TA 6746 Nature Credits Country Case Study

Thailand

May 2026

Release Notice

This Report delivered under SGV & Co.'s agreement with ADB may not be relied upon by any party other than ADB. SGV & Co. disclaims all responsibility to any other party for any loss, liability or damages that other party may suffer or incur arising from or relating to or in any way connected with such statements and sections of this document credited/referenced to SGV & Co., the provision of such statements and sections of the document credited/referenced to SGV & Co. or any of SGV & Co.'s work products for ADB to the other party, or the reliance upon such statements and sections of this document credited/referenced to SGV & Co. or any of the information taken from the SGV & Co. Report by the other party. This material has been prepared for general informational purposes only and not for any other purpose and is intended to disclose information to you about ADB's approaches and endeavors to achieve its company objectives. The information found herein is not intended to be relied upon as professional advice. Please refer to your advisors for specific advice. By accessing and using a copy of this document or any of its contents, you are deemed to have accepted the non-reliance provisions contained herein.

Table of Contents

List of Tables

List of Figures

List of Boxes

List of Appendices

List of Acronyms

AFOLU	Agriculture, Forestry, and Other Land Use	**ESG**	**Environmental, Social, and Governance**
AIPs	Aquaculture Improvement Projects	**F&B**	Food & Beverages
ARR	Afforestation, Reforestation, and Revegetation	**FEED**	Foundation of Environmental Education for Sustainable Development
AWD	Alternate Wetting and Drying	**FPIC**	Free, Prior and Informed Consent
BCA	Biodiversity Credit Alliance	**GEF**	Global Environment Facility
BCG	Bio-Circular-Green	**GHG**	Green House Gases
BCST	Bird Conservation Society of Thailand	**GIS**	Geographic Information System Mapping
BEDA	Biodiversity-based Economy Development Office	**HII**	Hydro-Informatics Institute
CBD	Convention on Biological Diversity	**HIPs**	High-Integrity Principles
CCUS	Carbon Capture, Utilization and Storage	**IAPB**	International Advisory Panel on Biodiversity Credits
CDP	Carbon Disclosure Project	**IBA**	Important Bird and Biodiversity Areas
CPF	Charoen Pokphand Foods	**ICVCM**	Integrity Council for Voluntary Carbon Markets
CSR	Corporate Social Responsibility	**IFM**	Improved Forest Management
DAR	Department of Aquatic Resources	**IPPU**	industrial process and product use
DFI	Development Finance Institution	**LT-LEDS**	Long-Term Low Greenhouse Gas Emission Development Strategy
DMCR	Department of Marine and Coastal Resources	**MAR**	Managed Aquifer Recharge
DNP	Department of National Parks	**MDB**	Multilateral Development Bank
DoF	Department of Fisheries	**MoNRE**	Ministry of Natural Resources and Environment
DWR	Department of Water Resources	**M&P**	Maintenance and Protection
EAAFP	East Asian-Australasian Flyway Partnership	**MPAs**	Marine Protected Areas
EAAF	East Asian–Australasian Flyway	**MRV**	Measurement, reporting and verification
ECA	Environmentally Critical Area	**NBSAP**	National Biodiversity Strategy and Action Plan
EIA	Environmental Impact Assessment	**NDC**	Nationally Determined Contributions

NEQA	National Environmental Quality Act	**SLR**	Sea Level Rise
NESDC	National Economic and Social Development Council	**TAO**	Tambon Administrative Organizations
NSW	New South Wales	**TGO**	Thailand Greenhouse Gas Organization
OECMs	Other Effective area-based Conservation Measures	**TH-BIF**	Thailand Biodiversity Information Facility
ONEP	Office of Natural Resources and Environmental Policy and Planning	**TNC**	The Nature Conservancy
PA	Protected Area	**TNFD**	Taskforce on Nature-related Financial Disclosures
PAO	Provincial Administrative Organization	**T-VER**	Thailand Voluntary Emission Reduction Program
PES	Payment for Ecosystem Services	**VCG**	Village conservation groups
PPP	Private Public Partnership	**VCM**	Voluntary Carbon Market
PTTEP	PTT Exploration and Production	**VCS**	Verified Carbon Standard
RFD	Royal Forest Department	**WEF**	World Economic Forum
RFI	Regional Flyway Initiative	**WHS**	World Heritage Site
RID	Royal Irrigation Department	**WWF**	World Wide Fund
RMOs	Resource Management Organizations	**ZPOT**	Zoological Park Organization of Thailand
SBTi	Science Based Targets Initiative		

I. Executive Summary

This Thailand Country Report constitutes a core output under the Asian Development Bank's Phase 2 of the Nature Credits Study, applying the conceptual and methodological foundations developed in Phase 1 to the national and site-level context of Thailand. The assessment examines Thailand's readiness to develop high-integrity nature credits, with a focus on wetland ecosystems associated with the Regional Flyway Initiative (RFI).

Thailand's wetlands form a critical component of the East Asian–Australasian Flyway (EAAF), supporting globally significant biodiversity, delivering essential ecosystem services, and underpinning livelihoods across fisheries, agriculture, tourism, and water security. Despite their ecological and socio-economic importance, these ecosystems face increasing pressure from land conversion, pollution, infrastructure expansion, hydrological alteration, and climate change. Public financing alone remains insufficient to address these challenges at scale. In this context, nature credits are explored as a complementary, market-based financing mechanism that can help mobilize private capital toward measurable conservation and restoration outcomes, while reinforcing, rather than substituting, public policy, regulation, and community stewardship.

Anchored in the Phase 1 definition of nature credits as *evidence-based units of positive ecological outcomes*, this Report explores how such mechanisms could be realistically developed in Thailand. The analysis draws on prior ADB-commissioned ecosystem service and costed intervention studies for RFI sites, national policy and legal reviews, secondary ecological and socio-economic data, and insights from multi-stakeholder consultation involving government agencies, civil society, and private-sector actors. Lessons from Thailand's relatively mature voluntary carbon market (T-VER) are used to inform governance, measurement, reporting, and verification (MRV), and market design considerations, while recognizing the greater complexity associated with biodiversity and ecosystem services crediting.

The Report is structured around four core analytical components: (i) an overall assessment of viability considerations for RFI sites; (ii) an assessment of gaps, opportunities, risks, and potential; (iii) an analysis of enabling mechanisms; and (iv) a roadmap to viable, implementable nature credit projects in the RFI sites. Salient insights from the completed analytical components are summarized below.

- **Thailand demonstrates emerging viability for nature credits, supported by strong policy intent and carbon market experience, but constrained by limited operational readiness.** National frameworks such as the National Biodiversity Strategy and Action Plan (NBSAP) 2023–2027, the Biodiversity Finance Plan, the Bio-Circular-Green (BCG) Economic Model, and long-term climate strategies provide a clear mandate for nature-positive finance, while the Thailand Voluntary Emission Reduction Program (T-VER) offers practical experience with credit issuance, verification, and registries. However, regulatory clarity for nature-linked credits, coordinated institutional leadership, MRV systems capable of capturing biodiversity and ecosystem services, and subnational implementation capacity remain insufficiently developed to support near-term, high-integrity nature credit markets.
- **Demand-side viability depends on national and sector-level buyers, while local ecosystem users are central to supply and stewardship.** Anchored on the study's Tiered Nature Dependency Framework, analysis shows that actors with direct ecological dependence, such as fisheries, salt farming, agriculture, and community-based tourism, are best positioned as implementers and beneficiaries rather than buyers. Credible near-term demand is most likely to come from large Thai conglomerates, financial institutions, and international firms (Tier 3 and 4), including those aligning with the Taskforce on Nature-related Financial Disclosures (TNFD), which face environmental, social, and governance (ESG) obligations and nature-

related risk management pressures. This reinforces the need for a top-down demand development strategy aligned with buyer expectations for scale, integrity, and reporting.

- **Landscape-based prioritization emerges as more relevant than site size alone in the Thailand context.** While viability parameters tend to favor larger sites due to scale and efficiency considerations, national consultations consistently emphasized that landscape characteristics provide a more meaningful basis for prioritization. In this context, voluntary nature credit initiatives may be examined or trialed at the landscape level while policy and regulatory frameworks continue to be refined. This allows lessons from early implementation to inform landscape-scale coordination and policy development, reduce uncertainty for stakeholders, and support the gradual establishment of nature credits as a credible financing mechanism.
- **Social equity, tenure security, and community stewardship are foundational to credit integrity but remain incompletely operationalized.** Thailand's existing community forestry and co-management frameworks provide a strong foundation for participation and stewardship. However, gaps in tenure clarity, benefit-sharing mechanisms, Free, Prior, and Informed Consent (FPIC)-like processes, and grievance redress pose risks to social license, clarity of credit ownership, and long-term permanence, underscoring the need for stronger formalization of safeguards.
- **Key risks relate to market readiness, governance alignment, and ecological permanence.** Weak buyer articulation, fragmented institutional mandates, and supply-driven development risk undermining project bankability and credibility. In parallel, permanence challenges in ecosystems under pressure from pollution, infrastructure expansion, and climate impacts, particularly in coastal and estuarine systems, require stronger alignment between site selection, buyer engagement, governance arrangements, and long-term management commitments.

The findings of this Thailand Country Report are consolidated in a roadmap for advancing nature credit development, translating the assessment of enabling conditions, site-level viability, and stakeholder inputs into sequenced actions for policy reform, capacity building, and piloting. The roadmap emphasizes **strengthening institutional and regulatory foundations, building market and technical readiness across buyers and implementers, and deploying phased pilots to test credit design, governance, and demand under real-world conditions**. Together, these directions provide a practical basis for de-risking early implementation and supporting the gradual scaling of credible nature credit mechanisms across the RFI sites and beyond.

II. Definition of Terms

Additionality
The principle that the environmental benefits attributed to a project would not have occurred in the absence of the intervention or the financial incentive provided by the credit mechanism (Gillenwater, 2012).

Afforestation
The establishment of a forest of vegetation in an area where there was no recent tree cover.

Capacity bottlenecks
A point in a process where a specific process step has a lower capacity than other steps which causes a slowdown in overall production or workflow.

Carbon Credits
A tradable certificate representing the reduction or removal of one ton of carbon dioxide, or its equivalent, from the atmosphere.

Codify
To compile laws and rules into an orderly formal code to establish a budding concept.

Credit design guidance
The structured approach of business to create and implement credit policies and strategies which make use of credit scoring methodologies, credit risk management principles and credit policies.

Data granularity
Refers to the level of detail at which data or information is presented, processed, or analyzed. It plays a significant role in decision making.

Ecological integrity
Ecological integrity is the ability of an ecosystem to maintain its natural structure, function and composition over time which ensures resilience, biodiversity and sustainable ecosystem services.

Elite capture
A form of corruption where public resources are biased on the benefit of a few. Usually happens within a powerful group of individuals at the expense of the larger population.

Fungibility
The right and ability of an asset to be interchanged with other individual goods or assets of similar kind.

Greenwashing
A marketing practice where companies provide the public or investors false portrayal, misleading or outright false information about the environmental impact of their product and / or operation (CarboEurope, 2025).

Liquidity
Refers to the ease at which an asset can be bought or sold in the market.

Market based solution
Solutions where market concepts such as supply and demand, pricing mechanisms, incentives are used to solve collective action problems. These aim to align individual and business interests with societal goals by creating economic motivations to adopt desired behavior.

Mitigation hierarchy
A widely used good practice framework that guides users towards limiting as far as possible the negative impacts on biodiversity from development projects. It can be applied to projects in any sector and is based on a sequence of four iterative actions: avoiding and minimizing any negative impacts (prevention), before restoring and finally offsetting residual impacts (remediation) (The Biodiversity Consultancy, n.d.).

Nature credits
Evidence-based units of ecological improvement designed to drive and finance the halt and reversal of nature loss.

Operationalization

The process of turning abstract concepts into observable and measurable phenomena through defining variables and indicators to quantify vague or intangible concepts.

Permanence
The permanence of a unit of carbon removal or biodiversity gain refers to the likelihood of the CO2 sequestered, or biodiversity gained being maintained into the future. Long-lasting project permanence goes hand in hand with the quality of the credits that it produces and is critical to ensuring long term impacts that either reduce green-house gas (GHG) emissions or increase biodiversity (rePLANET, 2023).

Procedural bottlenecks
Refers to points in a workflow where tasks are slowed down or hindered as a process cannot keep up with the others.

Restoration Credits
One of the two RFI Credit Archetype in this study which are generated from activities that restore degraded wetlands ecosystems (reversing nature loss) to its fully functioning state.

Supply-side readiness
Refers to an organization's ability to effectively manage, adapt, and respond to disruptions and market changes.

Sustainable Finance
Refers to investments and financial practices that integrate environmental, social, and governance consideration to achieve long-term economic, social, and environmental benefits.

Valuation
The process of determining what an asset is worth today and some later date. It could be dependent on buyer, stage investment, company evolution, capital requirement, and market drive.

III. Summary of Phase 1 Nature Credits Background Study

This Phase 2 report builds on Phase 1 of the ADB Nature Credits Study, which examined the potential of nature credits as a scalable, high-integrity mechanism to mobilize private capital for wetland conservation under the Regional Flyway Initiative (RFI).

Phase 1 of this study highlighted the ecological and socioeconomic importance of wetlands along the East Asian-Australasian Flyway (EAAF) and explored the case for nature credits to support the ongoing protection and conservation of these wetlands. The wetlands of the EAAF support over 50 million migratory waterbirds and sustain millions of people, while also being vulnerable to mounting threats from development and climate change. With the global biodiversity financing gap projected to exceed USD 1.15 trillion annually by 2030, nature credits are emerging as a promising market-based solution to channel private investment and secure durable conservation outcomes.

Defining Nature and Nature Credits

The Phase 1 study adopted the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) definition of Nature as "*the natural world, including people, and the interactions among living organisms and their environment*." Building on this, Nature Credits have been defined ***as evidence-based units of ecological improvement designed to drive and finance the halt and reversal of nature loss***. This framing captures the full range of ecosystem values, biodiversity, climate resilience, and community benefits, ensuring strong alignment with the goals of the RFI.

Carbon and Nature Credits: Complementary but Distinct

While nature credits encompass carbon credits within their broader scope, the two are treated as distinct environmental assets at this stage of market evolution. Carbon credits, being more mature and widely established, offer a reference point for shaping high-integrity nature credit mechanisms. However, as accounting methodologies, governance systems, and demand for integrated nature–climate outcomes advance, these instruments are expected to gradually converge. For now, carbon credits remain a separate market instrument, opening opportunities for stacking (carbon and nature credits from the same parcel of land) or stapling (carbon credits from related sites or activities alongside nature credits). Appendix 1 provides a comparative overview of carbon and nature conceptual frameworks.

Design Principles of Nature Credits

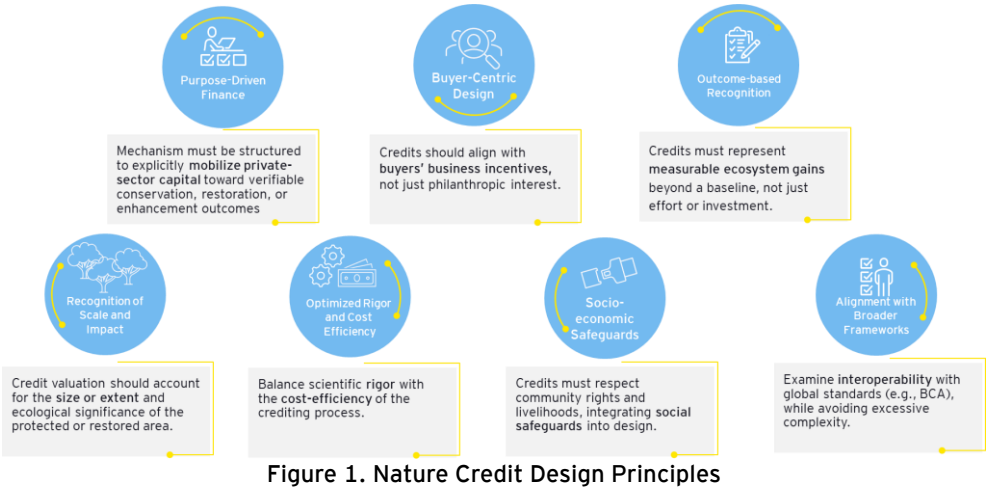


Figure 1. Nature Credit Design Principles

Effective nature credit mechanisms channel private finance toward measurable conservation and restoration outcomes by aligning with ecosystem improvement goals, meeting buyer priorities, and ensuring credit represents real ecological gains (Figure 1). They should be purpose-driven and outcome-based, while balancing scientific rigor with cost efficiency. Credible nature credit mechanisms should also embed socio-economic safeguards into project design by respecting

community rights, applying benefit-sharing models, and ensuring local participation. Finally, alignment with global frameworks and standards is important to guarantee credibility, comparability, and interoperability across emerging nature markets.

Actors and Relationships in the Nature Credits Market

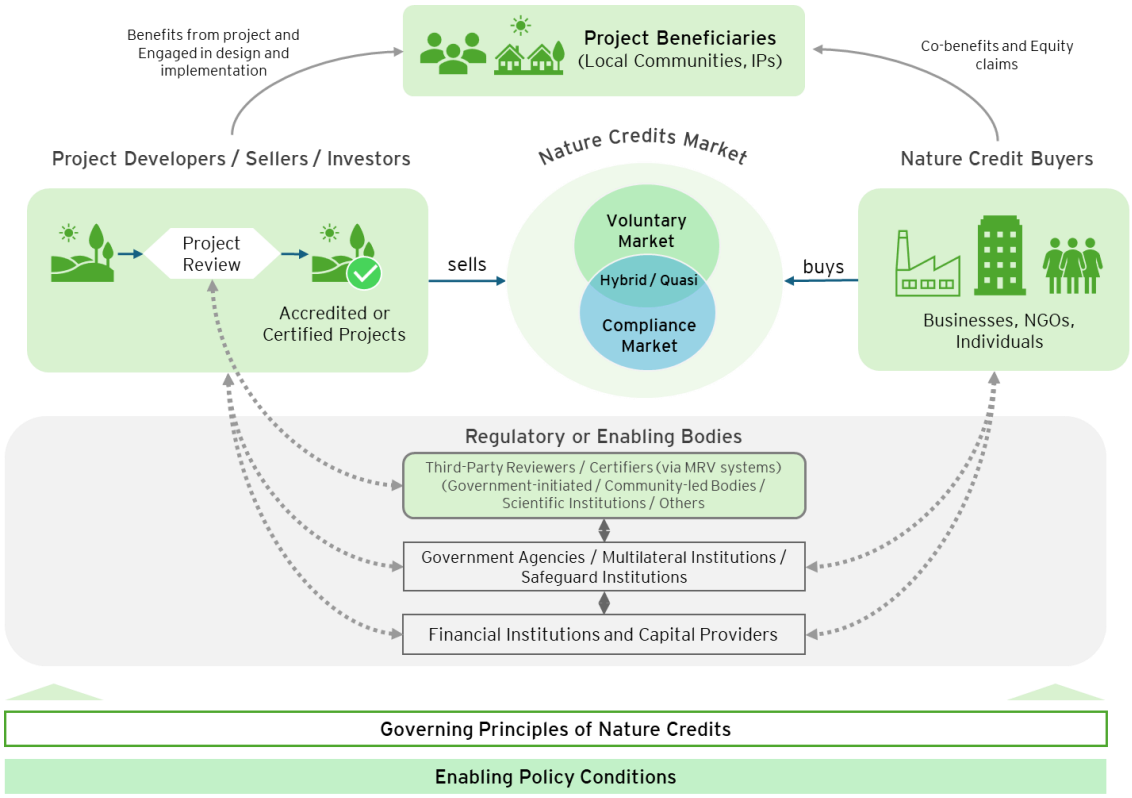


Figure 2. High-level Map of Actors and Relationships in Nature Credit Markets

Activating a nature credits market requires clear definitions of the actors, platforms, and supply–demand dynamics, drawing strong structural parallels to the design of carbon markets (Figure 2). Nature credits extend these models by embedding a broader set of ecological outcomes, emphasizing governance and community participation as integral design features.

Nature credit project developers and stewards of nature (NGOs, ethnic groups, and local communities) may create and manage projects; buyers (corporates and investors) drive demand and are the purchases of credits; and beneficiaries (local communities and ethnic groups) share the social and economic benefits arising from these projects when developed and delivered effectively, supported by transparent benefit-sharing policies and safeguards.

Standard setters and registries establish methodologies and platforms, while governments and multilaterals provide enabling policies, regulations, and early financing. Mapping these stakeholder relationships is important to understanding how a high-integrity nature credit market can operate within the RFI context.

Nature Dependency and Market Demand

The Phase 1 study introduced a Tiered Nature Dependency Framework, categorizing potential buyers based on their direct or indirect reliance on nature and related ecosystem services (Figure 3). This framework allows profiling of credit users, clarifies safeguards required for different buyer types, and supports more targeted engagement strategies. This tiered approach highlights the potential relevance of nature credits to a wide range of industries, investors, and communities.

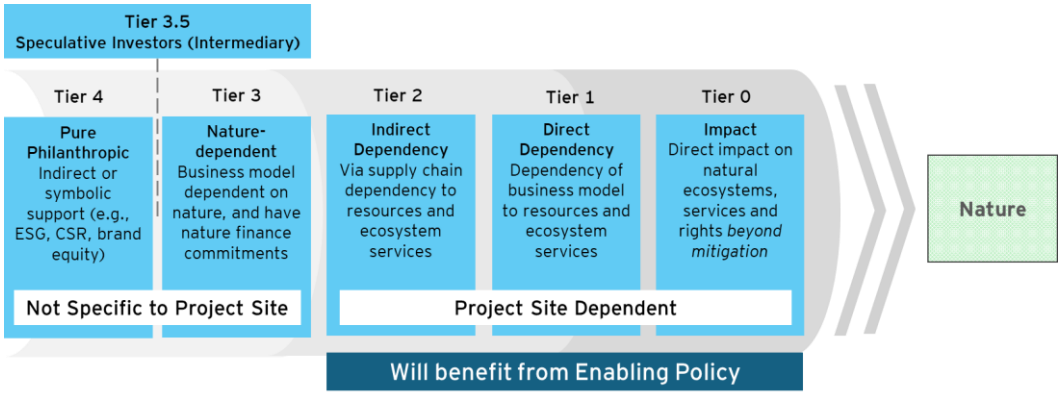


Figure 3. Tiered Nature Dependency Framework

- **Tier 0 (Residual Impacts):** Applies when all steps in the mitigation hierarchy have been exhausted and unavoidable residual impacts on nature remain. Nature credits here function as additional contributions made by companies that may already be requiring offsets and/or managing direct site-based impacts on nature, requiring strong safeguards and regulatory oversight to avoid greenwashing and ensure high-integrity claims.

- **Tiers 1–2 (Dependency Integration**): Represent buyers whose operations or supply chains depend on ecosystem services, but whose nature-related impacts and obligations may not yet be fully captured by regulatory, accounting, or recognized impact evaluation frameworks. For these actors, nature credits serve as tools for resilience building and contribution claims, integrating nature into business models and investment planning beyond offsetting logic.

- **Tiers 3–4 (Voluntary and Ethical Engagement):** Include buyers motivated by ESG, CSR, or philanthropic goals, seeking to advance ethical leadership, reputational value, or long-term sustainability commitments. Their participation expands the market base and supports the scaling of high-quality restoration and protection initiatives.

- **Tier 3.5 (Speculative Investors):** Refers to financial actors acquiring credits from any tier primarily for investment or trading purposes. While they lack direct ecological dependencies, their participation can enhance liquidity and price discovery, provided that high-integrity standards are maintained.

Together, these tiers illustrate the spectrum of motivations and safeguards needed to sustain an inclusive, credible, and scalable nature credit market. In the RFI context, this tiered framing helps align wetland restoration and conservation opportunities with the most appropriate buyer categories balancing integrity, transparency, and market growth.

RFI Nature Credits: Activities and Credit Archetypes

Qualifying projects under a nature credit framework requires recognizing the full range of eligible activities across the restoration spectrum. The Restorative Continuum Framework, aligned with the UN Decade on Ecosystem Restoration, highlights actions encompassing protecting intact ecosystems to managing modified areas and restoring degraded sites. For this study, eligible activities have been distilled into two archetypes (Figure 4): Restoration, which reverses degradation to enhance ecosystem health and services, and Loss Avoidance (or Maintenance and Protection), which prevents further decline by maintaining ecological functions and protecting against threats. In practice, these approaches often converge and are most effective when applied together, particularly in RFI wetlands

where pressures, such as pollution, habitat loss, and land-use change persist despite formal protections

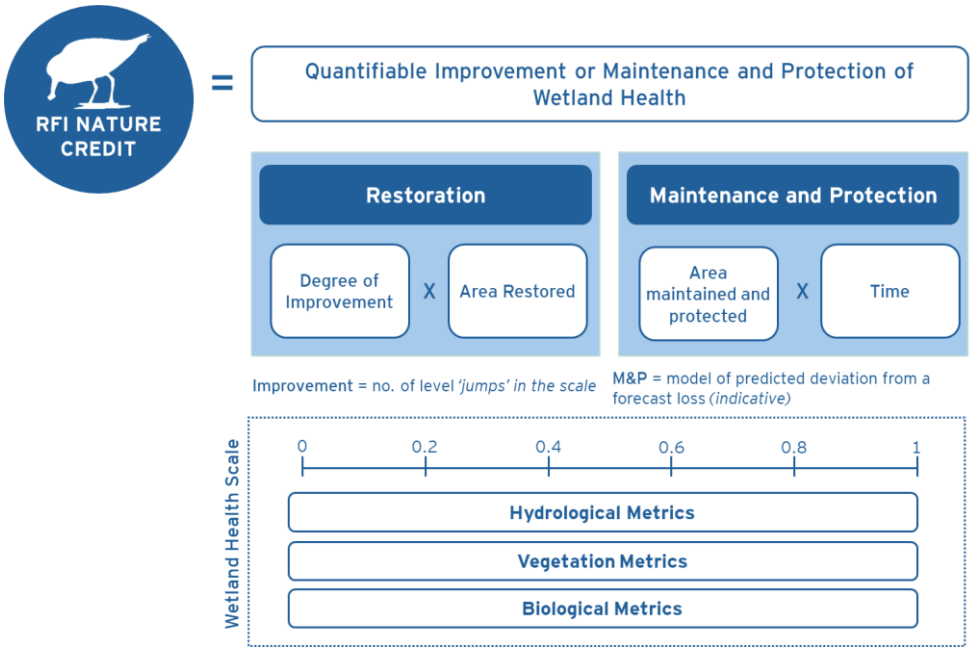


Figure 4. RFI Nature Credit Archetypes

Within the RFI nature credit framework, Restoration Nature Credits are generated from activities that recover degraded wetlands and improve their ecological function, while Loss Avoidance Nature Credits are derived from actions that protect and maintain wetlands already in good or recovering condition. Both are underpinned by wetland health metrics that assess ecological condition across three core dimensions: hydrology, vegetation, and biology, using a standardized 0 to 1 scale from fully degraded to reference condition. This results-based approach ensures that credits represent measurable ecological outcomes, enabling transparent tracking of wetland recovery and protection across RFI sites.

