections across multiple laws and agencies, limited implementation capacity, and inconsistent monitoring and enforcement. Environmental permitting processes can be difficult for the public to understand, with limited transparency around decision-making, agency roles, timelines, and public consultation requirements. Long-term financing is a challenge for sustained restoration, monitoring, policy advocacy, and community engagement. Additional limitations include consultation fatigue among stakeholders, uneven political will, and the need to translate technical legal and scientific information into practical tools that government agencies, communities, developers, and advocates can use consistently.

Lessons for Other Countries

- **Use restoration as a policy entry point.** Large-scale restoration can create public support, generate data, and build momentum for stronger legal protection, especially where mangroves are already recognized for climate resilience, fisheries, and biodiversity benefits.
- **Start with existing laws before creating new ones:** mangrove protection may already be partly embedded across multiple existing legal frameworks. Mapping these laws can reveal practical opportunities for better coordination, enforcement, and policy alignment without requiring new legislation.
- **Translate technical processes into public tools.** Clear, accessible permitting guidance, checklists, decision trees, & public-facing tools can improve compliance, reduce confusion, and strengthen accountability.
- **Use coalitions to bridge science, policy, and community action.** A multi-partner platform can connect legal research, restoration, monitoring, education, government engagement, and financing discussions, helping move mangrove policy from concept to implementation.

5. Integrating Mangroves into Planning and Governance Frameworks

Case Study

Integrated Mangrove Management in São Paulo, Brazil: Science-based Decision-making and Local Adaptation

Contributors: Laís Coutinho Zayas Jimenez, Beatriz Eiko Kitagami, and Julia Lima Monteiro de Carvalho from Fundação Florestal

Secondary Themes: Science, Monitoring, & Data Informing Policy; Finance, Incentives, & Blue Carbon; Restoration Protocols & Best Practice Guidelines

Scale of implementation: Subnational

Climate & Ecological challenges addressed: Biodiversity & Ecosystem loss; Invasive Species

Economic & Social challenges addressed: Infrastructure development; Lack of alternative income opportunities; Lack of public & decision-maker awareness; Lack of technical capacity; Poor monitoring & enforcement; Unemployment & poverty

Policy Background: Territorial mangrove management in São Paulo

Since 2024, the state of São Paulo has implemented an integrated mangrove management initiative through the Fundação Florestal, the body responsible for managing the state's protected area system. The initiative is grounded in territorial governance of protected areas along the coast, through which mangrove-related actions are implemented across multiple management contexts. This territorial foundation enables the integration of science, management, and local engagement across a diverse coastal landscape, and positions the protected area system as the primary institution for mangrove conservation, restoration, and monitoring in the state.

The initiative addresses a range of pressures on São Paulo's mangrove ecosystems including invasive species, ecosystem loss, and the need for improved spatial data on mangrove extent and carbon stocks. It operates within the state protected area system and contributes to broader conservation and climate agendas by strengthening mangroves as key ecosystems for biodiversity conservation and carbon storage.

5. Integrating Mangroves into Planning and Governance Frameworks

Policy Strategy

The strategy integrates five interconnected components within the state protected area network:

- **Biodiversity monitoring.** Systematic monitoring of birds, crabs, and vegetation provides the data foundation for management decisions, identifying avifauna hotspots, priority areas for fisheries stock protection, and detailed characterization of mangrove forest condition. All monitoring actions are structured to feed back into management, supporting evidence-based decisions and refining planning priorities.
- **Blue carbon inventory.** An ecosystem-scale blue carbon inventory integrates aboveground biomass and detailed soil carbon stocks from extensive field sampling, designed to generate new data through management actions while contributing to broader conservation and climate agendas.
- **Invasive species management.** Targeted actions address two invasive species: removal of the invasive oyster *Saccostrea cucullata*, supported by a payment for ecosystem services scheme linking biodiversity conservation with income generation for local communities; and control of *Sonneratia apetala* through field removal, inter-agency coordination, and direct investment including early detection and rapid response.
- **Restoration and territorial planning.** Actions include environmental education through teacher training in coastal municipalities, support for locally led restoration and development of new restoration projects, and territorial planning actions such as mapping previously undetected small mangrove stands, identifying vulnerable areas, and expanding protected areas.
- **Community and local governance.** Local communities are directly involved in the co-development of the PES scheme and in restoration initiatives, with environmental education providing an additional pathway for community engagement.

