2026 Forum on Blue Carbon and Sustainable Development

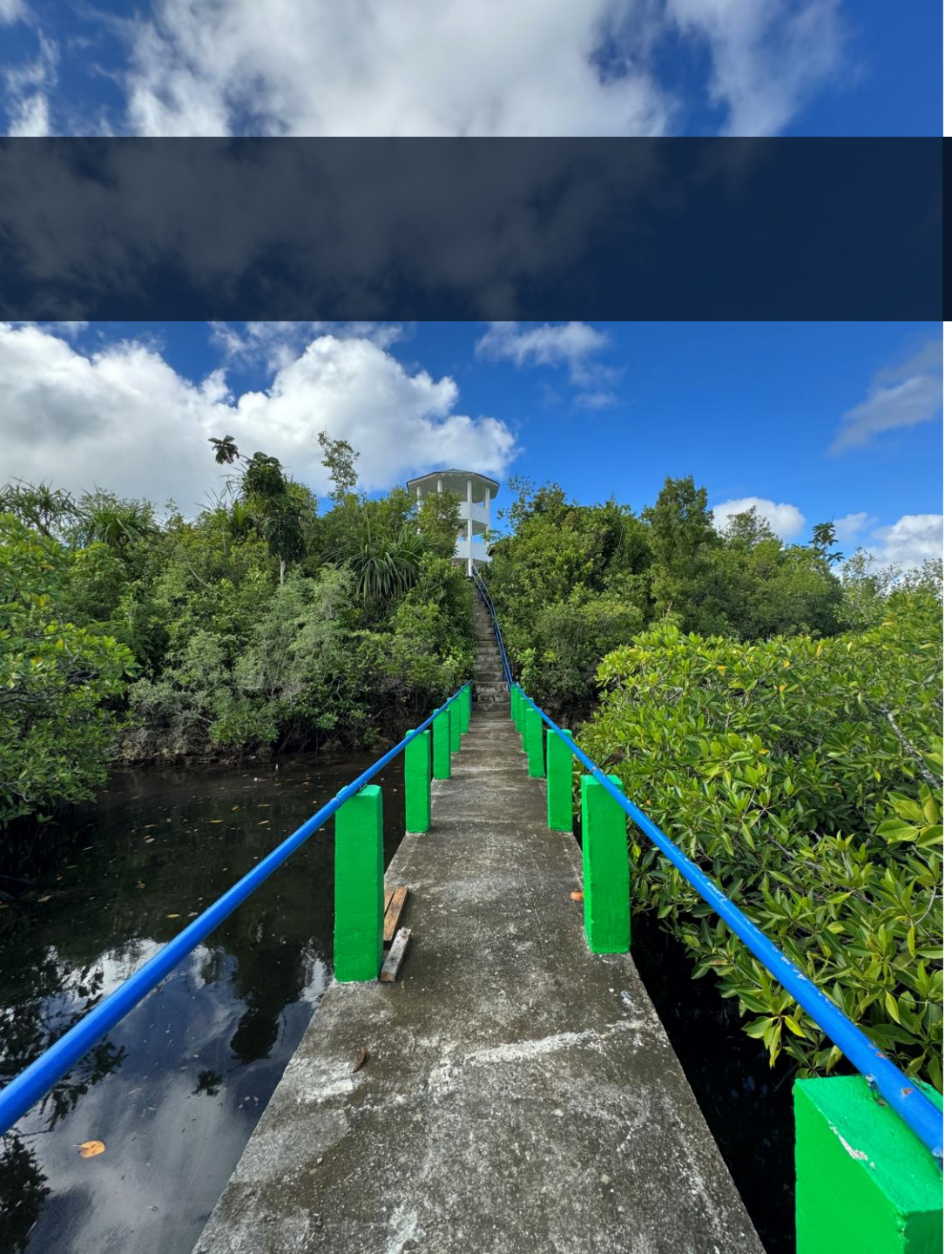
Localizing Blue Carbon Governance

Linking International Frameworks, Mangrove Conservation, and Socio-Ecological Outcomes in the Philippines

Jay Mar D. Quevedo
Asia Research Institute, National University Of Singapore
jquevedo@nus.edu.sg

CGSEA
CARBON GOVERNANCE IN SOUTHEAST ASIA

ARI
ASIA RESEARCH INSTITUTE
National University of Singapore



OUTLINE

- Introduction
- Methodology
- Results and discussion
- Key insights

Mangroves Connect Climate, Biodiversity, and Livelihoods

Climate Mitigation
Crucial blue carbon sinks that sequester and store significant amounts of carbon from the atmosphere, playing a vital role in global climate strategies.

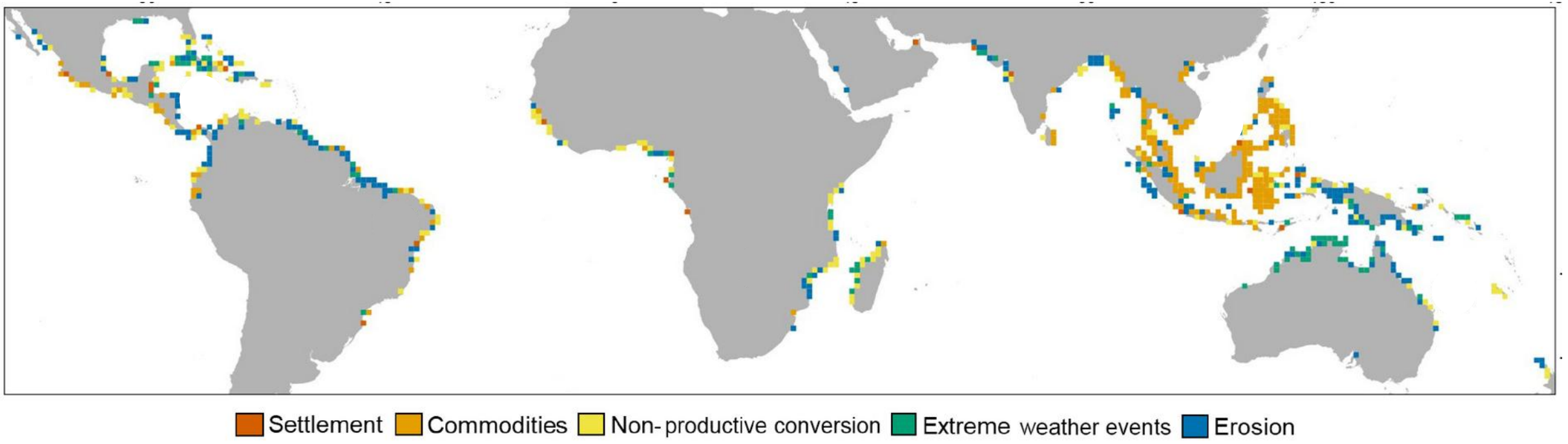
Biodiversity Conservation
Essential habitats for diverse marine life, supporting complex food webs and functioning as critical nurseries for numerous species.

