

PROJECT FINANCE FOR PERMANENCE MODEL SERIES

FULL REPORT

Baseline and Opportunity Analysis of Sustainable Finance Mechanisms for the Project Finance for Permanence Model



KITE

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Disclaimer:

This report draws on third-party inputs and publicly available information on real-world cases of implementation. While reasonable efforts have been made to ensure accuracy, the author does not guarantee the completeness, accuracy, or reliability of such information.

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Executive Summary

The Project Finance for Permanence (PFP) model is designed to secure long-term financial sustainability for conservation initiatives by combining philanthropic capital, public funding, and a diverse mix of Sustainable Finance Mechanisms (SFMs). Recognizing that reliance on traditional SFMs will not meet future ambitions, Enduring Earth has commissioned a consultancy to explore and prototype a broader range of promising SFMs for the partners. This report presents the baseline and opportunity analysis conducted to guide these efforts.

Baseline Assessment of SFMs in the PFP Model

In PFPs, SFMs are used to diversify and secure long-term finance to replace transition capital and/or endowment income in order to sustain the PFP objectives and activities over the long-term.

Across the portfolio of PFPs, deal teams and PFP partners identify and select the right mix of SFMs by considering attributes such as their applicability, volume of resources they may provide, the durability of these resources, their timing, and additionality.

The baseline analysis shows that PFPs have explored a broad suite of SFMs, although their implementation remains limited. Policy-based SFMs, particularly tourism fees and environmental taxes, form the core of current PFP financial strategies. Market-based SFMs, including carbon credits and Payments for Ecosystem Services (PES) are selectively implemented. Non-sovereign finance mechanisms are in early design or exploratory phases, while sovereign finance remains context dependent.

Analysis of Broader SFM Landscape

A review of 123 SFM cases beyond the PFP portfolio identified opportunities to diversify and strengthen PFP financing. Policy-based SFMs remain foundational but depend on robust governance and earmarking to ensure conservation impact. Market-based mechanisms, including biodiversity and nature credits, are evolving, while carbon markets are relatively mature but face integrity and volatility challenges. Non-sovereign SFMs, like blended finance and outcome-based bonds can unlock private and institutional capital but require sophisticated structuring and strong Monitoring, Reporting, and Verification (MRV) systems. Sovereign finance mechanisms, including debt conversions and sustainability-linked bonds (SLBs), can mobilize large-scale funding but are subject to political alignment and macroeconomic conditions that are highly context specific.

Strategic Insights

- No single SFM can fully ensure PFP sustainability, and effective strategies combine proven policy-based mechanisms with emerging market-based and financial instruments to create a diversified sustainable financing strategy.
- Successful implementation requires supportive policy frameworks, institutional capacity, and clear revenue allocation mechanisms.
- New and complex SFMs such as blended finance and outcome-based bonds offer significant potential but should be carefully designed, ensuring alignment with PFP needs and country-specific contexts.
- Effective intermediation and oversight, often through Conservation Trust Funds (CTFs), is critical for effective channeling and allocation of resources.

Strategic SFM Opportunities for the PFP Model

From a strategic perspective, tourism fees and taxes (i.e., core SFMs) remain essential for financial stability and predictability in PFPs. Emergent SFMs, such as blended finance and non-sovereign outcome-based bonds, as well as contextual SFMs, such as PES and carbon credits, represent the primary space for diversification. New models, such as biodiversity credits and Natural Asset Companies (NACs) are also presented as additional opportunities, but for longer-term exploration in line with the development of their respective markets.

Enduring Earth partners prioritized two emergent SFMs for prototyping: non-sovereign outcome-based bonds and blended finance. These mechanisms were chosen for their potential to attract new capital sources (especially private capital), their alignment with PFP structures, and the shared interest in further exploration within the PFP context.

The respective SFM prototypes (provided in separate reports) aim to address persistent challenges in each SFM and develop replicable models that can scale them across the PFP portfolio.

List of Acronyms and Abbreviations

ARR	Afforestation, Reforestation and Revegetation	NBSAP	National Biodiversity Strategy and Action Plan
ART	Architecture for REDD+ Transactions	NDC	Nationally Determined Contributions
BBA	Blue Bond Accelerator	OFA	Outcomes Finance Alliance
BIOFIN	Biodiversity Finance Initiative	ORRAA	Ocean Risk and Resilience Action Alliance
CI	Conservation International	PE	Private Equity
CTF	Conservation Trust Fund	PFP	Project Finance for Permanence
DFI	Development Finance Institution	REDD+	Reducing Emissions from Deforestation and Forest Degradation
EC	European Commission	SDGs	Sustainable Development Goals
GEF	Global Environment Facility	SFM	Sustainable Finance Mechanism
ICMA	International Capital Markets Association	SLB	Sustainability-Linked Bond
ICVCM	Integrity Council for the Voluntary Carbon Market	TFCA	Tropical Forest Conservation Act
IDB	Interamerican Development Bank	TNC	The Nature Conservancy
IFM	Improved Forest Management	TREES	REDD+ Environmental Excellence Standard
ITMO	Internationally Transferred Mitigation Outcome	UNDP	United Nations Development Programme
JREDD+	Jurisdictional REDD+	UNEP-FI	Finance Initiative of the United Nations Environment Programme
MDB	Multilateral Development Bank	VCM	Voluntary Carbon Market
MRV	Monitoring, Reporting and Verification	WCS	Wildlife Conservation Society
MSME	Micro, Small and Medium Enterprises	WEF	World Economic Forum
NAC	Natural Asset Company	WWF	World Wildlife Fund
NbS	Nature-based solutions		



Introduction

Background

Ensuring long-term financial sustainability is central to the Project Finance for Permanence (PFP) model, and a diverse mix of Sustainable Finance Mechanisms (SFMs) is essential to achieving it.

SFMs are processes or arrangements that generate, manage, or deploy financial resources for conservation and social outcomes (Meyers *et al.* 2025; Cruz-Trinidad *et al.*, 2024; and Meyers *et al.*, 2020). To date, PFPs have successfully leveraged traditional SFMs that draw on tourism and extractive use.

PFP teams acknowledge that deploying traditional SFMs in isolation will not be enough to meet the ambitions of the PFP model in the long run and a more structured, diversified, and context-specific approach to SFMs is required.

Enduring Earth is therefore exploring how a broader set of SFMs can be more effectively integrated into PFPs and commissioned a consultancy that aims to accelerate the partners' efforts in exploring further SFMs.

This includes delivering an SFM baseline and opportunity analysis, a series of SFM focus groups, and two prototypes for priority SFMs to support scaling and replication across the PFP portfolio.

Objective of the Baseline and Opportunity Analysis

Together, the baseline and opportunity analyses aim to inform the selection of suitable SFMs for further exploration and development, building on the experience of Enduring Earth Partners and relevant developments in the global SFM market.

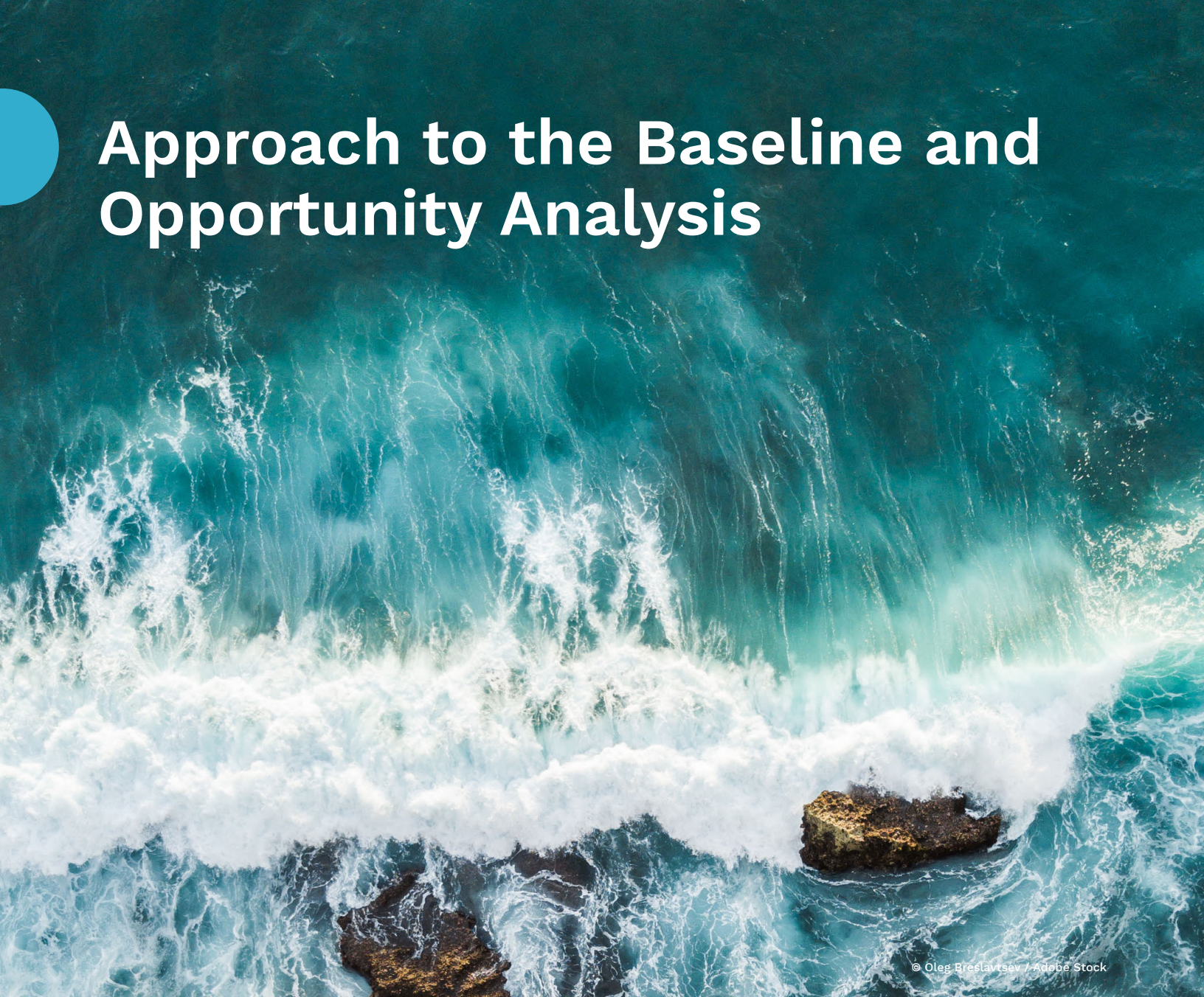
The baseline component focuses on:

- The essential and desired attributes of SFMs within the PFP model.
- The use of past and current SFMs across the PFP portfolio.

The opportunity analysis component identifies:

- Relevant and emerging SFMs beyond the current PFP portfolio.
- General considerations for their alignment with the PFP model.

This work is primarily intended for PFP practitioners, including Enduring Earth partners and implementing organizations. However, the insights may also be relevant to the broader conservation finance community, with the understanding that application to other contexts may require adaptation.



Approach to the Baseline and Opportunity Analysis

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Approach Overview

The baseline and opportunity analyses were developed through a multi-step, consultative process including internal expertise, external market insights, and case-based analysis (Table 1). This combined approach enabled a comparative assessment of SFMs within and beyond the PFP portfolio, as well as the identification of trends, and practical considerations for further design and implementation.

Representatives from the Enduring Earth partnership, The Nature Conservancy (TNC), Pew Charitable Trusts, and World Wildlife Fund (WWF) acted as an SFM Advisory Committee throughout the consultancy. This group provided strategic orientation, validated emerging findings, and ensured alignment with PFP priorities.

Component of Work	Description
Strategic and Technical Oversight	Ongoing guidance from the SFM Advisory Committee, complemented by one-on-one interviews with its members to capture perspectives on SFM use, lessons learned, and strategic priorities across the PFP portfolio.
Review of internal Knowledge Base	Integration of insights from the Enduring Earth Hub and previous analytical work, including the 2024 “SFM analysis sprint” conducted with McKinsey (Enduring Earth, 2024), which systematized information about SFM use and prioritization approaches across PFPs.
Market Consultations	Interviews with the following actors through virtual meetings and in-person exchanges (e.g., RedLAC): - External market actors: Finance Initiative of the United Nations Environment Program (UNEP-FI), United Nations Development Program (UNDP) Biodiversity Finance Initiative (BIOFIN), Conservation International (CI), Wildlife Conservation Society (WCS), Global Environment Facility (GEF), the Nature Based Carbon Fund of Climate Asset Management, and the Interamerican Development Bank (IDB). - Conservation Trust Funds (CTFs): PROFONANPE, FUNBIO, and Coast Funds. - Enduring Earth partners: ZOMALAB, PFP deal teams, and experts from Pew, WWF and TNC (beyond the SFM Advisory Committee).
Systematization into a Database of SFMs	Development of a database of 123 SFM cases beyond PFPs, compiled through expert recommendations and screening of ~60 relevant publications and platforms (e.g., UNDP-BIOFIN’s case studies, and cases in the Revenues for Nature (R4N) Database by the Green Finance Institute’s Nature Program, 2025).
Case Analysis	Systematic documentation of key features by case, including SFM structure, financial flows, actors, and enabling conditions, to inform both baseline insights and opportunity identification.
Strategic Grouping for Prototype Selection	Strategic grouping of SFMs into core, contextual, emergent, and frontier SFMs, based on their strategic potential for Enduring Earth partners and their current level of adoption within the PFP portfolio. Informed by further expert input.

