ASIA–PACIFIC CLIMATE REPORT 2025

UNLOCKING NATURE FOR DEVELOPMENT

ASIAN DEVELOPMENT BANK

ADB

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6 ADB Avenue, Mandaluyong City, 1550 Metro Manila, Philippines
Tel +63 2 8632 4444; Fax +63 2 8636 2444
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CONTENTS

Table, Figures, and Boxes v
Foreword vi
Acknowledgments viii
Definitions x
Abbreviations xi
Highlights xii
Executive Summary xiv

1. Nature as a Core Economic Asset 1

1.1 Role of Nature in Resilient Growth and Development 2
1.2 Rise of Nature-Based Investment 9
1.3 Role of Finance in Nature-Positive Transformation 11
1.4 A Practical Path Toward Resilient, Nature-Positive Growth 12

2. Unlocking the Nature–Development Dividend 13

2.1 Accounting for Nature's Value 14
2.2 Mobilizing Finance for Nature-Positive Economies 19
2.3 Addressing Market Failures and Policy Distortions 20

3. Governance, Policy, and Data: The Operating System for Nature Finance 24

3.1 Governance: Establishing Credibility and Incentive Alignment 25
3.2 Policy: Correcting Distortions, Fostering Innovation, and Aligning with Global Standards 31
3.3 Data: Building Decision-Grade Systems for Nature Finance 34
3.4 Integrating Governance, Policy, and Data into a Coherent Operating System 44

4. Making Nature Investable 46

4.1 Investing in Ecosystems Through Nature-Based Solutions 47
4.2 A Framework for Scaling Nature Finance Through Investable Programs 50
4.3 Building a Nature Finance Toolkit 53
4.4 Technology for Implementing Nature Investment 59
4.5 Scaling Nature Finance Through Landscape Approach and Regional Cooperation 61

5. Advancing Nature Finance—A Road Map for Sustainable Growth and Resilience in Asia and the Pacific 66

5.1 Why Private Finance for Nature? 67
5.2 A Phased 10-Year Implementation Road Map 68
5.3 Conclusion 73

References 75

TABLE, FIGURES, AND BOXES

Table

Investment Priorities Ranking by Economy 10

Figures

1.1 Share of Value-Added Dependent on Nature, by Economy, 2017–2024 2
1.2 Sectoral Dependence on Nature in Developing Asia, 2024 3
1.3 Types of Ecosystem Services 5
1.4 Virtuous Cycle of Nature and Climate Resilience 8
3 Implementation of System of Environmental-Economic Accounting in Asia and the Pacific, Number of Accounts 39
4 Green Versus Gray Landscapes 64
5 10-Year Phased Road Map 69

Boxes

1.1 Turning the Tide—A Strategic Opportunity for Asia and the Pacific 4
1.2 Nature, Biodiversity, and Natural Capital 6
1.3 Turning Restoration into a Development Strategy 7
2.1 Biodiversity and the Structure of Ecosystem Service Production 14
2.2 The Multiple Dimensions of Nature's Value 17
2.3 Market Failures and Policy Distortions 20
2.4 Agricultural Subsidies and Ecosystem Dynamics: Challenges and Opportunities 22
3.1 Ending Native Logging in Victoria: A Case of Environmental Governance 26
3.2 Unified Eco-Compensation Framework, People's Republic of China 27
3.3 Empowering Women Through Forest-Based Enterprises in Nepal 31
3.4 Nature as a Macro-Shock Buffer 36
3.5 Valuing Nature for Improved Policy and Planning, People's Republic of China's Gross Ecosystem Product 38
3.6 Blueprinting and Prioritization in Environmental-Economic Statistics 41
3.7 Digital Earth Pacific—Advancing Environmental Monitoring with Satellite Technology 43
4.1 Integrating Climate and Biodiversity Goals into Infrastructure Design 48
4.2 Scaling Nature-Based Solutions into Investable Opportunities 51
4.3 A Nature Financing Toolkit 54
4.4 Case Study—The Belize Blue Bond 56
4.5 Market-Based Incentives for Nature 57
4.6 Pinpointing Conservation Investment with Environmental DNA 60
4.7 Precision Nutrient Management 61
4.8 A Seascape Approach to Marine and Coastal Nature-Based Solutions in Asia and the Pacific 62
4.9 The Regional Flyway Initiative 63

FOREWORD

Nature is emerging as one of the most powerful levers for economic progress in Asia and the Pacific. Its role is not an abstract ideal or peripheral concern—it is foundational to well-being, productivity, and long-term fiscal and environmental health. About 75% of the region's gross domestic product depends on sectors closely tied to natural capital, including agriculture, fisheries, forestry, and tourism. Investing in nature mitigates disaster risk and enhances climate resilience. The message is clear: healthy ecosystems are not merely environmental assets—they are the bedrock of public health, fiscal stability, and economic security.

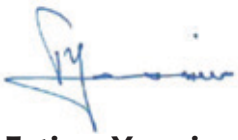
Across the region, the evidence is compelling. In the Philippines, a government-led mangrove restoration program in Siargao rehabilitated nearly 1,000 hectares of degraded ecosystems, creating alternative livelihoods for local communities while strengthening coastal protection against storms. In the People's Republic of China, the South Dongting Lake Wetland Project—part of ADB's Regional Flyway Initiative—is restoring more than 6,000 hectares of wetlands through eco-compensation mechanisms and blended finance, improving biodiversity, resilience and ecotourism revenues. In Sri Lanka, the restoration of Colombo's urban wetlands has reduced flood damage and earned international Ramsar accreditation as a model for integrating nature into city planning. These are not isolated success stories—they are early signals of a new development model that works with nature, not against it.

Scaling these efforts requires more than funding—it calls for a systemic approach to the way economies interact with nature. The challenge is to move beyond project-based funding toward integrated financing, where the value of nature is embedded across all decision frameworks—fiscal policy, investment planning, and capital markets. This requires upgrading the "operating system" of nature finance composed of governance, policy, and data so that financial flows consistently reinforce rather than degrade natural capital. Governments must lead by providing clear direction, introducing reforms, and creating enabling conditions that mobilize private and philanthropic investment. Multilateral institutions can play a pivotal role by supporting governments and regional initiatives through risk mitigation, policy guidance, and capacity strengthening. By working in partnership—governments, multilateral institutions, private sector, communities, and other stakeholders—we can build an integrated system that fully values and safeguards the natural foundations of our economies.

The Asian Development Bank is advancing this agenda through several flagship initiatives that operationalize the link between nature and economic resilience. The Nature Solutions Finance Hub mobilizes capital for nature-based and climate-resilient projects. The Association of Southeast Asian Nations Catalytic Green Finance Facility supports green infrastructure and biodiversity-positive projects across Southeast Asia. The Asia and the Pacific Natural Capital Fund promotes sustainable food systems and ecosystem restoration. Regional programs such as the Regional Flyway Initiative—targeting $3 billion in investments over a decade across 147 wetlands in 10 developing member economies—demonstrate how coordinated action can enhance biodiversity, livelihoods, and climate adaptation.

This report provides a timely framework for accelerating such progress. It outlines a differentiated and sequenced 10-year reform agenda to guide policymakers in integrating nature into economic and financial systems, anchored by strong governance, policy coherence, and decision-grade data. Its recommendations are intended to inform global and regional dialogue—particularly in the lead-up to key milestones such as 30th Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change in Belém (2025), the World Biodiversity Forum in Davos (2026), the 17th Conference of the Parties to the United Nations Convention to Combat Desertification in Ulaanbaatar (2026), and the 17th COP to the Convention on Biological Diversity in Yerevan (2026).

ADB remains firmly committed to working with its developing member economies and partners to scale up integrated nature-positive solutions that deliver economic prosperity, social inclusion, and environmental sustainability. A nature-positive future is not only possible—it is economically imperative and within our collective reach.