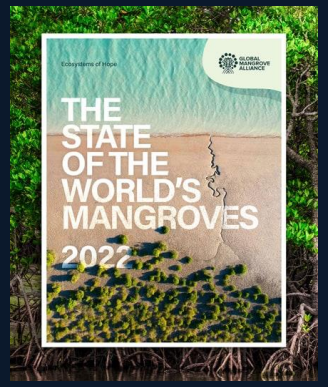
Coastal Livelihoods
Sustaining local economies through fisheries and eco-tourism, while providing natural resilience against coastal hazards and storms.



Global distribution of mangrove loss and its drivers

Goldberg et al., 2020





Global Mangrove Alliance

To **restore half of the 8,183km2 by 2030**, particularly in **Southeast Asia**

High potential for **carbon additionality** through **avoided deforestation** and **restoration** in Southeast Asia compared to other parts of the world

To aid countries in reaching their commitments under the **International environmental frameworks**

International Frameworks that Anchor Blue Carbon Goals



the 2015 Paris Agreement

Integrates blue carbon ecosystems into Nationally Determined Contributions (NDCs) for climate mitigation and adaptation.



the 1971 Ramsar Convention

Designates Wetlands of International Importance, promoting the conservation and wise use of mangrove ecosystems.



the 2022 Kunming-Montreal Global Biodiversity Framework

Targets massive ecosystem restoration and protection (such as the 30x30 target) to halt worldwide biodiversity loss.

(Convention on Biological Diversity, 2022; IPBES, 2024; Ramsar Convention Secretariat, 2016)

Localization of international frameworks is challenging

Global Environmental Change
Volume 32, May 2015, Pages 57-66

Forty-three years of Ramsar and urban wetlands

Missaka Hettiarachchi [a], T.H. Morrison [b], Clive McAlpine [a]

- inadequate recognition of the complex dynamics of urban social-ecological systems
- inadequate recognition of the political complexity of the policy processes
- lack of an environmental justice perspective
- disconnect between international goals and local governance realities

The Gap Between Global Commitments and Local Reality

Global Commitments	VS	Local Implementation
Broad targets and international treaties	SCOPE	Fragmented governance & overlapping jurisdictions
Top-down multilateral funding mechanisms	RESOURCES	Severe resource constraints & budget limitations
Long-tern carbon sequestration goals	PRIORITIES	Competing short-term economic interests

(Asante et al., 2017; Kochoni et al., 2025; Pandey et al., 2021)

There is a need to **examine how international framework are adapted at local scales** since their effectiveness often depends on how they are localized: interpreted, adapted, and implemented by actors on the ground

this study

Localizing Blue Carbon Governance: Linking International Frameworks, Mangrove Conservation, and Socio-Ecological Outcomes in the Philippines



Overarching objective

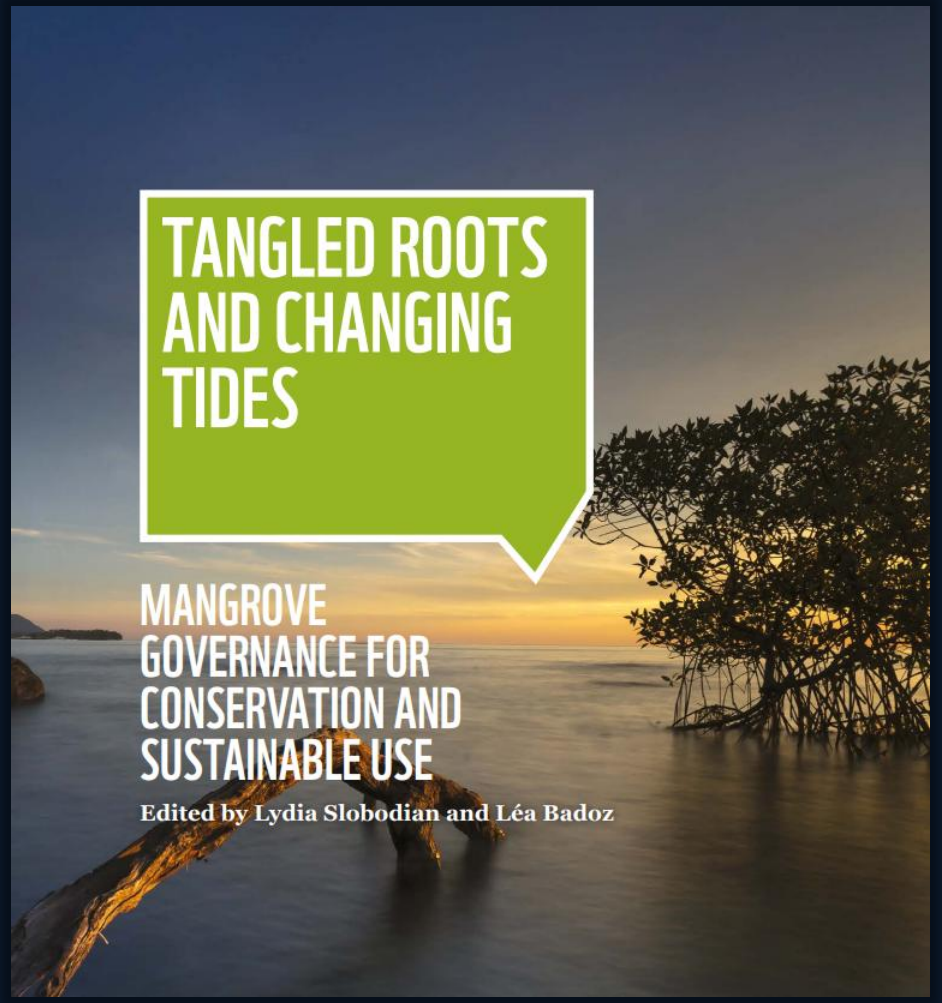
To examine how **international climate and biodiversity frameworks**, particularly those relevant to mangrove blue carbon governance, **are localized in practice**, focusing on **Del Carmen, Philippines** an illustrative case.