Table 1. Overview of key components of the approach to complete the baseline and opportunity mapping

Review and Analysis of Sustainable Finance Mechanisms

SFM s were analyzed using a practical classification framework. The four SFM categories considered (Table 2) were chosen from a combination of inputs from the SFM Advisory Committee, observed SFM cases, and existing classifications from the literature.

This working classification focuses on relevant categories for potential prototyping in PFPs and does not aim to propose a new comprehensive typology of SFMs. Broad SFM categories relevant to PFPs were chosen to reflect the evolving nature of SFMs while supporting structured comparisons with developments in the PFP portfolio.

Grant-based mechanisms were not included as SFM categories of focus, as they are either part of structural PFP funding (capitalizing PFP transition funds and/or long-term endowments) or play a catalytic role for other mechanisms. Risk-management mechanisms were not assessed because they primarily play an enabling role. Government budgets were also not considered, since these are either part of the PFP co-financing commitments, or a channeling component of policy-based SFMs.



SFM Category	Working Definition	Illustrative Examples (non-exhaustive)
Policy-Based SFMs	Public policy instruments that generate financial flows for conservation through government-mandated charges linked to environmental use or impact. These mechanisms rely on public authority to define, collect, and allocate revenues.	Environmental taxes (e.g., carbon taxes), extractive fees and royalties, and tourism fees.
Market-Based SFMs	Mechanisms that generate financial value from measurable environmental outcomes and enable their exchange through market transactions or contractual arrangements. These mechanisms may be policy-driven but rely on transactions, price signals, and (often) tradable units linked to environmental outcomes.	Biodiversity offsets, biodiversity and nature credits, carbon credits (project-based, jurisdictional), and Payments for Ecosystem Services (PES).
Non-Sovereign Finance	Financing mechanisms that mobilize capital at the level of financial institutions and the private sector through structured vehicles or transactions to finance projects or enterprises.	Debt and equity instruments, blended finance vehicles, impact funds, and outcome- and performance-based finance.
Sovereign Finance	Financing mechanisms in which national governments act as primary counterparties to mobilize or redirect financial flows toward conservation. This can be done by restructuring existing liabilities or issuing new instruments.	Debt conversions and sovereign bonds (e.g., green and blue bonds).

Table 2. Overview of SFM categories used throughout the baseline and opportunity mapping (definitions adapted from Meyers *et al.*, 2020; Meyers *et al.*, 2025; Cruz-Trinidad *et al.*, 2024; UNDP-BIOFIN, 2025; Enduring Earth, 2024)

PFP Baseline of Sustainable Finance Mechanisms

Key Attributes of Sustainable Finance Mechanisms in PFPs

The PFP model relies on a diversified mix of financial sources, combining philanthropic capital, government budget allocations, and a range of supplementary SFMs. Philanthropic and public funds are the backbone of PFP financing, while SFMs are used to diversify and secure long-term finance that either replaces the capital of PFP transition funds that are gradually spent down, or supplement revenues from PFP endowments (Figure 1).

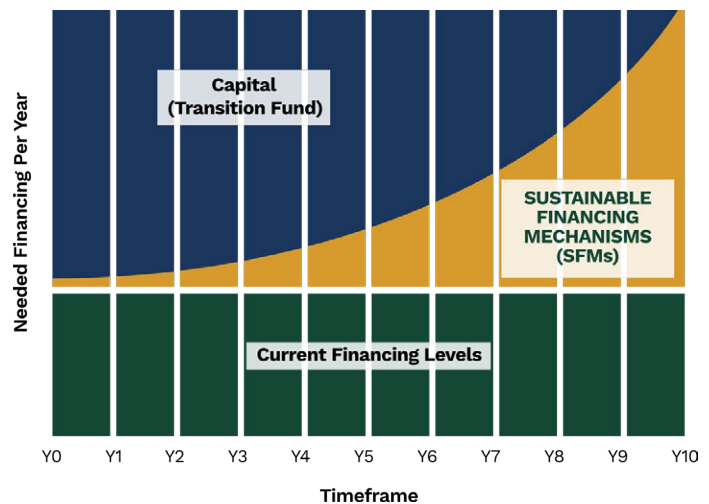


Figure 1. Illustration of the expected funding from SFMs as PFP transition funds are spent down

PFP practitioners describe the following SFM attributes among the most important to identify and select the right mix of SFMs in a PFP:

- **Applicability:** SFMs that fit the context of the respective PFP geography and directly address PFP cost categories.
- **Volume:** SFMs that generate funds (either alone or in combination with other SFMs) in amounts sufficient to compensate for the transition fund's spend-down.
- **Durability:** SFMs that generate funds or reduce costs over a long-term horizon.
- **Timing:** SFMs that generate funds with the frequency required to meet PFP needs.
- **Additionality:** SFMs that generate additional funds and/or attract new sources of finance beyond those already committed to the PFP.

In practice, SFMs may be implemented through different arrangements. While channeling funds through the PFP's designated administrator (e.g., a CTF) supports accountability and tracking, alternative channels may be used if additionality, applicability, and contributions to PFP costs are clearly demonstrated. Otherwise, such flows are not typically accounted for as core PFP funding.

Overview of Sustainable Finance Mechanisms in PFPs

Across the portfolio of PFPs, deal teams have identified and screened a broad suite of SFMs, reflecting increasing efforts to strengthen long-term financial sustainability from earlier stages of PFPs. However, SFM implementation remains relatively limited, with most mechanisms still at the stage of prioritization, evaluation, design, or early testing (Figure 2). At the portfolio level, several consistent patterns emerge across SFM categories:

Policy-based SFMs are the Most Widely Used and Foundational

Policy-based mechanisms are the most consistently prioritized and implemented SFMs across PFPs. For example, all PFPs in the planning stage have prioritized tourism fees for evaluation and design. The strong alignment of these SFMs with government-led processes, their ability to generate predictable and durable revenue streams, and their direct link to sectors benefiting from conservation (e.g., tourism, fisheries, forestry, etc.) make them particularly suitable for PFPs.

Environmental taxes have been selectively explored in PFPs, including proposals to allocate new carbon tax revenues (e.g., Bolivia) and existing eco-tax mechanisms (Colombia). However, implementation has faced challenges related to inter-ministerial coordination and execution of earmarked funds, highlighting the importance of institutional design.

Other examples include tourism fee systems implemented in Peru and Mongolia, as well as ongoing efforts to optimize or introduce fees in as well as ongoing efforts to optimize or introduce fees in several other PFPs across the portfolio.

PFPs are also exploring voluntary, private sector-led models, such as proposed per-visitor fees developed in partnership with tourism operators (e.g., a proposed voluntary cruise passenger fee in one marine-focused PFP), as a complementary approach to traditional government-mandated systems.

Market-based SFMs are Selectively Implemented, yet Frequently Explored

Market-based SFMs have also been increasingly prioritized during the planning-stage PFPs, but the mechanisms and approaches selected in each case vary greatly as their feasibility depends on enabling conditions such as regulatory frameworks, data availability, and market access.

- Carbon credits have been implemented in Peru and are increasingly explored in other PFP jurisdictions, but the suitable implementation approaches vary depending on enabling policy frameworks. This includes a jurisdictional REDD+ (JREDD+) proposal in Bolivia and consideration of a nested approach in countries where project-level carbon activities may be integrated within a broader national or subnational accounting framework.

- National PES mechanisms are operational in Costa Rica and Peru, representing mature and well aligned market-based approaches in PFP geographies. While each model builds on context-specific policies and institutional structures to generate and channel

funds, they illustrate the potential for PES to operate in alignment with, and potentially be integrated into, PFPs.

- Biodiversity credits and offsets are under consideration in several PFPs but remain largely at early stages and project pilots.

- ✓ SFM implemented
- ⊗ SFM in active design

Policy-Based	Levies on sustainable use (e.g., tourism fees)	✓
	Extractive fees, royalties, permits, eco-taxes	✓
	Biodiversity compensation/offsets	✓
Market-Based	Carbon credits	✓
	Biodiversity/nature credits	⊗
	Payments for ecosystem services	✓
Sovereign Finance	Debt conversions	✓
	Green/blue bonds	⊗
Non-Sovereign Finance	Impact/outcome bonds	⊗
	Blended finance	✓

Figure 2. SFMs in design and implementation across Enduring Earth's PFP portfolio

Non-sovereign SFMs are Growing in Interest, but in Early-stage Design and Exploration

Blended finance is widely prioritized across planning-stage PFPs, but implementation remains limited despite extensive blended finance experience of partner NGOs beyond PFPs (see *Blended Finance* section in the *Opportunity Analysis*).

Blended finance structures such as the Belize Artisanal Fisheries Loan Program (2024) are emerging as mechanisms to advance PFP objectives, while generating sustainable finance for key actors in the PFP. The Belizean example provides access to tailored loans from a Development Finance Institution (DFI) that support local livelihoods, improve fishing practices and incentivize legal compliance, directly addressing relevant components of the PFP conservation plan. Further exploration and tailoring of this or other blended finance models are still required for financial scalability, replicability and applicability across PFPs (a blended finance prototype for PFPs is provided as a supplement to this report, building on the assessment and selection of this SFM described in the section on *Strategic Opportunities for the PFP model*).

Outcome-and performance-based finance is emerging as an innovative but complex mechanism. Outcome-based mechanisms, such as the proposed Eastern Tropical Pacific (ETP) bond (multilateral-led model) and Coast Funds' salmon impact bond (Special Purpose Vehicle (SPV) model), illustrate emerging efforts to link financing

to verified conservation outcomes. PFP practitioners perceive this as a promising model based on its potential to fund direct conservation costs, and the capacity of PFPs to deliver outcomes at scale (an outcome-based bond prototype for PFPs is provided as a supplement to this report, building on the assessment and selection of this SFM described in the section on *Strategic Opportunities for the PFP model*).

Sovereign SFMs Offer High Financial Impact, yet are Subject to Parallel Political Cycles

Sovereign finance mechanisms are utilized in PFP jurisdictions, but their formal integration into PFP planning remains context-specific, reflecting dependence on macroeconomic conditions and political priorities that may not always align with the PFP lifecycle.

Bilateral debt swaps have been successfully implemented in Costa Rica and Peru, providing large-scale, outcome-linked financing.

Debt conversion transactions have also been completed in other PFP countries (e.g., Belize and Gabon), but these transactions preceded PFP initiatives. PFP teams are therefore actively exploring ex post alignment with pre-existing commitments, work plans and structures in the respective transactions to promote programmatic and financial synergies.

Sovereign bonds have been prioritized in a handful of PFPs but not yet implemented in the model due to political shifts, and limited market readiness, among others.

Lessons from Sustainable Finance Mechanism Assessment and Implementation in PFPs

The review of SFMs in the PFP portfolio and interviews with PFP practitioners and SFM experts offer several key lessons to inform the selection and development of SFMs across the PFP portfolio:

Building on Proven and Context-Appropriate Mechanisms

PFP experience suggests that established policy-based SFMs offer reliable pathways to implementation and revenue generation. These mechanisms are often already embedded in national systems and can be adapted or optimized to support PFP objectives.

Adopting a Diversified Approach

No single SFM can ensure financial sustainability. Effective strategies combine multiple mechanisms across categories, balancing short-term reliability with longer-term innovation. In practice, this means prioritizing a core set of feasible mechanisms, while progressively exploring more complex or emerging instruments over time.

Leveraging PFPs to Enable SFMs

SFM viability depends primarily on country-specific enabling conditions, including policy frameworks, institutional coordination, governance systems, and political support. Challenges observed across PFPs, such as difficulties in channeling tax revenues, implementing tourism fees, or advancing sovereign instruments, highlight the importance of clear allocation mechanisms,

inter-institutional coordination, and robust governance structures.