Enabling Factors and Key Stakeholders

The existence of an established protected area system managed by the Fundação Florestal ensures territorial presence, operational capacity, and continuity of actions along the coast. Strong institutional coordination with environmental agencies at federal and municipal levels enables joint responses to challenges such as invasive species management and territorial planning. Partnerships with universities and research institutions provide scientific grounding and technical support, while the presence of local management teams and engagement with local communities have been key to developing context-specific solutions.

Key institutions and stakeholders include the Fundação Florestal; research institutions including Fundação de Amparo à Pesquisa do Estado de São Paulo, Universidade de São Paulo, and Universidade Estadual Paulista; national agencies including the Ministério do Meio Ambiente, IBAMA, and ICMBio; state agencies including SEMIL, CATI, and IPA; municipal governments; and traditional & coastal communities. The authors wish to also acknowledge the contributions and leadership of Gustave Gilles Lopez, Andrea Soares Pires, and Rodrigo Levkovicz of the Fundação Florestal.



Figure 4. Community-based management of invasive oysters (*Saccostrea cucullata*).
© Fundação Florestal

5. Integrating Mangroves into Planning and Governance Frameworks

Progress & Next Steps

Key achievements include completion of the first year of biodiversity monitoring, with results identifying avifauna hotspots and priority areas supporting crab fishery stock protection, and detailed characterization of mangrove forests. The blue carbon inventory has advanced with soil sampling campaigns completed, with initial results indicating that São Paulo's mangroves stand out in terms of carbon storage capacity. Invasive species management has resulted in the removal of significant numbers of *Saccostrea cucullata* individuals, while early detection and response actions for *Sonneratia apetala* are underway. The PES scheme is under development in collaboration with local communities, with sectoral meetings already underway. Additional progress includes mapping of previously undetected small mangrove stands and advances in environmental education initiatives.

Next steps include advancing implementation of the PES scheme targeting *Saccostrea cucullata*; contracting specialized services to support large-scale removal of *Sonneratia apetala* with the objective of eradication; finalizing and disseminating the blue carbon inventory; continuing annual monitoring with ongoing refinement of protocols; and establishing mangrove nurseries, expanding restoration actions, creating new protected areas encompassing mangroves, and broadening environmental education across coastal regions.

Challenges and Limitations

Given the complexity and scale of the strategy and its reliance on public institutional structures, continuity may be influenced by changes in leadership and shifting priorities over time. The approach also requires constant coordination between different institutions and adaptation to the realities of each territory.

Lessons for Other Countries

- **Managing mangroves works better when grounded in territorial governance.** Working through protected areas makes it possible to act consistently over time and adapt actions to each region.
- **Combining existing scientific literature with data generated through management itself strengthens decision-making.** Monitoring and field actions are not separate from policy, they are part of it.
- **Invasive species management becomes more viable when combined with socio-economic instruments.** The development of a PES scheme linked to *Saccostrea cucullata* removal shows that conservation and local livelihoods can be addressed together.
- **Integrating different fronts, including biodiversity, carbon, restoration, and community engagement, within the same strategy helps address the complexity of mangrove ecosystems rather than treating each issue in isolation.**



Environmental monitoring conducted under the integrated mangrove management program, São Paulo, Brasil
© Fundação Florestal

5. Integrating Mangroves into Planning and Governance Frameworks

Case Study

Formalizing Kera-kera, a local traditional knowledge practice for Community-Based Mangrove Protection in West Papua, Indonesia

Contributors: Nurhidayani Namirudin (lead author), Susan Lusiana, and Nurismu Hidayat from Konservasi Indonesia; Ramlie Salihie from BLUD UPTD Pengelolaan KKP Kaimana; and Dahlin Iha, Head of Pattimburak Village

Secondary Themes: NBSAPs and National Mangrove Management Plans; Customary Mangrove Governance

Scale of implementation: Local

Climate & Ecological challenges addressed: Land & forest degradation; Biodiversity loss; Unsustainable harvest

Economic & Social challenges addressed: Lack of public & decision-maker awareness; Poor monitoring & enforcement; Poor governance & participation

Policy Background: Codifying customary practice into village law

Patimburak Village Regulation No. 02/2025 on the Management of Kera-kera Mangrove (PERKAM) in the Guraferi and Kidai areas of Irigain Bay, Fakfak, West Papua, formally recognizes and institutionalizes kera-kera, a long-standing customary open-close system governing mangrove resource use, within the village governance framework. Rather than introducing a new conservation model, the regulation codifies an existing customary management practice into a legally recognized governance mechanism, addressing uncontrolled harvesting, mangrove cutting and degradation, weak local enforcement, and increasing pressure on fisheries resources.