Adapted from the guiding questions posed by Slobodian and Badoz, 2019

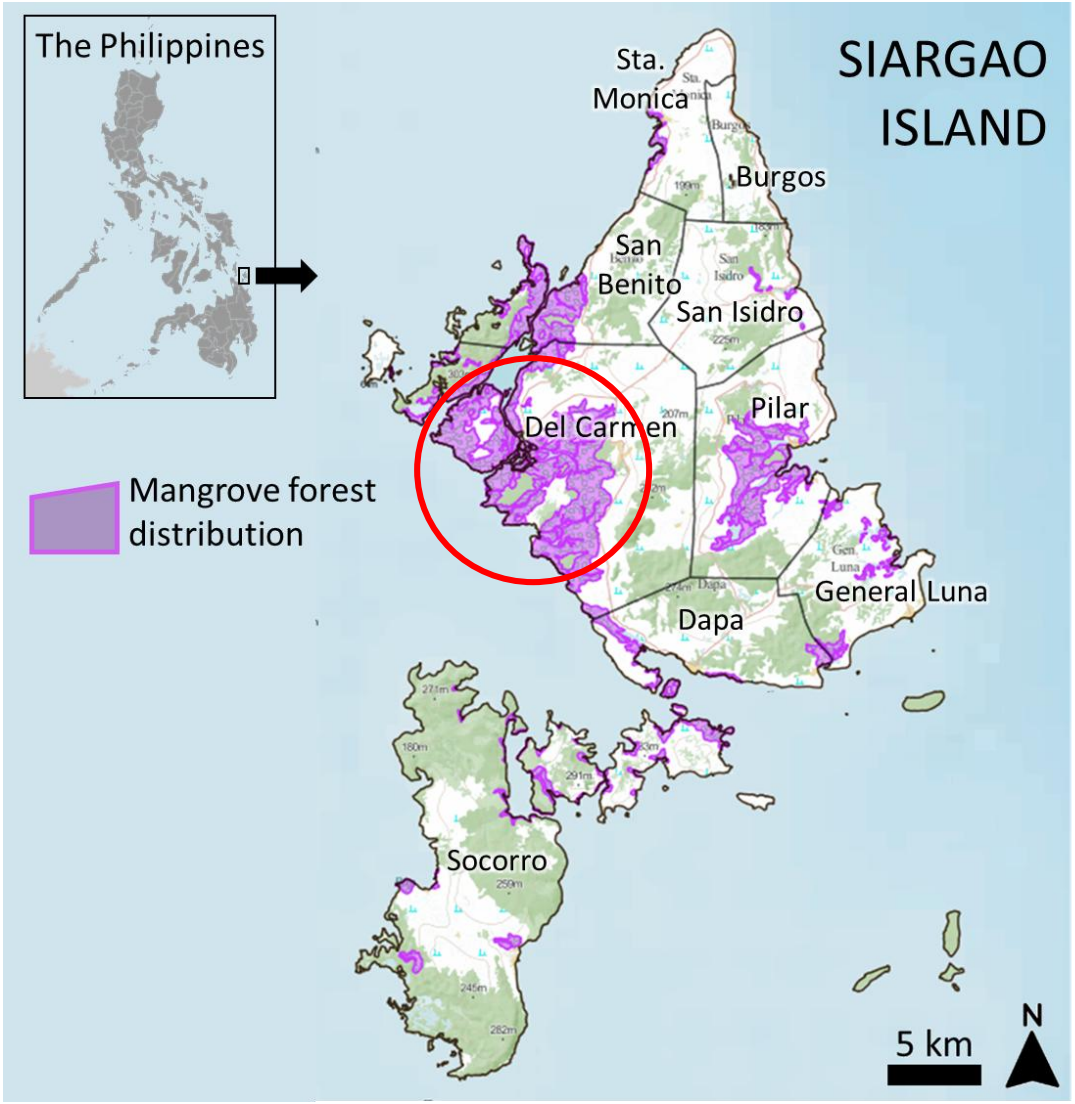
(1) Which **institutions and actors** shape mangrove governance in Del Carmen, and how do they operate?