PFPs can play a catalytic role in strengthening these enabling conditions by providing structured planning processes, inter-institutional alignment, and long-term financing and conservation commitments.

As many SFMs require time to design and implement, early integration into PFP development is critical to improve feasibility, alignment with national systems, and long-term effectiveness.

Being Selective and Realistic with Market-based and Innovative Mechanisms

While there is strong interest in carbon markets and biodiversity credits, these mechanisms require technical capacity and favorable market conditions. Their integration into PFPs should therefore be targeted and opportunistic, rather than assumed as core revenue sources. PES mechanisms, particularly those supported by public schemes, can provide more established pathways where enabling conditions are in place and the required institutional arrangements can ensure that funds flow towards objectives and activities of the PFP conservation plan.

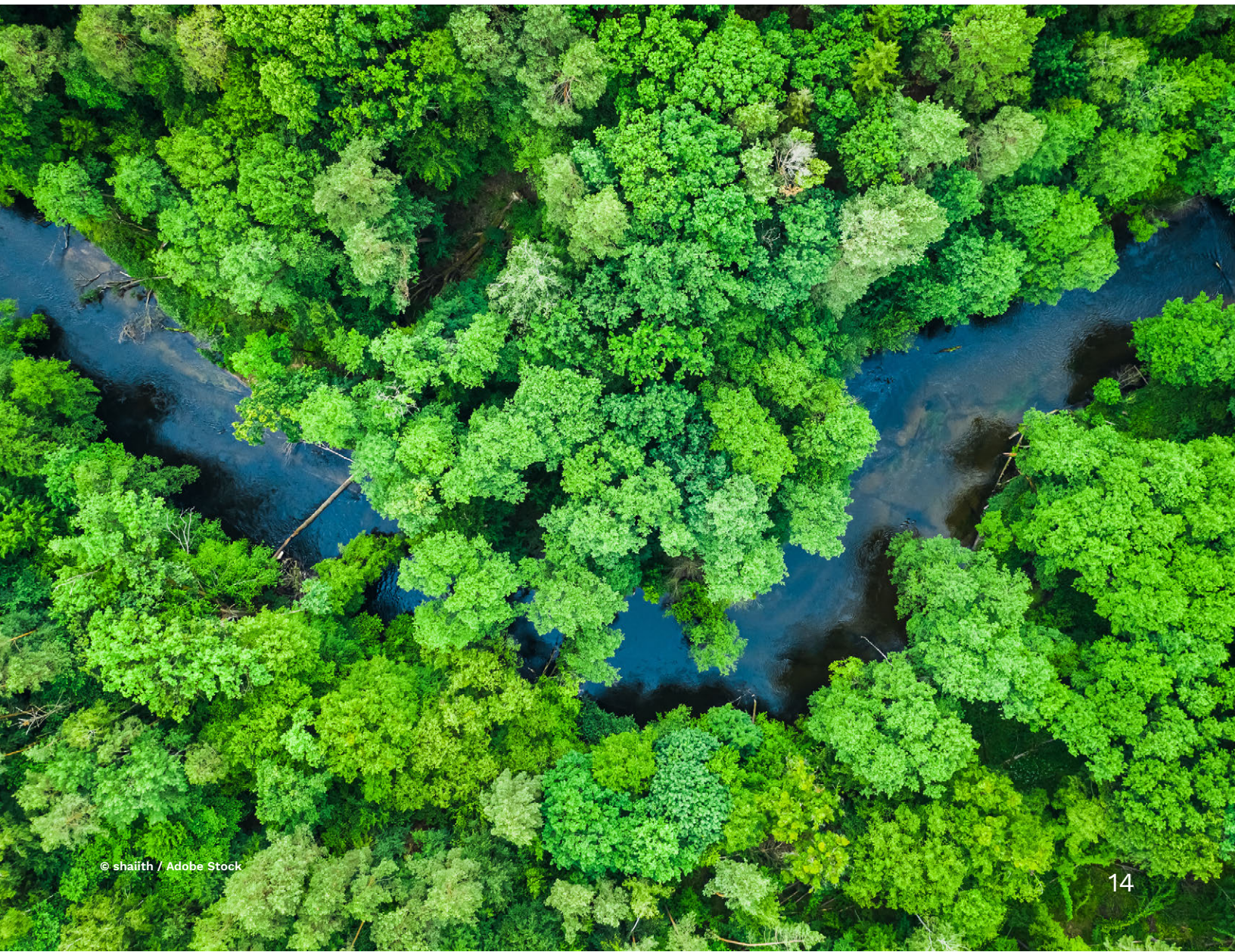
Ensuring Clear Allocation, Channeling, and Accountability of Financial Flows

Experience across PFPs shows that even when SFMs are implemented, the financial resources generated are not always clearly channeled to PFP priorities or systematically tracked.

This emphasizes the importance of transparent allocation mechanisms, clear institutional roles, and strong accountability frameworks. Whether management through national government budgets, CTFs, or

other entities (e.g., investment fund, public funds, enterprises, community organizations, etc.), clarity and alignment on funds flows, earmarking, and monitoring are necessary to support effective SFM contributions towards PFP objectives.

Overall, the baseline suggests that PFPs can build on a foundation of proven, policy-aligned mechanisms, while adopting a pragmatic, phased approach to innovation, grounded in country-specific realities and institutional readiness.



Opportunity Analysis: Broader Landscape of Sustainable Finance Mechanisms

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A large inventory of 123 cases of SFMs being explored or implemented beyond the portfolio of PFPs was compiled through a combination of interviews and desk review of documentation. As shown in the map below (Figure 3), the identified cases covered a wide scope of geographies and types of SFMs. The following sections by SFM category describe the main findings from the review of opportunities beyond the portfolio of PFPs, building on a combination of SFM case analysis, interviews and documentation review.

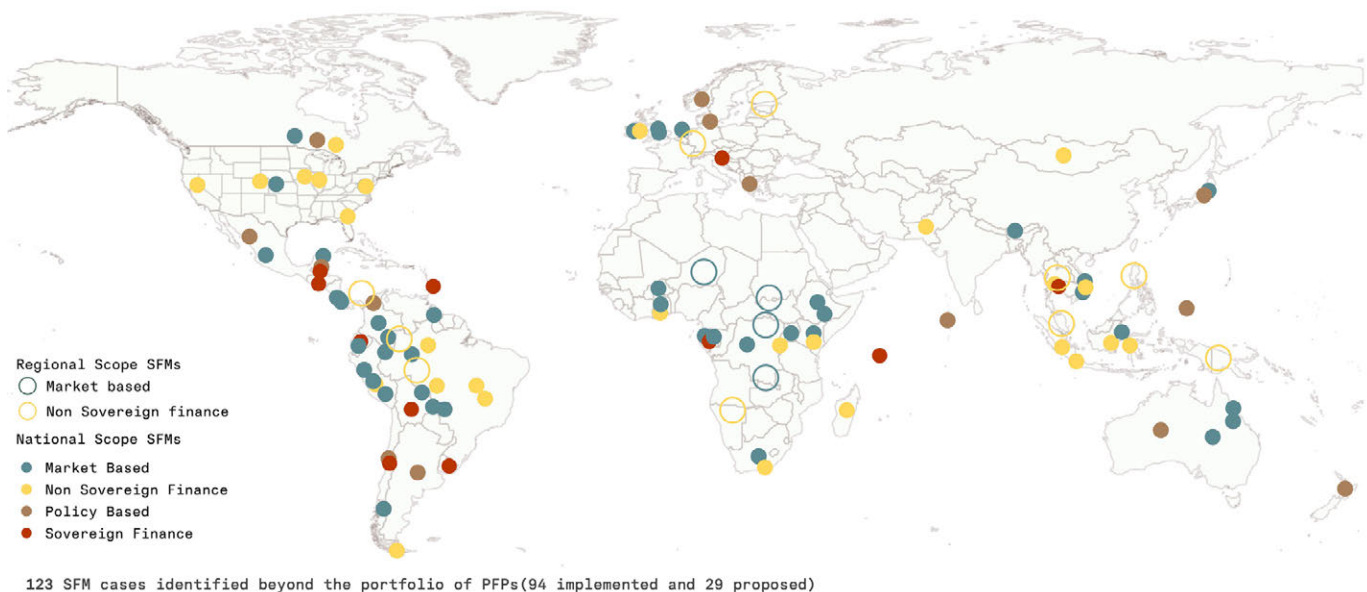


Figure 3. Overview of identified SFM cases of implementation and proposals beyond the portfolio of PFPs (illustrative, non-exhaustive)

Broader Landscape of Policy-Based Mechanisms

Cross-cutting Insights on Policy-based SFMs

- Policy-based SFMs are established and scalable mechanisms, which can potentially generate large, predictable, and long-term public revenues.
- They are strongly dependent on public governance, policy design, and institutional capacity and coordination.
- Earmarking remains a systemic challenge, requiring strong political commitment.
- Channeling funds may require dedicated vehicles or structures (e.g., conservation funds) for effective earmarking and allocation.

The review of opportunities identified three main types of policy-based SFMs:

- A. Environmental taxes
- B. Extractive fees and royalties
- C. Tourism fees

Tourism fees are presented as a distinct category due to their prominence and widespread use within PFPs, although conceptually they are part of broader fee categories.

A. Environmental Taxes

Key insights on Environmental Taxes

- Environmental taxes offer potential for large and predictable revenue streams.
- Political sensitivity across economic sectors.
- Persistent earmarking challenges may limit direct conservation impact.

Description of Environmental Taxes

Environmental taxes are mandatory payments levied on activities with negative environmental impacts, such as greenhouse gas emissions, pollution, or resource extraction. These are typically based on the polluter pays principle and serve a dual purpose (Meyers *et al.*, 2020; Meyers *et al.*, 2025):

- Generating public revenue.
- Incentivizing behavioral change by increasing the cost of environmentally harmful activities.

Key Actors in Environmental Tax Systems

- National governments and ministries of finance and environment, responsible for tax design, collection, and allocation (e.g., Colombia, Chile, Norway).
- Legislative bodies, which establish tax frameworks and earmarking provisions.
- Public financial management institutions and conservation funds (e.g., CTFs or statutory funds), which may receive and manage earmarked revenues.
- International organizations and technical partners (e.g., international NGOs, development banks), supporting policy design and implementation.

Market Developments and Trends in Environmental Taxes

Environmental taxes are well-established instruments globally, particularly in the form of carbon taxes and pollution levies. Countries such as Chile, Argentina, Mexico, Norway, Japan and Canada have implemented carbon taxes targeting emissions-intensive sectors, reflecting a broader trend toward integrating environmental externalities into fiscal systems.

Since revenues from environmental taxes traditionally flow into general government budgets, they are often difficult to earmark for nature-related purposes (Meyers *et al.*, 2025). While there are countries, such as Costa Rica or Colombia, where portions of fuel, carbon, or other environmental taxes have been allocated to public conservation funds and environmental programs, experiences shared by practitioners suggest that this model may face persistent political, institutional, and administrative challenges to ensure effective financial flows in the long term (as also noted in the section on the *Overview of SFMs in PFPs*).

Further input from consultations highlights the importance of early design of these mechanisms, including establishing a strong legal basis for earmarking, defining clear allocation and channeling arrangements, and securing stakeholder alignment.

In the PFP context, independent CTFs acting as PFP administrators can play a role in accounting, reporting and tracking co-financing commitments that flow through other channels (e.g., channeling of tax revenues through public budget allocation), helping ensure transparency and additionality of financial flows.

B. Extractive Fees and Royalties

Key insights on Extractive Fees and Royalties

- Extractive fees offer potential alignment with conservation outcomes, particularly where fees are structured to reflect environmental impacts or restoration costs.
- Revenue volatility, depending on commodity prices and extraction levels.
- Revenues are not always allocated to conservation despite their potential.

Description of Extractive Fees and Royalties

Extractive fees and royalties are payments linked to the use or extraction of natural resources, such as timber, minerals, or hydrocarbons. These mechanisms are typically based on the user pays principle, meaning that payments are conditional on resource use (Meyers *et al.*, 2025).

Extractive fees and royalties are generally more conducive to earmarking or direct allocation to conservation purposes relative to taxes, as they are linked to specific resource use and are often designed in combination with management objectives for those resources (Meyers *et al.*, 2025).

Key Actors in Extractive Fee and Royalty Models

- National and subnational governments, particularly ministries of finance, mining, and environment.
- Extractive industry companies, as primary payers of royalties and fees.
- Regulatory agencies, responsible for licensing, monitoring, and enforcement.
- Conservation funds or public agencies, which may receive earmarked revenues.
- Civil society organizations and international partners, supporting transparency and accountability.