Nature Credit Principles: High Integrity Considerations

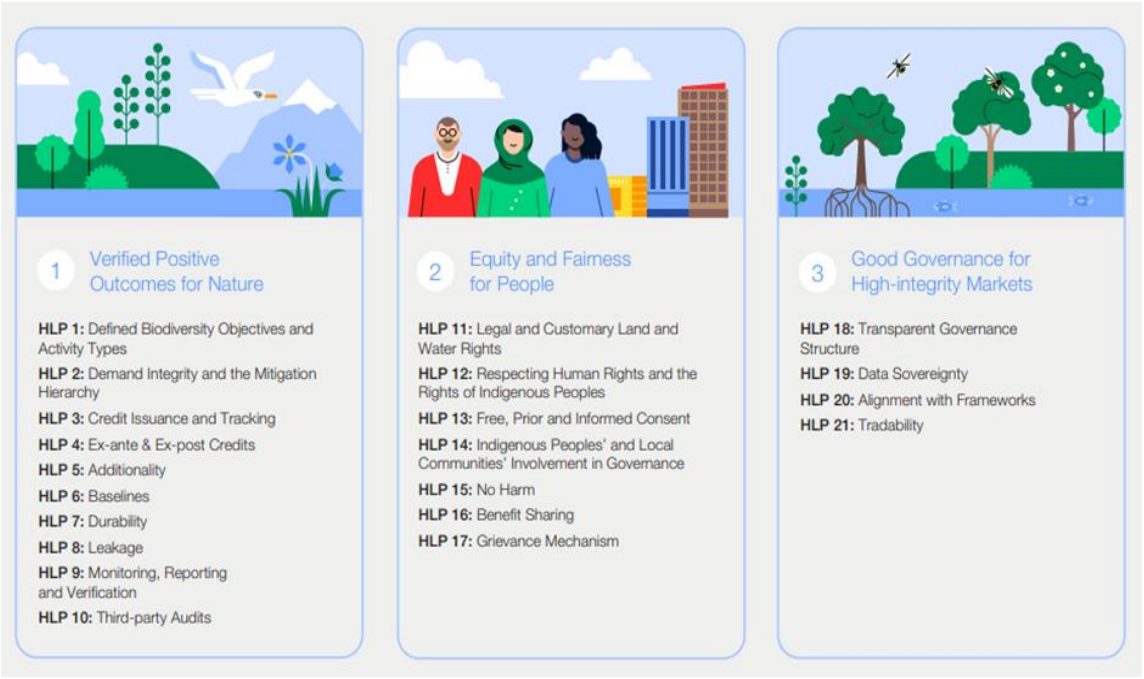


Figure 5. High Level Principles from UNDP Biodiversity Credit Alliance

Finally, Phase 1 of this study aligned the RFI framework with the High-Integrity Principles (HIPs) developed by the UNDP Biodiversity Credit Alliance (BCA), in partnership with the World Economic Forum (WEF) and the International Advisory Panel on Biodiversity Credits (IAPB). These 21 principles (Figure 5) emphasize measurable outcomes for nature, equity for people, and strong governance, synthesize lessons from more than 20 existing standards across carbon and biodiversity markets. Applying these principles to nature credits in the context of RFI ensures credibility and inclusiveness while acknowledging that practical implementation will vary depending on country-specific ecological and institutional contexts.

Enabling Conditions for Nature Credits Mechanism

Phase 1 of the Nature Credits Study also examined the policy, institutional, and financial environment necessary to establish credible and investable nature credit mechanisms. To simplify these findings, the enabling conditions have been structured under five enabling pillars that collectively define the foundation for operationalizing nature credit markets. These pillars provide the analytical basis for assessing country readiness in this Phase 2 report. Specifically:

- **Market Incentives:** Phase 1 emphasized the importance of financial incentives and participation pathways to unlock private investment in nature. Governments play a key role in stimulating market participation through fiscal measures (e.g. tax breaks), concessional or blended finance, and integration of nature credits into ESG and green-finance frameworks. Early public or philanthropic funding can de-risk pilots and attract private investors, helping bridge conservation finance with broader nature-positive markets.
- **Legal and Policy Foundations:** Phase 1 identified that robust legal and policy scaffolding is essential to legitimize credit markets and signal long-term government commitment. Enabling laws and strategies should define project eligibility, ownership, benefit-sharing, and verification rules. International recognition under frameworks, like the CBD and the Paris Agreement, was emphasized as critical for credibility and investor trust. Without these anchors, nature credit systems risk remaining fragmented and voluntary.
- **Standards, Metrics, and Market Infrastructure**: Strong technical foundations were seen as key to ensuring integrity and transparency. Phase 1 underscored the need for standardized crediting methodologies, measurable indicators for ecosystem outcomes, and MRV (measurement, reporting, and verification) systems compatible with international standards. Establishing national registries or linking to global platforms was recommended to build transparency and interoperability for future trading.
- **Governance and Institutions:** Effective governance was identified as the accountability core of nature credit systems. Phase 1 highlighted the need for clear institutional mandates, coordination across environment, finance, and planning agencies, and capacity-building for local institutions. Governments were advised to focus on enabling regulation and oversight, rather than market operation, ensuring transparency, independent verification, and inclusive participation of local communities.
- **Social Equity and Safeguards:** This pillar underlines that equitable participation and strong safeguards are central to the integrity and social legitimacy of nature-credit systems. Ethnic Groups and Local Communities must be actively involved in the design and governance of credit projects, with their rights, tenure, and traditional knowledge explicitly recognized. Clear benefit-sharing mechanisms and grievance-redress systems are essential to ensure inclusivity and prevent elite capture. Safeguard frameworks should also manage trade-offs among land uses and ensure that credit projects complement, rather than conflict with, local development priorities.

IV. Introduction and Background

A. Background and RFI Context in Thailand

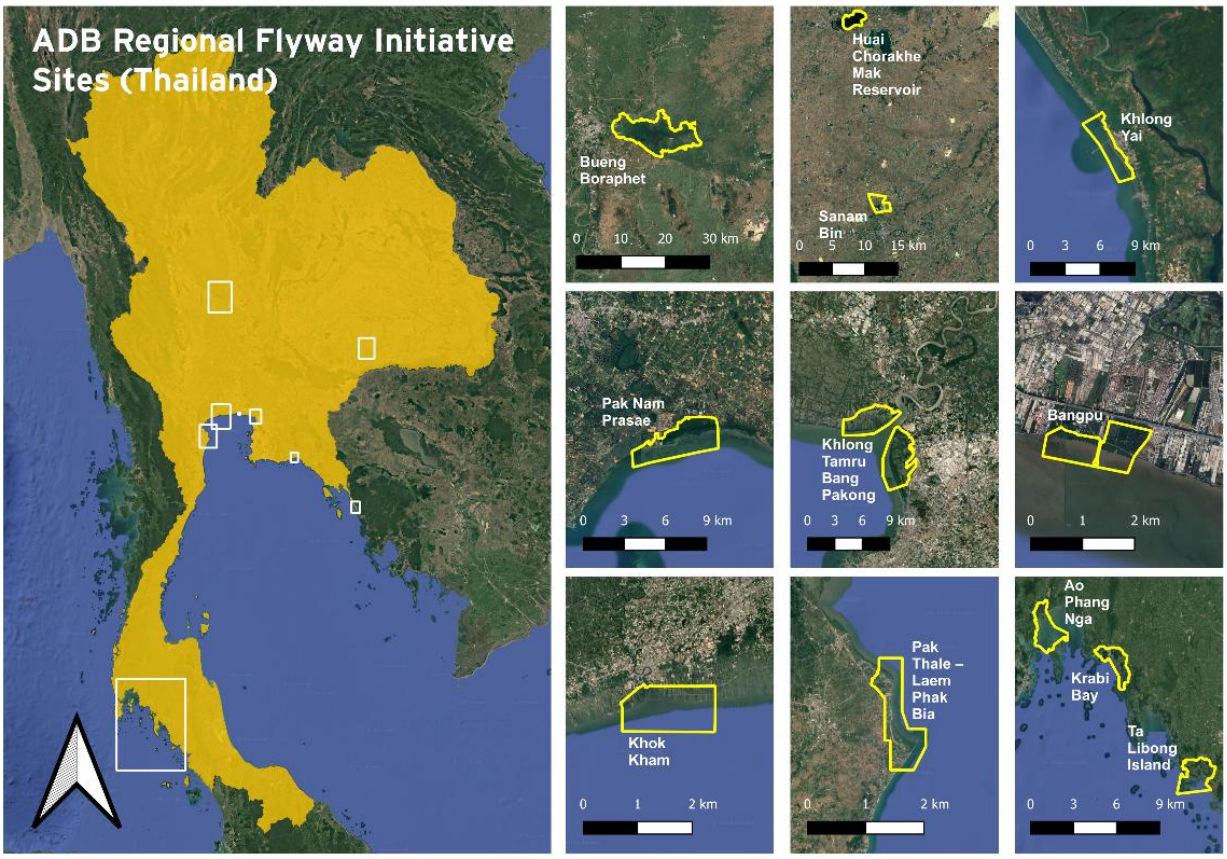


Figure 6. Map of RFI Priority Sites in Thailand

Building on the conceptual foundations developed in Phase 1, this Phase 2 report applies the emerging nature credit framework to Thailand, one of the pilot case study countries of this current RFI nature credit study, alongside the Philippines and Bangladesh. In Thailand, the RFI has identified twelve priority wetland sites (Figure 6): nine coastal (Bang Pu, Khok Kham, Khlong Tamru, Pak Thale–Laem Phak Bia, Pak Nam Prasae, Khlong Yai, Krabi River Mouth, Phang-nga Bay, Ko Libong–Hat Chao Mai) and three inland wetlands (Bueng Boraphet, Huai Chorakhe Mak, Sanam Bin), aligned with national and international conservation frameworks, such as the Ramsar Convention, EAAFP, Important Bird and Biodiversity Areas (IBA) network, and ASEAN Heritage Site.

Thailand's RFI wetlands, spanning over half a million hectares across mangroves, estuaries, salt pans, reservoirs, and river mouths, provide nationally and globally significant ecosystem services. Sites such as Bang Pu, Pak Thale–Laem Phak Bia, and Ko Libong support migratory birds, dugongs, and other threatened species, contributing to global biodiversity conservation and generating high-value niche tourism. Large Ramsar-designated systems such as Bueng Boraphet, Krabi River Mouth, and Phang-nga Bay supply essential provisioning services including fisheries and freshwater, while also functioning as important regulating systems for flood mitigation, erosion control, and carbon storage. Reservoir sites including Huai Chorakhe Mak and Sanam Bin provide water supply, drought buffering, and local recreation opportunities, while working wetlands such as Khlong Tamru and the Khok Kham salt pans contribute to food production, cultural heritage values, and community-based tourism.

Despite their ecological and economic importance, these landscapes face a range of pressures including agricultural runoff, aquaculture and industrial pollution, invasive species, land use change,

hydrological alterations from dams, erosion, tourism expansion, and climate-related impacts such as sea-level rise and drought. In coastal areas like Pak Nam Prasae, mangrove loss from aquaculture and sedimentation presents significant challenges, while urban and industrial encroachment affects sites such as Khok Kham and Khlong Tamru. These combined loss drivers highlight the urgency of applying nature-positive financing tools, including nature credits, to support protection, restoration, and long-term resilience of Thailand's wetland ecosystems. (A detailed description of each site, including ecosystem services, management arrangements, and key drivers of change, is provided in Appendix 2.

During the RFI's initial phase, country-specific activities included site identification and prioritization, capacity building on ecosystem services assessment and nature-based solutions, and stakeholder coordination among government agencies, local communities, and conservation partners. The technical assistance component likewise sought to establish a financing mechanism to channel resources from EAAFP members, development partners, and private investors toward high-priority wetland projects. Among the data and materials emerging from previous efforts are the early-stage site concept (site studies) on the twelve sites, which provided key information about each area (such as location and size, socio-ecological features, key ecosystem services, threats and drivers of change, stakeholders and management paradigms, among others) with the ultimate objective to provide recommendations on potential projects and likely financing mechanisms to conserve the site. These site studies form part of the site data used in this Phase 2 report, with this Study validating or expanding information via stakeholder consultations, desktop research, and key informant interviews.

B. Objectives of the Study and Overarching Approach

This report focuses on applying the nature credit framework to the context of Thailand, with the aim to assess how the mechanism can be embedded within national policy, institutional, and market systems, as well as the readiness of selected wetland sites to host nature credit activities. The study also develops a practical roadmap for integrating nature credits into national conservation and financing strategies.

An in-country workshop held in Bangkok (November 2025) convened representatives from the government, non-government organizations especially conservation entities with involvement in RFI sites, and the private sector with identified impacts and dependencies or potential interest in nature credit mechanisms in these RFI sites. The insights of these key stakeholders on opportunities, barriers, and priority actions for nature credits were incorporated into this report.[1]

Overarching Approach for Country Report

This country report applies a structured, stepwise approach to assess the potential for nature credit mechanisms across Thailand's priority wetlands under RFI (as outlined in Figure 7).

[1] More details on the country workshop are discussed and integrated in the following sections,

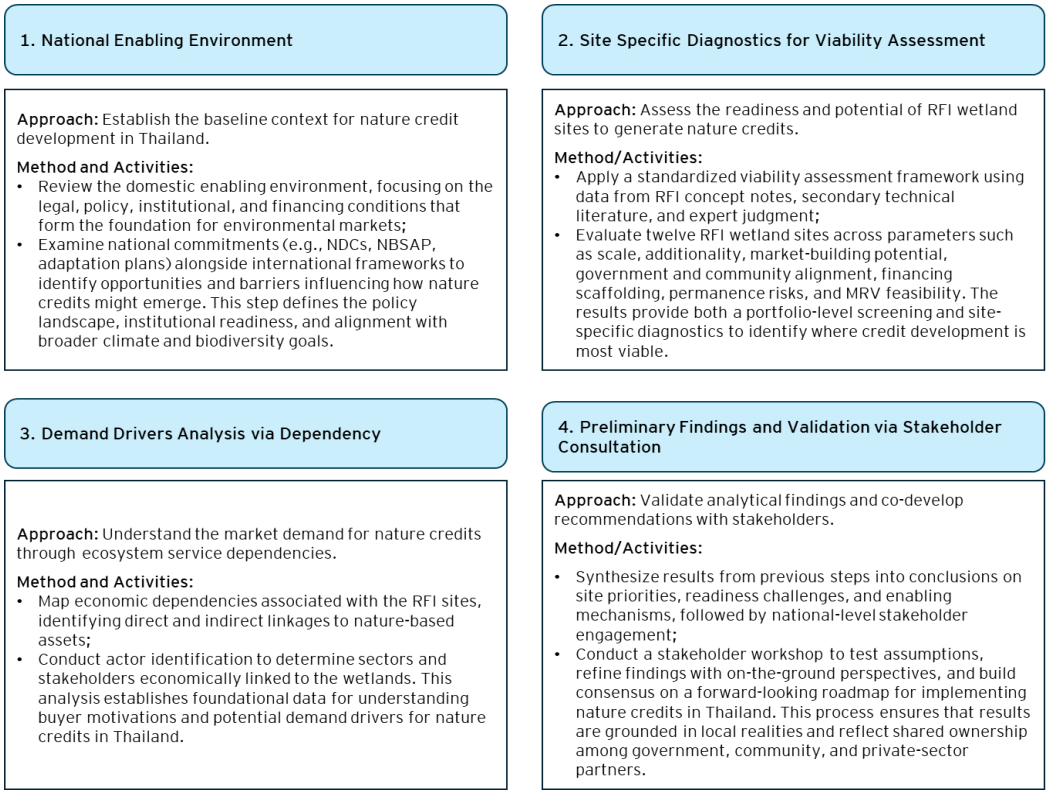


Figure 7. Overarching Approach for Assessing Nature Credit Potential across RFI Sites in Thailand

Together these four steps provide the key considerations, from policy assessment to site diagnostics, market demand analysis, and stakeholder validation, offering an integrated view of the enabling conditions and emerging opportunities for nature credit development in Thailand. The findings presented in the following sections are intended to inform further site-level analyses and stakeholder engagement, serving as an initial foundation for refining and operationalizing nature credit mechanisms across the RFI sites.

V. Thailand Policy and Institutional Landscape

A. National Policies, Strategies, and Governance Relevant to Nature Credits

Thailand has developed a strong foundation for climate and carbon-related governance, supported by the TGO's T-VER standards and emerging national climate legislation that enhances its readiness for voluntary carbon markets. However, a dedicated legal or regulatory framework specifically designed to govern nature credit markets, covering aspects such as credit issuance, verification, trading, and environmental integrity, does not yet exist. This represents a critical policy gap, especially if the country intends to mobilize private finance and scale investments in conservation through market-based instruments. It is important to stress that whilst a government-run nature credit scheme would be valuable, it should not be viewed as the sole pathway to activating a functioning nature credit market. Comprehensive policy reform of the scale identified above will inevitably take time; however, this should not become a barrier to early-stage, private-sector–led pilots supported by ADB and other development finance institutions. Early market testing can generate practical insights, build confidence among stakeholders, and deliver proof-of-concept transactions that can inform and accelerate the eventual design of a robust national framework.

The summary below presents an assessment of key policy and institutional elements in Thailand based on current maturity and readiness to support the development of a nature credit mechanism. These elements follow the enabling conditions outlined in Phase 1 of this study. Such conditions reflect good

international practice and minimum guardrails necessary for establishing credible, transparent, and effective environmental markets that support nature-positive contributions.

This section examines Thailand's national enabling environment through the lens of five enabling pillars namely: Market Incentives; Legal and Policy Foundations; Standards, Metrics, and Market Infrastructure; Governance and Institutions; and Social Equity and Environmental Standards. These pillars serve as the analytical framework for this section and provide the foundation for the subsequent high-level site viability assessment presented in Section VIII. Accordingly, the analysis begins with a national-level scoping of enabling and inhibiting conditions (as discussed in this section) and progresses toward a site-level viability diagnostic in the following section.

To provide a structured assessment, Table 1 classifies each enabling condition using a three-tier traffic-light system: **Gap**, **Emerging**, and **Existing**. This approach moves beyond a simple presence/absence distinction by capturing the spectrum of readiness across enabling conditions. The assessment was informed by desktop research complemented by expert knowledge on the national frameworks and programs relevant to environmental governance, climate action, and biodiversity conservation and/or financing. For each condition, the table identifies relevant law, policy, programs, and initiatives, accompanied by an explanation of how these enable, inhibit, or potentially constrain or support the development of a nature credit mechanism in the context of Thailand.

It is important to note that this analysis is based solely on available secondary information and reflects a preliminary, high-level assessment. The findings are intended to serve as a diagnostic input, highlighting strengths and areas for potential improvement in the enabling environment for nature credit development, rather than as a definitive evaluation of government policy or institutional performance. This assessment has been further reviewed and validated through a country workshop, with inputs provided by participants from the government, non-government organizations including conservation groups relevant to RFI sites, and private sector entities. Box 1 summarizes these perspectives from the workshop.

Table 1. Assessment Nature Credit Readiness at National Lens

Pillars	Enabling Condition	Status	Relevant Policies / Programs / Initiatives	Implications for Nature Credit Mechanism
Market Incentives (via Nature Finance Mechanisms)	**Drivers for Market Participation** *Creates demand signals and lowers barriers for private investment in credit markets.*	Existing	• Thailand Voluntary Emission Reduction Program (T-VER) and Premium T-VER • Bio-Circular-Green (BCG) Economy Model • Payment for Ecosystem Services (PES) Pilot Projects Studies (forest, mangrove, wetlands, watershed PES schemes) • Thailand Taxonomy Phase 1 (Phase 2 Draft) • Corporate ESG reporting requirements (SEC sustainability reporting guidelines: SDG Guidebook for Business -UNDP and SEC partnership)	Thailand's existing environmental market instruments provides foundation for investor and market familiarity that can support future nature credit mechanisms. The T-VER and Premium T-VER programs already establish functioning processes for project registration, crediting, and verification, offering operational experience that can be extended to nature-based credits. PES pilots across forests, coasts, and watersheds demonstrate early demand for ecosystem service investments and provide practical models that could be adapted or scaled for nature credit market design. The Thailand Taxonomy and ESG reporting requirements further anchors private-sector interest in sustainability performance. Although nature and biodiversity disclosures are still evolving, such disclosure-based activities could lay the groundwork for future demand from both voluntary and compliance-oriented buyers based on their dependencies on, and risks related to, nature.
Legal and Policy Foundations (Scaffolding)	**Strategic Policy Frameworks** *Sets national priorities and provides policy alignment that facilitate conservation/restoration programs to these RFI sites*	Existing	• Thailand NBSAP 2023–2027 (benefit-sharing, PES, biodiversity credits) • Thailand Biodiversity Finance Plan 2023-2027 (nature credits as one of the financing solutions) • Climate Change Master Plan 2015-2050 (with wetland conservation and protection as part of key strategies) • National Climate Change Act (Draft) – enabling carbon market instruments (e.g., ETS, Carbon Tax, Carbon Border Adjustment Mechanism, etc.) • Thailand Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) • BCG Strategic Plan 2021–2026 • National Environmental Quality Act (NEQA) • The Enhancement and Conservation of National Environmental Quality Act - supplements NECA in terms of provisions in the protection of natural resources	Thailand's strategic policy landscape provides strong anchorage for developing a future national framework for nature credits. The NBSAP 2023–2027 and the Biodiversity Finance Plan identify benefit-sharing, PES, and biodiversity credits as emerging financing pathways, signaling high-level policy interest in mobilizing resources for nature-positive outcomes. Thailand Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS) – identifies nature-based solutions as contributors to long-term mitigation and resilience pathways. Complementary frameworks, including the Climate Change Master Plan, the draft Biodiversity Act, NEQA and its supplementary legislation, and the BCG Strategic Plan, collectively reinforce ecological protection, sustainable forest and wildlife management, and the transition toward a green and circular economy. Although these policies do not yet specify credit-generating activities or credit design guidance, their alignment of conservation

Pillars	Enabling Condition	Status	Relevant Policies / Programs / Initiatives	Implications for Nature Credit Mechanism
			• Wildlife Preservation and Protection Act - provides for the endangered species protection, wildlife conservation areas (protected areas), etc. • Forest Act- protecting forests and promoting sustainable forest management • Biodiversity Act (Draft)- includes stipulations on liabilities and penalties for those who adversely impact biodiversity	priorities with sustainable finance objectives creates a strong basis for future legislation. Harmonizing Thailand's robust ecological management policies with national goals on green growth and nature finance could help catalyze the development of a dedicated legislative or regulatory framework for nature credits.
	International Recognition and Alignment *Aligns the country with global standards and strengthens legitimacy of credit systems.*	Existing	• CBD commitments via NBSAP (including GBF Targets) • UNFCCC NDC Implementation (NbS-linked mitigation & adaptation) • Ramsar Site Designations and Management Plans • UNESCO Biosphere Reserve programs • UNDP Biodiversity Finance	Thailand's commitments under the CBD, GBF, UNFCCC, and multiple Ramsar and UNESCO site designations provide an internationally recognized foundation for nature-positive finance mechanisms. These designations enhance the global credibility of Thai ecosystems as potential sites for restoration and conservation investments. International programs such as UNDP BIOFIN also contribute to Thailand's readiness for innovative finance by supporting resource mobilization planning and alignment with global biodiversity finance principles. While crediting mechanisms remain at an exploratory stage, Thailand's strong international alignment positions it well to ensure environmental integrity, comparability, and market confidence as mechanisms develop.
	Dedicated Legislation for Nature Credits *Provides the legal framework for credit issuance, verification, trading, and market integrity.*	Gap	• Draft Climate Change Act (TGO-led) • Community Forest Act (2019) • Marine and Coastal Resources Management Promotion Act (2015)	Current Thailand legislation provides a strong environmental management framework but does not yet include a comprehensive statutory structure tailored specifically to nature or biodiversity credits. The draft Climate Change Act focuses primarily on carbon pricing and GHG mitigation instruments. Sectoral laws (e.g., Community Forest Act, Wildlife Preservation and Protection Act, and Marine and Coastal Resources Act) establish important rights, responsibilities, and safeguards for ecosystem governance, but do not articulate credit-specific procedures. As Thailand explores biodiversity-related finance through the BFP and international dialogues, future legal or regulatory development will likely clarify governance arrangements, credit definitions,

Pillars	Enabling Condition	Status	Relevant Policies / Programs / Initiatives	Implications for Nature Credit Mechanism
				and oversight structures needed to operationalize a national nature credit mechanism.
Standards, Metrics, and Market Infrastructure	**Project Eligibility and Standards** *Defines what types of projects can qualify for credits, ensuring credibility and comparability.*	Emerging	• TGO NbS Carbon Methodologies (e.g., mangrove and seagrass restoration, conservation and restoration of peatlands, agroforestry) • DMCR Mangrove Carbon Credit Programme (private companies to invest in mangrove planting and protection to earn carbon credits- involvement of coastal communities in the conservation effort)	Thailand has established a suite of NbS-oriented carbon methodologies under TGO, including for mangroves, seagrass, peatlands, and agroforestry. These methodologies demonstrate technical readiness for project registration and MRV in nature-based landscapes. While currently oriented toward carbon outcomes, they provide foundations that could be adapted or complemented with biodiversity or ecosystem service performance metrics. Existing coastal initiatives, such as DMCR's mangrove carbon program, also illustrate project models with community participation and ecosystem conservation elements, offering practical pathways for future multi-benefit or nature-oriented crediting.
	Standards, Metrics, and MRV *Ensures transparent, credible measurement of biodiversity and ecosystem outcomes.*	Emerging	• Thailand Biodiversity Information Facility (TH-BIF) • National Wetlands Inventory (updating wetland data under Ramsar Convention) • DNP species and habitat monitoring system • DMCR coastal ecosystem monitoring program • Thailand Environmental Statistics • RFI Early-stage Site Concepts (Site Studies) (carbon sequestration, flood regulation, coastal protection valuation)	Thailand maintains several national biodiversity and ecosystem monitoring systems and datasets spread throughout various concerned agencies, including TH-BIF, the National Wetlands Inventory, DNP species and habitat monitoring programs, the DMCR coastal ecosystem database, and NESDC environmental statistics. These systems provide extensive ecological data that can support baseline-setting and long-term monitoring for crediting schemes. While these systems are robust for conservation planning, further integration and method development would strengthen their suitability for credit-specific MRV, particularly regarding indicators for biodiversity condition, ecosystem functionality, and permanence.
	Operational Credit Registry or Exchange *Provides infrastructure for issuing, tracking, and retiring credits transparently.*	Emerging	• TGO Carbon Registry System	Thailand's existing TGO carbon registry provides a functioning national platform for credit issuance, transfer, and retirement. This infrastructure demonstrates institutional readiness for registry management and could serve as a foundation for accommodating future nature or multi-benefit credit types. Integrating biodiversity or ecosystem service units would, however, require additional registry functionalities, such as tracking co-benefits, safeguard

Pillars	Enabling Condition	Status	Relevant Policies / Programs / Initiatives	Implications for Nature Credit Mechanism
				compliance, and benefit-sharing arrangements. While the current registry is carbon-focused, Thailand's current track and appetite in nature financing indicate that registry enhancements may be considered or developed for nature/biodiversity credit initiatives.
Governance and Institutions	**Oversight Mechanism / Designated Authority** *Ensures accountability, coordination, and integrity in credit market oversight.*	Emerging	• Thailand Greenhouse Gas Organization (TGO) - carbon markets • Department of National Parks (DNP) - forests, protected areas • Department of Marine and Coastal Resources (DMCR) - coastal/marine • Biodiversity-based Economy Development Office (BEDO) - sustainable tourism, biodiversity economy • Office of Natural Resources and Environmental Policy and Planning (ONEP) - NBSAP, EIA, NEQA • Royal Forest Department – forest resources • National Economic and Social Development Council (NESDC) - planning, investment approvals	Thailand has several established agencies with mandates relevant to nature credit governance. TGO oversees carbon market operations; DNP and DMCR manage forest and coastal ecosystems; RFD is responsible for forest reserves and production forests; BEDO advances biodiversity-based economic development; ONEP leads national biodiversity policy; and NESDC oversees national planning and investment. This institutional landscape provides a strong governance base. As Thailand continues to explore nature and biodiversity crediting, further clarification/ harmonization of roles and/or clear delineation of mandates, or even potentially through a designated coordinating unit or inter-agency mechanism would help ensure transparent oversight, consistent standards, and streamlined project approval processes. Strengthening these coordination pathways can also help reduce procedural bottlenecks and improve the efficiency of project implementation.
	Cross-Sectoral Coordination *Aligns diverse mandates across agencies to operationalize market mechanisms.*	Gap	• Draft Climate Change Act (TGO-led) • Community Forest Act (2019) – legal basis for community stewardship • Marine and Coastal Resources Management Promotion Act (2015) – opportunities for coastal ecosystem credits	Multiple Thai agencies hold mandates related to climate, biodiversity, forests, coasts, community governance, finance, and national development planning. These roles occasionally intersect in ways that create uncertainty over operational leadership and coordination responsibilities. While sectoral coordination structures are in place, establishing a more formal mechanism for integrated decision-making would improve readiness for implementing a nature credit mechanism that operates across multiple jurisdictions and authorities.
Social Equity and Safeguards	**IPLC Engagement and Benefit-Sharing** *Ensures equity, safeguards tenure, and enables inclusive participation in markets.*	Existing	• Act on Protection and Promotion of the Way of Life of Ethnic Groups • Community Forest Act (2019)- sustainable forest management	Thailand has well-established community stewardship arrangements across forests, mangroves, and protected areas, enabled by the Community Forest Act, Forest Act, and co-management programs under DNP

Pillars	Enabling Condition	Status	Relevant Policies / Programs / Initiatives	Implications for Nature Credit Mechanism
			• DNP Co-management Programs (Community PA management) • DMCR Community Mangrove Management Programs • NBSAP benefit-sharing mechanisms • DMCR Mangrove Carbon Credit Program • BEDO Biodiversity-Based Economy Programs (e.g., BD promotion- driving biodiversity conservation alongside community level economy, BD product certification- 'B-Mark Certification)	and DMCR, which provide a practical basis for local communities and ethnic groups participation in nature credit activities. The Act on Protection and Promotion of the Way of Life of Ethnic Groups and benefit-sharing provisions in the NBSAP further reinforce equity and rights-based approaches. Initiatives such as BEDO's biodiversity-based economy programs and the DMCR Mangrove Carbon Credit Programme illustrate pathways for linking community roles in conservation and resource management to livelihood benefits under future nature credit mechanisms.
	Safeguard Policies and Trade-off Management *Prevents harm, manages risks, and ensures integrity of crediting outcomes.*	Existing	• National Environmental Quality Act- requiring EIAs to large scale projects • EIA / SEA Requirements • Marine & Coastal Resources Management Promotion Act (2015) • National Parks Act (2019) • Pollution Control Act- regulating and controlling pollution from industrial, agricultural, and residential resources	Thailand's environmental governance system includes robust safeguard instruments, such as NEQA, EIA/SEA requirements, the National Parks Act, and pollution control regulations, that provide foundation for managing environmental and social risks. These policies can underpin the integrity of nature credit projects by ensuring compliance with national standards for conservation, environmental protection, and community rights. Future nature credit guidelines may incorporate additional biodiversity-specific or market-oriented safeguards, enabling Thailand to align with international expectations for credit quality and permanence.