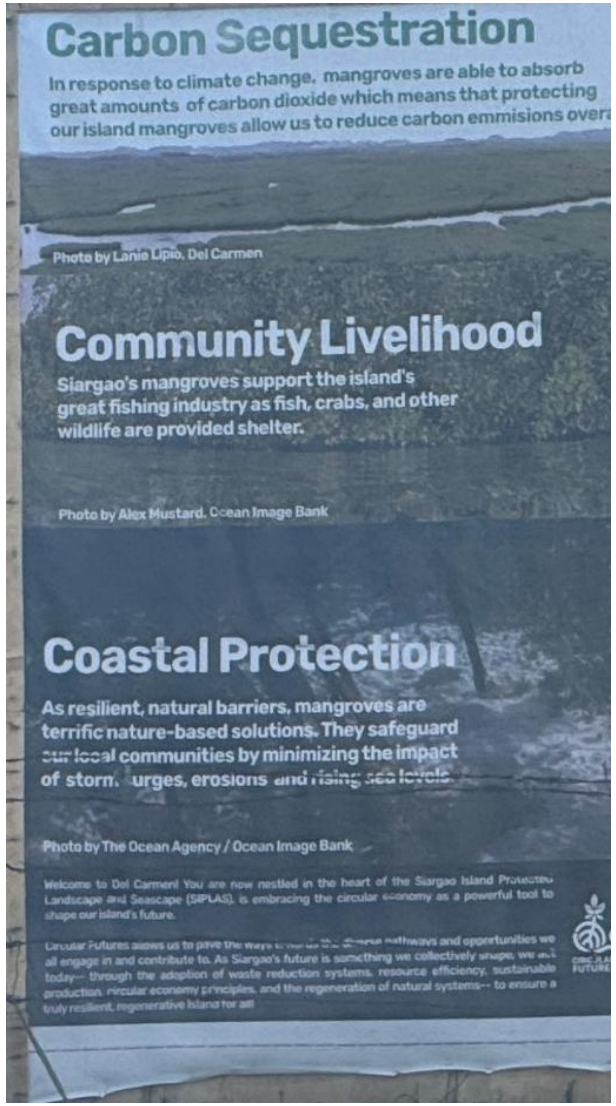
(2) How do **stakeholder behaviours** affect mangrove ecosystem health, and what governance responses have emerged?

(3) What **legal and policy instruments** are in place, and how are international frameworks translated into local practice?



Why Del Carmen?





The municipality is home to the **Del Carmen Mangrove Reserve**, which is one of the most extensive and contiguous mangrove forests in the Philippines, covering approximately 4,295 hectares (Cortez et al., 2023)

The **mangrove ecosystem** plays a crucial role in supporting coastal livelihoods, sustaining local fisheries, and mitigating coastal hazards (Hansen, 2024)

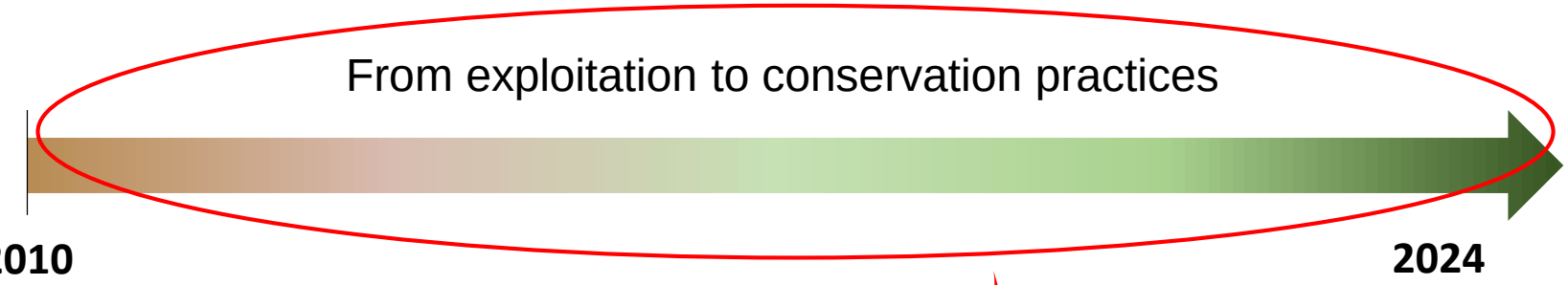
Why Del Carmen

offers a compelling example of bottom-up environmental leadership

Locally Driven Initiative
Transformed extensive mangrove forests from extractive use into globally recognized conservation sites

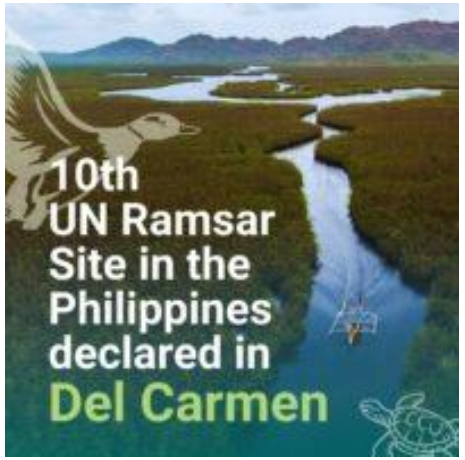
Undergone a remarkable transformation—from being labelled the "**illegal mangrove-cutting capital**" of the Philippines to **becoming a model of participatory governance and community-led mangrove conservation and sustainable tourism**

"we were before considered an illegal mangrove cutting capital of the country..." – Mayor Alfredo Coro



Conceptual framing

Through the lens of the **IPBES Transformative Change Framework**, this study conceptualizes localization not as a matter of meeting procedural requirements, but as a process of systemic transformation that involves shifting governance arrangements, stakeholder relationships, and socio-ecological practices that **reflect new ways of living with, and valuing, nature** (IPBES, 2024).



sources: https://cbc.iclei.org/local-governments-leading-the-way-in-sustainability-the-case-of-del-carmen-mangrove-forest-reserve/

Purposive sampling

Key informant interviews (7)

Focus group discussions (3)



Data collection

Inductive

Thematic analysis



Data analysis
(field notes, audio recordings)

Results and discussion

Institutional Landscape and Sectoral Interactions, Stakeholders' Perceptions and Behavioural Change and Links to Mangrove Ecosystem Health , Legal and Policy Instruments and Localizing International Frameworks