Market Developments and Trends in Extractive Fees

Extractive fees and royalties are long-standing instruments in resource-rich economies (e.g., Australia, Chile), often earmarked for a wide range of public purposes (e.g., broader economic development, health, education, etc.) As previously described (see Overview of SFMs in PFPs), PFPs are actively exploring this type of earmarking and allocation to support conservation plans. However, in practice, earmarking for conservation remains more commonly observed in fee-based mechanisms directly linked to protected areas, particularly those associated with tourism.

C. Tourism Fees

Key insights on Tourism Fees

- Tourism fees offer strong and distinctive revenue-conservation linkages compared to other policy-based SFMs, which can enhance public acceptance.
- Successful implementation and impact depend on clear policy frameworks, adequate pricing, effective enforcement, effective and efficient channeling of funds, and stakeholder engagement.
- Revenue generation depends on tourism demand, making funding sensitive to external shocks.
- Tourism fees can be more politically acceptable when borne by (international) visitors but may still raise concerns about competitiveness and demand impacts in the tourism sector.

Description of Tourism Fees

Tourism fees are charges levied on visitors in exchange for access to natural areas or tourism-related services, including protected area entry and activity fees, arrival and departure fees (e.g., airline or cruise passenger levies), accommodation levies, and activity-based fees (Meyers *et al.*, 2020; Meyers *et al.*, 2025).

These mechanisms are typically based on the user pays principle and are often directly linked to conservation services, making them more suitable for earmarking and reinvestment in protected areas or local communities.

While most tourism fees are government-mandated, they may also include voluntary or partnership-based arrangements with private sector actors, which may complement public fee-based systems.

Key Actors in Tourism Fee Systems

- Governments and protected area authorities, responsible for fee design, collection, and allocation.
- Tourism industry stakeholders (e.g., airlines, hotels, tour operators), potentially involved in fee collection and implementation (e.g., airline ticket levies).
- CTFs and protected area administrators, managing and deploying revenues.
- Local communities and indigenous peoples, as beneficiaries and key stakeholders in tourism systems.
- International NGOs and partners (e.g., WWF, TNC, Pew), supporting design, policy engagement, and implementation.

Market Developments and Trends in Tourism Fees

Tourism fees represent one of the most widely used policy-based SFMs in conservation (within and beyond PFPs),

particularly in nature-dependent economies. Within this group, Small Island Developing States (SIDS) provide various examples where governments have shifted towards earmarked and purpose-driven tourism fees, linking them directly to conservation outcomes (Inamdar & Edwards, 2026):

- Palau's Pristine Paradise Environmental Fee, generating dedicated funding for marine conservation and environmental management.
- Bonaire's dual system of visitor entry and nature fees, supporting national parks and sustainability initiatives.
- The Maldives' green tax, financing environmental protection and infrastructure.

- Jamaica's Tourism Enhancement Fund, funded by passenger levies and supporting environmental and tourism-related investments.

Earmarking of revenues to conservation remains a persistent challenge (as in other policy based SFMs), but tourism fees more frequently incorporate predefined allocation mechanisms, and their direct link to nature benefits enables public and high-level political support. The use of CTFs and/or other types of independent oversight is highlighted as a strategy to enhance transparency, accountability and further acceptability (Inamdar & Edwards, 2026).



Broader Landscape of Market-Based Mechanisms

Cross-cutting Insights on Market-Based SFMs

- Market-based SFMs operate in diverse stages of market maturity: biodiversity and nature credits remain nascent, carbon markets are relatively mature and undergoing adaptation in response to integrity concerns, and PES include established public models and variable private development.
- Across market-based SFMs, market growth increasingly relies on robust MRV systems, standardization and integrity initiatives to build trust and sustain demand.
- Corporate demand is evolving towards increasing emphasis on high-quality, Nature-based Solutions (NbS) with co-benefits.
- While being market-based structures, these SFMs are greatly dependent on enabling policy frameworks.

The review of opportunities identified three main types of market-based SFMs with potential relevance for PFPs:

- A. Biodiversity and nature crediting mechanisms
- B. Carbon credits
- C. PES schemes

These mechanisms differ in maturity, scale, and degree of standardization, but share common features: reliance on Monitoring, Reporting and Verification (MRV), increasing emphasis on environmental integrity and co-benefits, and growing interest from private sector buyers. At the same time, they remain highly dependent on enabling policy frameworks and public finance support, particularly in the nature space, where market fundamentals are less developed than in climate finance (Opel, 2025).



A. Biodiversity and Nature Crediting Mechanisms

Key insights on Biodiversity and Nature Crediting Mechanisms

- Strong market interest in biodiversity and nature credits (voluntary model), but practical application requires capacity building, regulatory alignment, and (often) pilot development.
- Demand is emerging, but supply pipelines, methodologies, and standards are still developing.
- Integration with carbon certification (e.g., co-benefits) may help build early demand and familiarity.
- Robust MRV, governance, and safeguards are essential to avoid reputational risks and ensure real biodiversity gains.

Description of Biodiversity and Nature Crediting

Biodiversity and nature crediting mechanisms include both compliance-based biodiversity offsets and voluntary biodiversity/nature credit markets.

- Biodiversity offsets (compliance-based) are regulatory instruments designed to compensate for residual biodiversity impacts from development projects, following the mitigation hierarchy. They aim to achieve “no net loss” or “net gain” of biodiversity, through measurable conservation outcomes that balance

project impacts with restoration or protection activities elsewhere (Forest Trends, 2025a; Meyers *et al.*, 2025; Meyers *et al.*, 2020).

- Biodiversity and nature credits (voluntary) are defined as the development and sale of verifiable, quantifiable units of biodiversity outcomes (e.g., restoration, avoided loss, or maintenance of ecosystems) over a defined time period (WEF, 2025b). These credits represent independently verified nature-positive outcomes, quantified using recognized metrics and designed to mobilize finance beyond compliance obligations (EC, 2025; WEF, 2025a).

A key distinction is that offsets are tied to compensating harm (NatureFinance, 2023), while voluntary credits are intended to finance additional, positive biodiversity outcomes not linked to a specific impact.

Key Actors in Biodiversity and Nature Crediting

- Governments and regulators driving compliance markets and enabling frameworks.
- Standard-setting and convening bodies such as the World Economic Forum (WEF), the Biodiversity Credit Alliance, the International Advisory Panel on Biodiversity Credits (IAPB), and the Business and Biodiversity Offsets Program (BBOP).
- Project developers and intermediaries.
- Financial institutions and corporates

(buyers and investors, including companies seeking nature-positive claims or regulatory compliance).

- Indigenous peoples and local communities as key stewards and beneficiaries, increasingly recognized in integrity frameworks.

Market Developments and Trends in Biodiversity and Nature Crediting

Biodiversity offsets represent the more mature segment, with several decades of implementation. Compliance-based examples include long-standing programs such as:

- US mitigation banking (1983).
- Mexico's forest land-use compensation program (2012).
- Australia's BioBanking scheme (2017).
- UK Biodiversity Net Gain credits (2024).

Over time, initiatives such as BBOP have strengthened methodologies, mainstreamed the mitigation hierarchy, and influenced corporate and regulatory practices globally (Forest Trends, 2025b).

In contrast, voluntary biodiversity and nature credit markets are nascent but rapidly evolving. Their development is strongly linked to global policy, particularly Target 19 of the Kunming-Montreal Global Biodiversity Framework, which explicitly calls for leveraging private finance and advancing biodiversity credits (WEF, 2025b). Recent milestones include:

- The High-level Principles to Guide the Biodiversity Credit Market produced by the WEF, the Biodiversity Credit Alliance, and the International Advisory Panel on Biodiversity Credits (IAPB) to establish integrity standards across environmental outcomes, equity, and governance (WEF, 2025b).
- The European Commission (EC) Roadmap towards Nature Credits (EC, 2025), aiming to build standardized methodologies, certification systems, and market infrastructure.
- Growing experimentation with stacked or bundled credits combining biodiversity, carbon, and other ecosystem services (GEF and IIED, 2023; WEF, 2025a).

Illustrative cases of biodiversity and nature credits include:

- Terrasos biodiversity credits (Colombia, 2020).
- Woodland Nature Credits (Ireland, 2022).
- Cassowary Credit Scheme (Australia, 2025).
- Emerging pilots in Peru, Bolivia, Chile, including marine and national-scale approaches.

Despite strong momentum for biodiversity and nature credits, key challenges remain around measurement complexity, standardization, additionality, and market confidence, requiring robust governance and verification systems.

B. Carbon Credits

Key insights on Carbon Credits

- Jurisdictional approaches (JREDD+) closely match PFP structures, requiring government-level commitments and enabling large-scale financing.
- Carbon outcomes do not automatically ensure biodiversity benefits, requiring careful design or integration with biodiversity credits
- Mechanisms are needed to channel and ring-fence carbon revenues toward PFP commitments.
- Engagement with platforms such as LEAF (focused on JREDD+ demand) or Symbiosis (focused on high-quality removal projects) can facilitate market access and/or help de-risk transactions.

Description of Carbon Credits

Carbon credits are tradable units representing one ton of CO₂ equivalent reduced or removed, generated through verified interventions that meet additionality criteria (GEF and IIED, 2023).

They operate across:

3. Compliance markets, governed by regulatory caps.
4. Voluntary carbon markets (VCM), where credits are traded to meet corporate climate commitments.

Two main approaches are relevant for PFPs:

1. Project-based credits, including REDD+ projects, restoration, and energy interventions.
2. Jurisdictional approaches (JREDD+), operating at national or subnational scale, integrating multiple activities into a unified accounting framework.

Key Actors in Carbon Markets

- Standard-setting bodies such as Verra, Gold Standard, Plan Vivo and the Architecture for REDD+ Transactions (ART).
- Multilateral institutions such as the World Bank and the Green Climate Fund.
- Coalitions and platforms, such as LEAF and Symbiosis.
- Project developers, including specialized private companies and, in some cases, NGOs acting as implementing partners.
- Conservation NGOs such as TNC and CI, which may act as developers, technical partners, or intermediaries depending on the context.
- Governments.
- Corporate buyers and investors.

Market Development and Trends in Carbon Markets

Carbon markets are the most mature market-based SFM, with over three decades of development. The VCM expanded primarily in the 2000s and early 2020s, reaching a peak of ~USD 2.1 billion market value in 2021, though still representing a small share of

global emissions (GEF & IIED, 2023). Since then, the market has contracted significantly, declining to approximately USD 535 million in 2024 (Ecosystem Marketplace, 2025). In 2024, the total reported transaction value of the VCM decreased by 29% and the average price declined by 5.5% with respect to the previous year (Ecosystem Marketplace, 2025), largely attributed to integrity concerns (EC, 2025).

REDD+ projects, in particular, have faced persistent challenges around additionality, baseline setting, leakage, permanence, and credibility (GEF and IIED, 2023; EC, 2025).

Following these developments, there is increasing emphasis on high-integrity credits, driven by initiatives such as the Integrity Council for the Voluntary Carbon Market (ICVCM) and its Core Carbon Principles (Ecosystem Marketplace, 2025).

Recent surveys suggest growing demand for NbS, with up to 87% of developers reporting buyer interest in forestry and land-use projects. There are also rising premiums for credits with biodiversity and community co-benefits, reflecting evolving buyer preferences (Ecosystem Marketplace, 2026).

Market dynamics are different across biomes. Forestry and land-use projects continue to dominate transaction volumes, although REDD+ credits have declined in both market share and value in recent years. In contrast, blue carbon projects (e.g., mangrove restoration), Afforestation, Reforestation and Revegetation (ARR), agroforestry and Improved Forest Management (IFM) are gaining prominence.

While blue carbon markets remain relatively small in volume, they have experienced substantial price growth (+257% from 2023 to 2024). Nature-based projects in the ARR and agroforestry categories also saw moderate price increases between 2023 and 2024 (+19% and +22%, respectively). IFM, on the other hand, has seen significant growth in transaction volumes (+242% from 2023 to 2024) (Ecosystem Marketplace, 2025).

Key global frameworks and initiatives shaping the market include:

- Paris Agreement Article 6, enabling the trading of Internationally Transferred Mitigation Outcomes (ITMOs).
- ART's REDD+ Environmental Excellence Standard (TREES) for JREDD+.
- LEAF Coalition, aggregating demand for jurisdictional forest credits (JREDD+).
- Symbiosis Coalition, providing long-term offtake commitments for high-quality nature-based carbon removals.

Relevant illustrative cases include JREDD+ (ART/TREES) implemented in countries such as Guyana (2022) and proposed across multiple jurisdictions globally.¹

Among other market innovations, there is increasing interest in results-based carbon finance programs where multilateral institutions (e.g., the World Bank in Gabon, Costa Rica, Indonesia) or investors (through investment vehicles) provide payments for emission reduction achievements.