Implications for the Thailand Nature Credit Readiness

The traffic-light assessment of nature-credit readiness highlights not only where Thailand has policy anchors but also the areas that require targeted reform to support a credible nature credit system. The discussion below examines the implications of the results across the five enabling condition pillars.

1. **Market Incentives: Solid Foundation with Growing Signals for Nature Finance**

   Thailand shows existing readiness in terms of market incentives and its sustainable finance landscape with several readily mature instruments, laying the groundwork for nature credit markets. The T-VER and Premium T-VER programs, managed by the TGO, have already familiarized domestic investors, project developers, and regulators with credit issuance, verification, and trading processes, sharing lessons that can be extended or modelled toward biodiversity or nature credits. Such mechanism, managed by the government, can potentially increase investor trust and demand actors in investing in credit markets.

   Complementary initiatives, including pilot projects and feasibility studies in Phangan Island, the Chin River Basin (Chao Phraya River), and the Lamsebai Watershed, have explored Payment for Ecosystem Services (PES) schemes focused on improving water quality and ecosystem integrity through protection and restoration activities.[2] These pilots share close conceptual alignment with nature credit approaches, demonstrating early interest ecosystem uplift or maintenance partnered with measurable outcomes, and providing practical examples and lessons that can be adapted into future nature credit structures.

   The Thailand Taxonomy, the Bio-Circular-Green (BCG) Economic Model and evolving ESG reporting framework through annual disclosure requirements for publicly listed companies under the SEC which aim to enhance transparency and reporting efficiency, signal a broader shift toward integrating environmental performance into private investment decisions.[3] Combined with tax incentives offered under the BCG model for companies pursuing sustainable development pathways, these instruments help steer capital toward nature-positive activities.[4] Although nature and biodiversity-related disclosures are still emerging, these frameworks have the potential to shape emerging demand from both voluntary and compliance-oriented buyers, particularly in sectors with significant dependencies on natural capital. Enhancing these instruments and embedding clearer biodiversity considerations could accelerate private-sector readiness for engaging in a future nature credit market.

2. **Legal and Policy Foundations: Strong Anchors, Growing Alignment for Nature-Positive Finance**

   Thailand benefits from a robust suite of strategic policy frameworks that integrate biodiversity conservation, sustainable development, and climate action. The NBSAP 2023–2027 and the Biodiversity Finance Plan 2023–2027 explicitly reference biodiversity and/or nature credits, PES, and benefit-sharing, signaling high-level policy endorsement for nature-positive finance. The inclusion of these instruments in national plans provides a strong basis for advancing the foundational work, assessments, and piloting envisioned within the current planning cycle,

[2] Jarungrattapong, R., Mahasuweerachai, R., & Nabangchang, O. (2016). Payment for ecosystem services in Thailand and Lao PDR (EEPSEA SRG Report No. 2016-SRG3). Economy and Environment Program for Southeast Asia. https://www.academia.edu/26823998/Payment_for_Ecosystem_Services_in_Thailand_and_Lao_PDR

[3] World Bank. (2024). *Corporate governance assessment of listed companies on the Stock Exchange of Thailand: Enhancing resilience through ESG integration* (Report No. P179597). https://documents1.worldbank.org/curated/en/099032624052515227/pdf/P1795971dc58270671bd9e1114d45321c25.pdf

[4] Birot, V. (2025). Thailand's Bio-Circular-Green Economic Model. Lex Nova Partners. Accessed on 26 November 2025 https://lexnovapartners.com/thailands-bio-circular-green-economic-model/#elementor-toc__heading-anchor-2.

positioning Thailand to explore and operationalize nature credit mechanisms over the 2023–2027 period as institutional and technical capacities mature.

This direction is further reinforced by the draft National Biodiversity Act, currently before Parliament. Once approved, it would establish a national framework for biodiversity conservation and reflect key Convention on Biological Diversity (CBD) and Nagoya Protocol principles, including access and benefit-sharing.[5] The Act is intended to complement, not replace, existing laws such as the national parks, wildlife, and community forestry, strengthening coordination across Thailand's biodiversity governance system.

Additional frameworks, including the Climate Change Master Plan, the BCG Strategic Plan, NEQA and its supplementary acts, and core forestry and wildlife legislation, reinforce ecological protection and sustainable resource management. Thailand's LT-LEDS further reinforces the strategic relevance of nature-based solutions by identifying forests, wetlands, and coastal ecosystems as contributors to long-term mitigation and climate resilience. Although the strategy does not yet articulate mechanisms for crediting or ecosystem service measurement, it aligns national climate ambitions with future opportunities for nature credit integration.[6] As Thailand refines its climate planning instruments, the LT-LEDS offers a high-level anchor for positioning nature credits within long-term financing pathways.

While these policies collectively provide strong strategic anchorage, they currently do not offer guidance on credit-specific rules or provisions. The draft Climate Change Act represents an important step toward market-based instruments, although its focus remains primarily on carbon. Stakeholder consultations highlighted the need to reference lessons from countries with successful nature or biodiversity credit pilots and policies, and to explore opportunities for integrating nature or biodiversity credits within the draft national Biodiversity Act. As Thailand continues to align its ecological management priorities with sustainable finance and green-economy strategies, there is an opportunity to progressively codify nature credits and establish clear regulatory frameworks.

3. Standards, Metrics, and Market Infrastructure: Strong NbS Carbon Base, Emerging Biodiversity MRV Potential

Under the T-VER, the country has made notable progress in developing nature-based carbon methodologies such as for mangrove and seagrass restoration, peatland conservation and restoration, and agroforestry projects. These provide technical foundations and institutional experience that could be extended to incorporate biodiversity or ecosystem service outcomes. Coastal initiatives such as the Department of Marine and Coastal Resources' (DMCR) Mangrove Carbon Credit Program also offer practical examples of credit generating community-led conservation and mangrove restoration activities for a period of 30 years[7], that align closely with the goals of the RFI. These experiences serve as useful references for designing potential activities that could be incorporated beyond carbon credit mechanisms, while also highlighting the need to strengthen community safeguards and trade off management to ensure equitable and responsible implementation.

Thailand has ongoing efforts to develop biodiversity datasets, including through the Thailand Biodiversity Information Facility (TH-BIF) led by ONEP, as well as parallel databases maintained

[5] Mungkarndee, R., & Nantananate, D. (2023). *Thailand's developments in promoting biodiversity: 2023 updates*. Lexel. Retrieved on December 17, 2025. https://lexel.co.th/thailands-developments-in-promoting-biodiversity-2023-updates/
[6] Office of Natural Resources and Environmental Policy and Planning. (2022). *Thailand's long-term low greenhouse gas emission development strategy (Revised version)*. United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf
[7] Wachpanich, N. (2024). *Thailand turns to mangrove carbon credits despite skepticism*. Dialogue Earth. Accessed on: November 26, 2025. https://dialogue.earth/en/nature/thailand-turns-to-mangrove-carbon-credits-despite-scepticism/

by various sectoral agencies. While these systems provide a starting point for baseline development and long-term monitoring, they remain at varying stages of development and accessibility, underscoring the need for improved coordination and standardization to support multi-metric MRV for nature credit applications.

4. **Governance and Institutions: Foundational Community Rights but with Critical Gaps for Future Nature Credit Integrity**

   Similar to the institutional arrangements seen in the Philippines and Bangladesh, Thailand has a wide array of national agencies involved in climate policy, carbon markets, biodiversity and ecosystem conservation, sustainable tourism, and national development planning, including TGO, DNP, DMCR, BEDO, ONEP, RFD, and NESDC. This institutional landscape provides a strong foundation for future nature credit governance. However, overlapping mandates across these agencies can lead to bottlenecks in leadership, coordination, oversight, and project implementation, creating uncertainties for both project developers and investors.

   As Thailand continues to advance nature and biodiversity financing approaches and explore market-based instruments, clearer delineation of roles and harmonized responsibilities across relevant agencies will be essential. Equally important is the coordinated development of policies to support a coherent and operational nature credit framework. Strengthening inter-agency coordination and ensuring that policy instruments are aligned rather than fragmented would help reduce procedural bottlenecks, enhance transparency and accountability, and create a more predictable enabling environment for nature credit project development and investment. Looking ahead, Thailand may benefit from empowering an existing agency, such as ONEP, to play a coordinating and oversight role for nature credits, similar in function to TGO's role in the carbon market, rather than establishing a new institutional body.

5. **Social Equity and Safeguards: Enablers for Credible Credits but Requiring Stronger Protections**

   Thailand has several longstanding frameworks that support community participation in natural resource governance, including the Community Forest Act and co-management arrangements in protected and coastal areas. These frameworks provide an enabling foundation for nature credit mechanisms that rely on local stewardship, participation, and benefit-sharing. The draft Act on the Protection and Promotion of the Way of Life of Ethnic Groups (2025) further strengthens this foundation by formally recognizing cultural identity and community relationships with land and natural resources within designated areas, representing an important step toward greater social inclusion in environmental governance.

   At the same time, implementation challenges remain that are relevant to the effective and equitable application of nature credit mechanisms. Free, Prior and Informed Consent (FPIC) remains a critical procedural safeguard and good practice, applicable not only to ethnic groups but to broader relevant local communities, particularly in the context of market-based conservation and nature finance initiatives. Experience from existing mechanisms, including carbon credit initiatives such as the DMCR Mangrove Carbon Credit Program, highlights ongoing challenges related to consultation processes, clarity of community engagement, and benefit-sharing arrangements.[8] These limitations are relevant because secure tenure, FPIC, and clarity

[8] Wachpanich, N. (2024). *Thailand turns to mangrove carbon credits despite scepticism*. Dialogue Earth. Accessed on: November 26, 2025. https://dialogue.earth/en/nature/thailand-turns-to-mangrove-carbon-credits-despite-scepticism/

of rights are essential for defining credit ownership, benefit-sharing, and long-term participation.[9]

In parallel, Thailand maintains a robust set of environmental safeguard policies that can support the integrity of nature credit mechanisms. The National Environmental Quality Act (NEQA), which provides for the EIA and SEA requirements, the Marine and Coastal Resources Management Promotion Act, the National Parks Act, and pollution control regulations provide a strong regulatory basis for managing environmental risks, ensuring compliance with conservation standards, and preventing harmful trade-offs. These safeguards are well-established and can help ensure that credit-generating activities mitigate negative impacts on biodiversity or ecosystem integrity, and do not displace community livelihoods or restrict access to natural resources.

As Thailand moves toward designing nature and biodiversity credit mechanisms, strengthening community rights protections, establishing clear FPIC requirements, and improving benefit-sharing frameworks will be essential. Equally important is ensuring that existing safeguard systems are harmonized with future credit guidelines and integrated into project approval, monitoring, and registry processes. Embedding stronger community safeguards alongside robust environmental protections will be critical to ensuring social legitimacy, preventing conflicts, maintaining credit quality, and building confidence among investors, communities, and regulators.

[9] UN Human Rights Office. (2025, September 24). *Thailand: UN Human Rights Office welcomes new law on ethnic groups, urges recognition of the rights of Indigenous Peoples*. OHCHR Regional Office for South-East Asia Bangkok. Accessed on: November 26, 2025. https://bangkok.ohchr.org/thailand-new-law-ethnic-groups

Box 1. Reflections from the Country Workshop: National Enabling Environment

Reflections from the Country Workshop

Stakeholders highlighted several enabling conditions and policy gaps shaping Thailand's readiness to pilot a nature credit mechanism:

- **Emerging market and regulatory drivers**, including TNFD-aligned disclosure requirements for SET50 companies, ongoing CDP and DJSI reporting trends, and the forthcoming Climate Change Act, **are creating heightened private-sector attention to nature-related dependencies and impacts**.
- Participants noted that while the draft **Climate Change Act may catalyze Emissions Trading System (ETS) development**, nature and biodiversity components would be more appropriately anchored in a **strengthened Biodiversity Act (draft)**, with clear alignment between climate and nature policy levers.
- Thailand lacks a consolidated national framework for nature and biodiversity. Numerous draft policies and regulations exist across ministries and agencies, but they remain **fragmented and inconsistently** applied.
- Companies such as PTTEP have instituted internal biodiversity and nature-positive policies, relying heavily on IBAT and other geospatial tools, but face challenges in ensuring that credits **meet rigorous standards for additionality, quality, and avoidance of greenwashing**.
- **Existing standards and tools** (CCB, TNFD, IBAT, satellite data, etc.) support corporate nature-related assessments, **but access barriers (especially cost) constrain smaller actors**. **Reporting remains voluntary** and lacks a unified national taxonomy or MRV framework.
- Local governance structures, including SAOs, currently lack tailored biodiversity policies, and **overlapping laws at sub-national levels complicate boundary setting and enforcement** for nature credit project areas.
- The **absence of a biodiversity law with incentives, clear tax benefits, or a recognized national standard** for nature credits remains a significant barrier to market formation.

B. Existing Initiatives or Pilot Programs Related to Nature Finance

Current private sector efforts in Thailand (Table 2) show companies increasingly integrating ecological stewardship into their core risk management strategies. This engagement is characterized by a dual focus: distinct financing for "blue carbon" coastal restoration, particularly mangroves which serve as both investible carbon sinks and physical barriers for industrial assets, and upstream watershed interventions designed to secure water availability against operational disruptions. These actions reflect a sophisticated understanding that supply chain resilience and business continuity are directly reliant on environmental health and the proper function of ecosystem services. Furthermore, the shift from isolated voluntary restoration projects to formalized governance of conservation efforts (evidenced by the early adoption of TNFD standards and participation in the T-VER credit scheme) suggests a maturing market. This established infrastructure of verifiable carbon and nature projects provides a fertile ground for scaling other market-based mechanisms, positioning Thailand to effectively leverage novel financial instruments like Nature Credits to meet its growing and increasingly ambitious nature-positive targets.

Table 2. Examples of Nature-related Private Sector Initiatives in Thailand

Entities Involved	Established Nature Dependency or Ecological Objectives	Actions Undertaken by the Entity
PTT Exploration and Production (PTTEP)	**Carbon Sequestration & Coastal Asset Protection.** As an oil and gas major, PTTEP faces high transition risks and physical risks to coastal infrastructure. Their dependency relies on "Blue Carbon" ecosystems to offset emissions and protect coastlines from erosion and storm surges to ensure business continuity.	**Ocean for Life Strategy & Mangrove Reforestation** • Implemented the "Forest Restoration for Eco-learning Center" at Sirinath Rajini Mangrove Ecosystem Learning Center. This was among the earliest blue carbon projects in Thailand to be registered under the T-VER (Thailand Voluntary Emission Reduction Program) for carbon credits.[10] • Finances the restoration of degraded mangrove forests to serve as carbon sinks and nurseries for marine biodiversity, directly supporting the "Ocean for Life" corporate strategy.[11]
TCP Group	**Water Security for Production.** As a beverage manufacturer, the company is 100% dependent on freshwater availability. Their objective is to achieve "Net Water Positive" status by 2030, ensuring they replenish more water than they consume to mitigate operational risks from drought.	**TCP Embracing Thailand's River Basin** • Financed a 5-year water management initiative partnering with the Utokapat Foundation and Hydro-Informatics Institute (HII). • Focuses on the Yom and Bang Pakong river basins (wetland ecosystems) to restore headwaters and improve water retention. • Implements Managed Aquifer Recharge (MAR) technology to replenish groundwater levels, ensuring continued access to water resources for both community agriculture and industrial supply chains.[12]
Thai Union Group	**Aquaculture Supply Chain Resilience.** The seafood processing firm relies heavily on healthy coastal ecosystems. Mangroves are critical nurseries for shrimp and fish stocks. Loss of these wetlands directly threatens their raw material supply and certification status (e.g., Aquaculture Stewardship Council).	**SeaChange 2030 & 250M THB Investment** • Committed THB 250 million specifically for ecosystem restoration, with a primary focus on mangroves. • Partnered with The Nature Conservancy (TNC) to execute evidence-based restoration projects. • Participating in Aquaculture Improvement Projects (AIPs) that require wetland conservation as a condition for market access to European and US buyers.[13,14]

[10] PTTEP. (n.d.). PTT Reforestation Stories. Retrieved from: https://www.pttplc.com/en/Sustainablegrowthforall/Planet/Planet.aspx
[11] PTTEP. (n.d.). Mangrove Reforestation Project. Retrieved from: https://sustainability.pttep.com/en/projects/23/mangrove-reforestation-project
[12] Stewardship Commons. (n.d.). Conserving Thailand's river basin for water security. Retrieved from: https://www.stewardshipcommons.com/article/arjaree-suwangool/2024/10/21/conserving-thailand-s-river-basin-for-water-security
[13] SeaChange 2030. (2025). Ecosystem Restoration. Retrieved from: https://www.seachangesustainability.org/en/for-planet/ecosystem-restoration
[14] Thai Union Group. (2023). Thai Union and The Nature Conservancy Partnership Progress Review: Year 1 Public Report. Retrieved from: https://www.thaiunion.com/files/download/sustainability/20230116-tu-tnc-partnership-report-year.pdf

Entities Involved	Established Nature Dependency or Ecological Objectives	Actions Undertaken by the Entity
Thai Union Group and the Asian Development Bank (ADB)	**Sustainable Shrimp Supply Chain & Ocean Health.** As a global seafood company, Thai Union depends on resilient aquaculture systems, sustainable shrimp sourcing, and healthy marine ecosystems. Shrimp aquaculture faces climate and environmental risks including disease, heat stress, pollution, habitat loss, deforestation pressure, and aquafeed-related pressure on marine resources.	**US$150M ADB Blue Loan for Sustainable Aquaculture** • Secured a US$150 million ADB Blue Loan, the first in Thailand's aquaculture/seafood sector, to scale sustainable shrimp procurement under SeaChange 2030 and support the Thai Union Group's 2050 net-zero ambition. • Defines sustainable shrimp as GSSI-recognized certified products, including ASC and BAP, or shrimp sourced from credible Aquaculture Improvement Projects, with focus on biodiversity, feed traceability, emissions reduction, deforestation prevention, fair labor, and community engagement.[15,16] • Financing includes US$50 million from ADB and a US$100 million syndicated B Loan from commercial co-financiers including HSBC, MUFG, OCBC, SMBC, UOB, and Bank of China (Hong Kong). • Proceeds will fund a sustainable, end-to-end shrimp market strategy, involving procurement, processing, and export. Other crucial aspects include farmer training, certification support, R&D, pilot tests, and resilience-focused technical assistance.[17]
Siam Cement Group (SCG)	**Operational Resilience & Raw Material Sourcing.** Cement and paper production (SCGP) require immense water volumes. SCG's "Check Dam" initiative is a direct response to regulating water flow to prevent floods (which disrupt logistics) and droughts (which halt production).	**TNFD Early Adopter & "Wet Forest" System** • TNFD Early Adopter: SCG is one of the few Thai conglomerates officially listed as an Early Adopter of the Taskforce on Nature-related Financial Disclosures, piloting nature-risk reporting.[18] • Constructed over 100,000 check dams to restore moisture to watershed forests (wetland headwaters), part of its Water Stewardship Strategy to (1) reduce water withdrawal and (2) increase water recycling rates. • SCGP (Packaging) executes the "Plant Beats Heat" project, which focuses on restoring inland watershed forests and constructing check dams to regulate water flow for production stability.[19] • SCG has undertaken targeted restoration of seagrass meadows, planting over 31,000

[15] Bangkok Post. (2025). *Thai Union Secures $150M ADB Blue Loan for Sustainability.* Retrieved from: https://www.bangkokpost.com/thailand/pr/3020930/thai-union-secures-150m-adb-blue-loan-for-sustainability
[16] Thai Union Group. (2025). *Thai Union Group Receives Landmark USD 150 Million Blue Loan from Asian Development Bank to Advance Sustainable Shrimp and Climate Goals.* Retrieved from: https://www.thaiunion.com/newsroom/business-and-finance-news/thai-union-group-receives-landmark-usd-150-million-blue-loan-from-asian-development-bank-to-advance
[17] Asian Development Bank. (2025). *ADB, Thai Union Sign the First Blue Loan for Sustainable Aquaculture in Thailand.* Retrieved from: https://www.adb.org/news/adb-thai-union-sign-first-blue-loan-sustainable-aquaculture-thailand
[18] Taskforce on Nature-related Financial Disclosures. (n.d.). TNFD Adopters. Retrieved from: https://tnfd.global/engage/tnfd-adopters-list/
[19] SCGP. (2023). Uniting Power through SCGP 'Plant Beats Heat' Volunteer Development Project to Expand Green Spaces in Kanchanaburi Community Forest for Father's Day and World Soil Day. Retrieved from: https://www.scgpackaging.com/en/news/scgp-plantation-2023-en

Entities Involved	Established Nature Dependency or Ecological Objectives	Actions Undertaken by the Entity
		seagrass plants, in the Ban Mod Tanoi Community (Trang) to support endangered Dugong populations.[20]
Toyota Motor Thailand	**Biodiversity Conservation & Social License to Operate.** Objective: To integrate private land into Thailand's national "30x30" biodiversity target. Toyota uses its "Cheewa Panavet" wetland to demonstrate how industrial zones can serve as official conservation areas (OECMs).	**Mangrove Restoration and Pilot Conservation Efforts** • Financed and implemented the planting of mangroves at the Bangpu Recreation Center for the 18th consecutive year alongside public sector partners. In 2025, 50,000 mangrove trees were planted.[21] • In June 2025, the "Cheewa Panavet" wetland at the Ban Pho plant was officially designated by the Thai government (ONEP) as a pilot site for OECMs (Other Effective area-based Conservation Measures). This makes it one of the first private industrial sites in Thailand recognized as a protected area equivalent.[22] • Partnered with IUCN to host the *8th Asia Regional Conservation Forum* in Bangkok (Sept 2024), reinforcing their role in the Thailand B-DNA (Bio-Diversity Network Alliance).[23]
Charoen Pokphand Foods (CPF)	**Food Security & Bio-Circular Economy.** Similar to Thai Union, CPF's shrimp business is inextricably linked to mangrove health. Their objective is to ensure operational continuity and certifying their supply chain as deforestation-free.	**Mangrove Forest Restoration and Product-Linked Restoration Funds** • Collaborated with Nichirei Fresh (Japanese partner) to finance mangrove restoration in the Trat province.[24] • Implements a benefit-sharing model where a portion of the proceeds from every kilogram of "extensive" (nature-based) shrimp sold is contractually donated to the "Mangrove Forest Conservation Fund." This fund finances the replanting of mangroves in Trat Province (Thailand) and Kalimantan (Indonesia), ensuring the raw material source (shrimp ponds) regenerates the ecosystem it depends on.[25]

[20] SCG. (2022). Growing Trees to Mitigate Global Warming Connecting Communities, Expanding Green Space. Retrieved from: https://www.scgsustainability.com/en/growing-trees-to-mitigate-global-warming-connecting-communities-expanding-green-space-en/
[21] Toyota Asia. (2025). Toyota Continues Its Commitment to Mangrove Reforestation for the 18th Consecutive Year. Joining Forces Across Sectors Toward a Sustainable Carbon Neutrality Goal. Retrieved from: https://www.toyota-asia.com/news/LZpPr6wPJ9
[22] Toyota Asia. (2025). The "Cheewa Panavet" Biodiversity and Sustainability Learning Center, located at Toyota's Ban Pho Plant, has been designated as a pilot site for the OECMs biodiversity conservation initiative. Retrieved from: https://www.toyota-asia.com/news/51rYN2XYKb
[23] Toyota Asia. (2024). Toyota joins IUCN in convening Asia's conservation community as Forum Partner for the 8th Asia Regional Conservation Forum. Retrieved from: https://www.toyota-asia.com/news/63RYbGePbA
[24] Seafood Source. (2023). CP Foods, Nichirei initiate mangrove restoration project in Thailand. Retrieved from: https://www.seafoodsource.com/news/environment-sustainability/cp-foods-nichirei-initiate-mangrove-restoration-project-in-thailand
[25] Nichirei. (n.d.). Inochi-no-Mori Project. Retrieved from: https://nichirei.disclosure.site/en/themes/224