Fatima Yasmin
Vice-President for Sectors and Themes
Asian Development Bank

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Albert Park
Chief Economist and Director General
Economic Research and Development
Impact Department
Asian Development Bank

Yevgeniy Zhukov
Director General
Climate Change and Sustainable
Development Department
Asian Development Bank

DEFINITIONS

The economies discussed in the *Asia-Pacific Climate Report 2025* are classified by major analytic or geographic group. For the purposes of this report, the following apply:

"**Developing Asia**" and "**Asia and the Pacific**" are used interchangeably to refer to the 47 members of the Asian Development Bank listed by geographic grouping as follows:

- **The Caucasus and Central and West Asia** comprises Armenia, Azerbaijan, Georgia, Kazakhstan, the Kyrgyz Republic, Tajikistan, Türkiye, Turkmenistan, and Uzbekistan.
- **East Asia** comprises the People's Republic of China; Hong Kong, China; Mongolia; the Republic of Korea; and Taipei,China.
- **South Asia** comprises Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, and Sri Lanka.
- **Southeast Asia** comprises Brunei Darussalam, Cambodia, Indonesia, the Lao People's Democratic Republic, Malaysia, Myanmar, the Philippines, Singapore, Thailand, Timor-Leste, and Viet Nam.
- **The Pacific** comprises the Cook Islands, Fiji, Kiribati, the Marshall Islands, the Federated States of Micronesia, Nauru, Niue, Palau, Papua New Guinea, Samoa, Solomon Islands, Tonga, Tuvalu, and Vanuatu.

In this report, "$" refers to United States dollars, unless otherwise stated.

ABBREVIATIONS

ADB	Asian Development Bank
ASEAN	Association of Southeast Asian Nations
CAREC	Central Asia Regional Economic Cooperation
CBD	Convention on Biological Diversity
eDNA	environmental deoxyribonucleic acid
EROL	environmental rule of law
GDP	gross domestic product
GEP	gross ecosystem product
IoT	Internet of Things
IPLCs	Indigenous Peoples and local communities
MDB	multilateral development bank
MRV	monitoring, reporting, and verification
NBS	nature-based solutions
NCA	natural capital accounting
OECD	Organisation for Economic Co-operation and Development
PES	payment for ecosystem services
PRC	People's Republic of China
SBTN	Science Based Targets Network
SEEA	System of Environmental-Economic Accounting
SMEs	small and medium-sized enterprises
TNC	The Nature Conservancy
TNFD	Taskforce on Nature-related Financial Disclosures
UK	United Kingdom
UNDP	United Nations Development Programme
WEF	World Economic Forum

HIGHLIGHTS

Nature is a core economic asset in Asia and the Pacific. About 75% of the region's gross domestic product comes from sectors that are moderately or heavily dependent on nature, including agriculture, forestry, fisheries, and tourism. Nature—defined as living and nonliving components of the natural world—underpins economic performance as fundamentally as labor and physical capital. This report calls for reframing economic priorities by mainstreaming nature as foundational to growth, productivity, competitiveness, and fiscal health across Asia and the Pacific.

Ecosystem services generate substantial economic value and deliver multiple benefits. Pollination supports crops, coral reefs sustain fisheries and tourism, and mangroves shield communities from flooding. Healthy ecosystems also safeguard public health by regulating disease and purifying air and water. They support food security, create jobs, boost productivity, and strengthen public finances by yielding revenues from nature-dependent sectors while lowering costs in health care, disaster response, and infrastructure. Ecosystems enhance climate mitigation and resilience, enabling communities to adapt to environmental shocks. Protecting and restoring ecosystems strengthens resilience and adaptation while maintaining natural carbon stores such as forests, wetlands, and soils, making nature integral to effective climate action.

Valuation makes nature visible in economic decisions. Proper valuation—through natural capital accounting, fiscal analysis, and corporate reporting—reveals how ecosystem services support productivity, revenues, and trade competitiveness. Frameworks such as the Taskforce on Nature-related Financial Disclosures and the Kunming–Montreal Global Biodiversity Framework provide a shared basis for integrating natural capital into economic governance. Alignment with these frameworks is meaningful only when accompanied by clear, measurable outcomes that ensure commitments translate into real ecological benefits. At this pivotal moment, governments, corporates, and financial institutions around the world are increasingly incorporating nature into decision frameworks. Yet despite growing momentum, the global biodiversity financing gap—estimated at $940 billion annually—persists.

Nature investment remains limited because markets often fail to reflect the full costs of environmental degradation and the value of ecosystem services. Many benefits—such as biodiversity, water filtration, and carbon storage—are public goods with no explicit market price, while ecological damage is externalized, allowing degradation without financial consequence. This distorts market signals and incentivizes short-term exploitation over long-term conservation. Policy distortions, weak property rights, unclear accountability, and limited integration of natural capital into economic systems deepen these failures. As a result, nature remains undervalued in policy and investment decisions. Finance is a critical lever for driving nature-positive transformation, but it operates most effectively as part of a broader enabling framework that internalizes environmental costs and properly values nature.

Scaling nature finance depends on upgrading the "operating system" of governance, policy, and data. Strong governance, anchored in robust environmental rule of law, sets clear rules, rights, and responsibilities for the custodianship and use of natural capital, defining how decisions are made, enforced, and coordinated. Effective policy turns environmental governance frameworks into action through regulations, fiscal measures, and market instruments that strengthen economic signals, reduce uncertainty, and foster innovation toward nature-positive outcomes. Integrated, high-quality data support valuation, risk assessment, budgeting, and credible monitoring. By providing actionable insights, data reduce investment risks and create finance-ready opportunities.

Public and private finance must work together to support systemic transformation. Public finance mitigates early-stage risks through concessional tools such as guarantees and below-market loans. Development finance institutions and multilateral development banks complement these efforts by providing funding, technical assistance, project preparation support, and institutional strengthening. These approaches help ensure that scarce public resources mobilize, rather than substitute for, private capital. Private finance then contributes innovation, efficiency, and scale, replicating proven models and expanding markets under the right conditions. Innovative instruments, including debt-for-nature swaps, sustainability-linked loans, and biodiversity credits, illustrate how capital can deliver both financial and environmental returns when linked to measurable outcomes.

Certain nature investments—particularly those without reliable or immediate revenue streams—will always depend on public finance. They can also generate significant budgetary savings over time. Nature-based solutions often provide cost-effective options for delivering public goods such as flood control and disease prevention. Governments can reduce costs while strengthening resilience, improving public health, and creating employment. These benefits highlight why ministries of finance, central banks, and other economic planners—not only environment ministries—play a central role in integrating nature into macroeconomic planning and fiscal management.

Investing at scale requires system-level approaches across meaningful geographic areas. Isolated pilots rarely achieve systemic change, as many promising projects stall because of insufficient scale, credibility, or financial structures to attract capital. By bundling projects into landscape, seascape, or basin-wide programs—defined as interconnected ecosystems and human activities across shared geographic area—initiatives can reach the scale needed to diversify revenues, reduce transaction costs, and attract institutional investors. Regional initiatives in Asia and the Pacific increasingly show how coordinated restoration and conservation can safeguard ecosystem services, generate sustainable economic benefits, and support improved livelihoods.

The report proposes a high-level, 10-year road map to guide policymakers in integrating nature into core economic and financial systems. The phased approach reflects diverse starting points and capacities, enabling immediate steps while gradually increasing ambition. Proven tools—such as payments for ecosystem services, climate budget tagging, and eco-compensation—achieve greater impact when embedded within existing public finance, trade, and development planning frameworks, avoiding the need for wholesale system overhauls. The road map begins with assessing current tools and institutional readiness, then progresses from foundational reforms such as subsidy realignment to more advanced measures such as biodiversity credit markets and integrated landscape finance.

Positioning nature as a core economic asset represents one of the strongest growth strategies for Asia and the Pacific. Investing in nature supports long-term resilience, competitiveness, and prosperity. In a global economy where sustainability is increasingly a condition for trade and investment, nature is not only a climate solution but also an economic imperative. By following the road map outlined in this report, economies in the region can demonstrate global leadership, showing that valuing nature as a productive asset is central to sustainable development.

EXECUTIVE SUMMARY

Nature as a Core Economic Asset

Nature is a core driver of economic performance in Asia and the Pacific. About 75% of the region's gross domestic product is generated from sectors that are moderately or heavily dependent on nature—including agriculture, fisheries, forestry, and tourism—making ecosystem health decisive for social and economic well-being (Bernabe et al. 2025). This report focuses on renewable natural capital, defined as the living and nonliving components of the natural world, including biomass, biodiversity, land, and water; while the estimate also includes sectors linked to nonrenewable resources such as minerals and fossil fuels. Biomass powers renewable energy, sustains agriculture through crop residues and fodder, and supplies raw materials for pharmaceuticals and industry. Biodiversity underpins vital ecosystem services such as pollination, natural pest control, genetic diversity for crops, and medicines. These ecosystem services are not abstract categories but production inputs—no less essential than labor and physical capital—and they underpin food security as well as a wide range of economic activities critical to the region's prosperity (Giglio, Rillo, and Stroebel 2025).