The regulation establishes rules for harvesting periods, access rights, prohibited activities, sanctions, and institutional responsibilities across the Guraferi and Kidai mangrove areas. It creates a formal basis for coordination between customary authorities, village government, and local monitoring groups in managing mangrove resources and resolving use conflicts.

Policy Strategy

The strategy integrates customary and formal governance arrangements across four interconnected components:

5. Integrating Mangroves into Planning and Governance Frameworks

- **Connection to wider planning and policy frameworks.** The regulation is grounded in Indonesia's Village Law, Environmental Protection and Management Law, and Coastal and Small Islands Management Law, providing formal legal legitimacy at the national level to customary resource management. It contributes to Indonesia's FOLU Net Sink 2030 agenda and supports the objectives of the CBD, including the 30x30 conservation target, the Ramsar Convention, and the Sendai Framework for Disaster Risk Reduction.
- **Role of data, science, and monitoring.** The regulation integrates traditional ecological knowledge with scientific approaches to mangrove and fisheries management. Field-based monitoring covers mangrove vegetation, ecosystem condition, water quality, and fisheries resources. Monitoring and enforcement responsibilities are clearly defined among village institutions, customary authorities, the Kera-kera management group, and Pokmaswas Nusa Matan (the community monitoring group), with periodic reporting to village authorities supporting adaptive management.
- **Finance mechanisms and incentives.** Implementation is financed through the Village Budget and other legally recognized funding sources. The rotational closure system provides a conservation incentive by allowing fisheries resources to recover, increasing the quantity and value of future harvests. Additional revenue may be generated through access permits and village contributions from external users.
- **Communities and local governance.** Kera-kera is governed through a collaborative system involving customary institutions, village authorities, community groups, and local resource users. Key decisions are determined through customary deliberation and community consultation. Customary leaders enforce sanctions while village government provides administrative, coordination, and financial support.

Enabling Factors and Key Stakeholders

A major enabling factor was the strong local legitimacy of kera-kera as an existing customary practice already understood and accepted by the community. Formalization therefore strengthened rather than replaced local governance arrangements. Indonesia's legal recognition of village authority and customary governance under the Village Law and Papua Special Autonomy framework created space for integrating customary systems into formal regulation. Participatory mapping helped clarify territorial boundaries and access arrangements between villages, reducing potential conflicts over resource use. Implementation costs remain manageable because enforcement and monitoring rely on local institutions, customary sanctions, and community participation.

Key stakeholders include the Patimburak Village Government, Village Consultative Body (BAPERKAM), customary leaders including Warnemen Wertuar as conflict resolution leader, the Kera-kera management Group, POKMASWAS Nusa Matan, and neighboring villages with access rights including Batufiafas, Kiminakra, Kinam, and Mandoni.

Progress & Next Steps

Village Regulation No. 02/2025 has formally institutionalized Kera-kera within the village governance system, providing clearer rules for harvesting, access, sanctions, and resource management responsibilities. Implementation structures have been established including patrol arrangements, reporting mechanisms, and coordination processes between customary leaders, village authorities, and local monitoring groups.

5. Integrating Mangroves into Planning and Governance Frameworks

Participatory mapping has clarified management boundaries in the Guraferi and Kidai areas, and community outreach has increased awareness of harvesting restrictions and mangrove protection. As implementation only began in 2025, ecological and socioeconomic outcomes are still being monitored and evaluated.

Next steps focus on strengthening implementation capacity, improving monitoring systems, and evaluating the effectiveness of the rotational closure mechanism, including improving fisheries data collection, strengthening patrol coordination, and refining reporting procedures. Future efforts will assess how the regulation affects fisheries productivity, harvesting practices, and ecosystem conditions over time, with monitoring results expected to support future adjustments to harvesting schedules and access arrangements.