¹ See updated ART registry at: <https://art.apx.com>

C. Payments for Ecosystem Services (PES)

Key insights on PES

- PES have strong alignment with local conservation.
- Revenue potential is highly dependent on context, including enabling policy and regulatory frameworks and the presence of identifiable and willing ecosystem service beneficiaries.
- Feasibility is subject to enabling regulatory frameworks, clear land tenure, and a strong base of ecosystem service beneficiaries.

Description of PES

PES are contractual arrangements in which beneficiaries of ecosystem services provide financial incentives to land or resource stewards in exchange for maintaining or enhancing those services (WEF, 2025a). Payments are typically:

- Conditional on verified outcomes.
- Structured through public schemes, private contracts, or hybrid models.
- Focused on services such as water regulation, carbon storage, or biodiversity.

Key Actors in PES

- Governments in design and funding of national PES programs.
- NGOs and local conservation organizations.
- Private sector beneficiaries (e.g., water utilities, agribusiness, corporates, supply chain actors).
- Local communities and landowners as service providers.

Market Developments and Trends in PES

PES is a well-established mechanism, with over 550 initiatives globally.² Scheme sizes vary widely, from small, site-based initiatives (in the USD 100,000 range) to larger programs (exceeding USD 10 million), reflecting the diversity of contexts and designs (WEF, 2025a).

National programs have demonstrated larger-scale implementation (WEF, 2025a) and, in some cases, rely on centralized fund channeling (e.g., to the national treasury). However, these cases may be structurally closer to policy-based SFMs (e.g., fees and taxes) and subject to similar design, implementation, and fund management considerations (see section on *Broader Landscape of Policy-based Mechanisms*).

² Given their specificity, a complete analysis of all these initiatives was not completed in the opportunity mapping. The database of SFM opportunities for PFPs includes an illustrative selection of cases.

Beyond national government-led programs, scaling remains context-dependent. Typical examples include water funds and catchment-based schemes (e.g., Kenya, South Africa, UK), which illustrate the potential for aggregation and scaling where suitable institutional frameworks and payer bases are in place.

Integration with other mechanisms (e.g., linkages to credits, funds, or bonds) is among the key strategies to enhance commercial growth in private models (WEF, 2025a). Examples like the Reef Credit Scheme implemented in Queensland, Australia (2018) and the sale of ocean health benefits to supply chain stakeholders and governments by Oyster Heaven (The Netherlands, 2021), illustrate the potential for hybrid PES-credit approaches.



Broader Landscape of Non-Sovereign Mechanisms

Cross-cutting insights on Non-Sovereign SFMs

- Non-sovereign SFMs offer access to private and institutional capital, but are dependent on clear revenue streams and risk-return profiles, which are typically limited or uncertain in conservation contexts.
- Financial structures are becoming more sophisticated and tailored (e.g., funds, facilities, bonds), yet pipeline limitations, small project sizes, early-stage enterprises, and insufficient MRV continue to constrain scale and replication.
- Linkages to environmental markets (e.g., carbon credits, plastic, water, and potentially biodiversity and nature credits) can support scalability, although these markets remain volatile and still evolving.
- While increasing sophistication and financial structuring can expand financing options, overly complex designs may introduce transaction costs, reduce transparency and risk diluting the primary objective of financing conservation outcomes.

The review of opportunities identified three main types of non-sovereign SFMs with potential relevance for PFPs:³

- A. Debt and equity financing
- B. Blended finance
- C. Outcome-and performance-based finance

These categories are not mutually exclusive. Debt and equity instruments often serve as the underlying financial structures within blended and outcome- and performance-based finance SFMs. The distinction used here reflects their primary structuring logic (e.g., source of capital, use of concessional finance, or linkage to outcomes), while acknowledging that in practice these approaches are frequently combined.

Across these categories, SFMs differ in their risk-return profiles, sources of capital, and degree of linkage to conservation outcomes.

³ While non-sovereign use-of-proceeds bonds belongs in this SFM category, these are not reviewed further due to limited availability of cases with potential PFP alignment. Sovereign bond issuances are, however, described in the respective sections below.

A. Debt and Equity

Key insights on Debt and Equity

- Debt and equity instruments can finance underlying economic activities within conservation landscapes.
- Since capital must be repaid or generate returns, the extent to which these instruments provide additional conservation finance is often unclear.
- Many conservation projects lack the scale, revenue stability, or risk profile required to attract debt or equity investment.
- Emerging models such as Natural Asset Companies (NACs) offer potential pathways to better align financial and ecological value, although further piloting and transaction experience are needed.

Description of Debt and Equity

Debt and equity instruments represent the most conventional forms of non-sovereign finance.

- Debt instruments involve loans or credit facilities that must be repaid with interest. These include bank loans, notes, leasing arrangements, and trade finance mechanisms that provide liquidity and risk mitigation for businesses and projects (Meyers *et al.*, 2020).
- Equity investments, particularly through private equity (PE), involve capital injections into businesses in exchange for ownership stakes, with returns generated through growth and eventual exit (Meyers *et al.*, 2020).

In the conservation and NbS context, these instruments are increasingly being applied to sustainable agriculture, forestry, fisheries, and emerging natural capital business models. However, they typically require revenue-generating business models and are therefore more suited to commercially viable segments of the conservation landscape, which remain limited in practice due to small project sizes, early-stage development, uncertain revenue streams, and perceived risks.

Key Actors in Debt and Equity Instruments

- PE firms and impact investors, which design and manage investment vehicles.
- Financial institutions and banks, providing debt financing and sustainability-linked instruments.
- Enterprises and MSMEs operating in relevant sectors for conservation (e.g., sustainable agriculture, forestry, fisheries, and tourism), which act as primary recipients of debt and equity investments.
- Project developers and intermediaries linking land managers to buyers of environmental outcomes (when applicable).

- Corporates and buyers of environmental credits (when part of the underpinning revenue model).
- Landowners, farmers, indigenous peoples and local communities, who implement conservation and restoration activities.
- Emerging actors in new models such as NACs, including community-led corporations (e.g., Boreal Company Holdings, as described further below in this section) and institutional investors.

Other relevant actors primarily associated with blended finance and outcome-based structures (e.g., DFIs, donors and outcome funders) are described in the respective sections below.

Market Developments and Trends in Debt and Equity

While the use of debt and equity in conservation remains relatively limited compared to other sectors, several illustrative cases demonstrate their application.

Over time, the application of debt and equity to conservation has evolved from early, niche investment vehicles toward a more diversified set of structures combining financial returns with nature-based revenue streams.

Early examples such as The Lyme Timber Company (2007) and Iroquois Valley Farms (2007) respectively illustrate PE investments in land restoration linked to carbon credit generation and returns derived from sustainable production premiums.

More recent applications of pure debt and equity structures in conservation-related activities continue to focus on financing enterprises and assets with identifiable revenue streams, most common in sustainable agriculture, forestry, fisheries, and tourism. Debt and equity examples that rely on blended or outcome-based repayment structures (e.g., sustainability-linked loans) are included in the respective sections below.

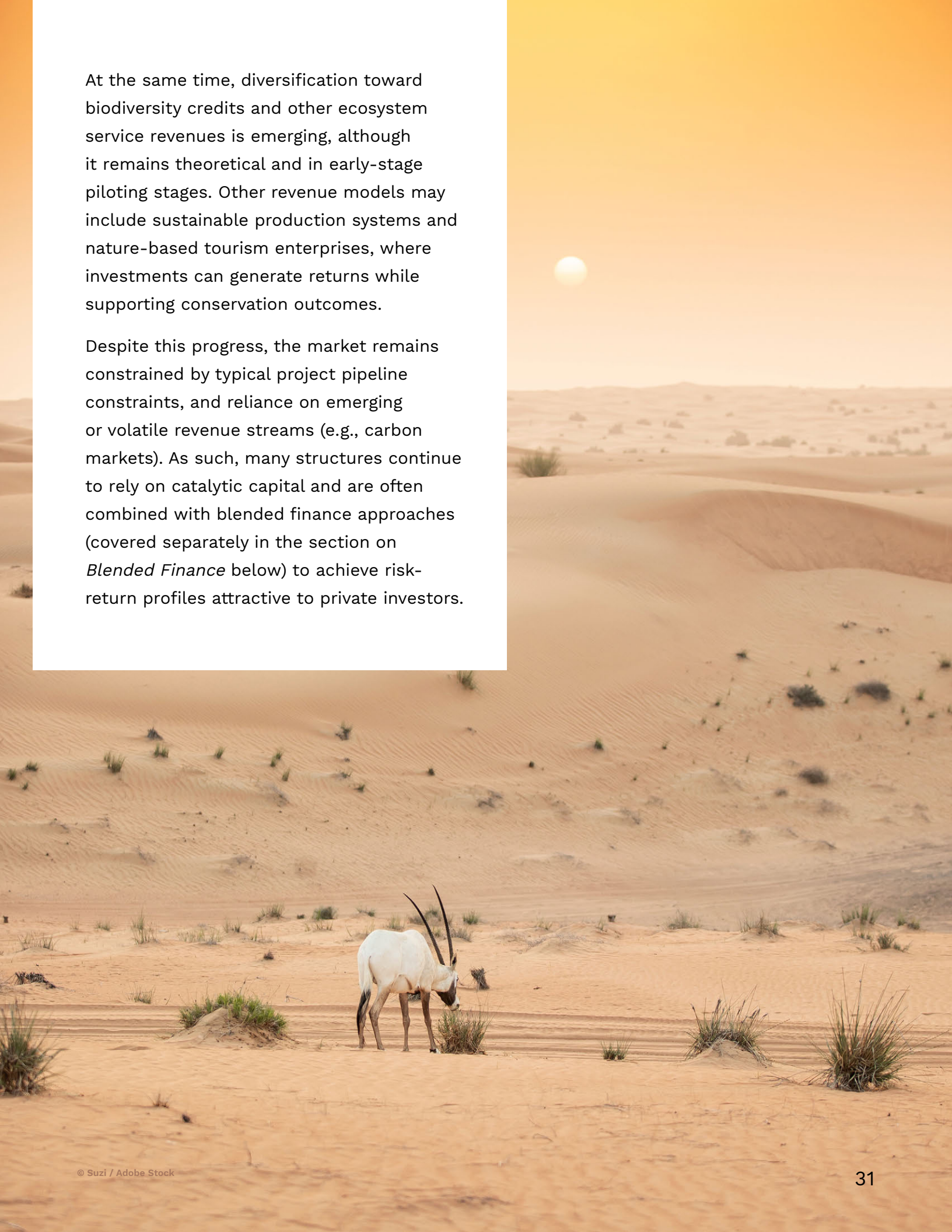
A notable emerging trend in this SFM type is the development of NACs as a new asset class. Defined as public or private companies that convert the economic value of natural assets into financial flows via equity models, NACs aim to generate returns from multiple ecosystem service revenues, including carbon and biodiversity credits, water services, and ecotourism (WEF, 2025a).

With only one operational example to date (The Boreal Natural Asset Company, Mongolia, 2025), NACs are still highly nascent and further transactions are needed for price discovery and replicability as a model to unlock institutional investment in nature (WEF, 2025a).

Across these developments, a clear trend is the growing linkage between debt/equity instruments and environmental markets, particularly carbon credits, which remain the most established revenue source.

At the same time, diversification toward biodiversity credits and other ecosystem service revenues is emerging, although it remains theoretical and in early-stage piloting stages. Other revenue models may include sustainable production systems and nature-based tourism enterprises, where investments can generate returns while supporting conservation outcomes.

Despite this progress, the market remains constrained by typical project pipeline constraints, and reliance on emerging or volatile revenue streams (e.g., carbon markets). As such, many structures continue to rely on catalytic capital and are often combined with blended finance approaches (covered separately in the section on *Blended Finance* below) to achieve risk-return profiles attractive to private investors.



B. Blended Finance

Key insights on Blended Finance

- Blended finance offers a proven approach to mobilize private capital at scale in development finance contexts, while managing risk.
- It offers alignment with landscape approaches, particularly in agriculture, value chains and sustainable enterprises.
- In conservation contexts, scalability remains constrained by limited pipelines, small ticket sizes, and early-stage projects.

Description of Blended Finance

Blended finance is a structuring approach that uses catalytic capital from public or philanthropic sources to mobilize private sector investment in sustainable development (Convergence, 2025a). It enables actors with different risk-return expectations to co-invest in a single structure, often through mechanisms such as concessional capital (e.g., first-loss tranches), guarantees or insurance, technical assistance facilities and design-stage grants. These elements improve the risk-return profile of investments, making them more attractive to private investors (Convergence, 2025a).