Entities Involved	Established Nature Dependency or Ecological Objectives	Actions Undertaken by the Entity
Nestle (Thai) Ltd.	**Water Security & Agricultural Supply Chain Resilience.** As a major food and beverage producer, Nestlé's operations and upstream sourcing are highly dependent on reliable freshwater availability and healthy watershed ecosystems. Water stress and ecosystem degradation pose material operational and reputational risks.	**Watershed Restoration & Water Stewardship Pilot Initiatives** • Implements long-term water stewardship and ecosystem restoration activities in the Khanom Jeen Canal. It has been recognized as a model for ecosystem enhancement and selected as a pilot site under Other Effective Area-based Conservation Measures (OECMs).[26] • Nestlé is collaborating with Thailand's ONEP to expand biodiversity conservation beyond protected areas. [27] • The initiative forms part of Nestlé's broader Water Stewardship and Net Zero Roadmap, linking nature-based solutions to supply chain risk management and long-term operational resilience.[28]
Mitr Phol Group	**Agricultural Yield & Climate Adaptation.** As a major sugar producer, Mitr Phol is dependent on soil health and water cycles. Nature risks (droughts and floods) directly impact crop yields and factory throughput.	**TNFD Reporting & Oasis Project** • Published a standalone "Mitr Phol TNFD Report 2025" (Taskforce on Nature-related Financial Disclosures), extensively applying the WWF Biodiversity Risk Filer to assess nature-related risks across their plantations, including assessing water stress and biodiversity loss in their sites.[29] • Launched the "Mitr Phol Oasis" project, constructing large-scale reservoirs (from previously flood-prone lowlands) with a capacity of 1 million cubic meters to bank water for the dry season. • Implements "Mitr Phol ModernFarm" (sustainable agriculture), utilizing automated drip irrigation and soil retention techniques to reduce on-farm water consumption and increase farm yields.[30]

[26] Nestlé (Thai) Ltd. (2025). The 10th anniversary of the "Nestlé Waters Cares for Water" project achieving the goal of regenerating clean water for communities and enhancing biodiversity while becoming a model in Thailand. https://www.nestle.co.th/en/media/pressreleases/nestlewaters2025
[27] Nestlé (Thai) Ltd. (2024). Nestlé collaborates with ONEP on biodiversity conservation, aiming to achieve global OECMs targets. Retrieved on December 17, 2025. https://www.nestle.co.th/en/media/pressreleases/mou-biodiversity
[28] Nestlé (Thai) Ltd. (2021). Nestlé Thailand announces roadmap to net zero greenhouse gas emissions by 2050. Retrieved on December 17, 2025. https://www.nestle.co.th/en/media/pressreleases/nestle-roadmap-to-net-zero
[29] Mitr Phol Group. (2025). TNFD 2025. Retrieved from: https://sustainability.mitrphol.com/wp-content/uploads/2025/09/Mitr-Phol-TNFD-Report-2025.pdf
[30] Bangkok Post. (2025). Mitr Phol Oasis Secures Farmers' Future with Water. Retrieved from: https://www.bangkokpost.com/thailand/pr/3113397/mitr-phol-oasis-secures-farmers-future-with-water

Entities Involved	Established Nature Dependency or Ecological Objectives	Actions Undertaken by the Entity
Dow Thailand Group	**Coastal Resilience, Biodiversity Conservation & Social License to Operate.** Dow's industrial assets and logistics infrastructure face exposure to coastal erosion and climate-related risks, while biodiversity loss increasingly affects stakeholder trust and regulatory expectations.	**Mangrove Restoration & Community-based Conservation** • Supports mangrove conservation and restoration projects in partnership with Thailand's DMCR, MoNRE, and IUCN and local communities.[31] • Dow's local activities are linked to voluntary carbon market participation (T-VER) and ecosystem protection goals.[32] • Activities contribute to Dow's sustainability commitments and complement voluntary carbon and ecosystem restoration frameworks in Thailand[33]
Government of Thailand: Public Debt Management Office (PDMO); Ministry of Natural Resources and Environment, with World Bank technical support	**Blue Economy Resilience & Coastal Ecosystem Protection.** Thailand's economy is materially dependent on healthy marine and coastal ecosystems, with its 23 coastal provinces, over 3,000 kilometers of coastline, and marine resources accounting for nearly 30% of GDP and about 26% of jobs. Persistent coastal erosion, pollution, overuse, and underinvestment threaten these natural assets. Over the past three decades, around 30% of Thailand's coastlines have eroded, causing estimated economic losses of US$1.3 billion.	**Sovereign Blue Bond Readiness & Marine Spatial Planning** • Working with the World Bank to assess Thailand's first sovereign blue bond, intended to finance sustainable ocean-based development, coastal protection, and investments in blue economy. • Developing a National Marine Spatial Planning Framework through the "PROBLUE" program to guide integrated coastal and marine management, as well as resolve resource-use conflicts and inform future public and private investments. • Exploring further blue economy financing solutions for nature-based coastal protection, mangrove restoration, and sustainable tourism frameworks.[34]

Carbon Credits as Nature Finance in Thailand

Among its regional peers, Thailand is unique in that it has created and effectively administered a proprietary, government-led organization dedicated to the development and management of capabilities relating to domestic carbon credit issuances and tracking infrastructure, among other key roles. The mandate of the Thailand Greenhouse Gas Management Organization (TGO) includes but is not limited to promoting and managing greenhouse gas mitigation mechanisms such as the Thailand Voluntary Emission Reduction Program (T-VER), developing technical standards and frameworks for GHG measurement, reporting and verification, certifying GHG emissions reductions and carbon credits, supporting the development of carbon markets, building capacity and providing training on decarbonization, serving as an information center on GHG matters, and conducting public outreach

[31] Dow Inc. (2023). Volunteering at the core of a healthy mangrove forest in Thailand. Retrieved on December 17, 2025. https://corporate.dow.com/en-us/news/seek-together/dow-volunteers-in-thailand-mangrove-forests.html
[32] Dow Thailand Group. (2020). Dow joins forces with DMCR in Mangrove Plantation for Carbon Credits. Retrieved on December 17, 2025. https://th.dow.com/en-us/news/press-releases/dow-joins-forces-with-dmcr.html
[33] Dow Thailand Group. (2020). Dow joins forces with DMCR in Mangrove Plantation for Carbon Credits. Retrieved on December 17, 2025. https://th.dow.com/en-us/news/press-releases/dow-joins-forces-with-dmcr.html
[34] World Bank. (2025). World Bank Supports Thailand's Blue Economy Ambitions with Innovative Financing and Coastal Protection Plans. Retrieved from: https://www.worldbank.org/en/news/press-release/2025/09/01/-world-bank-supports-thailand-s-blue-economy-ambitions-with-innovative-financing-and-coastal-protection-plans

and communication on issues within its purview.[35] TGO has established a roadmap towards achieving Net Zero in the year 2050, with NDC milestone targets set for the years 2030, 2035, 2040, and 2045, leveraging emissions reduction and removal strategies across the energy, industrial process and product use (IPPU), waste, agricultural, and forestry sectors. The forestry sector, in particular, is forecasted to result in up to 120 $MtCO_2$ of carbon removals by 2065.[36]

With Agriculture, Forestry, and Other Land Use (AFOLU)-type projects positioned as a core aspect of Thailand's decarbonization ambitions, the country aims to enhance the coverage of its green areas to 55% of total land area by 2037, comprised of 35% natural forest (representing a 1.8M ha increase), 15% "economic forest," composed of economically valuable species, (representing a 2.56M ha increase) and 5% urban and suburban green areas (representing a 1.8M ha increase).[10] To augment private sector involvement in reforestation and afforestation initiatives, the TGO formally launched its voluntary carbon market program in 2014, known as T-VER (Thailand Voluntary Emission Reduction Program). The program's frameworks procedures are compliant with leading global standards, such as ISO 14064-2 (for the overarching T-VER framework), ISO 14064-3 (for T-VER's operational verification framework), and ISO 14065 (for VVBs accredited by T-VER). Standard T-VER units were developed primarily for domestic offsetting purposes and retirement, and encompass 60 total methodologies across 7 sectoral scopes as of Q4 2025. Premium T-VER units (developed in 2022) aim to be competitive in the global market, encompassing 25 methodologies across 9 sectoral scopes as of Q4 2025. As a result, these credits are issued only following the successful demonstration of attributes additional to Standard T-VERs, ensuring their robust integrity, additionality, permanence, and benefits beyond GHG mitigation).[10] Standard T-VER methodologies within the forestry sector include a bespoke REDD+ program, a methodology for large-scale sustainable forestation projects, and a methodology for the conservation and restoration of peatlands. Premium T-VER methodologies in forestry further expand the portfolio of TGO coverage, subsuming afforestation and reforestation (with a dedicated methodology for ARR of degraded mangroves), an enhanced REDD+ module, mangrove and seagrass restoration, IFM (improved forest management), and peatland-oriented methodologies as well.

Taken together, these private-sector initiatives illustrate that nature stewardship in Thailand is increasingly embedded within corporate risk management, capital allocation, and long-term business strategy. Across energy, manufacturing, agribusiness, and consumer goods, companies are already financing ecosystem restoration to safeguard water security, coastal assets, raw material supply chains, and social license to operate, often through mechanisms that closely resemble outcome-based, verifiable nature finance. The coexistence of these corporate practices with a well-established domestic carbon crediting infrastructure further underscores Thailand's readiness to support complementary market-based instruments, including Nature Credits, that can channel private capital toward measurable, nature-positive outcomes at scale.

Additional detail on Thailand's carbon market context, including T-VER forestry and blue carbon project pipelines, historical trading volumes, pricing dynamics, and the role of international standards, is provided in Appendix 3.

[35] Thailand Government Public Relations Department. (2023). Get to know the "Thailand Voluntary Emission Reduction Program (T-VER)". Retrieved from: https://www.thailand.go.th/event-detail/001_04_051
[36] Thailand Greenhouse Gas Management Organization. (2025). Presentation: From Carbon to Nature – Lessons from Market-Based Mechanisms.

VI. Gaps and Challenges

Thailand's wetlands, forests, coastal zones, and agricultural landscapes underpin national water security, fisheries, rural livelihoods, and climate resilience. These ecosystems, however, face growing pressures from land conversion, pollution, unregulated extraction, and climate-induced hydrological change. Ambitions are expressed through initiatives such as the Bio-Circular-Green (BCG) Economy Model and Thailand's Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS), both of which underscore the importance of ecosystems and its services for national development. However, enabling conditions for transparent, high-integrity nature markets remain nascent. Key gaps persist across regulatory clarity, ecosystem data, institutional coordination, safeguards, investment readiness, and tenure and benefit sharing frameworks (Table 3) that remain insufficiently operationalized.[37] [38] These challenges, echoed consistently through national consultations and stakeholder workshops, highlight the need for clearer governance structures, stronger MRV and data foundations, and targeted capacity building to support the development of credible and scalable nature credit mechanisms in Thailand.

Table 3. Key Gap Areas and Priority Actions to Catalyze Nature Credit Markets

Gap Area	What Resolving Unlocks	Short– to Medium–Term Measures	Key Stakeholders (beyond government)
Policy and Institutional Gaps: • Limited regulatory clarity for biodiversity credits and nature-based offsets[39] [40] • Low readiness among local governments and protected area authorities	• Investor confidence; pipeline development for high-integrity projects; reduced market risk • Consistent implementation, monitoring, verification, and cross-agency coordination	• Issue interim technical guidance on biodiversity crediting; define authorized project types • Capacity building for provincial natural resource offices and PA managers	Industry Associations, and Chambers of Commerce; Academia: Leading universities with forestry faculty; Legal/Advisory: International law firms) to draft private contracts; NGOs, e.g. IUCN Thailand (for global best practices)
Technical and Data Capacity Gap: • Fragmented ecosystem valuation and natural capital data[41]	• Reliable baselines for biodiversity credits, wetland restoration, carbon sequestration, and water-related services	• Establish national ecosystem service accounting protocols; expand wetland mapping under ONEP	Research Institutes with energy and environment teams; Tech Providers: Ag-tech & Climate-tech startups (for remote sensing/GIS); VCM Standards Bodies; Data Aggregators, Development Research Institutes
Financial and Market Challenges: • Limited Pipeline of Investable NbS Projects • Limited private-sector orientation	• Unlocking blended finance, corporate participation, and scalable restoration • Bankable restoration, mangrove	• Develop sector-specific guidance under Thailand Taxonomy; pilot nature-related disclosures	Financial Sector: Bankers' Associations, Stock Exchange entities, Banks; Corporate Buyers: Major conglomerates seeking credits; DFIs:

[37] ONEP. (2022). *Thailand State of Environment Report 2021*. Office of Natural Resources and Environmental Policy and Planning. https://www.onep.go.th/ebook/spd/environmental-quality-management-plan-2023-2027-abridged-edition.pdf
[38] National Science and Technology Development Agency. (2021). *BCG model: Fostering sustainable development in Thai economy*. Ministry of Higher Education, Science, Research and Innovation. nstda.or.th/en/images/pdf/BCG_Booklet1.pdf
[39] TGO. (2022). *Thailand Voluntary Emission Reduction Program (T-VER): Program Overview*. Thailand Greenhouse Gas Management Organization. https://tver.tgo.or.th/
[40] Ministry of Natural Resources and Environment. (2023). *Thailand Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS)*. https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf
[41] World Bank Group. (2022). *Thailand country climate and development report*. World Bank. https://documents1.worldbank.org/curated/en/099100425072524077/pdf/P507208-2599e589-4b1c-4b01-b275-b097c729582a.pdf

Gap Area	What Resolving Unlocks	Short– to Medium–Term Measures	Key Stakeholders (beyond government)
toward nature investment[42]	rehabilitation, watershed protection; readiness for nature markets	• Feasibility studies, prefeasibility scoping, and MRV design for select priority ecosystems	IFC, ADB (for blended finance/de-risking); Project Developers (global and local)
Social Equity, Tenure Security, and Gender Considerations: • Gaps in clarity around tenure arrangements, benefit-sharing mechanisms, and FPIC-like processes for ethnic groups, and local communities[43]	• Social license; • Avoidance of leakage, land conflict, elite capture; • Equitable participation	• Develop sector-wide guidelines on social safeguards, grievance redress, equitable benefit-sharing	Civil Society (Community Forest Networks, Ethnic Group Networks); Foundations; Legal Aid (Human Rights Lawyers Associations for tenure disputes; Local Communities (Community Enterprise groups in buffer zones)
Cross-cutting Issues: • Limited integration of wetlands (e.g. Songkhla Lake Basin, Inner Gulf marshes) into national climate and biodiversity targets[44]	• Co-benefits for mitigation, adaptation, livelihood resilience, and biodiversity conservation	• Update NBSAP and NDC annexes to incorporate wetland-specific indicators	Regional Academia (Coastal resources institutes); Local Livelihoods: Coastal Fishery Associations, Eco-tourism operators in Songkhla / Phatthalung; Conservation Groups: e.g. Bird Conservation Society of Thailand (BCST).

Policy and Institutional Gaps

Thailand's voluntary carbon market is relatively more advanced than its biodiversity crediting landscape. TGO operates carbon protocols (T-VER), and having similar guidance for biodiversity credits, watershed services, or wetland restoration markets which, remain undefined to date, would be beneficial. Not having legal recognition of nature credits within national environmental or investment laws restricts the formation of high-integrity markets. Stakeholders observed that ongoing policy reforms (e.g., draft Biodiversity Act and green-economy initiatives) could serve as future entry points for nature credit provisions, but only with stronger alignment and clearer implementing rules. Enhancing these linkages would help Thailand gradually formalize nature credits and establish the regulatory foundations needed for credible market participation.

Provincial natural resource offices and protected area authorities are central to implementing restoration, monitoring ecological change, and supporting MRV. However, capacity constraints are often most pronounced at the local level, particularly within municipalities and Tambon Administrative Organizations (TAOs) that support on-the-ground implementation and community engagement. Many local authorities lack the specialized technical expertise, market familiarity, and

[42] Thailand Taxonomy Board. (2023). *Thailand taxonomy phase 1*. Securities and Exchange Commission, Thailand. https://www.sec.or.th/TH/Documents/LawsandRegulations/ResourceCenter/Thailand_Taxonomy_Phase1_Jun2023_EN.pdf
[43] United Nations Development Programme. (2012). *Project document: Integrated community-based forest and catchment management through an ecosystem service approach (CBFCM).* https://info.undp.org/docs/pdc/Documents/THA/78499_4033_Thailand_Community_Based_Prodoc_August_%202011%20(signed).pdf
[44] Office of Natural Resources and Environmental Policy and Planning. (2021). *National report on the implementation of the Ramsar Convention on wetlands: Thailand (COP14)*. Ramsar Convention Secretariat. https://www.ramsar.org/sites/default/files/documents/importftp/COP14NR_Thailand_e.pdf

data systems required for nature credit development. This challenge is compounded by institutional overlaps across key sectors (climate, forestry, coastal, marine, and wetlands), which may unnecessarily complicate regulatory landscape structure. This gap impacts the speed of project preparation and reduces the ability to scale landscape-level NbS initiatives. Strengthening institutional capability, particularly within ONEP, TGO, the Royal Forest Department, and the Department of Marine and Coastal Resources, is necessary to manage long-term governance of nature assets.

Technical and Data Capacity Gaps

While ecological data, monitoring, and inventory systems exist, Thailand is yet to achieve a unified, national natural capital accounting system, in line with ongoing efforts by the ONEP and the National Statistical Office to assess forest cover, wetland extent, and biodiversity condition. While such national accounts can provide useful strategic context, they are complex, resource-intensive, and long-term in nature, and are not a prerequisite for the development of nature credit markets. For nature crediting, the more immediate requirement is the availability of market-led methodologies and valuation metrics that can operate at project or landscape scale and support baseline setting, monitoring, and verification. Addressing these data and measurement gaps through standardized, fit-for-purpose MRV protocols will be essential for enabling high-integrity, investable nature assets, even as broader national accounting efforts continue to develop in parallel.

Financial and Market Challenges

Despite the country's strong record in community forestry, mangrove restoration, and watershed management, only a limited number of initiatives currently meet the financial structuring, MRV and risk–return standards required for investment. Feasibility studies remain under-resourced, and technical guidelines for wetland restoration credits have yet to be formally established particularly in ecologically significant areas.

Thailand's private sector demonstrates growing interest in ESG and climate mitigation, particularly through T-VER. However, nature-positive investment remains constrained by limited guidance on nature-relevant taxonomies, creating hesitancy over potential greenwashing claims if exacting integrity standards are not met. Even firms with strong sustainability commitments (including many SET50 companies now referencing TNFD guidance) have yet to consistently integrate biodiversity/nature dependencies or ecosystem-related risks into core operational planning, reporting, and decision-making. The Thailand Taxonomy (2023 draft) identifies nature-related sectors but does not currently indicate enabling direct market participation or credit purchases tied to measurable ecosystem outcomes.

Social Equity, Tenure Security, and Gender Considerations

While Thailand's legal frameworks (e.g., the Community Forest Act, and the draft Ethnic Groups rights act) provide partial recognition, more development is needed in tenure clarity, transparent benefit-sharing mechanism for crediting projects, and safeguards aligned with high-integrity principles (HIPs). In addition, project developers and subnational authorities have yet to be guided by consistent frameworks for participatory design, social risk management, and grievance handling. Best practices such as Free, Prior and Informed Consent (FPIC)-like processes are not uniformly applied to date, which can increase risks of exclusion, elite capture, and disputes over credit ownership, and long-term stewardship.

Cross-cutting Issues

While Thailand hosts internationally significant wetlands, including Ramsar Sites, wetland restoration and conservation are not systematically embedded in Thailand's NDC, NBSAP, or LT-LEDS

implementation plans. As a result, wetlands remain undervalued in national planning despite their importance for livelihoods, water regulation, climate adaptation, and biodiversity. Integrating wetland-based NbS into national climate policy can strengthen adaptation strategies, unlock nature crediting opportunities, and improve resilience for vulnerable communities.

Box 2. Reflections from the Country Workshop: Gaps and Challenges in Nature Financing

Reflections from the Country Workshop

Participants identified critical systemic, technical, and market challenges that must be addressed to establish credible nature credit mechanisms:

- **Nature credit incentives and legal foundations are underdeveloped**; no single agency provides authoritative guidance on standards, boundaries, or eligibility.
- **Overlapping mandates across government bodies** and unclear administrative/geographic boundaries (e.g., between fisheries, forestry, and environmental protection areas) undermine consistent site designation and long-term management.
- **MRV for biodiversity is weak: valuation is complex, ecosystem assessments lack standardized methods**, and current carbon approaches (e.g., T-VER) do not account for soil carbon or broader ecosystem services.
- **Benefit-sharing and ownership of credit value remain challenged**, especially in areas with multiple ecosystems, contested land tenure, or overlapping public mandates.
- **Concerns about greenwashing and inconsistent corporate disclosures create hesitancy** among potential buyers, particularly where nature-credit claims could be perceived as substituting for mandatory action.
- **'Fragmented communication' across specialist teams** (e.g., forest vs. bird experts) complicates integrated ecosystem assessment and long-term credit viability.
- **Long-term sustainability risks**, including ecological fluctuations, climate impacts, and changing species dynamics, **create uncertainty about project performance over time**.
- **Institutional capacity constraints persist at national and local levels**, including technical expertise, financial modeling, and localized policy development for TAO

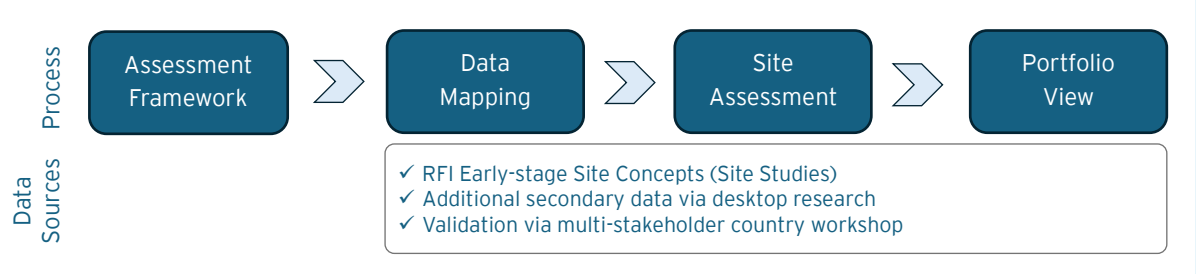
VII. Site-Specific Assessment: The Thailand Regional Flyway Initiative Sites

A. Approach and Framework

The preceding section examined Thailand's enabling environment for nature finance with emphasis on nature credits at the national level, where the discussion covered legal foundations, institutional mandates, emerging standards, and market incentives. While this provides the necessary context for system-wide readiness, translating these factors into site-level viability requires a more granular diagnostic. The following *assessment* of Thailand's twelve RFI sites applies national conditions to the ecological and socio-economic realities of each site, evaluating how legal status, governance arrangements, community dependencies, and financing opportunities interact with local threats and opportunities.

1. Units and Level of Analysis

The diagnostic follows a stepwise approach. First, a set of five viability pillars were mapped per Phase 1 nature credit principles ('guardrails' and 'enablers'): (i) Legal Policy and Foundation, (ii) Standards, Metrics, and Market Infrastructure, (iii) Market Incentives, (iv) Governance and Institutions, and (v) Social Equity and Environmental Safeguards. Second, these enabling pillars were mapped against site-contextual parameters, leveraging availability datasets from prior RFI studies (e.g., conservation status, management stakeholders, economic dependencies, and costed interventions). Third, each site was assessed relative to these pillars to identify comparative strengths and weaknesses, with results aggregated into a portfolio-level view that highlights priority areas, common bottlenecks, and sites requiring institutional lift.



It is important to note the following considerations and potential limitations of this site diagnostic exercise. Direct field sampling or ground-based ecological or socio-economic surveys was not undertaken in this assessment. Instead, the diagnostic relies on secondary data and early-stage site concepts (site studies) commissioned by the ADB, which provided costed intervention concepts and indicative assessment of ecosystem services. Assessment outcomes from this secondary data review were validated through a multi-stakeholder country workshop inviting participants from the government and public sector, non-government organizations with work or potential work in these RFI sites, and private sector actors. While this allows for a structured, high-level comparison across sites, it also means that conclusions should be seen as directional rather than definitive. Detailed feasibility assessments, including site visits, more targeted stakeholder consultations will be required to validate and refine these findings.

2. Application of Tiered Nature Dependency Framework to Examine Dependencies and Potential Supply-Side Activities in Thailand RFI Sites

a) Tiered Dependency Mapping of Economic Actors and Activities in RFI Sites

Building on the above approach, this section examines the demand- and supply-side dynamics of Thailand's nature credit potential through the lens of the tiered dependency framework (illustrated in Figure 3). This analysis identifies and categorizes actors and entities according to the degree and

nature of their economic and ecological reliance on the RFI sites. While distinct from the earlier assessment of policy and institutional readiness, it remains grounded in the five viability pillars by translating these dependencies into actionable insights on market incentives, governance linkages, and social–environmental safeguards. In doing so, it highlights how the distribution and intensity of dependencies across tiers shape both the potential supply of nature credits and the structure of emerging demand within Thailand's evolving nature finance landscape. This analysis will also feed into Section VIII wherein we finally apply a viability assessment to the RFI sites.

Table 4 below shows the application of this framework through a high-level mapping economic actors located within, near, or at a certain distance from an RFI site (depending on the value chain linkage). Early-stage site concepts (site studies) were used as first basis for understanding stakeholder linkages; the initial mapping was then expanded to fully incorporate the dependency lens (instead of merely impact-related) through additional desktop research and stakeholder consultations. This tiered dependency mapping highlights the following key points:

- **Tier 0 actors**, such as infrastructure developers, industrial operators, and other extractive activities near the RFI sites, are unlikely to purchase nature credits voluntarily without regulatory obligations or fiscal incentives. Although these companies must undertake environmental mitigation through Thailand's EIA system, this requirement does not extend to purchasing biodiversity offsets or credit instruments. Their potential participation in nature credits would therefore be limited to voluntary, above-and-beyond contributions, and is more likely to materialize only when future policy frameworks formally recognize ecosystem service credits or related compliance mechanisms.

- **Tier 1-2 actors**, including aquaculture, small-scale fisheries, salt production, and local ecotourism operators, demonstrate strong ecological dependencies but are unlikely to serve as nature-credit buyers due to their limited financial capacity, small scale of operations, and localized market footprint. Stakeholder consultations indicate that these actors are more appropriately positioned on the supply side, as implementers or co-beneficiaries of restoration activities that underpin credit generation, rather than as purchasers.

- **Tier 3-4 (including 3.5 speculative buyers) actors**, particularly large Thai conglomerates, international firms, commercial banks, and companies already advancing TNFD-aligned assessments or nature-based carbon procurement, represent the strongest emerging demand segment for nature credits. These entities are increasingly motivated by net-zero commitments, nature-positive targets, ESG obligations, and portfolio diversification into high-integrity nature-based assets. Workshop discussions highlighted that these actors, despite their relative distance from the RFI sites, possess both the scale and institutional readiness to participate in voluntary nature credit markets and are therefore the most credible near-term buyers in Thailand.