Challenges and Limitations

Implementation remains at an early stage, so long-term impacts on mangrove condition and fisheries productivity cannot yet be fully assessed. Limited village-level funding may constrain patrols, monitoring, and reporting activities over time. External pressures, including planned industrial development near Teluk Berau, may affect ecosystem conditions and community access to resources. Sustaining long-term coordination among customary institutions, village authorities, and resource users will require continued institutional support and community participation.

Lessons for Other Countries

- **Formal recognition of customary governance systems can strengthen local legitimacy while providing clearer legal authority for implementation and enforcement.** In Patimburak, the regulation builds upon an existing management practice rather than replacing it with an externally designed model.
- **Hybrid governance arrangements that clarify institutional responsibilities between customary authorities, local government, and community monitoring groups improve coordination while maintaining local ownership over resource management.**
- **Relatively simple management measures such as rotational closures, local patrols, and customary sanctions can support sustainable mangrove use without requiring highly technical or resource-intensive systems.**
- **Integrating access arrangements, conflict resolution, monitoring, & enforcement within a single local regulation can help create a more coherent and socially accepted governance framework for mangroves.**

Indonesia's mangrove forests.
© Eko Siswono Toyudho



Concluding Remarks

The case studies collected in this publication reflect a mangrove policy landscape in active transition. Across fifteen national and regional contexts, a consistent picture emerges: the ambition of global frameworks for climate, biodiversity, and wetland conservation is increasingly finding expression in national law, policy, and institutional arrangements, but translating commitment into durable, well-resourced, and equitable implementation remains the central challenge. Whether through the formalization of ecological restoration standards, the strengthening of NDC commitments with science-based baselines, the development of innovative financing mechanisms, the alignment of biodiversity strategies with mangrove-specific targets, or the integration of mangroves into broader planning and governance frameworks, the cases illustrate that effective mangrove policy is rarely the product of a single instrument or actor. It depends on coordination across institutions, sustained engagement with coastal communities, and the kind of long-term political and financial commitment that can survive changes in government and funding cycles.

Taken together, these cases also point to the growing maturity of the mangrove policy field. The questions being asked are no longer only about whether to protect and restore mangroves, but about how to do so in ways that are ecologically sound, financially sustainable, and socially just. As countries move toward 2030 and the implementation of their commitments under the Paris Agreement, the Kunming-Montreal Global Biodiversity Framework, and the Ramsar Convention's Strategic Plan, the cases presented here offer practical reference points for policymakers and practitioners navigating that challenge in their own national contexts.



Mangrove forest, Lamu County, Kenya
© Sarah Waiswa/TNC

Thematic Index

The index below lists all case studies by country or region, with their primary and secondary themes, to help readers identify cases relevant to a particular policy topic regardless of where they appear in the document.

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Further Reading

The **Mobilizing the Mangrove Breakthrough Regional Readiness Reports** identify where investment and action can most effectively accelerate science-based, community-led mangrove conservation and restoration at scale. They provide funders, governments, financial institutions, and NGOs with insights into regional trends, threats, barriers, and opportunities to halting mangrove loss, restore degraded mangroves and double their protection. Complementary country summaries highlight the country-specific enabling conditions needed to overcome recurrent barriers and deliver long-term impact in countries with the greatest potential. They assess national mangrove commitments, policies and legislation, existing government initiatives, financial mechanisms, governance, land tenure arrangements, best practices and implementation capacity.

Download the Regional Reports and country summaries for Asia, Americas and West Africa: <https://www.mangrovealliance.org/regional-reports>

The Global Mangrove Alliance is a worldwide collaboration between NGOs, governments, academics, and communities working together towards a global vision for scaling up the recovery of mangroves through equitable and effective expansion of mangrove protection and restoration, in order to build a host of opportunities for coastal peoples and biodiversity around the planet.

The GMA's 2023 *Mangrove Law and Policy Brief* provides the analytical and comparative foundations that this collection builds on, including an overview of legal and policy frameworks for mangrove conservation, restoration, and sustainable use across key thematic areas. It is available at: <https://tnc.app.box.com/s/16uadp2z1wbj5zqd0omdrdvqxadw6mc7>.

For more information on the tools, resources, and case studies referenced throughout this publication, visit:

GMA Knowledge Hub at www.mangrovealliance.org/knowledge-hub and

Global Mangrove Watch platform at www.globalmangrovetwatch.org.

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