Healthy ecosystems yield multiple dividends, strengthening public health, livelihoods, fiscal stability, and climate resilience. They purify air and water, regulate disease, reduce heat- and pollution-related illnesses, and improve mental well-being. Safe water and sanitation could prevent 1.7 billion diarrhea cases annually (WHO 2024), while access to natural spaces provides an estimated $2.2 trillion in mental health benefits each year (Buckley 2024). A global shift to nature-positive development could unlock over $10 trillion in business value and create 400 million jobs by 2030 (WEF 2020), with Asia and the Pacific accounting for $4 trillion (40%) and 232 million jobs (58%) (ADB 2024a). Nature-based infrastructure can provide equivalent services at roughly half the cost of gray alternatives—human-made systems such as roads, dams, and sewage treatment facilities—saving as much as $248 billion annually (Bassi et al. 2021). Coral reefs alone help avoid millions of dollars in storm damage across Pacific economies. Improved forest management in Asia and the Pacific could deliver 16.2 gigatons of carbon dioxide in mitigation by 2050, valued at $3.64 trillion, or 30% of the global potential (Roe et al. 2021; Busch 2025a; Greenstone 2024). These health, economic, fiscal, and climate benefits show that nature investments are critical drivers of socioeconomic well-being and resilience.

Nature and climate goals are closely aligned. Ignoring nature loss undermines climate objectives, while neglecting climate risks accelerates ecosystem degradation. This interdependence enables a virtuous cycle in which healthy ecosystems—wetlands, forests, and coastal habitats—reduce disaster and disease risks, regulate water, and sustain livelihoods. This is especially critical for small island developing states, where ocean health drives prosperity and resilience to sea level rise, acidification, and storms. Across Asia and the Pacific, where over 60% of people live in climate-vulnerable areas, nature-based solutions (NBS) deliver strong fiscal returns by reducing climate risks and enhancing ecosystem resilience. Mangrove restoration, for example, sequesters carbon, protects communities, and sustains fisheries and ecotourism. Soil conservation in the Indo-Gangetic Plain increases soil organic carbon by 40%–46%, raising crop productivity by 38%–53% (Mondal et al. 2021). Nature-based flood management approaches deliver multiple benefits, such as disaster

risk reduction, socioeconomic gains, and biodiversity conservation, and often outperform narrowly focused interventions in cost-effectiveness and government support. These benefits underscore the importance of addressing climate and nature together (Molnar-Tanaka and Surminski 2024).

Unlocking the Nature–Development Dividend

Valuation is the first step toward integrating nature into economic decision-making. Traditional cost–benefit analyses often overlook nature's full contributions because environmental costs and benefits remain unquantified or externalized due to data and methodological limitations. Robust valuation tools that incorporate ecosystem services and biodiversity into national accounts, fiscal frameworks, risk assessments, and corporate reporting can make nature's role visible in productivity, fiscal performance, and trade competitiveness. Some services, such as carbon sequestration and sustainable resource management, can be monetized through instruments like carbon credits or eco-certification premiums. Others, such as flood protection, depend on coordinated public investment and supportive policies. Systematic valuation helps uncover hidden natural assets—for example, pollination in agriculture, soil health in sustaining crop productivity, and water regulation in managed watersheds—thereby improving policy targeting, guiding investment strategy, and strengthening risk management.

Realizing the full value of nature requires working at the appropriate ecological and economic scales. Conservation and restoration efforts often target isolated projects or small sites, limiting their broader impact on livelihoods, productivity, and climate resilience. Yet rivers, forests, wetlands, and coastlines function as integrated systems across landscapes, catchments, corridors, and seascapes—just as farming, fishing, and energy supply depend on these linked ecosystems. Aligning nature investments across upstream, midstream, and downstream zones—through landscape and seascape approaches—helps capture cumulative gains in water regulation, food production, renewable energy, and disaster risk reduction, transforming fragmented activities into integrated, impactful, and financeable outcomes. In Viet Nam's Mekong Delta, for example, mangrove restoration reduced wave heights by 62%, strengthened flood protection, and increased rice yields, showing the multiple benefits of coordinating across ecosystems (Ty et al. 2024).

Recognizing nature as productive capital is driving positive change across Asia and the Pacific, although significant challenges remain. Global frameworks such as the Kunming–Montreal Biodiversity Framework and the Taskforce on Nature-related Financial Disclosures are setting standards that align investment with environmental outcomes. Regional platforms—including the Association of Southeast Asian Nations (ASEAN), the Central Asia Regional Economic Cooperation Program, and the Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area—promote cooperation on nature-positive strategies. National initiatives—such as the protected-area policies of the People's Republic of China's (PRC) and the biodiversity finance plan of Thailand—demonstrate how governments are integrating nature into economic planning to boost resilience and competitiveness. Natural capital accounting is gaining traction, with several economies piloting ecosystem accounts. These efforts are drawing attention to opportunities to finance nature-positive investments that can drive sustainable growth. Despite progress, financing remains far below the level needed to protect and restore ecosystems, with the global biodiversity financing gap estimated at $942 billion annually (BloombergNEF 2024; Paulson Institute 2025).

Investment in nature remains limited because markets often fail to account for the costs of environmental damage and the benefits of ecosystem restoration. Several market failures contribute to this gap. One example is fertilizer runoff, which pollutes waterways, yet the resulting environmental costs are borne by society rather than polluters. Many benefits—such as mangroves shielding coastlines from storms—are public goods without clear ownership, making them difficult to price and fund. Open access resources, such as fisheries, are often overused and depleted, as unclear property rights discourage sustainable

management. Information gaps and weak transparency further increase risks and deter investors. Short-term profit motives frequently outweigh the long-term value of ecosystem services. For example, forests may be cleared for immediate timber sales while neglecting longer-term benefits such as carbon storage, water regulation, and disaster protection. In addition to market failures, policy distortions further discourage investment in nature. Subsidies for fossil fuels, water use, and some agricultural inputs can lower the cost of environmentally harmful activities, creating disincentives for conservation and restoration.

Finance can be a powerful lever for nature-positive economic transformation when supported by the right enabling conditions. Capital already moves at scale and, with the right incentives, can rapidly shift production, consumption, and innovation. Public finance plays a key role in absorbing early risks and mobilizing markets, while private finance brings scale, efficiency, and innovation. However, finance cannot act alone in achieving meaningful impact. It works best when embedded in a framework that fosters coordination and accountability and provides predictable rules. Upgrading the "operating system" for nature finance—strong governance, sound policies, robust data infrastructure, and related enablers—can help realign incentives and create conditions for finance to flow at scale. Governments have a broader toolkit—including regulation, trade and industrial policy, taxation, and procurement—that can support systemic, long-term change. Such a comprehensive approach can ensure market signals, fiscal policies, and investment decisions more accurately reflect the costs of environmental degradation and the benefits of restoration.

Upgrading the Operating System for Nature Finance: Governance, Policy, and Data

Governance determines how decisions are made, enforced, and coordinated across institutions. A key pillar is environmental rule of law, which ensures that rules are applied fairly, transparently, and consistently, building institutional trust. Strong coordination across sectors and government levels prevents conflicting mandates and reduces inefficiencies. Equally important is the meaningful inclusion of communities, Indigenous Peoples, and local resource stewards, ensuring that they have a voice in decision-making and share equitably in the benefits of nature-based investments. One example of governance, legal accountability, and community participation working together is the Government of Victoria, Australia's 2024 decision to end native logging in state forests. Environmental laws protected endangered species, courts recognized the legal standing of community groups, and an independent judiciary held a state-owned enterprise accountable for violations.

Policy translates environmental governance frameworks into action by guiding investment through regulations, pricing mechanisms, fiscal incentives, and related tools. Key priorities include (i) using environmental pricing and fiscal incentives—through taxes, fees, and tradable permits—to internalize degradation costs and reward conservation; (ii) phasing out harmful subsidies and redirecting support to nature-positive alternatives; (iii) creating predictable demand through regulation and green public procurement; and (iv) aligning with global market standards and trade agreements to stay competitive and attract sustainable finance. For example, Singapore's carbon tax—launched in 2019 for high-emitting sectors—started at S$5 per ton (~$3.70) and will progressively rise to S$80 (~$62) by 2030 (IETA 2025a). In the Philippines, Executive Order 301 established the Green Procurement Program, which encourages public agencies to prioritize eco-friendly products, contributing to steadier demand and scaling sustainable supply chains over time.