Table 4. High-level Mapping of Economic Activities and Actors with Dependencies on Sectors in Thailand RFI Sites

Tier 4 Pure Philanthropic	Tier 3 Nature-dependent Business Models	Tier 2 Supply Chain Dependency	Tier 1 Direct Dependency	Tier 0 Residual Impacts / Offsetting	RFI Site
Small-to-large domestic corporates with CSR programs or offering philanthropic support: • Conglomerates	Pollution management investors and PPPs	Aquaculture processing and markets, upstream industries (for pollution regulation services)	Fisheries (aquaculture, small-scale fisheries, shellfish farming), Rice cultivation, Agriculture dependent on wetland water	Industrial effluents or infrastructure causing unavoidable environmental impacts	**Bang Pu Coast**

Tier 4 Pure Philanthropic	Tier 3 Nature-dependent Business Models	Tier 2 Supply Chain Dependency	Tier 1 Direct Dependency	Tier 0 Residual Impacts / Offsetting	RFI Site
• Telecoms • Banks • Tourism • Real Estate • Industries	Beverage manufacturing companies, birdwatching & ecotourism operators	Rice export markets, freshwater consumers (municipal, agricultural)	Agriculture (Rice cultivation, livestock grazing and farming)	Industrial effluents or infrastructure causing unavoidable environmental impacts	**Bueng Boraphet**
	Sustainable agriculture investors, ecotourism operators	Rice processing and export markets, water infrastructure and utilities	Rice cultivation and Artisanal fishing	N/A	**Huai Chorakhe Mak Reservoir**
	F&B companies, industrial estate developers (for water regulation)	Seafood markets, salt export markets	Aquaculture, salt production, and fisheries	Industrial pollution and infrastructure impacts	**Khlong Tamru (Bang Pakong)**
	Multilateral development institutions, fishery sector reform investors, coastal resilience investors	Shipping and logistics industries, seafood markets	Fisheries (small-scale), Aquaculture	Deep-sea port construction and associated residual impacts	**Khong Yai**
	Ecotourism operators, high land-use sectors	Solar salt markets (food and industrial users), aquaculture exporters	Salt production, aquaculture, small-scale fisheries directly dependent	Industrial/urban effluents causing unavoidable damage	**Khok Kham Salt Pans**
	Multilateral development institutions, marine ecotourism	Commercial seafood supply chains, ports and shipping logistics	Small-scale fisheries, aquaculture, mussel/oyster cultivation	Commercial / industrial effluents causing damage to the wetlands	**Ko Libong Non-Hunting Area and Hat Chao Mai National Park**
	Global hospitality chains	Commercial aquaculture markets, coastal seafood exporters	Small-scale fisheries, aquaculture, mangrove resource harvesting	Industrial pollution or infrastructure impacts	**Krabi River Mouth**
	Ecotourism sector, large industrial corporations (social license)	Seafood markets and exporters (crab and shrimp)	Fishing, aquaculture, shrimp/crab farming	Conversion of mangroves to other land uses (residual impact)	**Pak Nam Prasae**
	Large industrial corporations (social license), global birdwatching orgs.	Salt markets and buyers (food and industrial users), seafood exporters	Sea salt production, commercial fisheries, aquaculture directly dependent	Upstream dams causing residual impacts to the wetland	**Pak Thale-Laem Phak Bia Coast**
	Global hospitality chains	Fishery and shellfish export markets	Fisheries, shellfish aquaculture, mangrove timber harvesting	N/A	**Ao Phang-nga Bay**
	Sustainable agriculture investors, climate insurance providers	Rice processing and export markets, downstream water consumers	Fishing, rice cultivation, domestic duck rearing directly dependent	Dams and irrigation infrastructure causing residual ecosystem impacts	**Sanam Bin Reservoir**

b) Zooming In: Key Economic Sectors (Demand-Side Stakeholders) in Thailand RFI Sites

In this section, we focus on the sectoral nature of economic activities and actors identified in Table 4, where we sorted the twelve sites into two geographical clusters (See Figure 8):

- **Cluster A comprised of coastal sites**:
  1. Bang Pu
  2. Khok Kham
  3. Khlong Tamru
  4. Pak Thale–Laem Phak Bia
  5. Pak Nam Prasae
  6. Khlong Yai
  7. Krabi River Mouth
  8. Ao Phang-nga Ba
  9. Ko Libong–Hat Chao Mai

- **Cluster B comprised of the inland wetlands**:
  10. Bueng Boraphet
  11. Huai Chorakhe Mak
  12. Sanam Bin

The sites were grouped based on geographic proximity, allowing for a more practical identification of entities and activities with shared dependencies on nearby ecosystems. Clustering the coastal sites (Cluster A) and inland wetlands (Cluster B) facilitates a clearer mapping of economic linkages, stakeholder relationships, and overlapping areas of influence within each landscape. From the key actors identified and their tiered dependency, we frame the dependency discussion in terms of sectoral groups, their likely economic contribution, and thus allow us to illustrate the magnitude of the ecosystem services provided by the RFI sites (see Tables 5 and 6). This will feed later into our viability assessment as well as provide an initial mapping of actor-groups that may be prioritized for engagement in pilot offtake ideas.

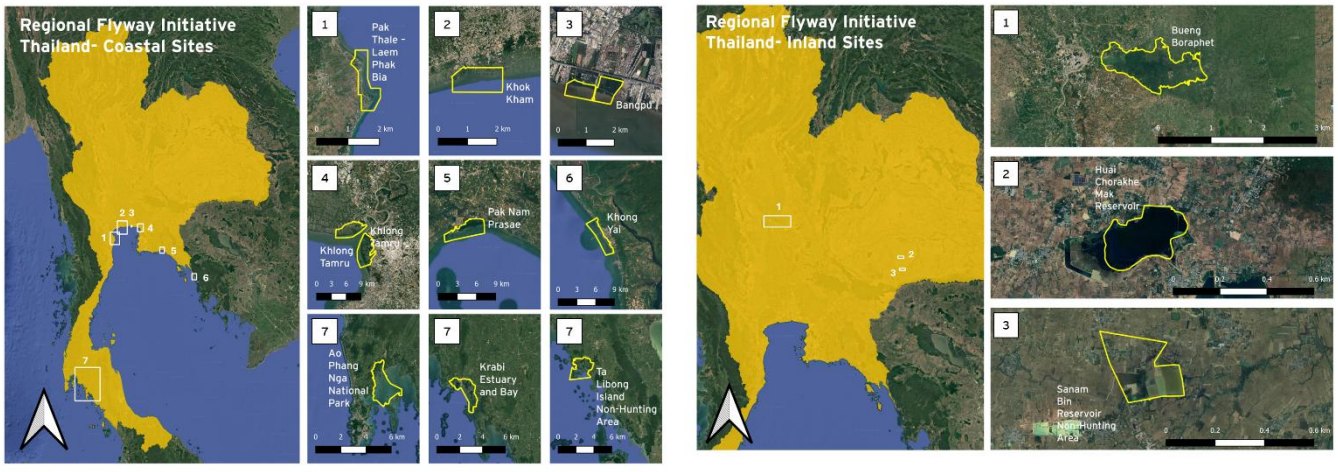


Figure 8. Maps of Thailand RFI Sites in Clustered Groups (Left: Coastal Wetlands, Right: Inland Wetlands)

Cluster A – Thailand's Coastal Wetlands

The coastal RFI sites support a diverse set of economic pathways that reflect both long-standing traditions and newer market-driven activities. Table 5 outlines how sectors such as ecotourism, fisheries, and seafood processing rely directly on the productivity and ecological integrity of coastal

wetlands, while other activities including salt farming, shipping and industrial estate operations are shaped by their proximity to coastal environments. Traditional sea-salt production remains a defining livelihood for many coastal communities, rooted in generational knowledge and local identity. Industries and tourism operators also rely on coastal ecosystems and, through their activities, influence the health of these environments. Their operations both benefit from and place pressure on these coastal wetlands, creating interconnected economic and ecological dependencies. Understanding these dynamics and linkage is important for assessing how conservation measures and nature credit mechanisms may influence local livelihoods, business practices, and the long-term condition of coastal ecosystems.

Table 5. Key Economic Dependencies in the Coastal RFI Sites

Dependency	Description	Example of Companies/ Organizations	Economic Contribution
Ecotourism	Birdwatching (Pak Thale) and Dugong watching (Ko Libong) attract high-spending niche tourists. In addition, community-based tourism and the growth of homestays and guided tours provide direct livelihood benefits to local communities, creating tangible incentives for the preservation and sustainable management of wetland ecosystems.	Andalay Beach Resort (in Ko Libong)- local eco resort, John Gray's Sea Canoe- low impact education tourism in Phang Nga	Thailand's coastal and marine resources are key drivers of national growth. Covering 23 coastal provinces, from major tourist beaches to the Eastern Economic Corridor, the blue economy is estimated to contribute about 30% of GDP and one-quarter of total employment.[45] The Thai government is currently pushing the Bio-Circular-Green (BCG) Economy. The target is for the BCG sector (which includes sustainable tourism) to generate 3.4 trillion THB (21% of GDP) within the next few years. Wetland preservation is a direct KPI for this growth.[46]
Fisheries and Seafood Processing	Samut Sakhon (Khok Kham) province is one of the largest seafood processing areas in Thailand.[47] With markets such as Mahachai- largest seafood market[48]- at its economic core, exemplifies the central role of marine capture and aquaculture in sustaining livelihoods, domestic consumption, and export performance. In the south (Krabi/Trang areas), "Blue Swimming Crab"-one of the high values species in marine fisheries sector in the country- banks are critical for community income and meet increasing consumption demands.[49]	Thai Union Group PCL (Global seafood giant based in Samut Sakhon), Mahachai Seafresh Co., Ltd (Major processor in the Mahachai area), Baan Nai Nang Fisheries Group in Krabi (Social enterprise managing local catch and processing)	The fisheries sector contributes approximately 2.3% to Thailand's GDP, yet its regional impact is significant, supporting major coastal economies and extensive supply chains.[50]
Salt Farming	Coastal communities in Thailand, particularly in major sea salt–producing provinces such as Phetchaburi, Samut Sakhon, and Samut Songkhram, remain strongly dependent on traditional sea salt	Khok Kham Salt Farming Cooperative (Community enterprise pivoting to artisanal salt product), Ban Laem Fishery Cooperative (Provides credit and financial support to salt farmers in Phetchaburi)	Thailand continues to be a significant exporter of sea salt, with annual export values exceeding US $30 million in 2023. The country exports salt in SEA countries such as

[45] Good, M. (2025, June 9). *Charting a smarter ocean future for Thailand*. World Bank Blogs. Retrieved on December 11, 2025. https://blogs.worldbank.org/en/eastasiapacific/charting-a-smarter-ocean-future-for-thailand
[46] National Science and Technology Development Agency (NSTDA). (n.d.). *Thailand's vision and national policy: BCG model*. Retrieved on December 11, 2025, from https://www.nstda.or.th/thaibioeconomy/why-bioeconomy/thailand-vision-national-policy.html
[47] Tang, T. K. K., Engstrom, D., & Srakaew, S. (2017). Community partnerships for the prevention of the worst forms of child labor among migrant children in Samut Sakhon, Thailand. The Journal of Sociology & Social Welfare, 44(4), 63–84. https://doi.org/10.15453/0191-5096.3854
[48] THAIest. (n.d.). *Mahachai Market*. Retrieved on December 11, 2025. https://thaiest.com/blog/maha-chai-market
[49] Suppapan, J., Songrak, A., Phinrub, W., Meesook, W., & Supmee, V. (2024). *Genetic diversity of blue swimming crab (Portunus pelagicus) from a crab bank project and wild crabs in Trang and Krabi Province, Thailand using mtDNA control region sequences*. Journal of Fisheries and Environment, 48(2), 94–111. https://doi.org/10.34044/j.jfe.2024.48.2.08
[50] Southeast Asian Fisheries Development Center. (2022). *Fisheries Country Profile: Thailand 2025*. Retrieved on December 2, 2025. https://www.seafdec.org/fisheries-country-profile-thailand/

Dependency	Description	Example of Companies/ Organizations	Economic Contribution
	farming for their livelihoods and cultural identity. This reliance is increasingly at risk, as environmental change, fluctuating market conditions, and a shrinking number of practitioners threaten the long-term sustainability of the practice.[51]		Cambodia, Vietnam. Malaysia, etc.[52] Despite its importance, the sector faces mounting pressures, including price volatility, competition from rock salt and imports, and declining interest among younger generations. In response, many communities are transitioning toward higher-value artisanal salt products and developing salt-field tourism as complementary income streams, contributing to livelihood diversification and the preservation of traditional coastal practices.[53]
Shipping and Logistics (Industrial)	In 2022, Samut Prakan and Chonburi rank among Thailand's highest-output provinces, supported by dense industrial estates, ports, and logistics hubs. [54] Their strategic connectivity strengthens national export efficiency, though concentrated freight activity also heightens pollution risks for nearby wetlands.	Amata Coproration PCL- factories near Khlong Tamru, AXTRA Future City Property REIT- manages retail hubs like Bang Pu Project S. Kritwan Port- private port operator, Talayphu Resort, Sriracha Harbour deep Seaport, Laem Chabang Port, Port of Kantang	The Eastern Economic Corridor (EEC), covering Chonburi, Rayong, and Chachoengsao, remains a core driver of national growth, with more than 650 billion THB invested in transport and industrial infrastructure and the highest share of foreign investment nationally.

Cluster B – Thailand's Inland Wetlands

Table 6 below summarizes the key economic activities that depend on Thailand's small inland wetlands, demonstrating how these ecosystems underpin local livelihoods and regional economies. Despite their smaller scale, wetlands such as Bueng Boraphet, Sanam Bin, and Huai Chorakhe Mak Reservoirs provide essential services, from sustaining fisheries and supporting agriculture to supplying freshwater and attracting ecotourism. Local communities, cooperatives, and public institutions rely on these wetlands for income, food security, and essential urban services, illustrating the critical role these inland ecosystems play in both biodiversity conservation and human well-being.

Table 6. Key Economic Dependencies in the Inland RFI Sites

Dependency	Description	Example of Companies/ Organizations	Economic Contribution
Fisheries and Aquaculture	Bueng Boraphet is the largest freshwater swamp/lake in Thailand and functions as the fish nursery for the Central Plains. It is critical for maintaining the stock of commercially important species in the Chao Phraya river system.[55]	Local Fishery Groups, Nakhon Sawan Provincial Administrative Organization (PAO)- Manages Bueng Boraphet Aquarium and associated tourism revenue	The wetland provides direct income for over 15,000 people living in the surrounding area through fishing, aquaculture, and irrigated farming.[56]
Agriculture	Huia Chorakhe Mak and Sanam Bin reservoirs are the reintroduction sites	Ban Sawai So Community Enterprise- local collective	Organic "Sarus Rice" sells for a higher price than conventional rice,

[51] Plaiphum, S., & Tansuchat, R. (2023). *Cultural capital of sea salt farming in Ban Laem District of Phetchaburi Province as per the Globally Important Agricultural Heritage Systems (GIAHS)*. Sustainability, 15(15), 11947. https://doi.org/10.3390/su151511947
[52] TrendEconomy. (2024). *Thailand | Imports and exports | World | Salt, pure sodium chloride, sea water | Value (US$) and value growth, YoY (%) | 2012 - 2023*. Retrieved on December 15, 2025. https://trendeconomy.com/data/h2/Thailand/2501
[53] Plaiphum, S., & Tansuchat, R. (2023). *Cultural capital of sea salt farming in Ban Laem District of Phetchaburi Province as per the Globally Important Agricultural Heritage Systems (GIAHS)*. Sustainability, 15(15), 11947. https://doi.org/10.3390/su151511947
[54] Arora, S. (2024). *Top 10 most developed provinces in Thailand (Excluding Bangkok)*. The Thaiger. Retrieved on December 11, 2025. https://thethaiger.com/travel/thailand-travel/top-10-most-developed-provinces-in-thailand-excluding-bangkok
[55] International Lake Environment Committee (ILEC). (n.d.) World Lake Database: Bung Boraphet. Retrieved on December 11, 2025. https://wldb.ilec.or.jp/Display/html/3536
[56] Sriwongsitanon, N., Surakit, K., Hawkins, P. R., & Chandrasena, N. R. (2006, October). Planning for wise-use of Bung Boraphet wetland's water resources. [Conference paper]. 3rd APHW Conference on "Wise Water Resources Management Towards Sustainable Growth and Poverty Reduction," Bangkok, Thailand. https://www.researchgate.net/publication/229151403_Planning_for_Wise-Use_of_Bung_Boraphet_Wetland's_Water_Resources

Dependency	Description	Example of Companies/ Organizations	Economic Contribution
	for the **Eastern Sarus Crane** (extinct in the wild for ~40 years). To ensure the cranes' survival, local rice farmers shifted from chemical to organic farming. This created a new economic model where "Sarus Rice" (Jasmine rice) is sold at a premium because it certifies the land is safe for endangered birds.[57]	producing and selling Sarus Rice, True Corporation- CSR support for tracking cranes and promoting conservation [58]	directly increasing household income for participating farmers. It has turned a "pest" (birds in rice fields) into an economic asset (branding tool), securing livelihoods while protecting biodiversity.
Freshwater Supply	Beyond biodiversity, Huai Chorakhe Mak Reservoir is an economic lifeline for Buriram City, serving as a primary source of raw water for downtown and economic centers of Buriram[59]	Provincial Waterworks Authority- manages water extraction and treatment, Buriram Hospital and Chang International Circuit- economic entities dependent on water supply operations	The Huai Chorakhe Mak Reservoir in Buriram's Mueang District, spanning the subdistricts of Ban Bua, Samet, and Sakae Phrong, serves as an important freshwater source managed by the Irrigation Department and the Provincial Waterworks Authority. It provides essential irrigation water for local farming communities and also functions as a popular recreational and rest area for nearby residents.[60]
Ecotourism	Bueng Boraphet is a classic tourist destination (Aquarium, boat tours), while Sanam Bin and Huai Chorakhe Mak cater to niche "avitourism" (birdwatching) focused on the Sarus Crane.	Bird Conservation Society of Thailand- organizing bird counts and promoting international tourism, Wetland and Eastern Sarus Crane Conservation Center- educational facility in Buriram	Tourism in Bueng Boraphet generates significant local revenue through boat rentals, homestays, and the Aquarium entrance fees[61]. In Buriram, the Sarus Crane has become a provincial mascot, drawing high-value nature photographers and researchers, diversifying the local economy beyond agriculture.[62]

Most of the identified actors with direct economic dependence on RFI wetlands are small-scale entities, including community enterprises, cooperatives, and local resource user groups. Their limited financial capacity and localized operations make them unlikely purchasers of nature credits. Instead, their value lies in implementing, co-managing, and benefiting from conservation and restoration activities that generate the credits. Meaningful and equitable participation of these groups remains essential, as it builds community ownership, strengthens social legitimacy, and supports long-term project viability.

Stakeholder consultations and the Thailand's broader financing landscape indicate that large Thai conglomerates, international firms, banks, and other TNFD-aligned companies are the most realistic voluntary buyers, given their scale, disclosure commitments, and growing interest in nature-based portfolios. This reinforces the importance of a top-down engagement approach that begins with credible buyers who have clear mandates, resources, and strategic alignment, and then designs or clusters pilots to meet their expectations for scale, impact, and reporting. Such engagement ensures that pilot sites, credit design, and delivery pathways reflect actual buyer demand, which in turn strengthens financial viability and builds early market confidence.

[57] Global Environment Facility. (2020*). Cooperation for coexistence in Thailand*. Retrieved on December 10, 2025. https://www.thegef.org/news/cooperation-coexistence-thailandhttps://truesustainability.info/sustainability/wp-content/uploads/2025/06/True-Biodiversity-Approach_May2025.pdf
[58] True Corporation. (2025, May). *True Biodiversity Approach*. Retrieved on December 10, 2025. https://truesustainability.info/sustainability/wp-content/uploads/2025/06/True-Biodiversity-Approach_May2025.pdf
[59] Bangkok Post. (2018). Drought fears soars as Monsoon to End, Retrieved on December 11, 2025. https://www.bangkokpost.com/thailand/general/1545958/drought-fears-soar-as-monsoon-to-end
[60] Thailand Tourism Directory. *Huai Jorakhe Mak Reservoir*. Retrieved on December 11, 2025. https://thailandtourismdirectory.go.th/en/attraction/2527
[61] Tourist Landmarks. (2025, September 15). Bueng Boraphet wetlands. https://touristlandmarks.com/landmarks-bueng-boraphet-wetlands_gulf-of-thailand
[62] Thai PBS World. (2024). Beauty and majesty: Admiring endangered sarus cranes in Buri Ram. Retrieved on December 11, 2025. https://world.thaipbs.or.th/detail/beauty-and-majesty-admiring-endangered-sarus-cranes-in-buri-ram/572

While current desktop mapping does not yet align with identifying which companies are the ideal buyers of nature credits linked to RFI sites, understanding ecosystem dependencies and exposure to nature-related risks remains critical. The resilience of sectors such as agriculture, aquaculture, shipping, and coastal infrastructure depends on the health of wetlands, mangroves, and delta systems that buffer against flooding, sedimentation, and resource loss. As these natural assets degrade, operational and supply chain risks intensify, undermining productivity and long-term viability. Encouraging nature credit investments should therefore be framed as a strategic component of risk management and business continuity, rather than discretionary spending. Over time, exploring mechanisms such as payment for ecosystem services (PES) or other incentive-based approaches could help strengthen accountability and gradually internalize the costs of ecosystem degradation across value chains, including among downstream buyers and international partners.

c) Key Supply-Side Stakeholders in Thailand RFI Sites

Following the assessment of potential demand-side actors, this section shifts focus to the supply side such as the institutions, communities, and enterprises capable of generating and sustaining high-integrity ecological outcomes across the Thailand RFI sites. The identification of potential suppliers was based on prior early-stage site concepts (site studies), site-level project documents, and supplementary desk research.

Supply-side stakeholders form the operational backbone of potential nature credit mechanisms. They manage ecosystems, implement conservation and restoration activities, and maintain ecological integrity that could be verified and quantified into tradable nature credits. Mapping these actors provides insight into institutional readiness, existing project baselines, and the range of delivery partners who could participate in pilot projects.

For analytical clarity, supply-side stakeholders were grouped into three institutional typologies, reflecting their primary functions and governance roles (Table 7):

1. **Regulators and Policy Enablers** – Government agencies with jurisdictional or legislative mandates for forests, wetlands, fisheries, and coastal management. They define policy frameworks, approve projects, and ensure legal compliance.
2. **Implementers and Resource Managers** – Local bodies, co-management committees, and community-based groups responsible for the day-to-day stewardship of ecosystems, fisheries, and protected areas.
3. **Support and Enabling Partners** – NGOs, academic institutions, and development partners that provide technical expertise, funding, monitoring, and MRV support to strengthen implementation capacity.

Table 7. High-level Mapping of Potential Supply Stakeholders in RFI Sites

RFI Site	Supply-Side Stakeholder Typology		
	Regulators and Policy Enablers	Implementers and Resource Managers	Support and Enabling Partners
Bang Pu Coast	• Royal Thai Army (land management and jurisdiction) • Department of Marine and Coastal Resources (DMCR) • Bang Pu Mai subdistrict government	• Local communities	• Private company (Toyota Motor Thailand) • Foundation of Environmental Education for Sustainable Development (FEED)
Bueng Boraphet	• Department of National Parks (DNP), • District governments of Mueang Nakhon Sawan, Tha Tako and Chum Saeng • Department of Water Resources	• Local communities • Tourism operators (e.g. sightseeing boat operators)	• PTT Group • Seub Nakhasathien Foundation

RFI Site	Supply-Side Stakeholder Typology		
	Regulators and Policy Enablers	Implementers and Resource Managers	Support and Enabling Partners
	• Royal Irrigation Department (RID) • Local Administrative Office		
Huai Chorakhe Mak Reservoir	• DNP • Department of Fisheries (DoF) • Buri Ram Provincial Government • Mueang Buri Ram district government • Provincial Waterworks Authority • RID	• Local communities	• Zoological Park Organization of Thailand • Private companies (True Corporation, TVP Group, Thai AirAsia)
Khlong Tamru (Bang Pakong)	• Department of Water Resources (DWR) • Department of Marine and Coastal Resources • Bang Pakong River Basin Committee • Khlong Tamru TAO	• Salt pans and fishpond operators • Local communities	• Private companies (Unilever Thailand, SCG Chemicals)
Khong Yai	• Khlong Yai town and Tambon Administrative Organization • DMCR • DWR • ONEP	• Fisheries cooperatives	• Bird Conservation Society of Thailand (BCST) (with project on spotted greenshank conservation) • Private companies (Charoen Pokphand Group) • IUCN Thailand
Khok Kham Salt Pans	• Samut Sakhon Provincial Government • Khok Kham and Pantai Norasingh subdistrict government • DMCR • ONEP • DF • RFD	• Local communities • Salt farmers and cooperatives • Khok Kham Birding Club (local conservation groups)	• Other NGOs • Private companies • BCST • Academe (Mahidol University)
Ko Libong Non-Hunting Area and Hat Chao Mai National Park	• DNP • Protected area management board of Hat Chao Mai National Park • Trang Provincial Government, and *amphoe* government of Sikao and Kantang • DF • Department of Tourism. • RFD	• Local community groups (including Si Ban community) • Dugong Conservation Volunteer Groups • Seagrass Restoration Groups • Ecotourism Operators • Mangrove Conservation Groups	• Save Andaman Network (Local NGO) • PTTEP
Krabi River Mouth	• Department of Aquatic Resources (DAR) • DMCR • ONEP • Krabi Provincial Government and Mueang Krabi (district) Government • DF • RFD	• Fishing cooperatives • Local communities • Ecotourism operators	• IUCN Thailand • Private companies (Marriott Hotels, Krabi Hotel Association)
Pak Nam Prasae	• Klaeng district government, • Pak Nam Prasae TAO • DMCR • DF • DWR • ONEP	• Local communities (fishing groups and farmers)	• BCST supported by BirdLife (ongoing projects) • Private companies (PTT Group, SCG Chemicals, Dow Thailand)
Pak Thale-Laem Phak Bia Coast	• DMCR • ONEP • Ban Laem subdistrict government • RFD • DF	• Local communities • Salt farming communities/operatives	• BCST • Thai Wetlands Foundation • Laem Phak Bia Environmental Study and Development Project (LEED)

RFI Site	Supply-Side Stakeholder Typology		
	Regulators and Policy Enablers	Implementers and Resource Managers	Support and Enabling Partners
	• Marine Department (for management of canals)		
Ao Phang-nga Bay	• DNP • DMCR	• Local communities • Ecotourism operators	• IUCN Thailand
Sanam Bin Reservoir	• DNP • DWR • RID • Prakhon Chai TAO • Buri Ram provincial government • Provincial Waterworks Authority.	• Local Communities	• ZPOT • BCST • Private companies (True Corporation)

Across the twelve RFI sites, the mapping highlights a rich network of existing institutions and partnerships that can underpin nature credit readiness:

- **National-level regulators**, led by the Ministry of Natural Resources and Environment (MoNRE), specifically the ONEP (national biodiversity policies and coordination), DNP (Parks/Wildlife) and DMCR (Mangroves/Coastal) retain overarching jurisdictional and large-scale management mandates over most RFI sites. Crucially, specialized agencies such as the Zoological Park Organization of Thailand (ZPOT) (critical for the Buriram crane sites) and the Royal Irrigation Department (RID) (managing reservoir sites) also provide essential, site-specific operational and legal authority.
- **Local implementers**, including co-management councils, resource management organizations (RMOs), village conservation groups (VCGs), and fishers' and salt farm cooperatives, ecotourism operators, play critical roles in conservation, restoration, and resource management at the community level.
- **Enabling partners**, The **Bird Conservation Society of Thailand (BCST)** appears as the most critical technical partner across multiple sites (Salt Pans, Buriram), capable of providing the biodiversity baselines required for credit verification. University partners (Mahidol, Kasetsart) provide the necessary scientific rigor for MRV.

Nature credit pilots in Thailand will need to account for the diverse governance and tenure contexts across RFI sites, including areas managed by government agencies as well as community-managed and privately held lands. For sites without formal protection status, priority should be given to clarifying management arrangements, roles, and long-term stewardship responsibilities within existing legal frameworks. Addressing this governance diversity will be essential for ensuring credit integrity, permanence, and scalability.