Key Actors in Blended Finance Transactions

- Donors and philanthropic organizations providing catalytic capital.
- DFIs and multilateral institutions providing concessional finance and guarantees.
- Private investors, such as institutional and impact investors.
- Fund managers and intermediaries.
- NGOs and technical assistance providers.
- Enterprises and MSMEs in sectors such as sustainable agriculture, forestry, fisheries, and tourism, which receive financing and implement revenue-generating activities linked to conservation.

Market Developments and Trends in Blended Finance

Blended finance has become a widely adopted approach in development finance, although its application to biodiversity and conservation remains limited.

Climate finance is a primary focus of blended finance, accounting for approximately 70% of blended finance flows between 2019–2024 (Convergence, 2025c).

However, transactions directly targeting nature represent less than 1% of the global blended finance market, highlighting both a gap and an opportunity for further alignment (Convergence, 2025b).

NbS are emerging as a market for blended finance based on their linkages to climate, including a primary focus on agroforestry and climate-smart agriculture (Convergence, 2025b; Convergence, 2025d), signaling potential future expansion of nature-related transactions.

Despite the relatively small market share, a wide range of blended finance structures relevant to conservation have been implemented. Impact funds using blended finance that provide catalytic and early-stage capital are recognized as a priority finance solution for nature-related projects and business models (WEF, 2025a). These structures span different levels of maturity and complexity, ranging from project-level facilities to large-scale investment funds. Examples of funds and investment vehicles include:

- Global Fund for Coral Reefs, by UNDP and UNCDF (2020): Blended fund with junior concessional capital, senior commercial tranches and technical assistance support to invest in reef-positive projects.
- Africa Conservation and Communities Tourism Fund (2023): Multi-tranche structure combining catalytic and commercial capital to finance conservation tourism enterprises.
- Mirova Land Degradation Neutrality Fund (2018) and Tropical Asia Forest Fund (2021): Providing debt and equity to sustainable land use projects.

- Sylvania Fund (2023) and the Nature Based Carbon Fund (2024): Structures combining patient capital with upfront financing to unlock carbon and biodiversity credit generation at landscape scale, and integrating long-term offtake agreements.
- Tunza Fund (2014) and Fund for Nature (2023): Facilities providing project-level debt financing for conservation and restoration.

Facilities and guarantee mechanisms include examples such as:

- Tiger Landscapes Investment Facility by UNDP and UNCDF (proposed in 2025): Combines guarantees and technical assistance to unlock lending to Micro, Small and Medium Enterprises (MSMEs) in tiger landscapes.
- Loan Guarantee Facility for fisheries by the Marine Stewardship Council (MSC) and Clarmondial (2025): Uses philanthropic guarantees to mobilize commercial lending.

Value chain and landscape models include:

- Livelihoods Carbon Funds (2008–2021): Financing large-scale NbS projects through corporate partnerships and carbon markets.
- Responsible Commodities Facility (2022) and Belterra (2020): Linking agricultural finance with sustainable production and environmental outcomes.

C. Outcome- and Performance-Based Finance

Key insights on Outcome- and Performance-based Finance

- Outcome- and performance-based finance is highly aligned with PFP principles, which emphasize long-term, measurable outcomes.
- It offers potential to unlock new private and philanthropic capital for conservation.
- Robust MRV systems and committed outcomes funders are essential.
- Integration with carbon and environmental credit markets provides potential pathways to scale transactions.

Description of Outcome- and Performance-based Finance

Outcome- and performance-based finance mechanisms link financial returns or payments to the achievement of verified environmental outcomes. These mechanisms shift performance risk to implementers and incentivize measurable impact.

They include a range of structures:

- Outcome-based bonds (often issued by multilateral institutions).
- Pay-for-success or impact bonds.

- Corporate Sustainability-Linked Bonds (SLBs).
- Performance-based contracts.

In these models, investors typically provide upfront capital, while repayment and/or returns depend on the achievement of predefined indicators, such as biodiversity outcomes, carbon sequestration, or ecosystem restoration.

Key Actors in Outcome- and Performance-based Finance

- Multilateral Development Banks (MDBs), notably the World Bank, in structuring or financing instruments and transactions.
- Philanthropic donors and outcome funders.
- Institutional investors providing upfront capital.
- NGOs and service providers designing and structuring instruments and partnerships.
- Corporates in SLBs or supply chain-linked models.
- Implementing entities and recipients of upfront funding (e.g., project developers, conservation organizations, CTFs, governments, corporations, MSMEs, etc.), responsible for delivering the outcomes tied to environmental performance.

Market Developments and Trends in Outcome- and Performance-based Finance

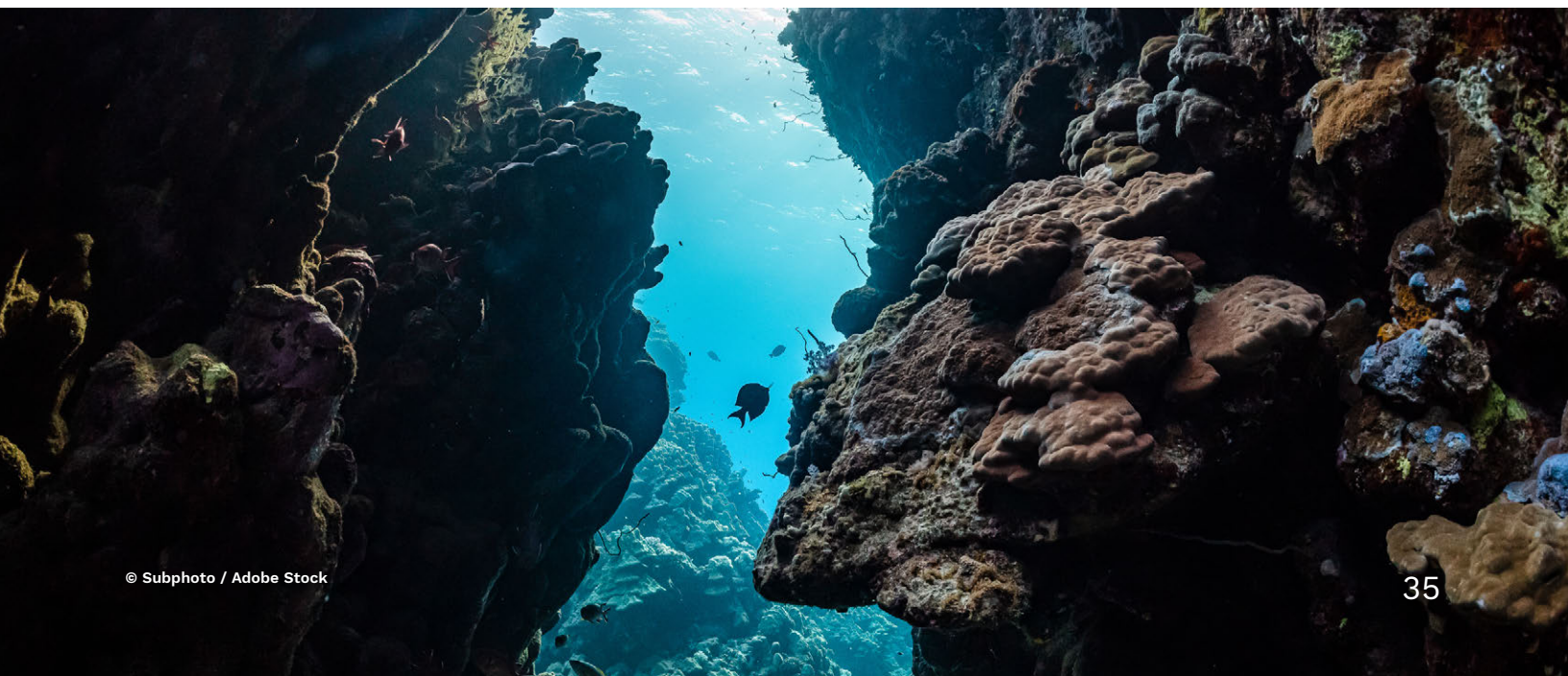
Outcome- and performance-based finance is a rapidly evolving field, with increasing expansion from social sectors into climate and nature-related applications, including instruments such as SLBs being prioritized as global priorities for nature-related finance (WEF, 2025a).

The World Bank has emerged as a leading issuer of outcome-based bonds, with approximately USD 825 million issued across six transactions since 2021 (The World Bank, 2025), including:

- Wildlife Conservation Bond (South Africa, 2022): Returns linked to rhino population growth.
- Amazon Reforestation-Linked Bond (Brazil, 2024) and Plastic Waste Reduction Bond (2024): Linking investor returns to environmental credit generation.
- Wetlands Environmental Impact Bond (USA, 2016-2018) and Small-scale fisheries bond (Indonesia, 2025): Demonstrating performance-based contracts in environmental contexts.
- Forest Resilience Bond (USA, 2018): Linking repayments to ecosystem service beneficiaries.
- Sustainability-linked loans, such as Tornator Oyj's green bank loan (Europe, 2020), which link financing conditions to biodiversity and forest certification outcomes.

Outcome-based bonds building on the Wildlife Conservation Bond model have been proposed since 2025 targeting corals (Indonesia), chimpanzees (Rwanda) and lemurs (Madagascar), signaling further demand for this philanthropy backed model.

A diverse set of other models has also been implemented or proposed. Pay-for-success, impact bonds and performance-based contracts include:



Relevant corporate-linked mechanisms include corporate SLBs, which link financial terms to issuer-level (e.g., firm-wide) sustainability targets, and emerging partnerships linking financing to biodiversity and community outcomes (e.g., Everland and BNP Paribas Outcome Bond initiative).

Key global initiatives and frameworks that shape the market include:

- The Outcomes Finance Alliance (OFA), formerly the Impact Bonds Working Group (IBWG), is a donor led and industry wide partnership that offers relevant support (e.g., outcomes accelerator), knowledge

and guidance on pay-for-success financing instruments that deliver on the UN Sustainable Development Goals (SDGs) (OFA, 2026), supporting further development of the outcome- and performance-based finance market.

- The International Capital Markets Association (ICMA) defines standards (e.g., SLB Principles; ICMA, 2024) and recommends best practices (e.g., metrics) to ensure integrity and promote confidence in outcome achievement and potential performance payments.



Broader Landscape of Sovereign Mechanisms

Cross-cutting Insights on Sovereign SFMs

- Sovereign SFMs can mobilize significant capital at national scale, either by creating fiscal space (debt conversions) or raising upfront resources (sovereign bonds).
- Feasibility depends heavily on debt sustainability, creditworthiness, and government leadership, making these SFMs highly context specific.
- Recent transactions show growing structuring sophistication, investor familiarity, and emerging standards, supporting replication and scaling (e.g., debt conversion toolkits, SLB frameworks).
- While debt conversions can unlock dedicated conservation funding without increasing debt, sovereign bonds provide liquidity but add to public debt.

The opportunity mapping identifies two main subclasses of sovereign SFMs with relevance for PFPs:

- A. Debt conversions (including debt-for-nature and debt-for-climate transactions).
- B. Sovereign bonds, including both use-of-proceeds instruments (e.g., green and blue bonds) and SLBs.

These instruments differ fundamentally in their implications for sovereign balance sheets, risk allocation, and the nature of conservation financing generated, but both offer pathways to mobilize large-scale, long-term funding aligned with national conservation priorities.



A. Debt Conversions

Key insights on Debt Conversions

- Debt conversions offer long-term, predictable funding flows by converting fiscal savings into multi-year commitments.
- As they do not create new liabilities, these mechanisms can facilitate government engagement and ownership with national budgets.
- The use of CTFs as financial intermediaries closely mirrors PFP governance structures.
- They require strong sovereign leadership and compliance with MDB standards and requirements.
- They may be subject to political, policy and market conditions that affect their timing and feasibility.

Description of Debt Conversions

Debt conversions are structured transactions that refinance a portion of a country's sovereign debt under improved terms, generating fiscal savings that are earmarked for conservation and resilience outcomes. These mechanisms respond to the interlinked challenges of biodiversity loss, climate change, and sovereign debt distress, and have gained prominence as a tool to address all three simultaneously (Escovar-Fadul *et al.*, 2025).

In a typical structure, existing sovereign debt is repurchased or refinanced, often at a discount or at lower interest rates through a new financing instrument. This is supported by credit enhancements such as guarantees or political risk insurance provided by DFIs, multilateral institutions, and, in some cases, private actors (e.g., insurers or philanthropic capital providers, as seen in transactions like the 2024 debt conversion in The Bahamas). The resulting fiscal savings are then committed, over time, to conservation programs, frequently managed through an independent CTF to ensure transparency, accountability, and long-term funding flows (Escovar-Fadul *et al.*, 2025).