High-quality, decision-grade data are essential for recognizing nature as an economic asset. Without reliable, accessible, and policy-relevant information, nature risks exclusion from economic planning, fiscal analysis, and investment decisions. Good data support decision-making by enabling policymakers to forecast risks, improve budget planning, and strengthen economic resilience. To be effective, environmental

data must be accurate, consistent, and comparable—on par with economic statistics (Fenichel et al. 2025). Economies are making progress: the PRC's gross ecosystem product, Indonesia's Integrated System of Environmental-Economic Accounting, and initiatives across Pacific island economies show how natural capital can be integrated into national accounts for planning and debt analysis. In Fiji, for example, water accounts have guided investments and tariff reforms in the water sector.

Technology is also expanding data access and usability. The European Union's Copernicus program provides free global satellite data to track land use, carbon emissions, and biodiversity, while Digital Earth Pacific monitors environmental change across Pacific island economies. The most effective approach is hybrid: public agencies set standards and ensure consistency, while private and community sources provide granular and localized data. Trusted measurement, reporting, and verification (MRV) systems aligned with financial standards further support the identification of investable opportunities.

Effective registries, verification protocols, and standardized rating systems built on robust data foundations are essential to support the credibility and scalability of environmental investments. These tools provide the basis for transparent tracking and measurement of ecosystem credits, biodiversity units, and water rights, ensuring that reported benefits reflect real environmental outcomes rather than just financial inputs. For example, the United Kingdom's Biodiversity Net Gain scheme requires developers to achieve a 10% increase in biodiversity, supported by a biodiversity credit registry and standardized impact measurements. Clear taxonomies and definitions of "nature-positive" outcomes help limit false claims and foster trust, addressing the risk of "greenwashing," where projects are labeled as nature-positive without verified impact. Transparent and reliable data systems enable financial tools and regulatory markets to function efficiently, allowing public capital to unlock greater private investment.

Together, this operating system provides the foundation for scaling nature finance. Just as the digital economy relies on standardized protocols and secure infrastructure to function at scale, nature finance depends on robust institutional frameworks that ensure consistency, credibility, and coordination across sectors. Governance, policy, and data must also link with complementary systems—science to measure ecosystem services and accounting to value natural assets (Zadek 2025). In the PRC, the South Dongting Lake Wetland project demonstrates this approach: governance reforms, eco-compensation policies, and improved data systems have supported the restoration of over 6,000 hectares through results-based payments and a blend of public, multilateral development bank (MDB), and revenue-backed financing (ADB 2025). When integrated, these elements ensure that nature is consistently valued, managed, and financed across sectors, strengthening development outcomes.

Mobilizing Nature Finance

Private finance is central to scaling NBS. While first movers help shape emerging markets, broader investment depends on a pipeline of projects that offer scale, predictable returns, and manageable risk. Across Asia and the Pacific, many promising initiatives remain at the pilot stage—not due to weak ideas but because they are not structured to attract capital. Programs that are investment-ready tend to share four characteristics: (i) scalable landscapes with secure tenure and high ecological value; (ii) credible counterparties with strong governance, local partnerships, and financial discipline; (iii) structured risk management through tools such as blended finance, revenue diversification, and project aggregation; and (iv) circular models that generate sustained value through ecosystem services or cost savings (Davies and MacDonagh 2025). Building dual literacy—enhancing financial understanding among conservation actors and ecological awareness among investors—ensures that nature-based initiatives are designed for both financial viability and ecological value, making them investable, measurable, and impactful over the long term.

Public finance plays a catalytic role in nature investment by absorbing early-stage risks and crowding in private capital. Concessional instruments such as grants, guarantees, and below-market loans can make high-risk, high-impact projects more viable. Development finance institutions and MDBs reinforce this process through technical assistance, capacity building, institutional strengthening, and innovative risk mitigation. Blended finance approaches—combining concessional resources from governments, MDBs, philanthropies, and global funds such as the Global Environment Facility—can help de-risk investments, attract commercial capital, and build scalable markets for nature-positive solutions. As risks decline, commercial lenders can step in with market-rate financing. This layered approach enables public funds to mobilize rather than substitute private investment. Initiatives such as the Seychelles' debt-for-nature swap and Singapore's Financing Asia's Transition Partnership illustrate how concessional and blended finance can catalyze nature investment.

Public finance is also vital where reliable revenue streams are uncertain. Investments in coastal defenses, flood management, and public health protection may prove more cost-effective when NBS are prioritized over gray infrastructure. More broadly, governments may need to directly finance interventions that yield significant social and fiscal benefits but fall outside private risk–return expectations—for example, restoring degraded forests to secure watershed services that prevent costly floods and safeguard water quality. Substituting or complementing traditional infrastructure with natural solutions can reduce long-term fiscal burdens while generating wider social and environmental gains. Mongolia's "Eternal Mongolia" initiative—a $198 million government-led program—demonstrates how public and philanthropic finance can sustain large-scale, long-term, high-value conservation efforts through dedicated funding support.

Financial instruments that link incentives to measurable environmental outcomes can shift capital flows toward NBS. Examples include debt-for-nature swaps, performance-linked bonds, biodiversity credits, sustainability-linked loans, payments for ecosystem services (PES), and blended finance vehicles. When tied to measurable outcomes such as emissions reductions, restored mangroves, healthier watersheds, or biodiversity gains—these instruments can support ecosystem restoration, resilience, and inclusive growth. PES programs provide clear examples: Mexico improved water quality for 40,000 communities; Costa Rica reduced deforestation by more than 80%, benefiting 10,000 households; and Viet Nam mobilizes $55 million annually to support 500,000 households (Wunder, Engel, and Pagiola 2008; Murguia et al. 2022; Do et al. 2018). Supported by digital tools such as remote sensing and mobile payments, PES can generate reliable revenues and measurable impact—attracting investment, scaling nature–climate solutions, and producing more inclusive and effective outcomes. Debt-for-nature swaps can ease fiscal pressures while advancing conservation, performance-linked bonds can lower borrowing costs for climate and biodiversity goals, and blended finance can attract institutional investors by reducing risks.

A Road Map for Advancing Nature Finance

Upgrading existing systems is essential for nature finance to achieve the scale needed. Instruments such as climate budget tagging and carbon or biodiversity credits are emerging across the region and beginning to show their potential to support resilience, productivity, and fiscal outcomes. Their impact will endure only when they are integrated into the core architecture of public finance and economic planning. In many cases, strengthening existing frameworks, rather than building entirely new ones, offers the most practical path forward. MDBs and development partners can support governments in advancing policy, regulatory, and institutional reforms; standardizing methodologies; and de-risking early investments through systems that are credible, coordinated, and responsive.

Cross-border cooperation—through aligned standards, policy coordination, and pooled resources—can multiply the benefits of landscape-scale investments. Platforms led by regional blocs or MDBs offer shared governance structures, harmonized taxonomies, and common data systems that unlock capital at scale. For example, the ASEAN Taxonomy for Sustainable Finance aligns sustainable finance frameworks across 10 economies, while the Ocean Resilience and Climate Adaptation Financing Partnership Facility secured $13 million in grants in 2023 and another $9 million in 2025 from MDBs, climate funds, and private investors to support ocean health and climate resilience in small island developing states and vulnerable coastal regions (ADB 2024b). Knowledge sharing through regional policy dialogues, joint trainings, and cross-border partnerships further strengthens institutional capacity and accelerates the adoption of effective practices. These experiences show that bundling diverse activities under unified frameworks can reduce transaction costs, improve investability, support policy coordination, and enable long-term and scalable impact.

Strengthening national systems takes time. In most contexts, building a nature-positive economy is best achieved through a gradual, capacity-tailored approach. This report outlines a sequenced 10-year road map to guide policymakers from foundational reforms toward scaled, investable systems. The first step is to assess where each economy stands, recognizing that not all begin from the same point. Evaluating governance, policy, data, and finance systems can help identify context-specific entry points, whether in low-, middle-, or high-income economies. Early actions may include mapping ecologically critical areas using accessible datasets and geospatial tools. As systems and capacities expand, economies can adopt more advanced instruments such as natural capital accounting, ecosystem service valuation, and landscape-scale planning. Investing in institutional capacity—especially in monitoring, evaluation, data management, finance, and local participation—is crucial. Combined with strong governance and safeguards, adequate capacity helps manage trade-offs and ensures that benefits reach local communities who play a central role in protecting ecosystems. A phased, context-driven approach grounds reforms in local realities and supports effective implementation over time. Even low-income economies rich in natural capital can gain significant development advantages by positioning ecosystems as drivers of livelihoods, resilience, and competitiveness—especially if action is taken before critical ecosystems become too degraded.