Box 3. Reflections from the Country Workshop: Demand and Supply-side Insights on Nature Credits

Reflections from the Country Workshop

Stakeholders described distinct motivations, constraints, and segmentation across both potential buyers and suppliers:

- **Tier 3 and 4 companies are the most likely early buyers**, aiming to convert CSR efforts into measurable in setting or value-chain action. By contrast, **Tier 1** actors such as small-scale agriculture **face high operating costs and limited capacity, making them unlikely buyers but potential suppliers of nature credits**.
- Key investment drivers include **reputational benefits, narrative/branding value, achieving no-net-loss or net-positive impacts, and alignment with global commitments** (TNFD, SBTi, CDP).
- **Proactive engagement with larger companies can help cultivate early demand** by aligning nature-credit opportunities with their sustainability strategies and disclosure needs, while familiarizing them with emerging market mechanisms and positioning them as potential early adopters.
- Buyers may **expect some form of linkage between project location and their operations although this may be acceptable at the landscape or sub-regional level (as opposed to direct linkage to site)**. Further buyer expectations extend to credible MRV, strong community co-benefits, and assurance against greenwashing.
- **Investors require visibility on return profiles**, though nature-based returns may be slower or less predictable than traditional assets.
- **Banks and financial institutions highlighted difficulty accessing consistent, comparable biodiversity information** due to non-uniform disclosures.
- Suppliers include local communities, government agencies managing wetlands and protected areas, and private entities with land access rights, but all **face uncertainties about ownership, benefit allocation, and long-term rights to generate or sell credits**.
- **Methodological uncertainty persists**: unlike carbon, nature credits cannot be quantified in a single metric (e.g., tons), and require ecosystem-specific baselines and impact indicators.
- **Market competitiveness with T-VER poses challenges**; nature credits must articulate unique value propositions, such as biodiversity outcomes, water regulation, or cultural heritage enhancement.
- Opportunities arise from the **potential to bundle nature credits with ecosystem services and community development benefits, leveraging ESG expectations among Thai listed companies**.

VIII. Viability Assessment of RFI Sites for Nature Credits

A. Nature Credits Principles and Parameters for Viability: Framing and Approach

While the viability of nature credits at any site will ultimately depend on field-based validation and direct stakeholder engagement, this study provides a proposed diagnostic framework to guide such assessments. It draws on available data from prior RFI concept studies, complemented by secondary literature and comparative insights from other jurisdictions where nature credit mechanisms are emerging. The aim is not to deliver definitive feasibility results, but to translate the ecological, socio-economic, and financing information already available into structured decision criteria. These criteria are organized under five enabling pillars synthesized from Phase 1 of this study: Legal and Policy Foundation, Standards & Metrics, Market Incentives, Governance & Institutions, and Social Equity & Safeguards, each linked to site-specific variables. Together, they provide a structured lens for identifying both the opportunities and the risks of developing nature credit mechanisms across the Thailand wetland portfolio.

Table 8 below presents this framework that highlights how available ecological, socio-economic, and financing data can be translated into decision criteria – categorized as *core*, *operational*, *scaffolding*, and *market-building* - for identifying opportunities and risks in developing nature credit mechanisms.

Table 8. Parameters and Variables to Assess Viability

Enabling Environment Pillar	Core Viability Parameter	Site-Level Variables Used	Rationale
Legal and Policy Foundation (laws and mandates that establish a regulatory basis)	Additionality including Protected Area Status	• Wetland Type & Conservation Status • Presence/quality of Management Plan	Protected area designations, management plans, and statutory roles of agencies define the legal baseline and regulatory space for nature credits. However, outdated or weak plans, fragmented implementation, lack of project continuity may increase potential additionality, as proposed interventions may not sufficiently address ongoing or emerging threats to biodiversity.
	Government & Stakeholder Alignment (policy/mandates aspect)	• Mandates of Royal Forest Department, Department of Fisheries, local govt • Legal recognition of sites (Ramsar, WHS, IBA/KBA, ECA, PA)	Legal mandates and institutional authority establish the regulatory foundation that governs interventions and crediting eligibility.
Standards, Metrics & Market Infrastructure (verification, monitoring, trading)	MRV Readiness	• Carbon Sequestration estimates • Valuation of Flood/Coastal Protection • Land Use Change / Spatial Mapping	Ability to measure, report, and verify ecological gains underpins integrity of credits. Current reliance on secondary/literature estimates points to medium confidence but a viable basis.
	Permanence / Resilience of Ecological Gains	• Threats to Ecosystems • Key Drivers of Change • Alternate State	Permanence requires low reversal risks. High exposure to land clearance, erosion, or climate change weakens long-term viability unless offset by strong governance and restoration commitments.
Market Incentives (fiscal and financial demand levers)	Market-Building Potential	• Existing Economic Activities (e.g., fisheries, ports, shipping, agriculture) • Identified ES dependencies (storm/flood regulation, food, climate regulation)	Demand drivers create a 'buyer logic' for credits. Where dependencies are strong, markets for credits are more likely to materialize.
	Financing Scaffolding	• Potential Co-financing (donor, MDB, CSR) • Intervention Costs (from RFI concepts)	Supply-side readiness is indicated by the presence of financing initiatives, MDB or donor pipelines, and costed interventions, which lower investor entry barriers.

Enabling Environment Pillar	Core Viability Parameter	Site-Level Variables Used	Rationale
Governance & Institutions (roles, mandates, capacity)	Government & Stakeholder Alignment (institutional aspect)	• Identified Management Stakeholders • Enforcement/management effectiveness	Institutional willingness and coordination determine whether interventions can be implemented and monitored effectively.
	Nature Credit Archetype	• Threats to Ecosystems • Threat Severity • Priority for Restoration vs. M&P Potential • Proposed RFI Interventions	Determines feasibility of credit type. Restoration credits require degraded but restorable areas; M&P credits depend on intact ecosystems threatened by loss.
Social Equity & Environmental Safeguards (inclusivity, transparency, ecological integrity)	Community Co-benefits & Social License	• Existing Economic Activities (community reliance) • Livelihood-linked Proposed Interventions (alt. livelihood, Nb-tourism) • Involvement of local cooperatives/Ethnic groups	Social co-benefits and safeguards underpin legitimacy and long-term durability of credits, reducing risks of conflict.
	Nature Credit Archetype (safeguard dimension)	• Same as above (Archetype variables) but assessed from equity/safeguard lens	Ensures archetype selection integrates inclusivity, avoids displacement of livelihoods, and protects biodiversity integrity.

B. Nature Credits Viability Assessment for RFI Sites

1. Applying the Framework

The framework above attempts to translate site-level diagnostic data (ecological, socio-economic, financing) into decision variables that may support the viability of launching a nature credit mechanism. The findings are diagnostic and not definitive and provide a structured way to highlight a site's weaknesses, strengths, and where more information is required before moving to project-level conceptualization and structuring.

A low-medium-high scoring (traffic-light system) has been deployed to present an intuitive, decision-maker friendly format that refrains from false precision rating, pending more quantitative benchmarks. Table 9 9 below summarizes how scoring was determined. These scores ultimately provide a '**viability profile**' rather than a pass/fail score, or a heat map of a) strengths (parameters that support immediate exploration of nature credit structuring); b) moderates (parameters that require deeper investigation into a next phase study), and c) weaknesses (parameters that may represent 'deal-breakers' unless addressed through interventions). A weighting exercise (e.g. weighted multi-criteria analyses) may be introduced later through site-specific ground validation and more stakeholder engagement.

Table 9. Scoring Criteria of the Nature Credits Viability Test

Enabling Pillar	Viability Parameter	Low	Medium	High
Legal & Policy Foundation	**Scale (Area)**	<20,000 ha – very small area, limited credit issuance, low efficiency.	20,000–100,000 ha – moderate area, viable but limited scaling.	>100,000 ha – very large area, strong issuance potential and economies of scale.
	Additionality (PA status, plan)	Site already under strong legal protection with updated management plan – limited new additionality potential.	Some protection (e.g., PA or flyway designation) but with outdated/weak plans or limited enforcement.	No formal protection or outdated/absent management plan – higher scope for demonstrating additionality.
	Institutional Alignment	Fragmented or weak institutional mandates; little	Mandates exist but enforcement/coordination	Strong alignment: clear mandates, active institutions,

Enabling Pillar	Viability Parameter	Low	Medium	High
Governance & Institutions		evidence of coordination; no co-financing.	weak; some project interest present.	co-financing interest, alignment with NDC/NBSAP.
	Archetype Feasibility	(Restoration vs. M&P) Not scored – descriptive only; Priority archetype is determined by threats, drivers, restoration potential.		
Market Incentives	Market-Building Potential	Few or no clear buyer sectors; ecosystem service linkages unclear.	Dependencies identified (e.g., fisheries, agriculture, coastal protection) but buyer mapping incomplete.	Clear economic dependencies and buyer pathways (e.g., shipping, ports, aquaculture, insurance).
	Financing Scaffolding	No mention of financing or co-financing opportunities.	Some indicative or donor-based financing pathways identified.	Explicit co-financing/private sector/MDB interest identified at site level.
Standards & Metrics	MRV Readiness	Indicators absent or weak, difficult to build MRV system.	Some quantitative data available (carbon rates, ES valuations, spatial mapping) but incomplete.	Strong quantitative + spatial data, replicable valuation, credible MRV pathway.
	Permanence / Reversal Risk -man-made (upstream /on-site) or natural disturbances	High threat level, low reversibility, and low resilience capacity (e.g., active land conversion, industrial expansion, or recurring erosion).	Moderate threat level, partial reversibility, and moderate resilience capacity; some mitigation measures in place but pressures remain.	Low threat level, high reversibility, and strong resilience capacity; effective management and ecosystem stability minimize reversal risks.
Social Equity & Safeguards	Community Integration & Social License	Weak or absent linkage of interventions to community livelihoods.	Some integration but not central to intervention design.	Strong linkage to livelihoods, alternative incomes, and stakeholder participation explicitly built in.

These viability profiles allow illumination of themes (e.g., governance limitations) cutting across multiple or all sites and provide key actors for a concerted effort that will deliver wider action for RFI sites.

Lastly, it is also important to note that while considerations of additionality influence the overall scoring, ***it does not imply direct exclusion criterion for the issuance of nature credits***, as additionality is assessed more rigorously at later stages of project design and validation. As such, the results should be interpreted as indicative rather than definitive, serving to highlight relative strengths, weaknesses, and priority areas for deeper feasibility assessment in a next-stage, operationalization-level study.

C. Scoring of Site Viability – Portfolio Level Summary and Key Findings

Table 10 below summarizes a portfolio-level screening of the twelve RFI sites in Thailand against the key viability parameters for nature credit development. Organized under pillars covering legal and policy foundations, governance, market incentives, standards and metrics, and social safeguards, the assessment reveals several cross-cutting insights that shape the opportunity landscape. It is important to note that this assessment is based on available RFI data and desktop research. Scores may be refined with deeper site-level reviews and direct consultation with local stakeholders. Box 4 provides stakeholder insights into these viability parameters and their implications for prioritizing RFI site funding and project development.

- **Scale.** At a portfolio level, larger sites such as **Ko Libong (over 276,000 hectares) and Krabi River Mouth (over 133,000 hectares)** stand out in terms of their potential to generate higher credit volumes and benefit from economies of scale. Several others, including Bueng Boraphet, Khlong Yai, and Phang-nga Bay, fall within a medium-size range (20,000–100,000 hectares) and present viable regionally focused crediting opportunities. Smaller wetlands such as Bang Pu,

Khlong Tamru, and Pak Thale fall below the scale typically associated with efficient standalone crediting.

However, stakeholder consultations emphasized that scale alone should not be treated as a decisive viability criterion in the Thailand context. Several smaller sites hold disproportionately high ecological value, particularly for migratory birds and flyway connectivity, and may support premium or niche nature credit offerings despite lower volumes. Building on this insight, workshop discussions highlighted the value of **landscape-based aggregation**, whereby ecologically similar or geographically proximate sites are bundled into unified crediting programs with shared measurement, reporting, and verification systems and stronger market narratives. Suggested landscape clusters include:

- **Mudflat Landscape:** Bang Pu and Khlong Tamru
- **Salt Pan Landscape:** Khok Kham and Pak Thale
- **Island and Marine Landscape:** Ko Libong and Phang-nga Bay
- **Estuary Landscape:** Pak Nam Prasae, Khlong Yai, and Krabi River Mouth
- **Freshwater Swamp and Reservoir**[63]**:** Bueng Boraphet, Sanam Bin Reservoir, and Huai Chorakhe Mak Reservoir

These clusters reflect ecological connectivity and common monitoring needs. Bundling them can raise total credit volume, and appeal to buyers interested in larger credit/scale outcomes, while still allowing each site to highlight its unique biodiversity contributions.

- **Additionality.** The portfolio reveals a clear differentiation between sites with strong existing protection and those with minimal or absent national or local coverage. **Khlong Tamru** and **Khlong Yai** score high on additionality due to the absence of formal protected area status or comprehensive management plans, creating significant scope to demonstrate net new conservation outcomes. Conversely, sites such as Bueng Boraphet, Ko Libong, and Phang nga Bay, while ecologically valuable, already operate under designations such as Non-Hunting Areas, Protected Area, Ramsar sites, and/or National Parks. Their additionality is therefore moderate as gains are still possible but will stem from quantifiable enhanced management effectiveness. For these sites, demonstrating additionality will require a focus on improving enforcement, reducing degradation drivers, or implementing new community co-management models to ensure permanence.
- **Market-building potential and governance.** Market readiness varies across the portfolio and is closely linked to the presence of clear economic dependencies and buyer-relevant ecosystem services. Ko Libong demonstrates the strongest immediate market readiness, supported by well-defined linkages to fisheries, aquaculture, and tourism, alongside relatively strong institutional arrangements and financing pathways. Krabi River Mouth and Phang-nga Bay also show strong market potential, reflecting their relevance to tourism, fisheries, and coastal economic activities, as well as the presence of indicative financing and monitoring foundations. However, for these sites, further strengthening of institutional coordination and implementation capacity would enhance overall readiness for near-term credit issuance. Most other sites fall into the moderate category, where economic linkages, such as fisheries in Bang Pu or salt farming in Pak Thale, exist but the buyer landscape is not yet mapped. These sites will therefore require more targeted buyer analysis to convert general economic benefits into concrete demand. A key recommendation from the workshop was to identify companies at the national or sector level, including those located far from the sites, whose operations have nature dependencies or impacts and who could be

[63] The Freshwater Swamp and Reservoir Landscape was not included in the cluster suggested during the workshop but has been added here to showcase the range of landscapes across all 12 RFI sites.

positioned as early buyers of credits, even if their activities are not directly tied to specific RFI sites.

- **Community co-benefits.** Social license emerges as a strong enabling factor across the portfolio. Sites such as Khok Kham, Pak Thale, and Phang-nga Bay demonstrate strong community integration, with livelihoods directly tied to ecosystem services including artisanal fisheries, salt farming, and eco-tourism. Ko Libong and Phang-nga Bay are further strengthened by the presence of Ethnic Group such as the Moklen, creating opportunities for credits that support cultural heritage, stewardship, and biodiversity outcomes simultaneously. Ensuring durability of crediting frameworks in these areas will require interventions explicitly designed to avoid livelihood displacement and, where possible, formalize local stewardship roles through community fisheries groups, co-management arrangements, or alternative livelihood programs.

While the analysis indicates that larger sites such as Ko Libong and the Krabi River Mouth show strong potential for near-term nature credit development, and that smaller wetlands such as Khlong Tamru and Pak Thale offer high additionality and piloting value, stakeholder consultations suggest that a landscape-based approach is better suited for early implementation. By bringing together geographically proximate sites and/or sites with similar ecosystem characteristics, this approach allows different site types to be considered collectively, improving scale, reducing fragmentation, and enhancing overall feasibility for nature credit development.

Box 4. Reflections from the Country Workshop: Nature Credits Viability Assessment

Reflections from the Country Workshop

Discussions on site readiness highlighted feasibility considerations, ecological factors, and operational challenges:

- Priority landscapes, spanning mudflats, salt pans, estuarine systems, and island/marine ecosystems, present notable governance complexities due to overlapping mandates and diverse ecosystem management requirements. While these complexities persist, national consultations suggest that **adopting a landscape approach**, clustering geographically proximate or ecologically similar sites, **can generate larger-scale ecological outcomes and better align with the scale and investment expectations** of potential nature credit buyers.
- **Marine protected areas (MPAs) and state-owned lands introduce legal constraints on commercial activities and require long-term leases** (typically capped at 30 years, unless approved for commercial purposes), complicating crediting arrangements.
- **Sites often include multiple ecosystems, requiring multidisciplinary assessment teams** and integrated valuation approaches.
- Market viability depends on **credible measurement approaches - using indicator species, landscape-level designation, and alignment with migratory bird flyways** - to establish robust ecological baselines.
- **Ecological variability (e.g., species fluctuations, climate impacts) introduces risks to credit durability**; ensuring continuity beyond early project years requires adaptive management frameworks.
- **Competing institutional objectives at the site level underscore the need for multi-agency coordination** and integrated planning.
- **Provincial budgets, existing community livelihood programs, and production shifts (e.g., from chemical to organic agriculture) provide co-financing opportunities** that may enhance project viability.

Table 10. RFI Sites - Portfolio Summary of Nature Credit Viability Potential

Pillar	Sub-Parameter	Bang Pu Coast	Bueng Boraphet	Huai Chorakhe Mak Reservoir	Khlong Tamru (Bang Pakong)	Khlong Yai	Khok Kham Salt Pans	Ko Libong Non-Hunting Area and Hat Chao Mai National Park	Krabi River Mouth	Pak Nam Prasae	Pak Thale-Laem Phak Bia Coast	Phang-nga Bay	Sanam Bin Reservoir
Legal & Policy Foundation	Scale	385 ha	46,120 ha	631 ha	3000 ha	30,146 ha	13,178 ha	276,000 ha	133,179 ha	10,783 ha	8,666 ha	42,253 ha	603 ha
	Additionality	Strong protection, needs strong mgt. plan	Protected area and Ramsar Site	Protected area; non hunting area	Not a PA, with ongoing conservation effort, No mgt plan	No formal protection in place; no mgt plan	Non hunting area; reserved forests, with restoration plan	PA, Ramsar Site, AHS	Ramsar Site, Flyway Site, Forest Reserve, Krabi Envi PA	No formal management	Privately managed PA, Flyway Network Site, and IBA	PA, Marine National Park, mangrove under protection forest	Protected area, Non hunting area
Governance & Institutions	Institutional Alignment	Multi-actor but military-led and fragmented	Many actors, moderate coordination	Adequate but small-scale	Alignment improving but inconsistent	Multi-agency; low enforcement strength	Moderate coordination with NGOs	Strong PA enforcement & structure	High institutional coordination	Moderate alignment, not strong	Strong cross-sector coalition	Strong DNP + local/ethnic groups	Limited but functional
	Archetype Feasibility	M&P + restoration feasible	Restoration + M&P	Mostly M&P	Restoration-focused	M&P with targeted restoration	M&P with targeted restoration	Mostly M&P	M&P with targeted restoration	Restoration + M&P	Restoration + M&P	M&P with targeted restoration	Mostly M&P
Market Incentives	Market-Building Potential	Aquaculture + tourism, partial buyer logic	Strong freshwater + tourism dependencies	Agriculture & recreation, moderate dependencies	Fisheries/aquaculture	Fisheries + port/shipping	Salt + fisheries + tourism	Strong fisheries + aquaculture + tourism	Tourism + fisheries + aquaculture	Fisheries & aquaculture	Salt + fisheries + tourism	Tourism + shellfish + fisheries	Small fisheries/agriculture buyers
	Financing Scaffolding	Loan/grant paths; NGOs active (WWF/FEED)	Loan/grant; strong NGO & govt programs; high GEF/UNDP alignment	Loan only; some provincial govt projects; limited donor or NGO footprint	Loan/grant; mangrove restoration feasible	Loan/grant; NGOs active (BCST); strong blue-economy fit	Loan/grant; BCST + local NGO projects	Loan/grant + carbon finance potential; strong NGO and finance pathways	Loan + carbon finance (mangrove/seagrass)	Loan/grant; DMCR mangrove programs; some NGO involvement	Loan/grant; strong NGO presence	Loan/grant; major tourism finance; strong blue carbon potential	Loan/grant; limited biodiversity NGO presence
Standards & Metrics	MRV Readiness	Some ecological data	Limited ecological data	Limited ecological data	Strong carbon stock + sequestration estimates; mangrove datasets.	Some carbon data; basic ecological mapping	Long-term bird/mudflat monitoring; with ecological datasets.	Excellent multi-ecosystem datasets; strong carbon stock & sequestration data	Large carbon datasets; strong ecological mapping; long monitoring history	Some carbon data; ecological mapping partial; needs additional baselines.	Strong carbon estimates + monitored shorebird site; strong ecological datasets.	Robust carbon + spatial data across; strong biodiversity datasets.	Limited data; high bird but limited carbon data
	Permanence / Reversal Risk	Pollution + Sea Level Rise (SLR)	Pollution & degradation	Agriculture + drought risk	Industrial expansion	Low threats	Urban and industrial pollution	Tourism + siltation + erosion	High siltation + seagrass loss	mangrove loss predicted	High Sea Level Rise, drought, erosion	Moderate pressures (tourism + aquaculture)	Moderate pressures
Social Equity & Safeguards	Community Co-benefits	Moderate tourism & community involvement	Dependent communities but not central to design	Rice & fisheries community linkages	Fisheries groups engaged	Community fisheries (shorebird program)	Salt + fisheries + tourism livelihoods	Fishers Group + tourism + Ethnic Group (Moklen)	fisheries but not strong integration	Livelihood ties but weakly embedded	salt workers + tourism	Ethnic groups + ecotourism + fisheries	Moderate livelihood integration

Legend:
Low (1) Medium (2) High (3)

D. Prioritization of Viable Nature Credit RFI Sites in Thailand

1. Prioritization Approach

Given the diversity of ecological, socio-economic, and institutional contexts across the twelve RFI wetland sites, a structured prioritization framework is required to identify where nature credit mechanisms may be most viable in the near term. The objective of this step is not to produce definitive feasibility rankings, but rather to provide a comparative diagnostic that highlights relative strengths and weaknesses across sites. Given the portfolio's assessment structured around five enabling environment pillars: (i) Legal and Policy Foundation, (ii) Governance and Institutions, (iii) Market Incentives, (iv) Standards and Metrics, and (v) Social Equity and Safeguards, it is possible to prioritize by the interaction of these. For ease of comparison, these pillars have been grouped into two 'composites': **enabling conditions** (legal and policy foundation, governance and institutions, and social equity and safeguards) and **market readiness** (market incentives and standards and metrics) (Figure 9).

- **Market Readiness (X-axis):** An aggregate of *Market Incentives* and *Standards and Metrics*, representing demand pull, technical integrity, and crediting infrastructure.
- **Enabling Conditions (Y-axis):** An aggregate of *Legal and Policy Foundation*, *Governance and Institutions*, and *Social Equity and Safeguards*, reflecting the policy base, institutional capacity, and community legitimacy required for implementation.

Preliminarily, all pillars are given equal weight, consistent with established multi-criteria analysis methods, where equal weighting is commonly adopted at the screening stage in the absence of empirically derived preferences. These composites now allow us to plot the sites into four quadrants per interaction of the two composite parameters.

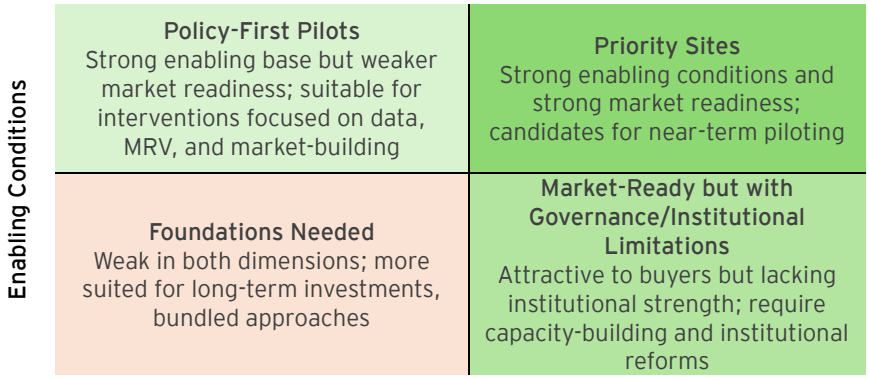


Figure 9. Portfolio Prioritization Framework

Key Assumptions and Limitations: While the quadrant approach provides a useful comparative diagnostic across the twelve RFI sites, it is important to recognize its limitations. Equal weighting of the five enabling environment pillars follows established multi-criteria screening practices but inevitably simplifies complex site realities. Traffic-light scoring reduces nuanced differences in institutional capacity, market demand, or ecosystem threats into categorical ratings, which may obscure localized variations. As such, t*he results should be interpreted as indicative rather than definitive*, serving to highlight relative strengths, weaknesses, and priority areas for deeper feasibility assessment in a next-stage, operationalization-level study.

2. Preliminary Assessment on Prioritization

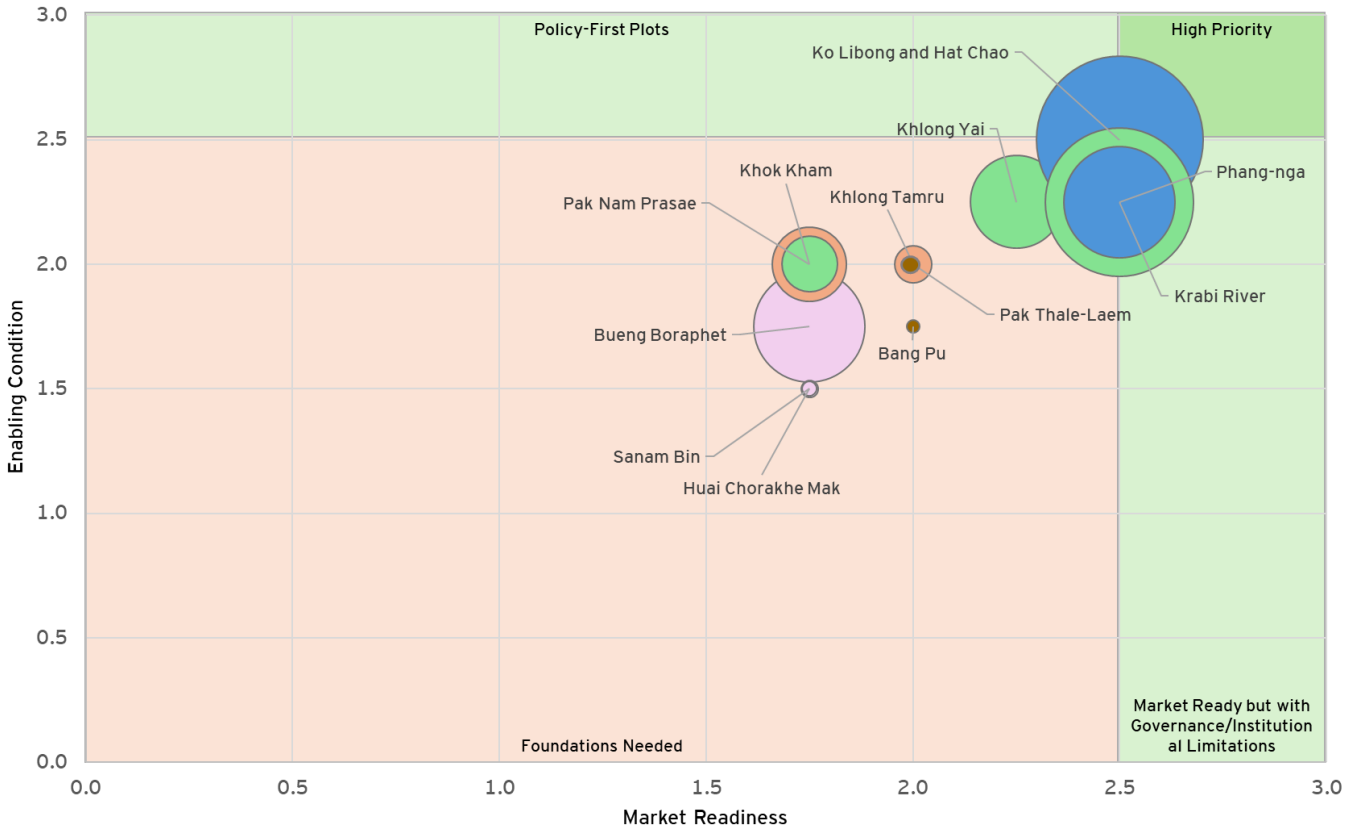


Figure 10. Preliminary Prioritization - Portfolio Level Assessment
(Pink: Freshwater Swamp/Reservoirs Landscape; Brown (*additional*): Mudflats Landscape; Orange: Salt Pan Landscape; Blue: Island and Marine Landscape; Green: Estuary Landscape)

The current assessment (Figure 10) identifies the **Ko Libong** as the **strongest near-term candidate** for nature credit development. Its exceptional scale, strong institutional alignment, clear economic dependencies (ports, fisheries, aquaculture), and relatively robust monitoring and financing foundations position it as the most investable option in the portfolio. The **Krabi River Mouth** also emerges as a high-potential site, particularly from a market readiness perspective. Its large scale, strong relevance to tourism, fisheries, and aquaculture, and the presence of established financing pathways and relatively advanced ecological datasets create clear demand-side signals for nature credits. While its institutional arrangements are less consolidated than those at Ko Libong, targeted improvements in governance coordination and implementation capacity could materially strengthen enabling conditions, positioning the Krabi River Mouth as a viable candidate for near-term piloting as well. **Phang-nga Bay** shows a similar profile, combining strong market relevance and technical readiness with the need for continued institutional coordination to fully support credit issuance.