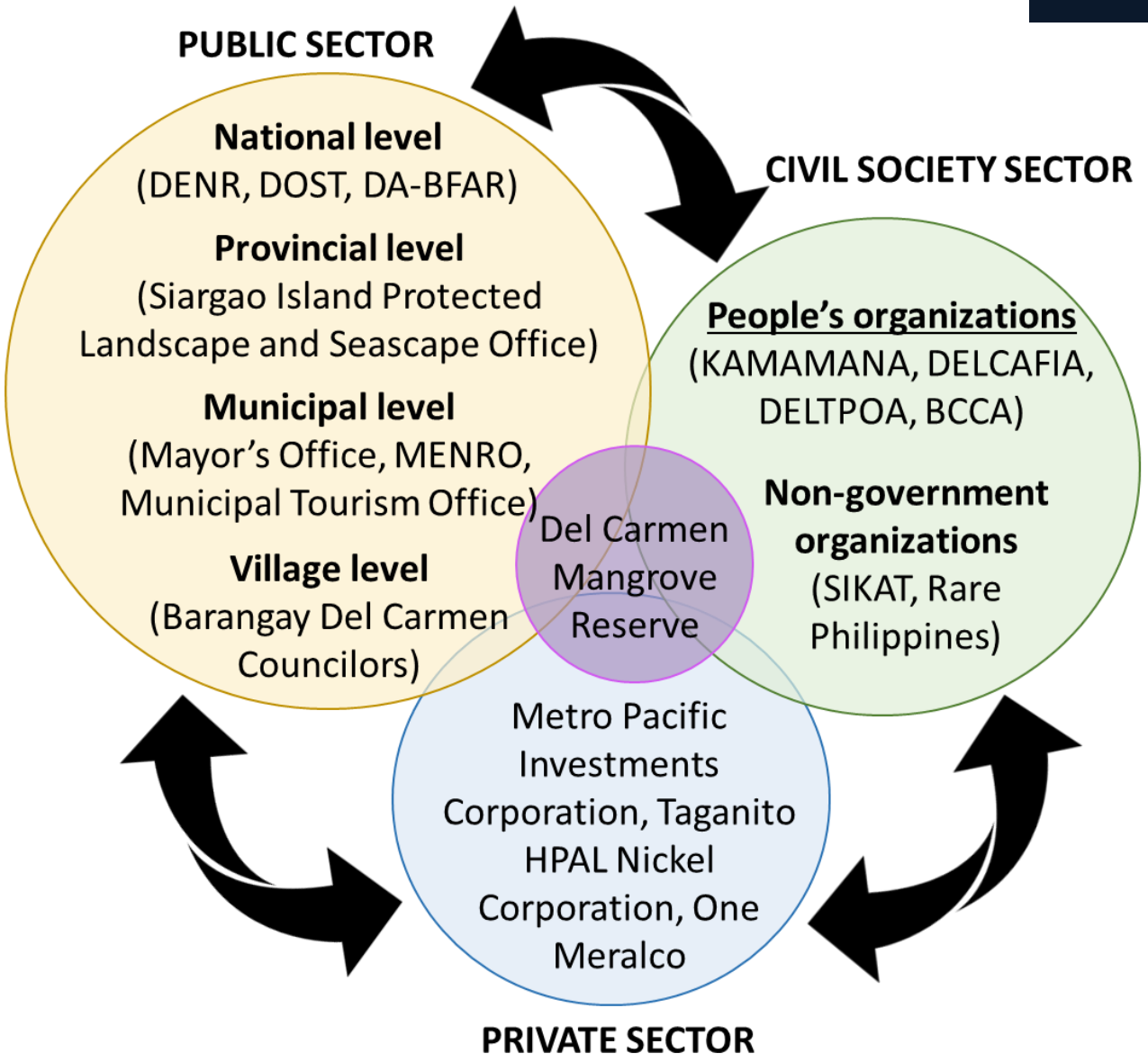
Institutional landscape and sectoral interactions

Research Question 1: Which institutions and actors shape mangrove governance in Del Carmen, and how do they operate?



Actors involved in conservation and management span three primary sectors—**public, civil society, and private**—whose interactions are largely collaborative but uneven in structure and resourcing.

Legal and policy frameworks
Technical support
Capacity building



Implements activities
Maintenance of the projects

Funding support

Example of public-private-civil society sector partnership

Head of Municipal Environment and Natural Resource Office
(Public – local government office)



Selects the community organization that will implement the project



Del Carmen Fisherfolk Association (Civil society group)

Works closely with the funder for the monitoring and evaluation of the project

ONE MERALCO FOUNDATION

(Private company)

Contacts the local government of Del Carmen for their Corporate Social Responsibility Program

Institutional and sectoral challenges



Limited and fragmented funding streams



Short project timelines



Need for more transparent partnership agreements



Lack of post-implementation initiatives

Stakeholders' Perceptions and Behavioural Change and Links to Mangrove Ecosystem Health

Research Question 2: How do stakeholder behaviours affect mangrove ecosystem health, and what governance responses have emerged?