Unlocking nature for development requires leadership from ministries of finance and economic planning, which are well-positioned to place nature at the center of development strategies. When treated as a core economic asset, nature becomes integral to socioeconomic well-being, fiscal resilience, and long-term growth. This report outlines how upgrading the operating system of governance, policy, data, and finance can transform proven tools into systemic levers for resilience, productivity, and development. Economies that integrate nature into their economic and financial systems will be better prepared to mobilize nature finance, manage fiscal and sovereign risks, and sustain prosperity in a world where sustainability increasingly shapes market access and investment priorities. The time to act is now—delays risk irreversible loss of natural capital and the economic opportunities it provides for a sustainable future.

Chapter 1

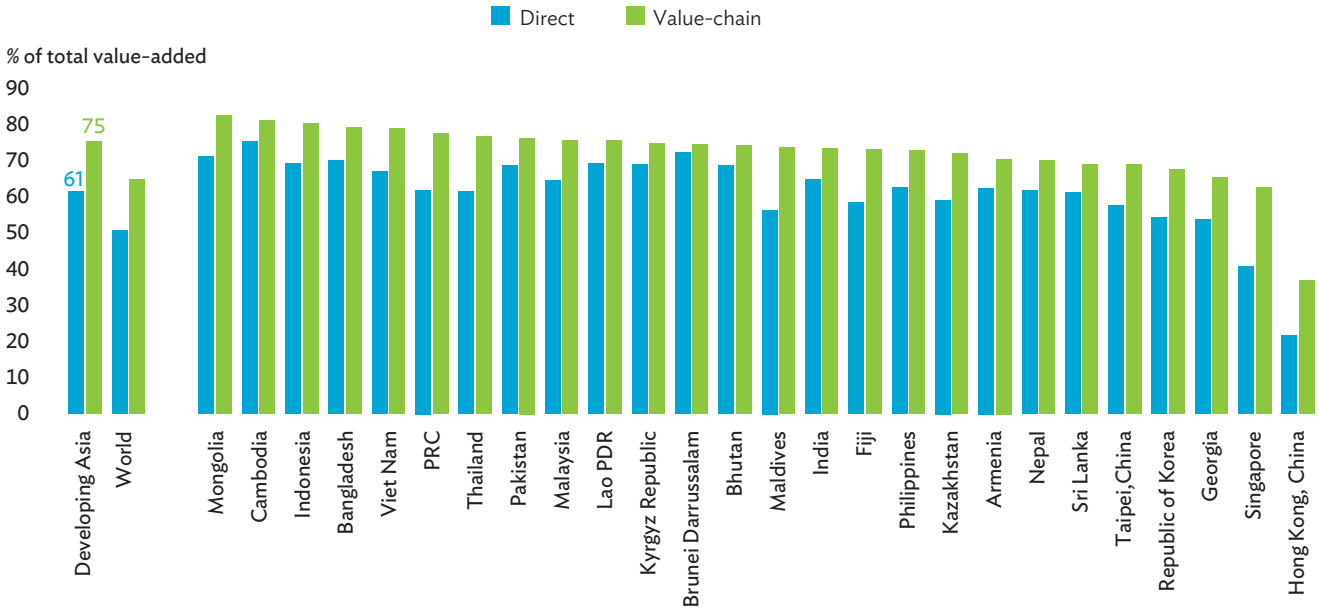
NATURE AS A CORE ECONOMIC ASSET

1.1 Role of Nature in Resilient Growth and Development

For developing Asia and the Pacific, nature represents both an essential economic asset and a strategic pathway toward sustainable, resilient growth. An estimated 75% of value-added—equivalent to about $21 trillion—comes from sectors that are moderately or heavily dependent on nature (Bernabe et al. 2025; Figure 1.1). These sectors include agriculture, fisheries, and tourism, as well as manufacturing, transport, and energy that rely directly or indirectly on natural inputs and ecosystem services. Analysis using the multiregional input–output table of the Asian Development Bank (ADB) highlights the broad economic footprint of nature, demonstrating that natural systems underpin income generation across much of the region's economy (Figure 1.2). Together, Figure 1.1 and Figure 1.2 underscore how nature-dependent sectors drive value creation both directly and through extensive supply chain linkages across developing Asia. A specific example is the ocean economy, which plays a vital role as a source of growth and livelihoods in the region, contributing over 15% of gross domestic product in many Pacific island economies, supporting more than 2 million jobs, and generating up to 70% of export earnings in some small island developing states (Box 1.1). Yet despite this economic importance, accelerating ecosystem degradation and climate volatility are undermining public health, disrupting livelihoods, reducing productivity and job creation, and increasing disaster-related costs. In response, governments, companies, and investors are turning to nature-positive investments to drive growth and resilience, sparking a historic shift in policy, capital flows, and markets.

Figure 1.1: Share of Value-Added Dependent on Nature, by Economy, 2017–2024

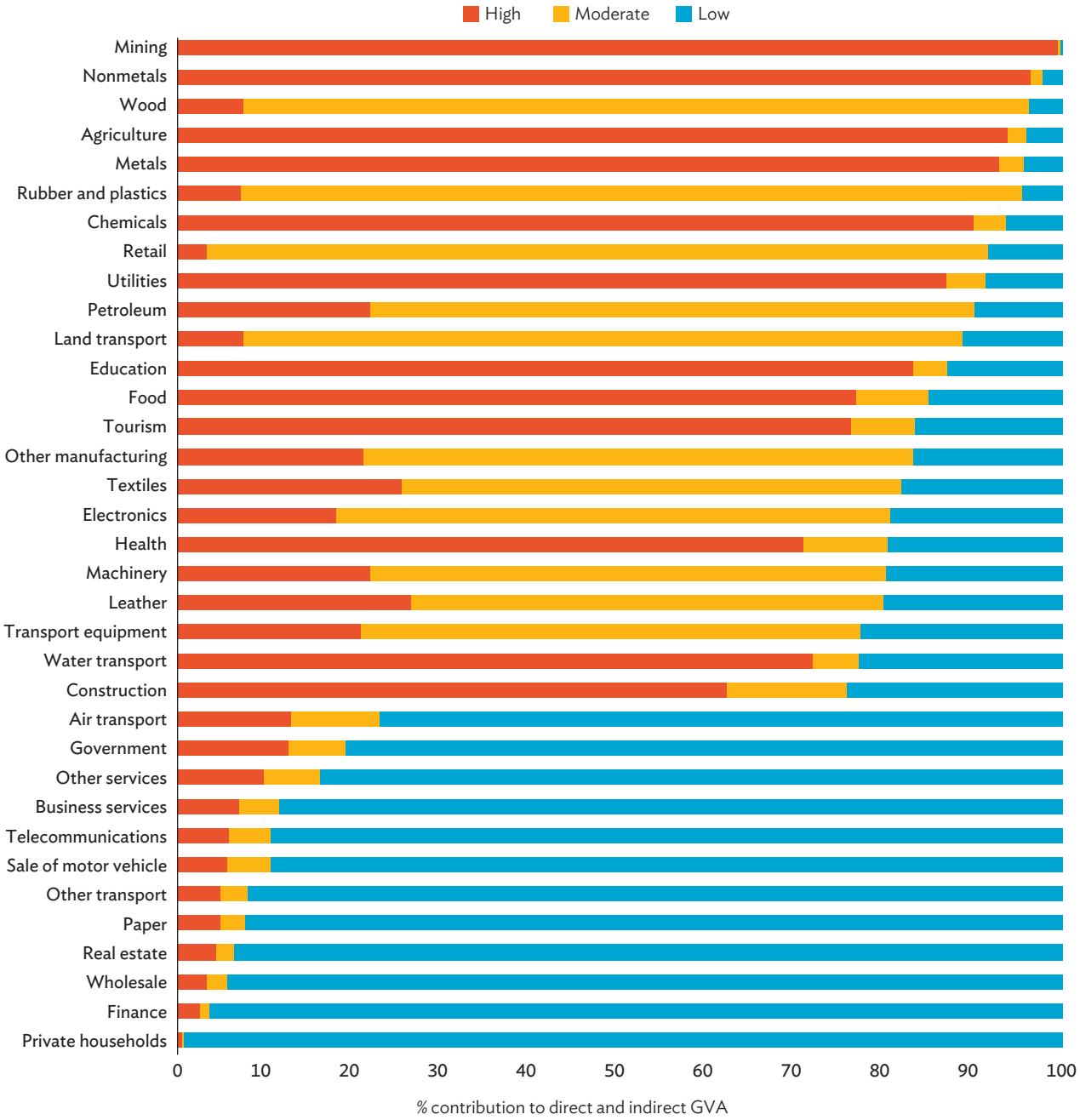
Nature-dependent sectors form a significant share of economic activity across economies in developing Asia, both through direct outputs and broader supply chain linkages.