Debt conversions generate value through a combination of:

- Reduction in debt stock (via discounted buybacks).
- Lower interest rates relative to existing or market debt.
- Improved debt profiles and repayment terms.

Importantly, these transactions are not purely financial; they are paired with conservation planning, policy commitments, and monitoring frameworks aligned with national priorities such as National Biodiversity Strategies and Action Plans (NBSAPs) and Nationally Determined Contributions (NDCs).

Key Actors in Debt Conversions

- Sovereign governments represented by, at least, the Ministries of Finance and Environment.
- DFIs and MDBs (e.g., DFC, IDB, CAF) and, in some cases, private actors (e.g., insurers or philanthropic investors) providing guarantees and insurance.
- International NGOs (e.g., TNC, CI, WWF, WCS) acting as structuring partners and conservation advisors.
- Commercial banks and financial intermediaries (e.g., Credit Suisse, JP Morgan).
- CTFs and local institutions managing conservation funding streams.
- Institutional investors and bondholders, who purchase the new debt instruments issued as part of market-based debt conversions.

Market Developments and Trends in Debt Conversion

Debt conversions build on earlier debt-for-nature swaps, which emerged around three decades ago as bilateral agreements involving debt forgiveness by creditor governments. Mechanisms such as the U.S. Tropical Forest Conservation Act (TFCA), passed in 1998, mobilized hundreds of millions of dollars for conservation and played a foundational role in the establishment of many CTFs globally (Bath *et al.*, 2020). Examples of bilateral transactions

include PFP geographies like Costa Rica and Peru (see Overview of SFMs in PFPs).

Since the mid-2010s, the field has evolved toward more complex, market-based commercial debt conversions, pioneered by organizations such as TNC, starting with the Seychelles transaction. These newer structures leverage capital markets and credit enhancements to achieve significantly larger scale and longer-term financing flows compared to traditional bilateral swaps.

The market for debt conversions has expanded rapidly in recent years, with multiple large-scale transactions reaching financial close between 2022 and 2025.

Notable examples include:

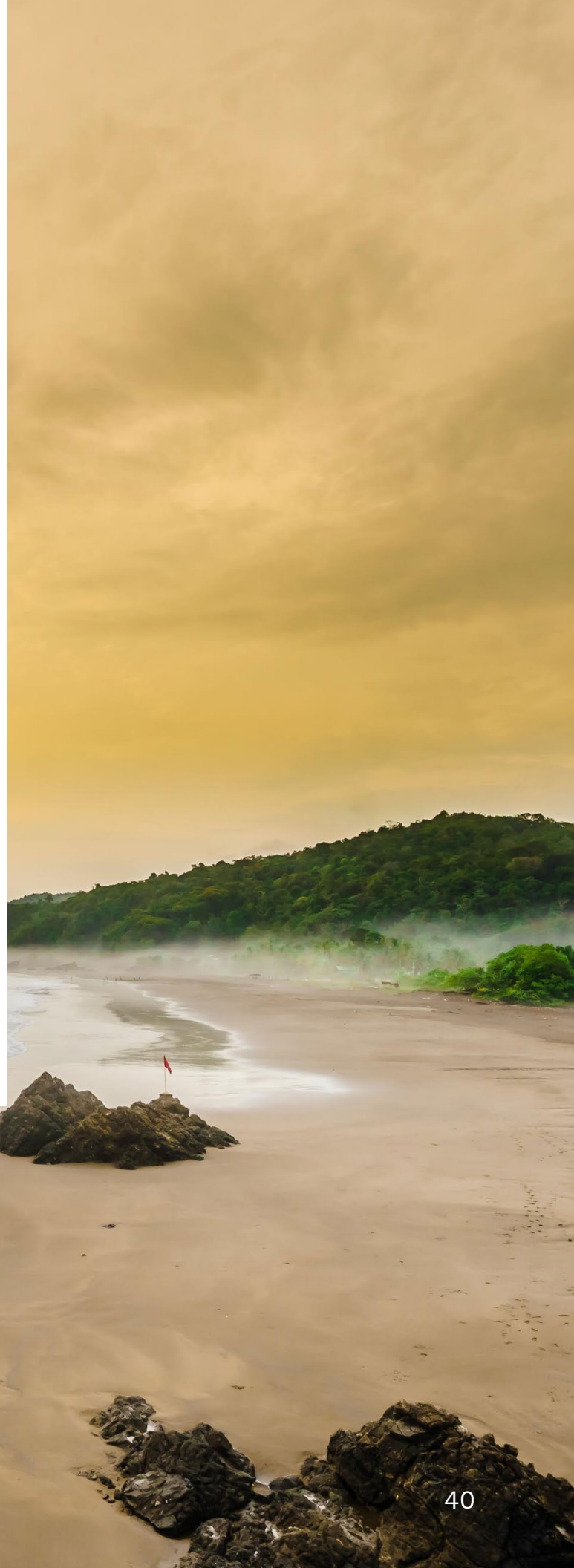
- Belize (2018): A pioneering “blue loan” structure used to repurchase sovereign debt at a significant discount, generating long-term marine conservation funding.
- Barbados (2022): Debt repurchase financed through a credit-enhanced loan, illustrating variations such as “use-of-proceeds” models.
- Gabon (2023) and El Salvador (2024): Expanding the model to new thematic areas, including watershed restoration and marine conservation.
- Ecuador (2023): The Galápagos Marine Bond transaction, one of the largest to date, refinancing USD 1.6 billion in debt while generating more than USD 300 million for the Galapagos Life Fund over 18.5 years.

This growing pipeline reflects increasing investor familiarity, improved structuring approaches, and stronger institutional support. The launch of the Debt for Nature Coalition at COP16 (2024) further signals a shift toward standardization, scaling, and coordination.

Debt for Nature Coalitions members have produced relevant standards and global guidance, including:

- The Practice Standards for Nature, Resilience and People (Escovar-Fadul, 2025) intended for actors participating in debt conversions.
- The Nature Bonds Project Toolkit (TNC, 2024), which provides an overview of commercial debt conversions intended for key stakeholders, such as the Ministries of Finance and Environment.

Despite this momentum, scaling will require increasing amounts of credit enhancements (Debt for Nature Coalition, 2025) and remain subject to the complexity of structuring transactions, as well as political, policy and market-related uncertainties.



B. Sovereign Bonds

Key insights on Sovereign Bonds

- Sovereign bonds offer large resource mobilization potential for the environment, with sovereign SLBs showing promising potential for nature-related purposes.
- However, sovereign bonds increase public debt and require clear repayment strategies.
- These instruments generally do not unlock new sources of concessional capital but rather reallocate or front-load financing.
- Use-of-proceeds bonds must fit within national investment plans, while SLBs require robust, measurable targets.
- Sovereign bonds may be most useful in contexts where governments face short-term liquidity constraints but have credible pathways to generate returns through large-scale nature investments.
- Aligning sovereign bond financing with PFPs requires careful structuring and integrated planning to address potential earmarking, channeling, allocation and accounting challenges arising from the different structural and governance requirements of each mechanism.

Description of Sovereign Bonds

Sovereign bonds represent a second type of sovereign SFM, whereby governments raise capital directly from financial markets. Two main models are relevant in the context of conservation finance:

1. Use-of-proceeds bonds (e.g., green and blue bonds), where funds are earmarked for specific environmental projects or sectors. They typically involve limited ex-post enforcement, with reputational rather than financial consequences if proceeds are not used as intended.
2. Sovereign SLBs, where financial terms (e.g., coupon rates) are linked to the achievement of predefined sustainability performance targets.

These instruments involve new borrowing, rather than restructuring existing debt, and therefore have direct implications for sovereign debt levels.

Key Actors in Sovereign Bond Transactions

- National governments as issuers.
- Investment banks and underwriters.
- Institutional investors (e.g., asset managers, pension funds).
- External reviewers and verifiers (particularly for SLBs).
- Multilateral institutions (in some cases providing technical assistance or credibility support).

Technical advisors (including NGOs and specialized consultants) supporting design (e.g., sustainability targets, KPIs, MRV, etc.) and alignment with international standards (e.g., ICMA).

Market Developments and Trends in Sovereign Bonds

Sovereign bonds operate in a mature market where green bonds have mobilized hundreds of billions for broader environmental purposes (e.g., renewable energy) over the past decade (Meyers et al., 2020) and there is an increasing diversification toward blue bonds and SLBs.

Use-of-proceeds bonds are the most established format, but nature-related bonds still represent a relatively small portion (around 18%) of the thematic bond issuances (WEF, 2025a). These instruments are generally integrated into national development and investment plans. Proceeds may be directed towards water infrastructure, pollution control, general resource management or sectors such as fisheries, agriculture and forestry. In general, they should support revenue-generating activities, which can contribute to debt servicing.

The Ocean Risk and Resilience Action Alliance (ORRAA), a multi-sector collaboration that advances financial products to build resilience for climate-vulnerable ocean communities, is actively working to scale the blue bond market by driving several relevant initiatives, including:

- The Blue Bond Accelerator⁴ (BBA), aiming to build a high-quality blue bond market through technical assistance, financial advisory and convening services for potential issuers of blue bonds including themes such as food security, climate resilience, ocean benefits, greenhouse gas emission, among others with potential linkages to conservation.
- The Commonwealth Guide to Blue Bond Issuance (Siddons, *et al.*, 2025), which aims to help governments structure, launch and manage sovereign blue bonds.

In sovereign SLBs, unmet targets typically create a financial penalty for the issuer, providing a stronger incentive for sovereigns to achieve relevant outcomes. Relevant examples of sovereign SLBs include:

- Uruguay (2022): SLB linked to emissions reductions and native forest cover targets.
- Thailand (2025): SLBs tied to climate and energy transition.
- Slovenia (2025): SLB focused on emissions targets.
- Chile (2023-2026): SLBs tied to climate focused on greenhouse gas emissions, and social aspects like gender equality. The latest SLB issuance (January 2026) integrated biodiversity protection targets, i.e., 30% land protection by 2030, and effective protected area

⁴ This includes sovereign and non-sovereign bonds.

management, in accordance with the country's latest Sustainability-Linked Framework (Ministry of Finance of Chile, 2025).

While most issuances have focused on climate mitigation and energy, there is growing interest in integrating biodiversity and nature-related targets (as in Chile and Uruguay).

Sovereign SLBs require strong alignment with ICMA standards (e.g., SLB Principles; ICMA, 2024) and recommended best

practices (e.g., metrics). These instruments introduce greater accountability and external verification requirements compared to use-of-proceeds bonds.

However, unlike debt conversions, sovereign bonds do not inherently generate additional fiscal space. Instead, they provide access to liquidity that must be repaid. Their uptake is therefore closely linked to country-specific macro-fiscal conditions and debt sustainability considerations by country.



Lessons from the Broader Landscape of Sustainable Finance Mechanisms

The review of SFM cases beyond the PFP portfolio highlights several cross-cutting lessons:

Public Policy and Regulatory Frameworks Remain Foundational Enablers

Even in market-based and (non-sovereign) private finance mechanisms, enabling conditions are strongly shaped by public policy, legal clarity, and regulatory systems. Carbon markets depend on national frameworks (e.g., Article 6 alignment, authorization rules), biodiversity offsets require compliance regimes, and blended finance requires enabling policy environments to facilitate investments. Environmental taxes and fees evidently depend on enforceable legislation. Across cases, underdeveloped or unclear policy environments consistently limit scalability, while strong frameworks enable replication and investor confidence.

Earmarking, Governance, and Financial Intermediation are Critical Points of Attention

Revenue generation across policy-based and sovereign SFMs faces challenges in earmarking, allocation, and execution that are widely documented. Effective models often rely on dedicated financial intermediaries (e.g., CTFs), transparent governance systems, and clear rules for revenue allocation to ensure that funds reach conservation objectives.

Context Specificity Limits Replication and Demands Adaptation

Across all SFM categories, implementation is highly context-dependent, shaped by factors such as institutional capacity, market access, political priorities, socioeconomic conditions and the natural resource base. While this limits direct replication, many mechanisms demonstrate adaptable design elements that can be tailored to different geographies. These may include fee structures, financing vehicles (e.g., blended funds and facilities), and financial instruments (e.g., bonds), among others. Scaling of SFMs therefore requires adaptation of underlying principles of previous cases to local conditions, rather than exact replication.