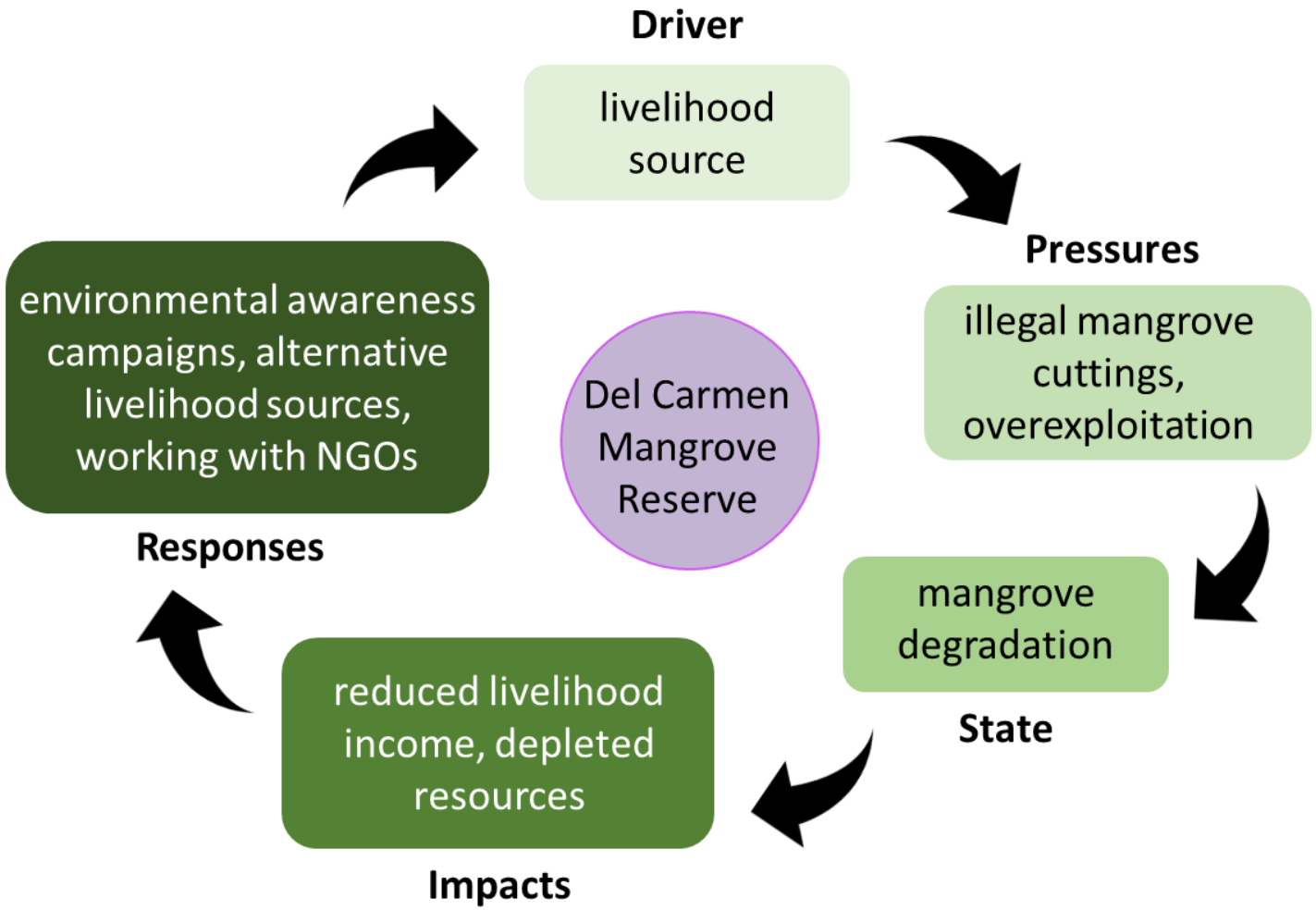


Source: https://www.facebook.com/CCCPhl/photos/mayor-alfredo-corro-ii-of-del-carmen-siargao-islands-shared-how-nature-based-sol/2131301533599210/

"A **behavioural approach is needed** to understand why people do illegal activities. **Providing alternative nature-based livelihoods** (e.g., mangrove ecotourism) can stop illegal activities" – Mayor Coro, 2024

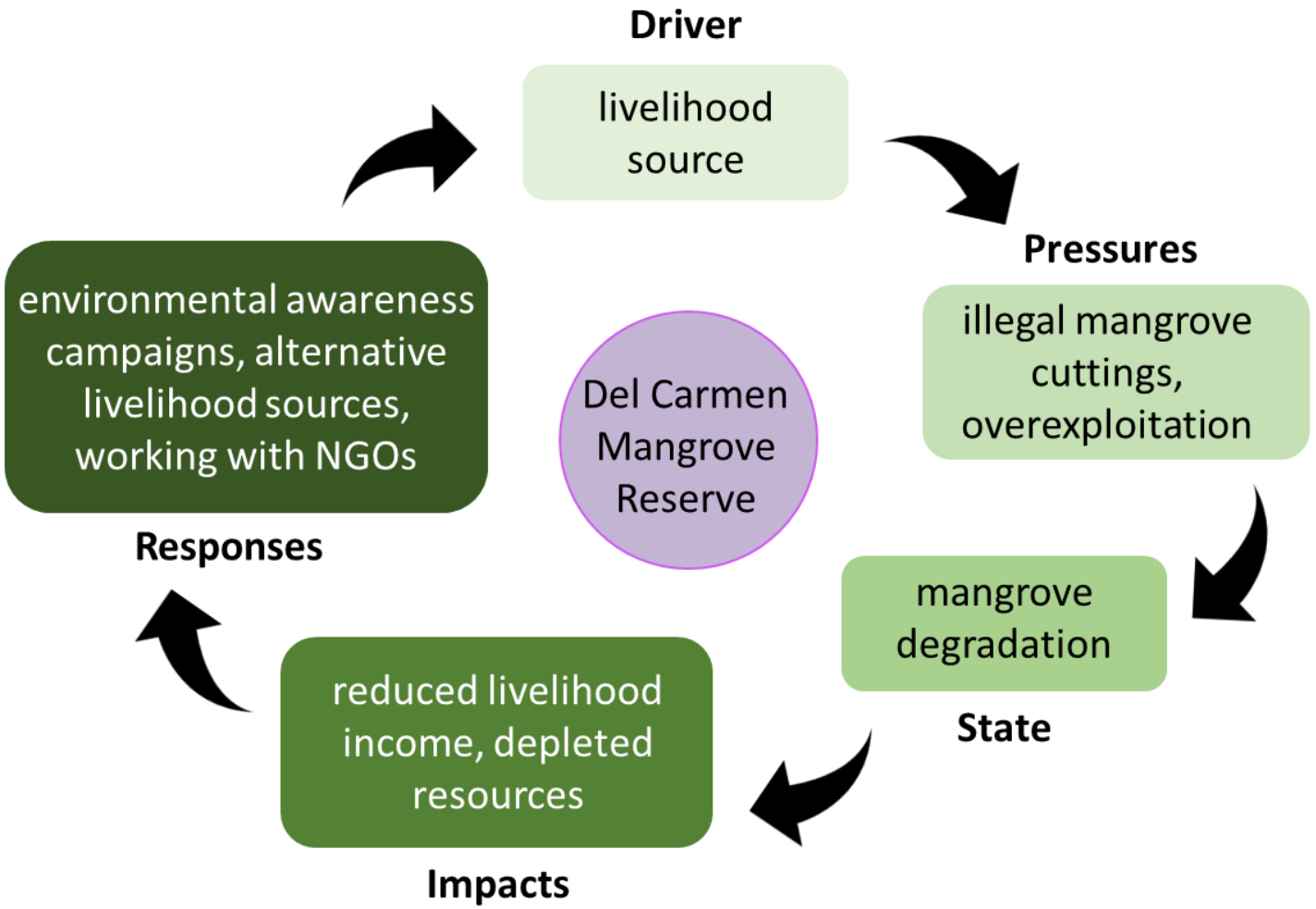
Using the DPSIR framework, we identified that **livelihood dependence on mangroves**—particularly for fuelwood and food—**acted as a key driver of ecosystem pressure**, especially between 2010 and 2017