PRC = People's Republic of China, Lao PDR = Lao People's Democratic Republic.
Notes: Dependence refers to the extent to which an economy's output relies on ecosystem services. Direct dependence is the value-added contribution of nature-dependent sectors themselves, while indirect dependence captures upstream contributions from their supply chains. The data uses the Asian Development Bank's multiregional input–output table combined with ENCORE dependency scores to estimate total value-chain effects, averaged over 2017–2024.
Source: Bernabe, J. et al. 2025. Developing Asia's Dependence on Nature. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Figure 1.2: Sectoral Dependence on Nature in Developing Asia, 2024

Key economic sectors are moderately to highly dependent on nature.



GVA = gross value-added.
Notes: Each sector's dependence on nature was assessed using ENCORE scores for relevant ecosystem services. Sectors were grouped into high, moderate, and low categories based on tercile thresholds and mapped to the sector classification of the Asian Development Bank. Values represent each group's contribution to total direct and indirect GVA in 2024. GVA refers to the income generated by economically productive activities attributable to residents of a given jurisdiction.
Source: Bernabe, J. et al. 2025. Developing Asia's Dependence on Nature. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Box 1.1: Turning the Tide—A Strategic Opportunity for Asia and the Pacific

The global ocean economy is a powerful driver of growth and livelihoods, generating approximately $2.2 trillion annually and supporting over 600 million people worldwide. It sustains around 100 million jobs across fisheries, aquaculture, and tourism, with tourism alone contributing roughly $725 billion (UNCTAD 2025).

In Asia and the Pacific, hundreds of millions rely on healthy ocean ecosystems for livelihoods, food security, and economic stability. In the Pacific, ocean-based sectors contribute over 15% of gross domestic product in many island economies and provide more than 2 million jobs. Coral reef-related tourism and fisheries generate up to 70% of export earnings in some small island developing states, while marine ecosystems in the Coral Triangle—which includes Indonesia, Malaysia, Papua New Guinea, the Philippines, Solomon Islands, and Timor-Leste—directly sustain over 120 million people (Hoegh-Guldberg et al. 2015).

For communities living in small island developing states, the ocean is more than an economic resource; it is the foundation of identity, resilience, and survival. With abundant marine resources, renewable energy potential, and traditional knowledge, these countries are well positioned to lead a sustainable blue economy. Strategic investments in blue carbon ecosystems, offshore energy, resilient infrastructure, and sustainable fisheries can unlock economic diversification, job creation, and long-term resilience.

Regional initiatives like the Healthy Oceans Action Plan and the Ocean Resilience and Coastal Adaptation Trust Fund of the Asian Development Bank (ADB) mobilize blended finance to support investable, nature-based programs aligned with national climate goals, including nationally determined contributions and national adaptation plans (Global Center on Adaptation 2025; ADB 2022).

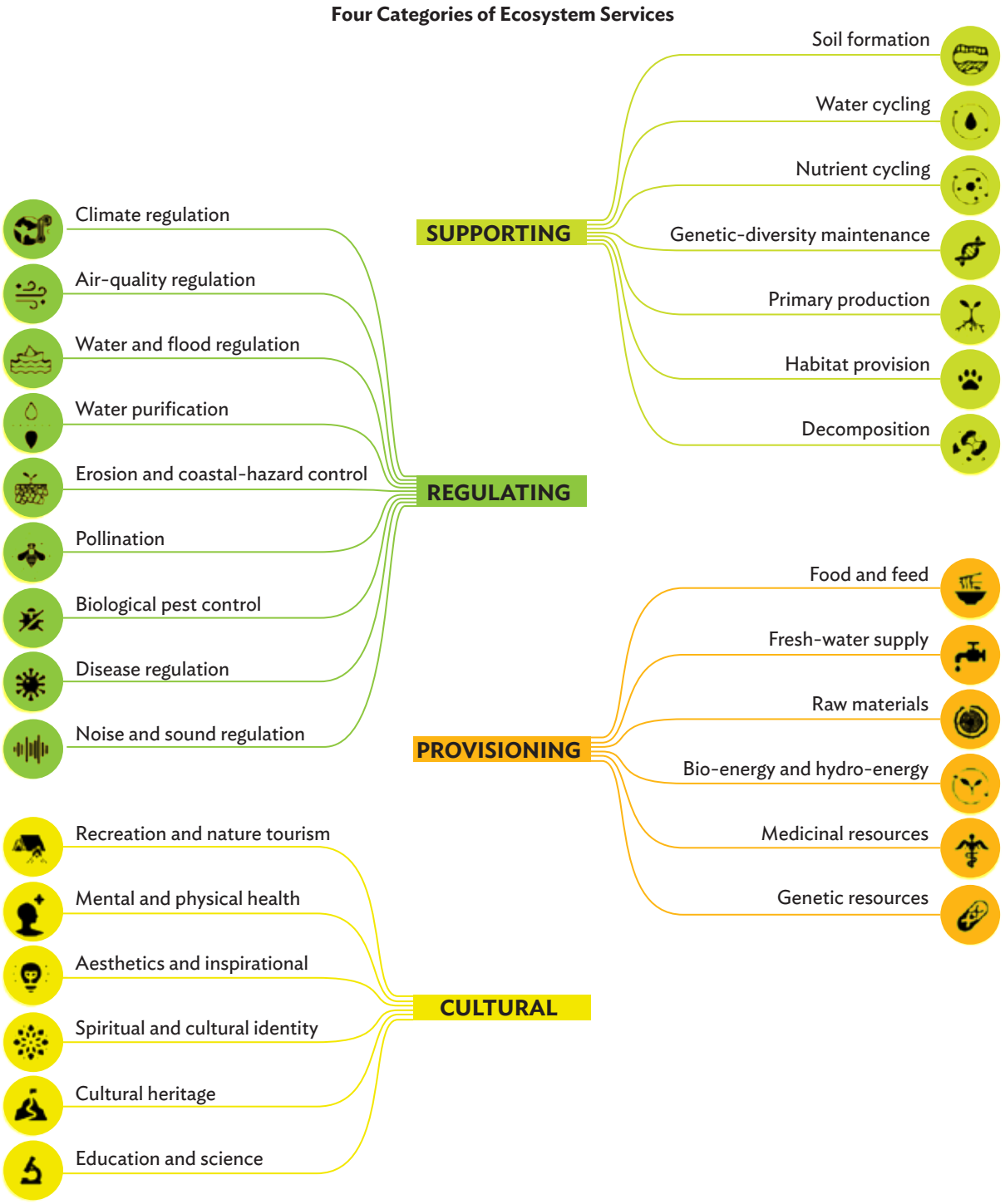
References:
ADB. 2022. Asian Development Bank Ocean Finance Framework.
Global Center on Adaptation. 2025. *State and Trends in Adaptation Report 2025: Small Island Developing States*.
Hoegh-Guldberg, O. et al. 2015. Reviving the Ocean Economy: The Case for Action—2015. WWF International.
United Nations Conference on Trade and Development (UNCTAD). 2025. *Policy Insights: Sustainable Ocean Economy—A Key and Fast Growing Sector at Risk*. Global Trade Update.

Source: Authors.

Nature provides ecosystem services that support both society and the economy. These services—grouped as supporting, regulating, provisioning, and cultural—are underpinned by the living and nonliving components of natural systems such as biodiversity, biomass, land, and water (Figure 1.3, Box 1.2). Biomass fuels renewable energy, sustains agriculture through crop residues and fodder, and supplies raw materials for pharmaceuticals and industry. Biodiversity supports essential services like pollination, natural pest control, and genetic diversity that are critical for crops and medicines. These are not abstract categories but fundamental production inputs, no less essential than labor or physical capital (Chapter 2). Healthy ecosystems function as natural infrastructure, sustaining both economic activity and societal resilience. For example, mangroves and coral reefs across Asia and the Pacific provide billions of dollars annually in flood protection, often outperforming engineered alternatives in both cost and durability. The stability of key environmental systems—such as water flows, air quality, and soil health—also depends on intact ecosystems, which enable the consistent delivery of services that support agriculture, health, and disaster preparedness.