While the largest wetlands offer the strongest potential for credit volume and economies of scale, many of the remaining RFI sites fall into a **foundation-building category**. These sites, often smaller swamps, estuaries, mudflats, and working landscapes such as salt pans, share common characteristics that explain their clustering in this category: limited scale, evolving institutional arrangements, and lower immediate market demand, alongside high additionality, strong livelihood linkages, and existing biodiversity monitoring. When considered individually, these factors constrain near-term crediting and limit their attractiveness to potential buyers seeking scale.

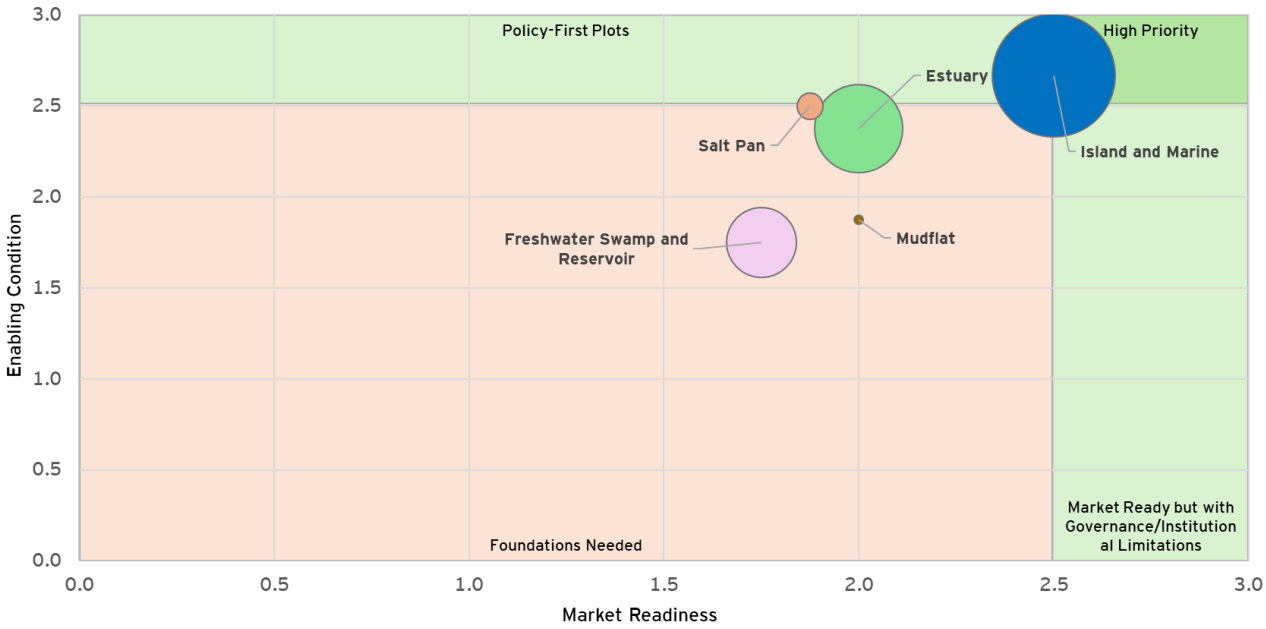


Figure 11. Preliminary Prioritization - Portfolio Level Assessment of Landscapes

Stakeholder consultations, however, emphasized that landscape characteristics provide a more meaningful basis for prioritization in the Thailand context than individual site attributes viewed in isolation (Figure 11). By clustering geographically proximate sites or sites sharing similar ecosystem characteristics, including flyway functions and shared habitat networks, landscape configurations can address site-level constraints and present a larger, more coherent investment proposition aligned with buyer expectations. Figure 11 shows that sites within the same landscape clusters tend to exhibit similar or closely aligned viability profiles, reinforcing the suitability of a landscape-based configuration for piloting nature credit interventions.

Within this framing, **smaller sites can play strategic roles as entry points for implementation within broader landscape configurations**, despite their limited standalone scale. While significant groundwork is often required before credit issuance is feasible, these sites offer practical advantages for early piloting, including lower implementation complexity and the ability to test methodologies, MRV systems, and community engagement models before wider application.

In the Thailand context, voluntary nature credit projects can be advanced using a landscape-based approach while policy and regulatory frameworks continue to be refined. The landscape level provides the strategic unit for aggregation, buyer engagement, and ecological coherence, but also implies that coordination across relevant management bodies and agencies will need to be strengthened. Taken together, this approach allows lessons from site-level pilots to inform landscape-scale coordination and policy development, reduce uncertainty for stakeholders, and support the gradual establishment of nature credits as a credible financing mechanism.

Limitations and caveats. It should be emphasized that this prioritization carries a moderate confidence level. The analysis relies on secondary data, primarily from ADB-commissioned early-stage site concepts (site studies), and does not incorporate direct field validation or detailed stakeholder consultations. While the quadrant framework is a useful diagnostic, it simplifies complex realities into categorical ratings. Improvements in data granularity, market analysis, and stakeholder dialogue will be necessary to refine site rankings and to fully test additionality, permanence, and social safeguards.

E. Assessment Outcomes and Findings

This section synthesizes the findings from the enabling environment review, viability assessment, dependency mapping, and feedback from the consultation workshop, to outline how nature credit development may realistically take shape across the RFI wetland portfolio in Thailand. While the sites present strong ecological significance and clear livelihood linkages, readiness for market-based crediting remains uneven. The analysis identifies both opportunities and constraints, ranging from scale advantages to governance and market-building gaps in relatively smaller sites. These findings were further validated and refined through the national consultation, which underscored the need to view "scale" and "additionality" as qualified rather than absolute indicators of viability.

By combining supply-side considerations (e.g. scale, additionality, permanence) with demand-side drivers (tiered buyer dependencies), this assessment highlights the practical pathways for nature credit pilots, the critical weaknesses that must be addressed, and the complementary mechanisms beyond nature credits that may provide a more immediate and credible financing route for site protection and restoration. *This synthesis integrates not only the diagnostic results but also key workshop reflections on demand potential, institutional readiness, and equity considerations across different site typologies.* Table 11 below summarizes these findings:

Table 11. Summary of Outcomes and Findings

Dimension	Key Findings	Implications for Portfolio
Readiness & Strengths	• **Scale is not a decisive determinant of viability in the Thailand context.** While the screening parameters tend to skew toward sites with greater scale and efficiency, stakeholder consultations indicate that **landscape approach** provides a more meaningful basis for prioritization and early piloting of nature credit interventions. • **Landscape clusters offer scale and coherence.** Ecologically linked sites across mudflat, salt pan, estuary, and marine systems can be bundled to create unified crediting programs, enabling shared MRV, larger credit volumes, and stronger landscape-level narratives sought by buyers. • **Strong additionality in unprotected areas.** Sites without formal protection such as Khlong Tamru and Khlong Yai exhibit high potential for demonstrating net-new conservation outcomes, strengthening the case for avoided loss and restoration-based interventions. • **Market-ready pilot opportunities in select sites.** Ko Libong, and to a lesser extent the Krabi River Mouth and Phang-nga Bay, demonstrate strong near-term readiness due to clear economic dependencies, institutional alignment, and established monitoring foundations that can support early piloting within broader landscape configurations. • **Community integration and social license as core enablers.** Local livelihoods, in fisheries, salt farming, and eco-tourism, and the stewardship role of Ethnic groups create strong social foundations for nature credit projects, supporting permanence and community buy-in. • **Smaller wetlands offer quick wins for piloting.** Lower institutional complexity and faster approval pathways make compact wetlands suitable for testing methodologies, trialing MRV systems, and proving early models before scaling to larger landscapes.	• Prioritize landscape-based pilots that aggregate ecologically connected sites to achieve scale, reduce fragmentation, and strengthen investment propositions. • Position high-additionality sites within landscapes for early credit generation, particularly where protection gaps allow clear demonstration of net conservation gains. • Leverage strong community stewardship to enhance credit integrity and long-term permanence, while exploring opportunities for flyway-related products that can generate additional local income. • Use smaller wetlands to test applicable nature credit methodologies before wider roll-out

Dimension	Key Findings	Implications for Portfolio
Gaps & Weaknesses	• **Governance complexity across priority landscapes.** Overlapping mandates, inconsistent legal designations, and site-level institutional conflicts hinder coordinated planning and complicate crediting arrangements, especially within MPAs and state-owned lands governed by restrictive lease regulations. • **Moderate additionality in existing protected areas.** Sites such as Bueng Boraphet and Ko Libong already benefit from Ramsar, Non-Hunting Area, Protected Area, or National Park status, reducing the scope for avoided-loss claims and shifting additionality toward improved management effectiveness. • **Insufficient buyer logic at the local scale.** While economic dependencies exist, most sites lack strong local demand; small-scale enterprises (Tier 1) have limited capacity to act as buyers, reinforcing the need for national-level demand development. • **Technical MRV gaps for multi-ecosystem settings.** Complex sites containing multiple habitat types require integrated baselines, indicator-species monitoring, and approaches capable of accommodating ecological variability, which are not yet fully developed. • **Risk of supply-driven development without buyer articulation.** Valuation studies and ecological assessments exist, but demand signals remain weak, raising concerns that supply may advance faster than market readiness, undermining project bankability.	• Strengthen governance engagement and harmonization to streamline pilot implementation • Prioritize national-level demand building (top-down approach) and mapping for nature credits • Invest in and test MRV frameworks in pilot sites, improving methods (e.g., drawing from T-VER) to cover wider ecosystem and biodiversity outcomes. • Differentiate additionality pathways for protected and unprotected sites to reflect their distinct opportunities for demonstrating net-new conservation and management gains.
Priority Activities	• **Cultivate early demand from national and sector-level companies.** Engaging larger corporates early can align nature-credit offerings with their disclosure requirements and nature-positive commitments, building a cohort of potential early adopters and strengthening market confidence. • **Advance landscape-based crediting across RFI sites.** Clustering ecologically similar or geographically proximate wetlands can generate scale, reduce MRV costs, and better meet buyer expectations for landscape-level outcomes and impact comparability. • **Strengthen MRV systems for biodiversity outcomes**. Standardizing methods around indicator species, migratory flyway alignment, and landscape-level baselines will be essential for ensuring credit quality and long-term durability. • **Formalize community stewardship in credit design.** Co-management mechanisms, alternative livelihood programs, and community fisheries groups should be incorporated to secure social license and support permanence of conservation outcomes. • **Clarify policy, tenure, and governance arrangements.** Work with relevant ministries to improve clarity around credit ownership, participation modalities, and institutional roles within existing legal frameworks, supporting pilot implementation and future scaling.	• Build on Thailand's carbon market design experience, particularly its governance, verification, and stakeholder engagement systems, to support the effective piloting of nature credits. • Institutional and policy reforms should accompany pilot implementation to ensure scalability and long-term market credibility. • Anchor early credits with committed corporate buyers by familiarizing them with nature-credit mechanisms and helping them understand how credits can fit within their sustainability portfolios, thereby reducing hesitancy and building market confidence. • Embed community roles in nature credit project designs to secure social license. • Explore clustered landscape pilots to achieve buyer relevance (increased scale and stronger landscape narratives)

IX. Roadmap for Nature Credits

This section sets out a roadmap for advancing nature credit development in Thailand, translating the findings from the enabling environment assessment, site-level viability analysis, and stakeholder consultations into practical and sequenced actions. The roadmap is structured around three thematic areas: (A) Enabling Environment Recommendations, (B) Data, Capacity, and Technical Needs, and (C) Phased Piloting Plan. Together, these actions aim to support the emergence of a credible, functional, and scalable nature credit ecosystem aligned with Thailand's biodiversity, climate, and development priorities.

A. Enabling Environment Recommendations

Thailand's policy frameworks provide strong strategic endorsement for biodiversity conservation and nature-positive finance, but stakeholder consultations highlighted that operational clarity and institutional coordination remain key constraints. Advancing nature credits will therefore require targeted policy refinement and clearer institutional arrangements to move from intent to implementation. Key priorities include:

- **Strengthen the policy and regulatory architecture for nature credits,** either by creating a policy and framework specific to nature credits, or potentially integrating the concepts within the draft Biodiversity Act, and issuing complementary guidance on land tenure, credit ownership, benefit-sharing, and claims. Stakeholders emphasized that early clarity in these areas is critical for investor confidence and community participation.
- **Empower a lead coordinating institution such as the likes of ONEP**, building on existing mandates rather than creating new structures. Clear role definition across national agencies and improved vertical coordination with provincial and local authorities are needed to reduce fragmentation and procedural bottlenecks.
- **Ensure coherence across biodiversity, climate, and sustainable finance policies**, drawing on lessons from Thailand's carbon market governance and relevant international best practices, as well as green economy initiatives to avoid parallel or conflicting systems.

These measures aim to establish a predictable and transparent enabling environment that supports both early pilots and longer-term scaling.

B. Data, Capacity, and Technical Needs

Stakeholder discussions underscored that technical readiness is not only a data challenge, but also a capacity and coordination challenge across buyers, project implementers, and public institutions. While Thailand has relevant experience from carbon markets and ecological monitoring initiatives, nature credits require broader engagement and more integrated systems.

- **Strengthen early buyer readiness and market understanding,** through early engagement with large companies, financial institutions, and multinational firms. Consultations highlighted the need to align nature credit 'attributes' with corporate commitments under the TNFD, SBTI, etc.
- **Build capacity among supply-side actors**, including government agencies, protected area managers, community organizations, and project developers. Priority areas include project bankability, return-on-investment modeling, ecosystem valuation, and long-term stewardship responsibilities.
- **Develop and/or harmonize MRV systems**, extending beyond carbon to biodiversity and ecosystem services. Stakeholders emphasized linking new methodologies to existing systems where possible, while developing ecosystem-specific indicators and baselines suited to wetlands, coastal areas, and multi-habitat landscapes.

- **Improve coordination and accessibility of ecological data**, including biodiversity, habitat condition, and ecosystem service datasets held across agencies. Field validation/assessments were repeatedly identified as essential to complement desktop assessments and ensure integrity in site selection and baseline setting.
- **Invest in targeted training and institutional capacity building**, spanning national and subnational government, financial institutions, and community actors, to support effective implementation, monitoring, and governance of nature credit projects.

Together, these actions aim to reduce technical and capacity bottlenecks, strengthen governance credibility, and ensure both demand- and supply-side readiness.

C. Phased Piloting Plan

Stakeholders consistently emphasized the value of a phased, learning-by-doing approach to piloting nature credits in Thailand. Rather than immediate large-scale deployment, pilots should be used to test design choices, governance arrangements, and market response under real-world conditions.

- **Identify priority pilot landscapes**, focusing on sites or clusters where ecological significance, institutional readiness, community stewardship, and potential demand align most strongly. Landscape-based aggregation was highlighted as a practical strategy to improve scale and efficiency.
- **Engage potential buyers early in the pilot design process**, to test demand, understand scale and pricing expectations, and refine credit attributes before full project structuring.
- **Pilot differentiated credit archetypes**, including restoration and maintenance and protection approaches, tailored to site conditions and legal status, with explicit testing of additionality and permanence assumptions.
- **Demonstrate co-benefits beyond biodiversity**, such as water security, flood regulation, and livelihood resilience, to strengthen the value proposition for both public and private investors.
- **Capture and disseminate lessons from pilots**, focusing on governance effectiveness, community engagement, technical feasibility, and market uptake, to inform replication and scaling to other conservation areas beyond the RFI portfolio.

Works Cited List

Jarungrattapong, R., Mahasuweerachai, R., & Nabangchang, O. (2016). Payment for ecosystem services in Thailand and Lao PDR (EEPSEA SRG Report No. 2016-SRG3). Economy and Environment Program for Southeast Asia. https://www.academia.edu/26823998/Payment_for_Ecosystem_Services_in_Thailand_and_Lao_PDR

World Bank. (2024). Corporate governance assessment of listed companies on the Stock Exchange of Thailand: Enhancing resilience through ESG integration (Report No. P179597). https://documents1.worldbank.org/curated/en/099032624052515227/pdf/P1795971dc58270671bd9e1114d45321c25.pdf

Birot, V. (2025). Thailand's Bio-Circular-Green Economic Model. Lex Nova Partners. Accessed on 26 November 2025 https://lexnovapartners.com/thailands-bio-circular-green-economic-model/#elementor-toc__heading-anchor-2.

Mungkarndee, R., & Nantananate, D. (2023). Thailand's developments in promoting biodiversity: 2023 updates. Lexel. Retrieved on December 17, 2025. https://lexel.co.th/thailands-developments-in-promoting-biodiversity-2023-updates/

Office of Natural Resources and Environmental Policy and Planning. (2022). Thailand's long-term low greenhouse gas emission development strategy (Revised version). United Nations Framework Convention on Climate Change. https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf

Wachpanich, N. (2024). Thailand turns to mangrove carbon credits despite skepticism. Dialogue Earth. Accessed on: November 26, 2025. https://dialogue.earth/en/nature/thailand-turns-to-mangrove-carbon-credits-despite-scepticism/

Wachpanich, N. (2024). Thailand turns to mangrove carbon credits despite scepticism. Dialogue Earth. Accessed on: November 26, 2025. https://dialogue.earth/en/nature/thailand-turns-to-mangrove-carbon-credits-despite-scepticism/

UN Human Rights Office. (2025, September 24). Thailand: UN Human Rights Office welcomes new law on ethnic groups, urges recognition of the rights of Indigenous Peoples. OHCHR Regional Office for South-East Asia Bangkok. Accessed on: November 26, 2025. https://bangkok.ohchr.org/thailand-new-law-ethnic-groups

PTTEP. (n.d.). PTT Reforestation Stories. Retrieved from: https://www.pttplc.com/en/Sustainablegrowthforall/Planet/Planet.aspx

PTTEP. (n.d.). Mangrove Reforestation Project. Retrieved from: https://sustainability.pttep.com/en/projects/23/mangrove-reforestation-project

Stewardship Commons. (n.d.). Conserving Thailand's river basin for water security. Retrieved from: https://www.stewardshipcommons.com/article/arjaree-suwangool/2024/10/21/conserving-thailand-s-river-basin-for-water-security

SeaChange 2030. (2025). Ecosystem Restoration. Retrieved from: https://www.seachangesustainability.org/en/for-planet/ecosystem-restoration

Thai Union Group. (2023). Thai Union and The Nature Conservancy Partnership Progress Review: Year 1 Public Report. Retrieved from: https://www.thaiunion.com/files/download/sustainability/20230116-tu-tnc-partnership-report-year.pdf

Bangkok Post. (2025). Thai Union Secures $150M ADB Blue Loan for Sustainability. Retrieved from: https://www.bangkokpost.com/thailand/pr/3020930/thai-union-secures-150m-adb-blue-loan-for-sustainability

Thai Union Group. (2025). Thai Union Group Receives Landmark USD 150 Million Blue Loan from Asian Development Bank to Advance Sustainable Shrimp and Climate Goals. Retrieved from: https://www.thaiunion.com/newsroom/business-and-finance-news/thai-union-group-receives-landmark-usd-150-million-blue-loan-from-asian-development-bank-to-advance

Asian Development Bank. (2025). ADB, Thai Union Sign the First Blue Loan for Sustainable Aquaculture in Thailand. Retrieved from: https://www.adb.org/news/adb-thai-union-sign-first-blue-loan-sustainable-aquaculture-thailand

Taskforce on Nature-related Financial Disclosures. (n.d.). TNFD Adopters. Retrieved from: https://tnfd.global/engage/tnfd-adopters-list/

SCGP. (2023). Uniting Power through SCGP 'Plant Beats Heat' Volunteer Development Project to Expand Green Spaces in Kanchanaburi Community Forest for Father's Day and World Soil Day. Retrieved from: https://www.scgpackaging.com/en/news/scgp-plantation-2023-en

SCG. (2022). Growing Trees to Mitigate Global Warming Connecting Communities, Expanding Green Space. Retrieved from: https://www.scgsustainability.com/en/growing-trees-to-mitigate-global-warming-connecting-communities-expanding-green-space-en/

Toyota Asia. (2025). Toyota Continues Its Commitment to Mangrove Reforestation for the 18th Consecutive Year. Joining Forces Across Sectors Toward a Sustainable Carbon Neutrality Goal. Retrieved from: https://www.toyota-asia.com/news/LZpPr6wPJ9

Toyota Asia. (2025). The "Cheewa Panavet" Biodiversity and Sustainability Learning Center, located at Toyota's Ban Pho Plant, has been designated as a pilot site for the OECMs biodiversity conservation initiative. Retrieved from: https://www.toyota-asia.com/news/51rYN2XYKb

Toyota Asia. (2024). Toyota joins IUCN in convening Asia's conservation community as Forum Partner for the 8th Asia Regional Conservation Forum. Retrieved from: https://www.toyota-asia.com/news/63RYbGePbA

Seafood Source. (2023). CP Foods, Nichirei initiate mangrove restoration project in Thailand. Retrieved from: https://www.seafoodsource.com/news/environment-sustainability/cp-foods-nichirei-initiate-mangrove-restoration-project-in-thailand

Nichirei. (n.d.). Inochi-no-Mori Project. Retrieved from: https://nichirei.disclosure.site/en/themes/224

Nestlé (Thai) Ltd. (2025). The 10th anniversary of the "Nestlé Waters Cares for Water" project achieving the goal of regenerating clean water for communities and enhancing biodiversity while becoming a model in Thailand. https://www.nestle.co.th/en/media/pressreleases/nestlewaters2025

Nestlé (Thai) Ltd. (2024). Nestlé collaborates with ONEP on biodiversity conservation, aiming to achieve global OECMs targets. Retrieved on December 17, 2025. https://www.nestle.co.th/en/media/pressreleases/mou-biodiversity

Nestlé (Thai) Ltd. (2021). Nestlé Thailand announces roadmap to net zero greenhouse gas emissions by 2050. Retrieved on December 17, 2025. https://www.nestle.co.th/en/media/pressreleases/nestle-roadmap-to-net-zero

Mitr Phol Group. (2025). TNFD 2025. Retrieved from: https://sustainability.mitrphol.com/wp-content/uploads/2025/09/Mitr-Phol-TNFD-Report-2025.pdf

Bangkok Post. (2025). Mitr Phol Oasis Secures Farmers' Future with Water. Retrieved from: https://www.bangkokpost.com/thailand/pr/3113397/mitr-phol-oasis-secures-farmers-future-with-water

Dow Inc. (2023). Volunteering at the core of a healthy mangrove forest in Thailand. Retrieved on December 17, 2025. https://corporate.dow.com/en-us/news/seek-together/dow-volunteers-in-thailand-mangrove-forests.html

Dow Thailand Group. (2020). Dow joins forces with DMCR in Mangrove Plantation for Carbon Credits. Retrieved on December 17, 2025. https://th.dow.com/en-us/news/press-releases/dow-joins-forces-with-dmcr.html

Dow Thailand Group. (2020). Dow joins forces with DMCR in Mangrove Plantation for Carbon Credits. Retrieved on December 17, 2025. https://th.dow.com/en-us/news/press-releases/dow-joins-forces-with-dmcr.html

World Bank. (2025). World Bank Supports Thailand's Blue Economy Ambitions with Innovative Financing and Coastal Protection Plans. Retrieved from: https://www.worldbank.org/en/news/press-release/2025/09/01/-world-bank-supports-thailand-s-blue-economy-ambitions-with-innovative-financing-and-coastal-protection-plans

Thailand Government Public Relations Department. (2023). Get to know the "Thailand Voluntary Emission Reduction Program (T-VER)". Retrieved from: https://www.thailand.go.th/event-detail/001_04_051

Thailand Greenhouse Gas Management Organization. (2025). Presentation: From Carbon to Nature – Lessons from Market-Based Mechanisms.