Blended and Outcome-based SFMs are Promising Means to Unlock Further Private Capital, but Introduce Further Transaction Complexity

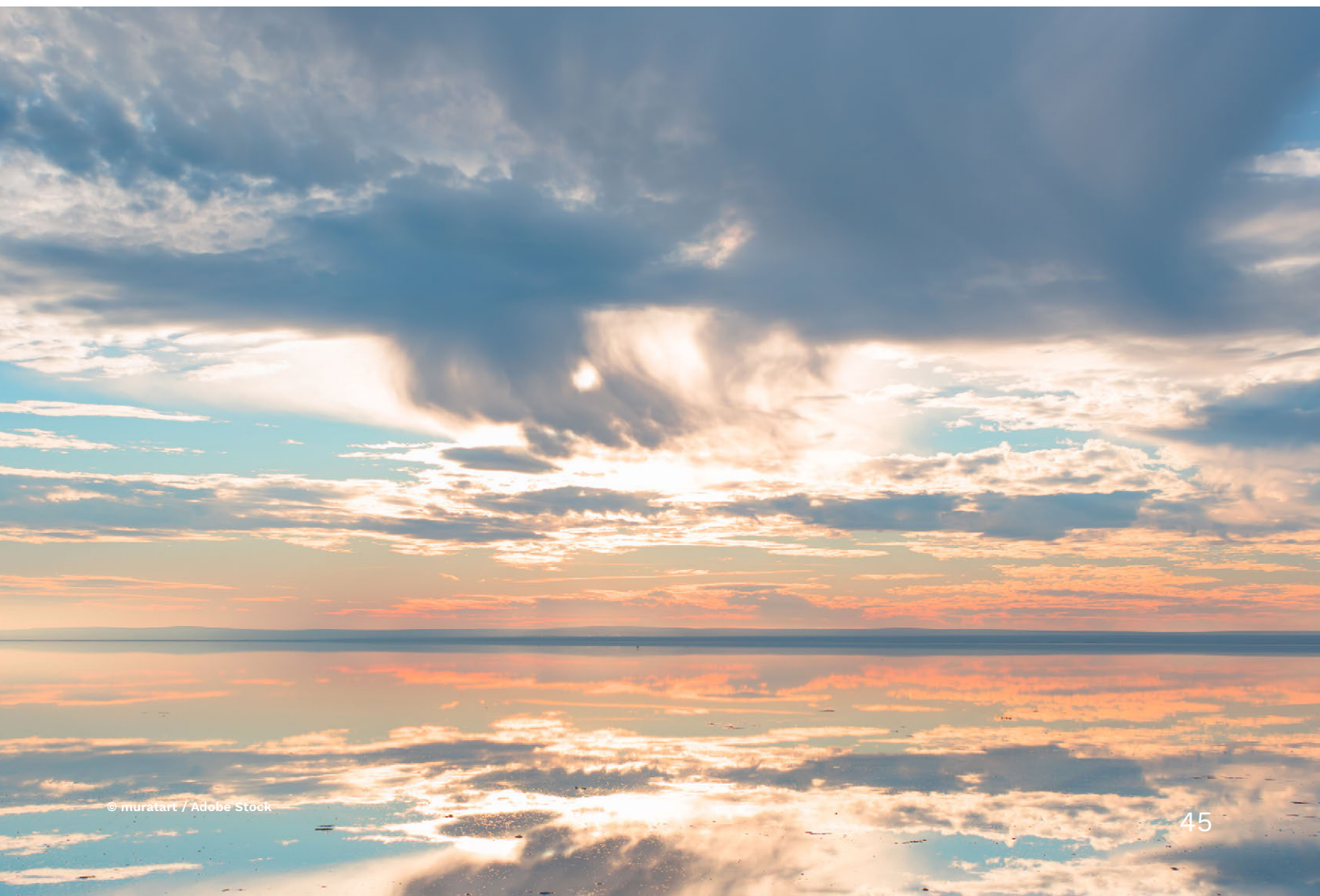
Blended finance and outcome-based SFMs offer specific potential to mobilize private capital, particularly when risks are mitigated. However, global experience shows that their successful

application depends on robust structuring capacity, credible metrics, and clearly defined roles across public, private, and philanthropic actors, among others.

Market Maturity and Demand Determine Feasibility and Potential of Otherwise Promising Opportunities

The analysis highlights important differences in maturity across market-based SFMs. Biodiversity credits and Natural Asset Companies remain nascent and evolving, with limited transaction history and limited demand to date, making their SFM potential highly uncertain. Carbon markets and PES schemes are relatively established, but face distinct scalability challenges: carbon markets are affected by price volatility and integrity concerns, while PES schemes are constrained by dependence on policy frameworks and clearly defined payer bases.

Overall, the opportunity mapping suggests that advancing SFMs requires a combination of strong enabling environments, credible revenue models, and appropriate financial structures, supported by effective governance and sequencing.





Strategic Opportunities for the PFP Model

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Strategic Positioning of Sustainable Finance Mechanisms for PFPs

Building on the baseline and opportunity mapping, this section synthesizes where and how different SFMs can strategically strengthen the PFP model, with a focus on informing the selection of SFMs for prototyping.

SFMs with current or future relevance to PFPs were grouped into core, contextual, emergent, and frontier SFMs, reflecting both their current level of adoption across the portfolio and their strategic potential for the PFP model (Table 3).

These strategic groups can be understood as a dynamic range from proven and widely used SFMs to innovative and still-developing approaches.

Across these groups, SFMs differ in how they perform against key attributes relevant to PFPs, reinforcing that no single SFM can meet all PFP financing needs and diversified SFM portfolios remain essential.

The overall insights from this analysis are:

- Core SFMs remain essential for financial stability and predictability.
- Emergent and contextual SFMs represent the primary opportunity space for diversification.
- Frontier SFMs provide strategic optionality, particularly for long-term evolution of the PFP model.

Strategic Group	SFMs Included	Strategic Role in PFPs	Implications for Prototyping
Core SFMs in PFPs	Fees and taxes (e.g., tourism fees, environmental taxes, extractive fees)	Established, widely used SFMs that provide durable and predictable funding, closely aligned with PFPs (as government-led initiatives).	Limited focus for prototyping, as these SFM are well understood among PFP practitioners. Opportunities lie in optimization and efficiency gains.
Contextual SFMs in PFPs	PES, carbon credits, biodiversity offsets, and debt conversions	Mechanisms with proven applications beyond PFPs and selective use within the portfolio. Their relevance is highly context dependent.	Prototyping can enhance replicability and scalability, particularly by addressing enabling conditions and institutional design.
Emergent SFMs for PFPs	Non-sovereign outcome-based bonds and blended finance	Mechanisms with growing interest among PFP teams, offering access to new sources of capital (e.g., MDBs, private sector and investors) but not yet widely tested in PFPs.	Prototyping is relevant to test applicability, structure transactions, and define viable models within PFP contexts.
Frontier SFMs for PFPs	Biodiversity credits and NACs	Innovative mechanisms with potential to unlock significant private finance, but still nascent and evolving markets.	Prototyping can help anticipate future opportunities, though implementation may depend on broader market maturation.

Table 3. Strategic grouping of SFMs balancing what is already proven with what may unlock future scale and diversification of finance in PFPs

Implications for Prototyping Sustainable Finance Mechanisms

The strategic grouping of SFMs, combined with discussions with the SFM Advisory Committee, provided a basis for prioritizing SFMs. This prioritization reflects both the need to diversify beyond core mechanisms and the opportunity to advance SFMs that show strong alignment with PFP needs while requiring further structuring and testing. Considerations on enabling conditions and potential challenges (see *Annex 1*) also informed this prioritization.

By prototyping priority SFMs, the Enduring Earth partnership aims to increase understanding of suitable design elements, strategies, and practical implementation roadmaps for their use in PFPs.

The short list for prototyping included four promising SFMs for PFPs:

- **Blended finance**, where a prototype can help clarify and harmonize pathways to leverage new private and development finance for PFPs, particularly by addressing challenges related to pipeline development, risk allocation, and coordination across actors.
- **Non-sovereign outcome-based bonds**, where a prototype can build on ongoing efforts and support the development of replicable structures for PFPs that align conservation outcomes with investor returns.
- **Carbon credits**, where a prototype can help define suitable models for better integration into PFPs, including alignment with policy frameworks, benefit-sharing arrangements, and timing of financial flows.
- **Biodiversity credits**, where a prototype can clarify how emerging market structures could align with PFP objectives and evolving integrity frameworks.

Building on this prioritization and considering both strategic potential and feasibility within the scope of this consultancy, the SFM Advisory Committee identified two emergent SFMs for focused prototyping: non-sovereign outcome-based bonds and blended finance.

These mechanisms were selected due to their potential to unlock new sources of capital, their growing relevance within the PFP portfolio, their relatively limited application within PFPs to date, and the opportunity for prototyping to generate actionable insights on structuring, implementation, and scalability.

SFM prototypes were developed for these two SFMs, with the objective of aligning them with PFP-specific financing needs, governance structures, and enabling conditions, while addressing persistent challenges such as transaction complexity, pipeline development, and alignment with conservation outcomes.

The development of the SFM prototypes was informed by virtual focus group sessions with Enduring Earth partners and market experts, complemented by targeted documentation review.

While prototyping at this stage was focused on outcome-based bonds and blended finance, other emergent and contextual SFMs also remain strategically relevant and may warrant further exploration beyond this consultancy.

Overall, this approach reflects a phased and pragmatic pathway for SFM innovation within the PFP model: advancing mechanisms that are close to deployment while maintaining optionality to integrate emerging opportunities over time.



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Annex 1

Enabling Conditions and Challenges for Strategic Sustainable Finance Mechanisms in PFPs

The following table includes a tentative selection of key enabling conditions of promising SFMs for PFPs, and potential challenges for their application within the PFP model. These enablers and challenges were identified through documentation review and interviews with experts, and were used as a general reference to guide the selection of two SFMs for prototyping (see accompanying blended finance and outcome-based bond prototypes).

Contextual SFMs

SFM	Key Enabling Conditions	Potential Challenges in PFPs
Biodiversity Offsets	Strong regulatory and compliance frameworks; clear equivalence metrics; enforcement mechanisms.	Uncertain and pipeline-dependent revenues; reliance on development pressures; political and institutional constraints on fund allocation.
Carbon Credits	Carbon potential in PFP geographies; enabling policy frameworks (e.g., authorization, nesting rules); clear benefit-sharing; robust MRV systems.	Policy and regulatory complexity; potential misalignment with PFP timelines and needs; price volatility; challenges in earmarking revenues.
PES	Clear identification of beneficiaries (payers); clear ownership rights; enabling regulatory frameworks; local institutional capacity.	Scale and revenue strongly dependent on context and enablers; potential misalignment with PFP cost structures; earmarking constraints.
Debt Conversions	Strong sovereign commitment and inter-ministerial coordination; access to credit enhancements (e.g., guarantees, insurance); debt sustainability; capable financing intermediaries (e.g., CTFs); and strong governance frameworks to meet commitments.	High transaction complexity; significant structuring costs; dependence on market conditions and availability of credit enhancements; alignment of transaction design with PFP timeline and conservation plan; political and policy risks affecting feasibility and implementation.

Emergent SFMs

SFM	Key Enabling Conditions	Potential Challenges in PFPs
Blended Finance	Pipeline of investable projects; public-private coordination; de-risking instruments; investor appetite; enabling regulatory environment.	Underdeveloped project pipelines; small ticket sizes; potential misalignment with PFP conservation priorities; uncertain financial returns. For more details on enabling conditions, PFP challenges, and PFP strategies, see accompanying prototype.
Non-Sovereign Outcome-Based Bonds	Robust and measurable outcomes; credible KPIs; investor confidence; suitable issuer and outcome payer; alignment with ICMA principles.	Transaction complexity; structuring costs; potential misalignment with PFP timelines; uncertainty around scale and timing of financial flows. For more details on enabling conditions, PFP challenges, and PFP strategies, see accompanying prototype.

Frontier SFMs

SFM	Key Enabling Conditions	Potential Challenges in PFPs
Biodiversity Credits	Credible standards and methodologies; robust MRV systems; buyer confidence; enabling policy frameworks.	Nascent demand; uncertainty around pricing and claims; reputational risks; unpredictable financial flows.
NACs	Standardized valuation of ecosystem services; integration of ecological and financial accounting; diversified revenue streams (carbon, biodiversity, PES, tourism); investor familiarity with equity structures.	Very limited track record; unclear monetization pathways beyond carbon; complex governance and ownership structures (e.g., land tenure); lack of benchmarks and price signals; dependence on broader market development.

Table 4. Overview of key enabling conditions and potential challenges facing promising contextual, emergent and frontier SFMs⁵

⁵ Given the objective of SFM diversification, this analysis focuses only on contextual, emergent, and frontier SFMs. Core SFMs are not assessed further, as they are already well explored within the PFP model