Illegal mangrove cutting was rampant, with trees harvested and exported to neighboring provinces to supply firewood for bakeries



Local government sought to end illegal mangrove cutting by **partnering with a local NGO** to implement environmental awareness campaigns, mangrove reforestation initiatives, and alternative livelihood program

Behavioral transformation took place: former **illegal cutters were trained as boat operators and ecotourism guides**, providing them with legal and more sustainable sources of income



The success of these programs also **fostered a growing sense of environmental stewardshi**p in the community

By **restructuring livelihood opportunities**, **shifting governance relationships**, and **redefining community values around mangrove ecosystems**, Del Carmen's approach resonates with several IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services) Transformative Change strategies



Strategy 1
conserving and regenerating ecosystems of value to nature and people

Able to observe the changes before and after mangrove planting, not just earning income but also protection against the typhoon



Strategy 2
systemic change in sectors driving biodiversity loss

Illegal mangrove cutters turned to tourism boat operators



Strategy 3
transforming economic systems toward sustainability and equity

they saw a big change in terms of their livelihood; higher income in tourism



Strategy 4
inclusive and adaptive governance systems

Community organizations are part of the decision-making processes



Strategy 5
shifting societal values and human–nature relationships

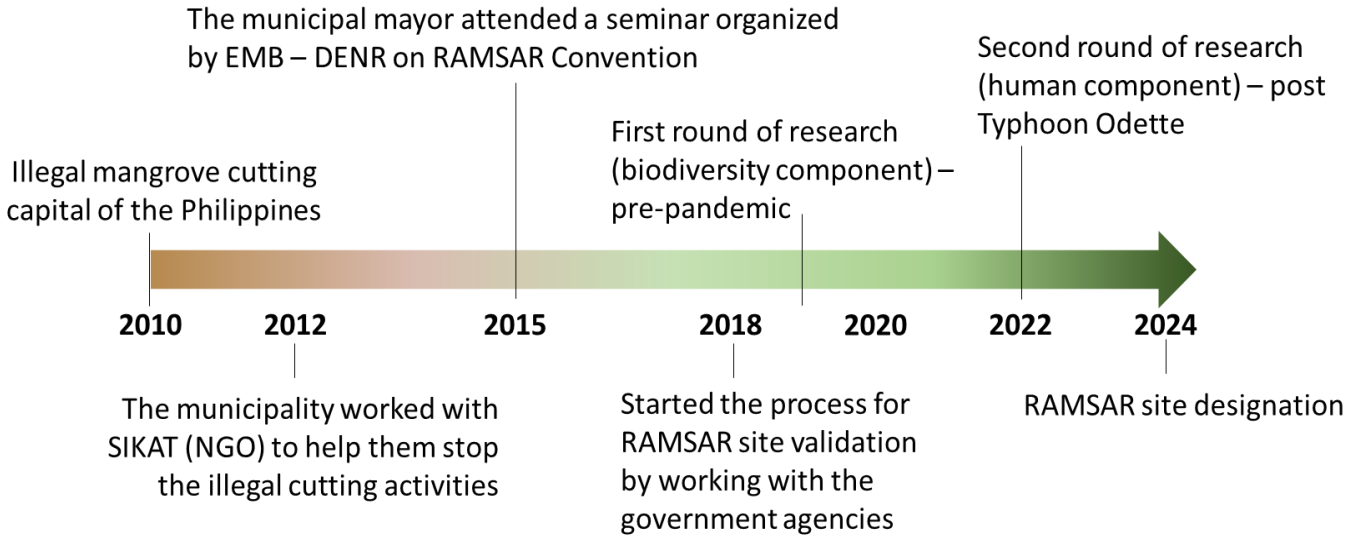
tourism boat operators has changed their perception toward mangroves, and they are now appreciative of the benefits in terms of more crabs and fish to harvest

Legal and Policy Instruments and Localizing International Frameworks

Research Question 3:

What legal and policy instruments are in place, and how are international frameworks translated into local practice?