Figure 1.3: Types of Ecosystem Services

Nature provides various services to the economy and society, all of which depend on the health and stability of ecosystems.



Source: Authors.

Box 1.2: Nature, Biodiversity, and Natural Capital

Nature refers to the living and nonliving components of the natural world, such as biodiversity, water, biomass, and land. In this report, it excludes nonrenewable resources such as minerals, metals, and fossil fuels.

Biomass refers to organic material from plants and animals, which supports renewable energy sources such as fuelwood and biogas, sustains agriculture through crop residues and fodder, and provides raw materials for pharmaceuticals and industrial processes.

Biodiversity is the variety of life on Earth, encompassing three levels:

- *Genetic diversity:* the variety of genes within a species
- *Species diversity:* the number and abundance of different species in a given area
- *Ecosystem diversity:* the range of habitats, biological communities, and ecological processes in the natural world

Natural capital refers to the stock of natural assets, including ecosystems and living resources, that generate flows of ecosystem services such as water filtration, carbon sequestration, and natural flood protection.

The analysis and recommendations in the report focus on renewable natural capital—living systems such as forests, wetlands, grasslands, and coastal ecosystems—that have the capacity to regenerate and sustain long-term economic and social value when managed responsibly. While nonrenewable resources like fossil fuels and minerals are undeniably important to the climate and development agenda, they involve distinct challenges related to transition and governance that are beyond the scope of this analysis. By concentrating on renewable natural assets, the report aims to provide targeted insights into how these resources can be effectively valued, governed, and financed as productive capital. At the same time, it recognizes the need for complementary efforts to address how extractive industries and mineral supply chains can align with broader biodiversity and climate objectives.

Sources:
Convention on Biological Diversity. 2021. Natural Capital.
Smithsonian National Museum of Natural History. n.d. What is Biodiversity?
U.S. Energy Information Administration. n.d. Biomass Explained.

Ecosystem degradation is increasingly affecting public health, employment, productivity, fiscal stability, and long-term resilience. Asia and the Pacific is one of the world's most ecologically rich regions—home to half of all global biodiversity hotspots, vast forest and grasslands, and diverse marine ecosystems—making its natural capital vital to regional and global resilience.[1] Pollution, deforestation, habitat loss, and unsustainable land and water use are eroding the ecosystems that sustain food security, agricultural productivity, and livelihoods and protect communities from disasters. The degradation of natural ecosystems directly threatens crop yields by undermining soil health, reducing pollination, and limiting water availability, impacting millions across Asia and the Pacific. As these natural systems deteriorate, productivity declines and public budgets face growing pressure from higher health expenditures, food import needs, and climate adaptation costs. Clearing wetlands, mangroves, and forests weakens economies' natural buffers against floods and storms, raising recovery costs and disrupting livelihoods. These risks are especially acute in the region, where economic activity remains closely tied to nature.

[1] A few examples of biodiversity hotspots in Asia and the Pacific are the East Melanesian Islands, Himalaya, mountains in southwestern People's Republic of China, the Philippines, Polynesia–Micronesia, Sundaland (covering parts of Indonesia, Malaysia, and Brunei Darussalam), Wallacea, Western Ghats and Sri Lanka, Caucasus, Irano-Anatolian, and Mountains of Central Asia. For full details of biodiversity hotspots are see the Knowledge Centre for Biodiversity- Global Biodiversity Data Viewer.

Conversely, protecting and restoring nature yields multiple benefits that can drive economic transformation and build resilience. In public health, improved access to clean water and sanitation could lower the risk of vector-borne and zoonotic diseases and prevent diarrhea cases—affecting 1.7 billion children per year—significantly reducing health care costs (WHO 2024). Access to national parks enhances mental well-being, potentially saving $2.2 trillion annually in health care and productivity losses (Buckley 2024). In terms of livelihoods and productivity, large-scale sustainable investments could unlock $10.1 trillion in business opportunities and create 395 million jobs by 2030, requiring annual investments of $2.7 trillion (WEF 2020). In agriculture, conservation practices in the Indo-Gangetic Plain have boosted rice yields by 38%–53% through improved soil quality (Mondal et al. 2021). From a fiscal perspective, nature-based solutions (NBS) can cost up to 50% less than traditional infrastructure, saving governments and investors about $248 billion annually (Bassi et al. 2021). Coastal ecosystems like coral reefs avert millions in infrastructure damage yearly across Pacific island economies (Arena et al. 2015; Pascal et al. 2015; Salcone, Brander, and Seidl 2016). In climate mitigation and resilience, forest management across Asia and the Pacific could mitigate 16.2 gigatons of carbon dioxide emissions over 30 years—worth an estimated $3.6 trillion—and account for nearly one-third of global mitigation potential, particularly in India, Indonesia, the People's Republic of China (PRC), and Viet Nam (Roe et al. 2021; Busch 2025a; Greenstone 2024).[2] Every dollar invested in forest restoration can yield $7–$30 in benefits, including carbon sequestration, soil stabilization, and flood control (Verdone and Seidl 2017; WRI 2025). The overall benefits of investing in nature extend far beyond climate gains. Such investments deliver tangible public health, fiscal, socioeconomic, and environmental returns—making them a core driver of economic growth and resilience (Box 1.3).

Box 1.3: Turning Restoration into a Development Strategy

The restoration of the Loess Plateau in the People's Republic of China provides a clear example of how ecosystem recovery can be integrated into national development strategies to yield multiple benefits. Starting in 1999, the Grain for Green program encouraged farmers to convert erosion-prone land back to vegetation, supported by complementary policies such as payments for ecosystem services, subsidies, and land-use reforms (FAO 2007). Over two decades, about 3 million hectares of land were restored (Feng et al. 2016), leading to a 30% increase in per capita grain output (Fan et al. 2025) and a significant reduction in soil erosion. Sediment runoff into the Yellow River decreased by over 100 million tons annually, contributing to reduced flood risks (Liu and Diamond 2005). Additionally, these changes helped lift approximately 2.5 million people out of poverty by boosting agricultural productivity and incomes (World Bank 2007). This case illustrates how coordinated ecological restoration, supported by policy and financial mechanisms, can simultaneously improve environmental conditions, enhance economic livelihoods, and reduce disaster risks.

References:

Fan, X. et al. 2025. Agricultural and Socioeconomic Effects of Vegetation Restoration on the Loess Plateau, China. *Geography and Sustainability*. 6 (5). 100326.
Feng, X. et al. 2016. Revegetation in China's Loess Plateau Is Approaching Sustainable Water Resource Limits. *Nature Climate Change*. 6. pp. 1019–1022.
Food and Agriculture Organization (FAO). 2007. *Restoring the Loess Plateau: Sustainable Development Through Rehabilitation and Land Management*.
Liu, J. and J. Diamond. 2005. China's Environment in a Globalizing World. *Nature*. 435. 30 June.
World Bank. 2007. Restoring China's Loess Plateau.

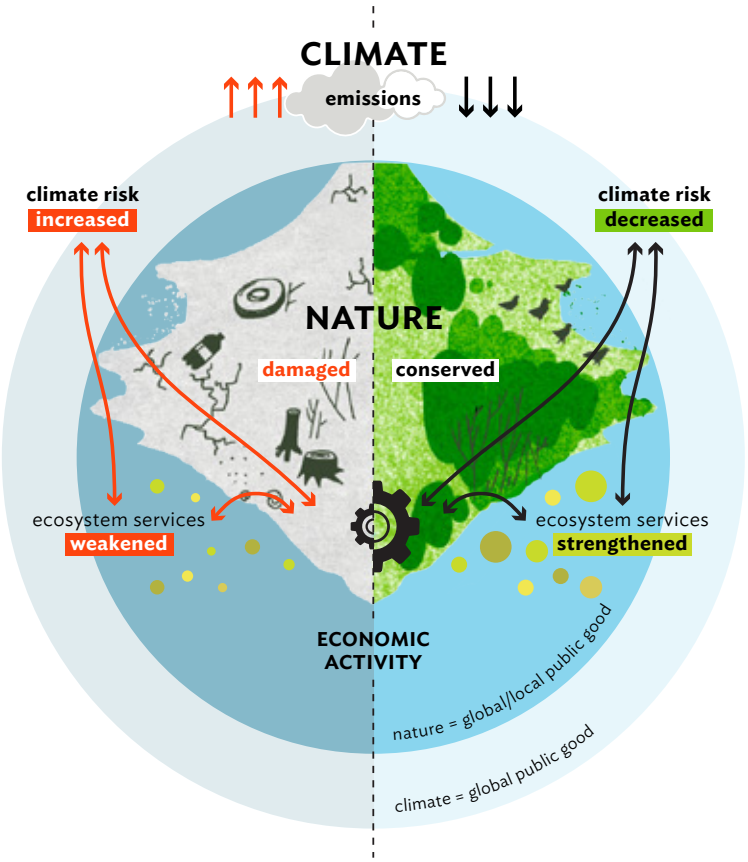
Source: Authors.