ONEP. (2022). Thailand State of Environment Report 2021. Office of Natural Resources and Environmental Policy and Planning. https://www.onep.go.th/ebook/spd/environmental-quality-management-plan-2023-2027-abridged-edition.pdf

National Science and Technology Development Agency. (2021). BCG model: Fostering sustainable development in Thai economy. Ministry of Higher Education, Science, Research and Innovation. nstda.or.th/en/images/pdf/BCG_Booklet1.pdf

TGO. (2022). Thailand Voluntary Emission Reduction Program (T-VER): Program Overview. Thailand Greenhouse Gas Management Organization. https://tver.tgo.or.th/

Ministry of Natural Resources and Environment. (2023). Thailand Long-Term Low Greenhouse Gas Emission Development Strategy (LT-LEDS). https://unfccc.int/sites/default/files/resource/Thailand%20LT-LEDS%20%28Revised%20Version%29_08Nov2022.pdf

World Bank Group. (2022). Thailand country climate and development report. World Bank. https://documents1.worldbank.org/curated/en/099100425072524077/pdf/P507208-2599e589-4b1c-4b01-b275-b097c729582a.pdf

Thailand Taxonomy Board. (2023). Thailand taxonomy phase 1. Securities and Exchange Commission, Thailand. https://www.sec.or.th/TH/Documents/LawsandRegulations/ResourceCenter/Thailand_Taxonomy_Phase1_Jun2023_EN.pdf

United Nations Development Programme. (2012). Project document: Integrated community-based forest and catchment management through an ecosystem service approach (CBFCM). https://info.undp.org/docs/pdc/Documents/THA/78499_4033_Thailand_Community_Based_Prodoc_August_%202011%20(signed).pdf

Office of Natural Resources and Environmental Policy and Planning. (2021). National report on the implementation of the Ramsar Convention on wetlands: Thailand (COP14). Ramsar Convention Secretariat. https://www.ramsar.org/sites/default/files/documents/importftp/COP14NR_Thailand_e.pdf

Good, M. (2025, June 9). Charting a smarter ocean future for Thailand. World Bank Blogs. Retrieved on December 11, 2025. https://blogs.worldbank.org/en/eastasiapacific/charting-a-smarter-ocean-future-for-thailand

National Science and Technology Development Agency (NSTDA). (n.d.). Thailand's vision and national policy: BCG model. Retrieved on December 11, 2025, from https://www.nstda.or.th/thaibioeconomy/why-bioeconomy/thailand-vision-national-policy.html

Tang, T. K. K., Engstrom, D., & Srakaew, S. (2017). Community partnerships for the prevention of the worst forms of child labor among migrant children in Samut Sakhon, Thailand. The Journal of Sociology & Social Welfare, 44(4), 63–84. https://doi.org/10.15453/0191-5096.3854

THAIest. (n.d.). Mahachai Market. Retrieved on December 11, 2025. https://thaiest.com/blog/maha-chai-market

Suppapan, J., Songrak, A., Phinrub, W., Meesook, W., & Supmee, V. (2024). Genetic diversity of blue swimming crab (Portunus pelagicus) from a crab bank project and wild crabs in Trang and Krabi Province, Thailand using mtDNA control region sequences. Journal of Fisheries and Environment, 48(2), 94–111. https://doi.org/10.34044/j.jfe.2024.48.2.08

Southeast Asian Fisheries Development Center. (2022). Fisheries Country Profile: Thailand 2025. Retrieved on December 2, 2025. https://www.seafdec.org/fisheries-country-profile-thailand/

Plaiphum, S., & Tansuchat, R. (2023). Cultural capital of sea salt farming in Ban Laem District of Phetchaburi Province as per the Globally Important Agricultural Heritage Systems (GIAHS). Sustainability, 15(15), 11947. https://doi.org/10.3390/su151511947

TrendEconomy. (2024). Thailand | Imports and exports | World | Salt, pure sodium chloride, sea water | Value (US$) and value growth, YoY (%) | 2012 - 2023. Retrieved on December 15, 2025. https://trendeconomy.com/data/h2/Thailand/2501

Plaiphum, S., & Tansuchat, R. (2023). Cultural capital of sea salt farming in Ban Laem District of Phetchaburi Province as per the Globally Important Agricultural Heritage Systems (GIAHS). Sustainability, 15(15), 11947. https://doi.org/10.3390/su151511947

Arora, S. (2024). Top 10 most developed provinces in Thailand (Excluding Bangkok). The Thaiger. Retrieved on December 11, 2025. https://thethaiger.com/travel/thailand-travel/top-10-most-developed-provinces-in-thailand-excluding-bangkok

International Lake Environment Committee (ILEC). (n.d.) World Lake Database: Bung Boraphet. Retrieved on December 11, 2025. https://wldb.ilec.or.jp/Display/html/3536

Sriwongsitanon, N., Surakit, K., Hawkins, P. R., & Chandrasena, N. R. (2006, October). Planning for wise-use of Bung Boraphet wetland's water resources. [Conference paper]. 3rd APHW Conference on "Wise Water Resources Management Towards Sustainable Growth and Poverty Reduction," Bangkok, Thailand. https://www.researchgate.net/publication/229151403_Planning_for_Wise-Use_of_Bung_Boraphet_Wetland's_Water_Resources

Global Environment Facility. (2020). Cooperation for coexistence in Thailand. Retrieved on December 10, 2025. https://www.thegef.org/news/cooperation-coexistence-thailandhttps://truesustainability.info/sustainability/wp-content/uploads/2025/06/True-Biodiversity-Approach_May2025.pdf

True Corporation. (2025, May). True Biodiversity Approach. Retrieved on December 10, 2025. https://truesustainability.info/sustainability/wp-content/uploads/2025/06/True-Biodiversity-Approach_May2025.pdf

Bangkok Post. (2018). Drought fears soars as Monsoon to End, Retrieved on December 11, 2025. https://www.bangkokpost.com/thailand/general/1545958/drought-fears-soar-as-monsoon-to-end

Thailand Tourism Directory. Huai Jorakhe Mak Reservoir. Retrieved on December 11, 2025. https://thailandtourismdirectory.go.th/en/attraction/2527

Tourist Landmarks. (2025, September 15). Bueng Boraphet wetlands. https://touristlandmarks.com/landmarks-bueng-boraphet-wetlands_gulf-of-thailand

Thai PBS World. (2024). Beauty and majesty: Admiring endangered sarus cranes in Buri Ram. Retrieved on December 11, 2025. https://world.thaipbs.or.th/detail/beauty-and-majesty-admiring-endangered-sarus-cranes-in-buri-ram/572

Thailand Greenhouse Gas Management Organization. (n.d.). Standard T-VER Database and Statistics. Retrieved from: https://tver.tgo.or.th/database/public/projects/1/1?lang=en

Thailand Greenhouse Gas Management Organization. (n.d.). Premium T-VER Database and Statistics. Retrieved from: https://tver.tgo.or.th/database/public/projects/2/1?lang=en

Thailand Greenhouse Gas Management Organization. (2025). Presentation: From Carbon to Nature – Lessons from Market-Based Mechanisms.

Verra. (n.d.). Verified Carbon Standard Registry. Retrieved from: https://registry.verra.org/app/search/VCS/All%20Projects

Global Carbon Council. (n.d.). GCC Carbon Registry. Retrieved from: https://registry.spglobal.com/gccregistry/public/gcc

American Carbon Registry. (n.d.). Public Reports. Retrieved from: https://acr2.apx.com/myModule/rpt/myrpt.asp?r=111

Gold Standard. (n.d.). Impact Registry. Retrieved from: https://registry.goldstandard.org/projects?q=&page=1

Verra VCS Registry. (n.d.). THAMMA RAKSA – Reforestation and Land Restoration in Thailand. Retrieved from: https://registry.verra.org/app/projectDetail/VCS/3581

X. Appendices

Appendix 1. Comparative Landscape of Carbon and Nature Credits

Aspect	Carbon Credit	Nature Credit
Conceptual Framing	Carbon as an Impact - Emissions need to be reduced or removed	Nature as an Asset - Delivers wide array of ecosystem services - treated as natural capitals
Risk Framing	Climate Risk (often in terms of Physical and Transition Risk from carbon-intensive activities)	Nature Risk (Water Scarcity, Species Extinction, Supply Chain Disruptions, etc.)
Environmental Concerns	Carbon Emissions - One of the drivers of climate change	Nature Loss - Often entails ecosystem degradation, biodiversity decline, loss of natural capital
Core Objective	Climate Change Mitigation through Emission Removal, Reduction, and Avoidance	Protection, Restoration and Stewardship of Natural Ecosystems and Biodiversity
Unit of Trade	1 metric ton of CO_2 equivalent avoided or removed	Usually outcome or area-based (e.g. hectares conserved or protected, species preserved); No consistent unit that could be used in registries, pricing, or comparisons.
Metrics	Established Carbon Accounting Methodologies	Typically valued through ecosystem services, biodiversity metrics, or ecological outcomes/health
Existing International Treaties and Agreements	Paris Agreement Task Force on Climate-Related Financial Disclosures	Convention of Biological Diversity, Ramsar Convention, Convention on Migratory Species, Convention on International Trade in Endangered Species of Wild Fauna and Flora, etc.
Market Maturity and Governance	Mature markets with established standards (Compliance and Voluntary Markets)	Emerging market with evolving methodologies and standards (Largely voluntary but is currently being integrated into emerging frameworks (e.g. Task Force on Nature Financial Disclosures)
Demand Drivers	Compliance with regulations, voluntary offsetting, ESG Goals, Net Zero Commitments, Climate Strategies, and Energy Transition	Tied to Nature-positive and ESF Goals, Value Chain Resilience, Sustainable Land and Water Use
Buyers	Corporates, Financial Institutions, Governments	Corporates (ecosystem-dependent supply chains), ESG and Governments, and some NGOs
Supply Sources	REDD+, Renewable Energy, Methane and Carbon Capture, etc.	Ecosystem restoration and protection, and species conservation
Permanence	Long-term Carbon Storage	Long-term Ecosystem Health and Protection
Co-benefits	Nature and Social benefits including biodiversity	Carbon and Social benefits

Aspect	Carbon Credit	Nature Credit
Fungibility	Accepted as Fungible	Limited Fungibility
MRV Complexity	Developed MRV system; Highly standardized, technology-enabled monitoring	Multi-metric and Complex MRV systems (basket of metrics); Complex, multispectral ecological assessments, site-specific
Registries	Well-established registries (e.g., Verra's VCS, Gold Standard) that enable credit issuance, tracking, and transfer with standardized protocols	Emerging registries under development or pilot phases (e.g., New South Wales (NSW) Biodiversity Stewardship Credit Registers, ICVCM Nature Credits, Plan Vivo Registry, Accounting for Nature's pilot Nxt.Nature registry and other regional biodiversity registries); Lack of standardized units and protocols complicate integration and market transparency
Risk and Reversal Management	Buffer pools, insurance mechanisms standard	Buffer pools / reversal protocols to be introduced
Temporal Credit Window	Annual issuance with vintage year	Crediting tied to health improvements and protection duration; guidance on intervals needed
Challenges	Additionality, Permanence, Double Counting, Greenwashing Claims	Fungibility, Lack of Valuation Standards, Limited Market Scope (often locality-specific)

Appendix 2. Characterization of Thailand RFI Sites

RFI Site	RFI Area (ha)	Conservation Status/ Funding Source	Management Stakeholders	Key Ecosystem Services[64]	Primary Economic Activities	Key Drivers of Change to Wetland[65]
Bang Pu Coast	385	Protected Area; Flyway Network Site; Nature Reserve	Royal Thai Army, Bang Pu Mai subdistrict government, DMCR, WWF, FEED, local communities, tourists	Regulating (climate, erosion), Provisioning, Cultural (recreation, tourism)	Tourism, fisheries, and nearby Industrial Areas	Pollution from aquaculture and industries upstream, coastal erosion, sea-level rise, dams
Bueng Boraphet	46,120	Protected Area; Ramsar site; Has designated Non-Hunting Area	DWNP, District governments (Mueang Nakhon Sawan, Tha Tako, Chum Saeng), RID, Tourism operators, local communities	Provisioning (freshwater), Regulating, Recreational	Fisheries, Tourism, and Agriculture	Habitat degradation, pollution from agriculture and industries
Huai Chorakhe Mak Reservoir	631	Protected area	DWNP, Buri Ram Provincial Government, Mueang Buri Ram district government, ZPOT, agriculture & irrigation departments	Provisioning (water, food), Regulating (flood mitigation), Cultural (tourism)	Agriculture, Fisheries, Livestock, Tourism	Agricultural intensification, invasive species, climate change (droughts)
Khlong Tamru (Bang Pakong)	3,000	Not formally protected area; but ongoing conservation effort to lobby for Ramsar site registration	Department of Water Resources, DMCR, Bang Pakong River Basin Committee, Khlong Tamru TAO	Regulating (flood, water quality), Cultural (recreation, heritage)	Industrial activities in watershed (factories), Fisheries, Agriculture, Transport/Urban Development	Industrial & wastewater pollution, infrastructure expansion, land use change
Khong Yai	30,146	No formal protection both at local and national	Khlong Yai town & Tambon government, DMCR, DWR, ONEP, fishery cooperatives, BCST	Provisioning (food), Regulating (storm, erosion), Cultural (knowledge, education)	Coastal fisheries, Aquaculture, Tourism, Shipping-Related Commerce, Small-Scale Agriculture	Ports, shipping lanes, canals, tourism infrastructure
Khok Kham Salt Pans	13,718	Flyway Network Site Part of the site lies within Pantai Norasingh Non-hunting Area managed by the Department of National Parks,	Samut Sakhon Provincial Government, Khok Kham & Pantai Norasingh subdistrict govts, DMCR, ONEP, Khok Kham Birding Club, BCST	Provisioning (food), Regulating (air quality, erosion), Cultural (recreation, education)	Salt Production, Aquaculture, Fisheries, Tourism (Birdwatching), Small-Scale Agriculture	Household sewage, urban wastewater, industrial/military effluents, invasive species, tourism

[64] Stakeholders' Perception through the RFI Workshop (Wetland Threats based on Ramsar Management Effectiveness Tracking Tool)
[65] Selected High to Medium Impact Activities causing or may cause Changes to the RFI Site/Wetland (from RFI Site Draft Concept Report)

RFI Site	RFI Area (ha)	Conservation Status/ Funding Source	Management Stakeholders	Key Ecosystem Services[64]	Primary Economic Activities	Key Drivers of Change to Wetland[65]
		Wildlife and Plant Conservation				
Ko Libong Non-Hunting Area and Hat Chao Mai National Park	276,000	Protected Area, Ramsar Site, ASEAN Heritage Park	DWNP, Trang Provincial Government, Sikao & Kantang amphoe governments, Department of Fisheries, Tourism, Moklen communities	Provisioning (food, water), Cultural (recreation, tourism, knowledge)	Fisheries, Ecotourism, Small-Scale Aquaculture, Seaweed Harvesting, Local Agriculture	Commercial/industrial activities, erosion, siltation, aquaculture, tourism, water extraction
Krabi River Mouth	133,799	Ramsar Site, Flyway Network Site, Forest Reserve Most of intertidal marine parts of the site are within the Krabi Environmental Protected Area	Department of Aquatic Resources, DMCR, ONEP, Krabi Provincial & Mueang Krabi District Governments, Department of Fisheries, Royal Forest Department, BCST	Provisioning (food), Regulating (climate), Cultural (heritage, aesthetics)	Capture Fisheries, Tourism, Aquaculture, Port/Urban Commerce, Agriculture In Watershed	Commercial/industrial areas, erosion, hydrological connectivity loss, housing, tourism, infrastructure development
Pak Nam Prasae	10,783	No formal management	Klaeng district government, Pak Nam Prasae TAO, DMCR, Department of Fisheries, Department of Water Resources, BCST	Provisioning (food), Regulating (climate), Cultural (heritage, recreation)	Mangrove-Related Fisheries, Aquaculture, Coastal Agriculture, Tourism	Mangrove loss due to aquaculture, invasive species, erosion, sedimentation
Pak Thale-Laem Phak Bia Coast	8,666	Protected area, Flyway Network Site, Important Bird & Biodiversity Area	DMCR, ONEP, Ban Laem sub-district govt, Bird Conservation Society, Thai Wetlands Foundation, LEED, Royal Forest Department	Provisioning (food), Cultural (heritage, tourism)	Salt Farming, Aquaculture, Coastal Fisheries, Birdwatching Tourism	Dams, droughts, erosion, fishing, waste, housing, tourism infrastructure, climate impacts (sea-level rise)
Phang-nga Bay	42,253	Protected Area (Marine National Park), Flyway Network Site	DNP, DMCR, Ethnic groups: Moken & Moklen	Provisioning (food, medicine), Regulating (erosion), Cultural (tourism, sense of place)	Marine Fisheries, Tourism Aquaculture, Local Handicrafts	Restoration/tourism infrastructure, fishing, harvesting, solid waste, housing, aquaculture, shipping lanes
Sanam Bin Reservoir	603	Protected Area; Non-Hunting Area	DWNP, Department of Water Resources, Prakhon Chai TAO, Buri Ram provincial government	Provisioning (freshwater, food), Regulating (flood mitigation), Cultural (recreation, education)	Reservoir Fisheries, Irrigated Agriculture, Livestock	Housing & settlement development, tourism/recreation, livestock grazing, agriculture

Appendix 3. Thailand Carbon Market Context: T-VER Forestry and Blue Carbon Projects

Standard T-VER projects in the forestry sectoral scope total 152 as of end Q3 2025, with 17 of those projects having been issued a total of over 575,000 carbon credits since their inception. If all 152 projects successfully generated their forecasted emissions reductions and removals, TGO estimates an aggregate GHG reduction potential of over 980,000 tCO_2e annually. Of specific interest in gauging the viability of an RFI nature crediting scheme are the Standard T-VER projects established in mangrove forests. Twenty-five mangrove reforestation projects have been registered under the program, covering a total area over 4,630 hectares and with combined annual GHG reductions totaling just under 200,000 tCO_2e (based on projections).[66] Under the Premium T-VER program, 8 forestry projects have been registered, with 3 classified as Mangrove Reforestation and another 3 classified as Alternate Wetting and Drying (AWD). The expected annual GHG reductions of these blue carbon projects sum to about 18,600 tCO_2e.[67]

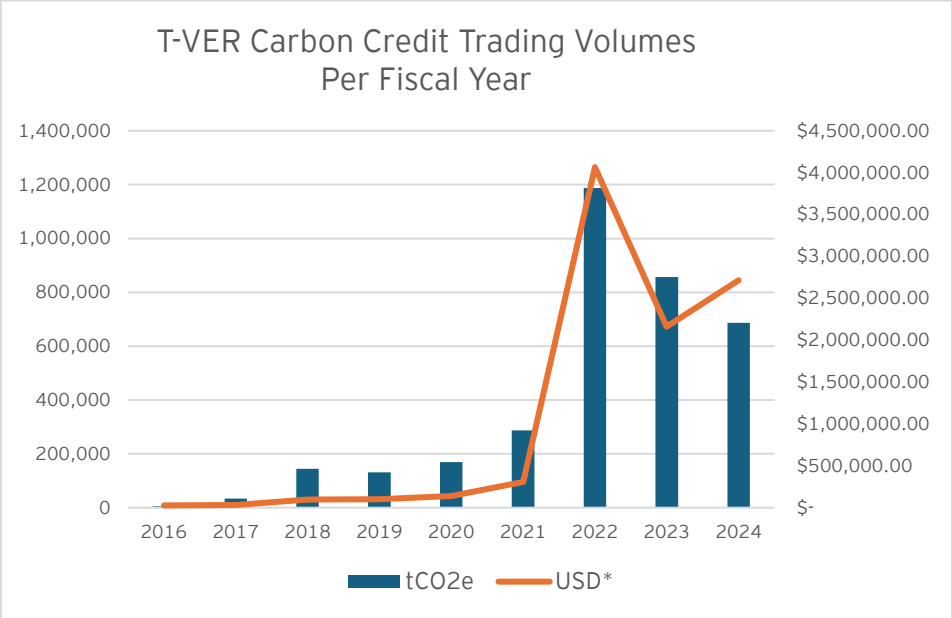


Figure 12. T-VER Carbon Credit Trading Volumes per Fiscal Year, by tCO_2e and USD* (*USD 1.00 = THB 31.60)

Table 12. T-VER OTC Prices for Key Forestry Project Types as of Q3 2025, in USD*[10] (USD 1.00 = THB 3.61)

Project Type	Min Price	Max Price	Avg Price
ARR	US$1.74	US$94.94	US$9.72
P-REDD+ (project level REDD+)	US$33.77	US$63.29	US$35.18

The historical Standard T-VER transaction volumes (Figure 12) demonstrate a robust foundation of market demand over the recorded period of nine years (from 2016 to 2024), with trading volumes peaking in both tCO_2e and USD value metrics in 2022 but remaining well above 2021 levels in the succeeding years. Further years may be observed in order to arrive at more sound conclusions on whether domestic T-VER appetite can be sustained over a longer time period. Table 12 displays the minimum, maximum, and average historical prices for T-VER credits originating from key project types

[66] Thailand Greenhouse Gas Management Organization. (n.d.). Standard T-VER Database and Statistics. Retrieved from: https://tver.tgo.or.th/database/public/projects/1/1?lang=en
[67] Thailand Greenhouse Gas Management Organization. (n.d.). Premium T-VER Database and Statistics. Retrieved from: https://tver.tgo.or.th/database/public/projects/2/1?lang=en

within the forestry sectoral scope. Noting that no distinction between Blue Carbon and non-Blue Carbon is made within these price figures, P-REDD+ (project-level REDD+) commands the highest market price per tCO_2e among all the listed project types across all sectoral scopes (RE, Transport, Energy Efficiency, Industrial Emissions, Waste, AFOLU, and CCUS). Average ARR T-VER prices stand well above those of other project types as well, being over double the average price for biogas projects, six times the average price of solar RE projects, and over triple the average price of waste management projects.[68] It is unclear whether the price discrepancy between the two forestry project types is purely a result of market perceptions of quality and attractiveness as offsetting instruments, or due to the relative scarcity of P-REDD+ credits (with the price data based on approximately 48,000 credits traded over-the-counter) compared to ARR credits (price data based on approximately 324,000 credits traded over-the-counter).

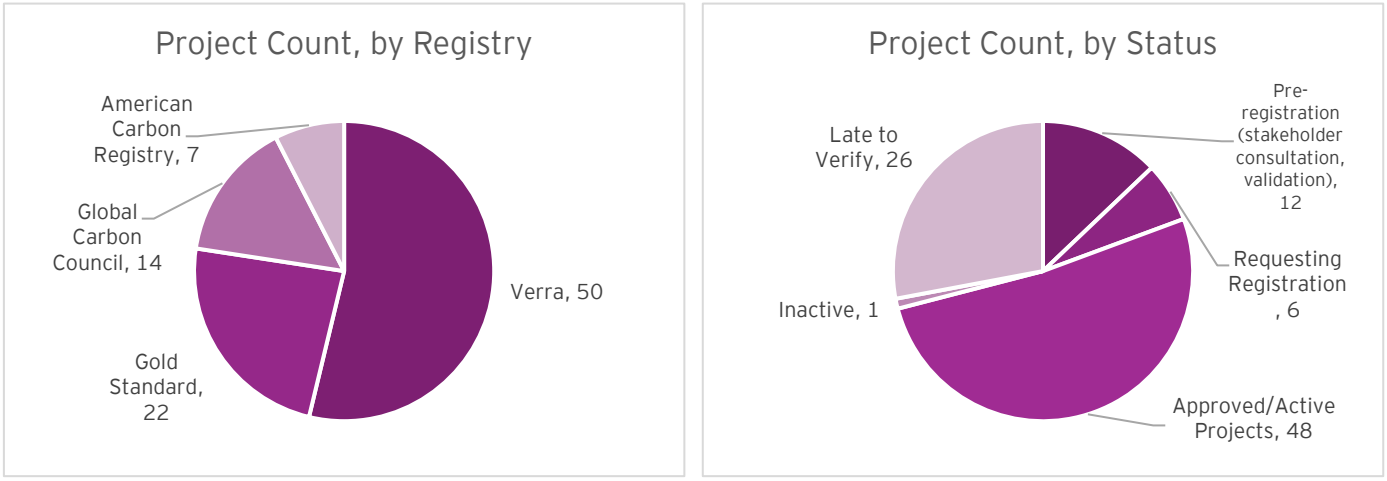


Figure 13. Count of Carbon Projects in Thailand across major Registries, by Registry and by Status

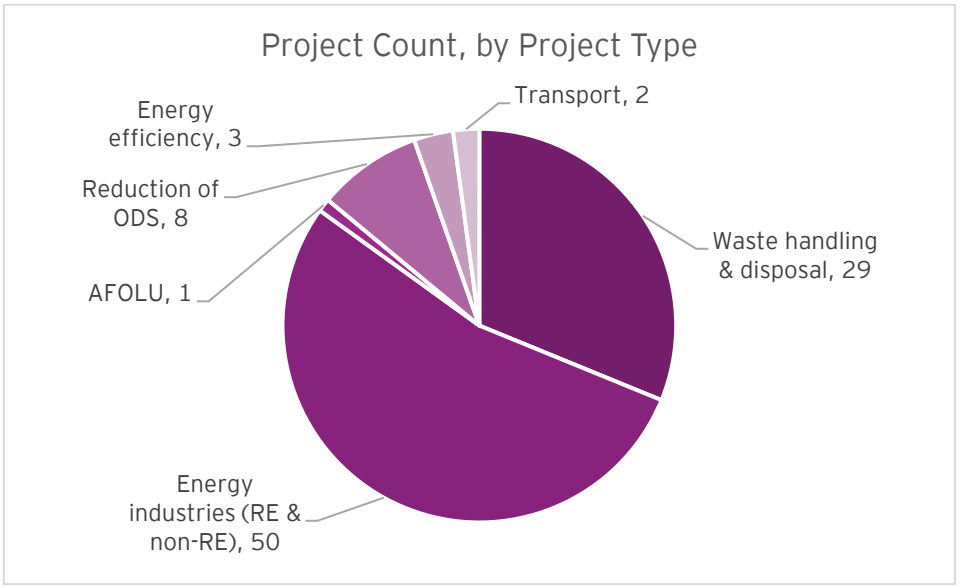


Figure 14. Count of Carbon Projects in Thailand across major Registries, by Project Type

[68]Thailand Greenhouse Gas Management Organization. (2025). Presentation: From Carbon to Nature – Lessons from Market-Based Mechanisms.

With respect to projects in Thailand that have been registered with major international carbon crediting standards (Figure 13)[69,70,71,72],the data reveals a concentration of projects in four programs. Verra houses more than half of all pipeline projects and actively registered (non-rejected, non-withdrawn) projects in Thailand. Across the four programs, projects within the Energy Industries sectoral scope dominate, with Waste Handling & Disposal projects also representing a significant share of all projects (Figure 14). The AFOLU project count notably stands at just one project, which is registered in Verra's Verified Carbon Standard. Launched in 2016 in Thailand's Isan region, the THAMMA RAKSA initiative utilizes agroforestry to rehabilitate degraded land and enhance farmer resilience. It utilizes ARR methodology AR-AMS0007: Afforestation and reforestation project activities implemented on lands other than wetlands. By integrating tree planting into existing rice paddies, the project diversifies local incomes while restoring vital ecosystem services. Between 2016 and 2020, over 505,000 trees were planted across Yasothon, Surin, Sisaket, Buriram, and Ubon Ratchathani. Designed as a scalable grouped project focused on carbon mitigation and education, it is structured to expand these restorative efforts from the northeast to provinces nationwide.[73] However, a barrier exists: THAMMA RAKSA also happens to be the singular project classified as "Inactive," with no publicly available documents on the Verra VCS registry.

Despite the absence of viable nature-based carbon credits in Thailand from international carbon crediting standards, strong market uptake, pricing (especially relative to other project types), and project development under the forestry and blue carbon sectors of Standard T-VER and Premium T-VER suggest a durable domestic appetite for nature-derived offsets. Precedents already exist within the aforementioned programs for project development, and successful credit issuance, in wetland ecosystems, particularly reforestation and afforestation of mangrove stands. Nature M&P and restoration projects and their resultant Nature Credits would likely be able to establish a lasting foothold in the existing Thai market due to their similarities to prevailing ARR and P-REDD+ project types, and the additional appeal of their ability to function as both offsets and contribution claims depending on market and regulatory circumstances. Due to the positive nature outcomes represented by Nature Credits being highly adjacent to carbon reductions and removals, it is likely that only relatively minor adaptations will be needed on the part of domestic market participants to adjust to an alternative market-based mechanism and crediting framework. Multinational conglomerates and medium-to-large domestic companies alike that sought T-VER carbon credits for voluntary offsetting purposes may find value in the supply chain resilience and reputational benefits afforded to them by Nature Credits, especially in scenarios where prospective buyer entities have direct (or indirect, value chain-related) dependencies on the wetland ecosystems where the projects might be established in the future.

[69] Verra. (n.d.). Verified Carbon Standard Registry. Retrieved from: https://registry.verra.org/app/search/VCS/All%20Projects
[70] Global Carbon Council. (n.d.). GCC Carbon Registry. Retrieved from: https://registry.spglobal.com/gccregistry/public/gcc
[71] American Carbon Registry. (n.d.). Public Reports. Retrieved from: https://acr2.apx.com/myModule/rpt/myrpt.asp?r=111
[72] Gold Standard. (n.d.). Impact Registry. Retrieved from: https://registry.goldstandard.org/projects?q=&page=1
[73] Verra VCS Registry. (n.d.). THAMMA RAKSA – Reforestation and Land Restoration in Thailand. Retrieved from: https://registry.verra.org/app/projectDetail/VCS/3581

SGV | Building a better working world

SGV is the largest professional services firm in the Philippines. In everything we do, we nurture leaders and enable businesses for a better Philippines. This Purpose is our aspirational reason for being that ignites positive change and inclusive growth.

Our multidisciplinary teams work across a full spectrum of services in assurance, tax, strategy and transactions, and consulting. Enabled by data, AI and advanced technology, we help clients shape the future with confidence and develop answers for the most pressing issues of today and tomorrow.

All in to shape the future with confidence.

SGV & Co. is a member firm of Ernst & Young Global Limited. EY refers to the global organization, and may refer to one or more of the member firms of Ernst & Young Global Limited, each of which is a separate legal entity. Ernst & Young Global Limited, a UK company limited by guarantee, does not provide services to clients.

EY is building a better working world by creating new value for clients, people, society and the planet, while building trust in capital markets. Fueled by sector insights, a globally connected, multidisciplinary network and diverse ecosystem partners, EY teams can provide services in more than 150 countries and territories. Information about how EY collects and uses personal data and a description of the rights individuals have under data protection legislation are available via ey.com/privacy. EY member firms do not practice law where prohibited by local laws. For more information about our organization, please visit sgv.ph.