Del Carmen's pathway to Ramsar designation illustrates how international conservation frameworks can be localized through **sustained institutional leadership**, **community engagement, and cross-sectoral collaboration**

The legal foundation supporting Del Carmen's Ramsar journey is rooted in national legislation

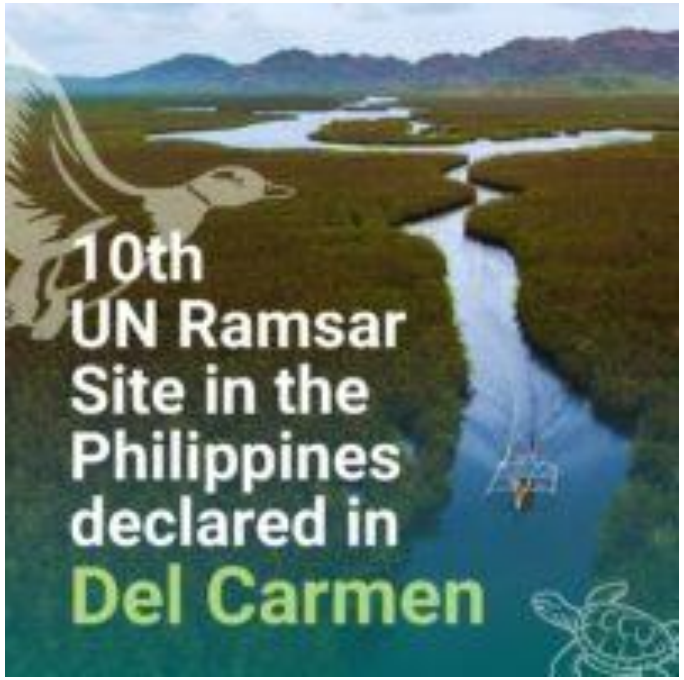
The **Local Government Code of the Philippines** (RA 7160) empowers LGUs to manage natural resources within their jurisdictions, **enabling Del Carmen to initiate and coordinate mangrove conservation programs**

The National Integrated Protected Areas System **(NIPAS) Act** (RA 7586), under which Siargao Island is declared a Protected Landscape and Seascape, provides the broader **policy framework for ecosystem-based management**

The **Fisheries Code** (RA 8550) and the **Revised Forestry Code** (RA 7161) further **regulate mangrove use and promote the rehabilitation** of degraded coastal areas

These laws have provided entry points for local government unit-led governance innovations in the Philippines (Song et al., 2021)

Localizing Ramsar Convention



Three key drivers

Adaptive Institutions	Flexible governance arrangements that seamlessly adapt and respond to local feedback and changing ecological conditions
Livelihood Transitions	Community-led shifts moving away from extraction and toward sustainable, non-destructive income streams
Scientific Integration	Using rigorous empirical evidence and ecological monitoring data to inform and justify local decision-making

Alignment with Kunming-Montreal Global Biodiversity Framework

Del Carmen demonstrates how locally driven responses to mangrove degradation simultaneously contribute to global biodiversity goals, even when such actions were not originally framed in KM-GBF terms.

KM-GBF Targets	Empirical evidence from Del Carmen
Reducing threats to biodiversity	
1. Spatial planning & ecosystem retention	Cessation of illegal mangrove cutting following community awareness campaigns and enforcement
3. Area-based conservation	Ramsar designation and MPA establishment through multi-agency collaboration
Meeting people's need through sustainable use and benefit sharing	
9. Sustainable livelihoods	Income diversification through ecotourism and mangrove stewards
11. Restoring ecosystem services	Observed increase in crabs and fish to harvest, protection against storm surges
Tools and solutions for implementation and mainstreaming	
14. Mainstreaming biodiversity	Integration of mangroves into tourism, disaster risk reduction, and development planning
20. Strengthening collaborations	Cross-sectoral collaborations locally and internationally
21. Inclusive governance	Inclusion of people's organizations in mangrove projects

Challenges remain after localizing international-level frameworks



As Mayor Coro noted, “On the tourism side, it has a good impact for us... **but on the blue carbon side, it becomes very challenging if we become Ramsar**”

The municipality must now **fulfil stricter conservation standards** while navigating expanding tourism activities and emerging opportunities from blue carbon markets both of which **may reshape how mangrove blue carbon ecosystems are managed**

In 2025, **Del Carmen enacted Municipal Ordinance** No. 2025-141, a local policy **establishing guidelines for the designation and management of blue carbon conservation areas** and outlining rules for potential participation in **carbon trading mechanisms**.

Translating Governance into Tangible Outcomes

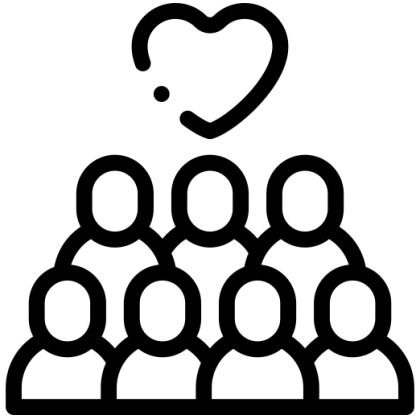
Carbon Storage
Enhanced preservation of mangrove ecosystems to support climate mitigation efforts



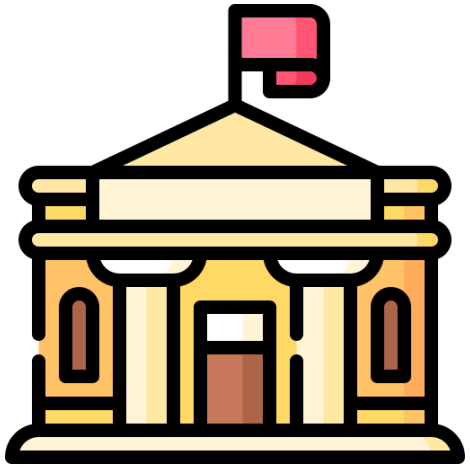
Ecosystem Restoration
Active rehabilitation of degraded zones to revive biodiversity and coastal defenses



Community Well-being
Improved socio-economic resilience through eco-tourism and sustainable livelihoods



Recommendations for scaling-up



(1) Institutional and actor landscape



(2) Practices and pressures



(3) Legal and policy instruments

Multi-level and collaborative governance

Adaptive leadership and sustained partnerships

Behavioural transformation of local communities – from illegal mangrove cutters to mangrove stewards

Balancing conservation outcomes with economic growth

Needs collaborations among government agencies across all levels

Institutional innovation, anchored in national policy but driven locally

Thank you

Acknowledgments

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Del Carmen Mangrove Reserve