2 The economic value of avoided emissions is calculated using a carbon price of $225 per ton, as proposed by Greenstone (2024). The social cost of carbon is calculated as follows: Social cost of carbon = Total emissions (tons) × $225 per ton.

Nature and climate goals are strongly aligned. When ecosystems are healthy, they help regulate the climate, reduce disaster risks, support livelihoods, and contribute to more stable and productive economies. That stability, in turn, encourages reinvestment in nature, creating a virtuous cycle in which environmental and economic gains reinforce one another (Figure 1.4). Conversely, biodiversity loss and climate change trigger a feedback loop: as ecosystems degrade, their capacity to absorb carbon and buffer impacts diminishes, accelerating habitat loss and species decline and heightening vulnerability on both fronts (Government of the United Kingdom 2025). Across Asia and the Pacific—where over 60% of people live in climate-vulnerable areas, and where fragile and conflict-affected situations, small island developing states, and mountainous economies face particularly acute risks—NBS help reduce climate risks while enhancing ecosystem health and community resilience. They also deliver strong fiscal returns by lowering disaster-related costs and supporting sustainable economic growth. Mangrove restoration, for example, sequesters carbon, protects communities, and sustains fisheries and ecotourism. Soil conservation in the Indo-Gangetic Plain increases soil organic carbon by 40%–46%, raising crop productivity by 38%–53% (Mondal et al. 2021). Because nature's benefits and risks are felt locally, economies have a clear opportunity to strengthen resilience by conserving and restoring ecosystems. Integrated restoration strategies can advance climate goals while improving food and water security, lowering disaster risk, and supporting long-term economic growth and resilience.

Figure 1.4: Virtuous Cycle of Nature and Climate Resilience

Healthy ecosystems reduce climate risks and support livelihoods, creating economic stability that encourages continued investment in nature conservation, reinforcing resilience and long-term sustainable growth.



Source: Authors.

Economies across the region are beginning to act, revealing the potential of nature-positive development. While investment in nature remains nascent, a growing number of governments, communities, and businesses are adopting nature-based approaches to strengthen resilience, support livelihoods, and improve development outcomes. In Viet Nam's Ca Mau province, ecological shrimp–mangrove farming has increased yields, with sustainability certifications enabling farmers to obtain 10%–20% price premiums and access higher-value markets (Lai et al. 2021; Nguyen and Huynh 2022). In the Philippines, community-led mangrove restoration has helped replenish fish stocks and lower post-disaster recovery costs (ICLEI Southeast Asia Secretariat 2024). In the PRC, the Qinling Mountains project has managed over 10,000 hectares of forestland, reducing soil erosion and land degradation, boosting rural incomes by about 140%, and generating more than 1,500 jobs through ecotourism and local enterprises. Nature-based flood management projects are likewise proving cost-effective and gaining public support compared with traditional infrastructure (OECD 2024). These early efforts show that nature-positive development is not an alternative to economic growth but a pathway to achieve it more sustainably and inclusively.

For finance ministries, central banks, and economic planners, nature is increasingly relevant to their core institutional mandates. As ecosystems decline and climate-related shocks intensify, disaster costs, fiscal disruptions, and revenue volatility in nature-dependent sectors such as agriculture, tourism, and energy also rise. These pressures can undermine debt sustainability and erode macroeconomic stability. At the same time, global capital markets are evolving. Environmental performance now influences access to finance, credit ratings, and investment flows, linking natural capital more directly to fiscal outlooks and competitiveness (Seker and Isguven 2025). In this context, integrating nature into fiscal frameworks, budget planning, debt sustainability assessments, and monetary and supervisory policies is now an economic imperative.

1.2 Rise of Nature-Based Investment

Worldwide, growing consensus is driving support for nature-positive investment. Global agreements such as the Kunming–Montreal Global Biodiversity Framework and the Convention on Biological Diversity provide a shared foundation for aligning investment and policy with environmental goals. These frameworks strengthen accountability and credibility by encouraging governments to integrate biodiversity and climate objectives into national strategies. For Asia and the Pacific, the challenge and opportunity lie in embedding these principles within domestic fiscal, regulatory, and market institutions. Managing ecosystems as living infrastructure enhances resilience, boosts productivity, and unlocks new economic opportunities at scale. Regional platforms such as the Association of Southeast Asian Nations (ASEAN), Central Asia Regional Economic Cooperation, and Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area, along with national initiatives such as the PRC's protected-area policies, Thailand's biodiversity finance plan, and Uzbekistan's emissions trading legislation, reflect growing momentum to translate global commitments into practical actions and tangible benefits.

Governments and businesses across Asia and the Pacific are increasingly investing in nature, supported by evolving global frameworks and tools. Natural capital accounting and valuation through frameworks such as the United Nations System of Environmental-Economic Accounting (SEEA) and disclosure mechanisms like the Taskforce on Nature-related Financial Disclosures (TNFD) are standardizing how nature-related risks are reported. For example, the PRC, through the Natural Capital Accounting and Valuation of Ecosystem Services[3] initiative, integrates ecosystem service valuation into national accounts and policy frameworks (Chen et al. 2022; SEEA 2025). Globally, leading financial institutions—such as BlackRock and Norway's

[3] Launched in 2017, it aimed to enhance understanding and promote the practical application of environmental-economic accounting, particularly ecosystem accounting. It supported pilot testing of the SEEA for Ecosystems in five partner countries: Brazil, the PRC, India, Mexico, and South Africa.

sovereign wealth fund—are incorporating nature-related risks into their portfolios, signaling that biodiversity and ecosystem decline are now considered material market risks (Zadek 2025). This shift is expanding the pool of capital available for nature-based investments and encouraging similar progress in Asia and the Pacific. Advances in cost-effective satellite monitoring, environmental DNA techniques, and user-friendly artificial intelligence-driven analytics are also making it easier for developing economies to track and value ecosystem services and to design financially transparent, investable nature-based projects.

Alongside institutional interest, public awareness and support are emerging as critical enablers of nature investment. ADB's 2024 climate perception survey across 14 economies found that while flood protection, climate-resilient infrastructure, early warning systems, and water supply were the most frequently cited investment priorities, 36% of respondents still ranked nature conservation among the top five priorities for government climate spending (table). Support correlated strongly with awareness: individuals who understood the link between climate change and biodiversity loss were significantly more likely to favor ecosystem investment and adopt pro-environmental behaviors such as conserving energy, reducing waste, or supporting green products (Jensen et al. 2025). However, biodiversity loss remains less visible to the public than acute climate risks like floods or heatwaves, highlighting the importance of targeted education and communication to build sustained support for nature-positive policies and finance.

Investment Priorities Ranking by Economy

Nature conservation is among the top investment priorities for respondents.

Economy	Better warning systems	New infrastructure functions under future climate conditions	Better flood protection infrastructure	Climate-resilient water supply	Seawalls and coastal protection measures	Enhanced irrigation and agricultural technology	Sustainable fisheries	Conservation of natural areas	Strengthened health systems	Strengthened social protection systems	Improved insurance markets and products
Bangladesh	51	48	45	33	38	28	17	27	19	15	1
People's Republic of China	44	42	64	54	48	34	24	35	18	15	5
Hong Kong, China	39	44	57	41	35	26	26	28	27	17	4
India	59	32	52	27	26	38	22	41	28	14	5
Indonesia	54	54	62	27	29	40	22	33	31	20	5
Kazakhstan	21	45	52	36	36	34	12	36	38	21	3
Malaysia	53	50	57	36	23	37	23	37	32	17	8
Pakistan	51	39	44	23	21	23	11	27	28	13	7
Philippines	58	51	50	32	22	43	24	34	24	13	8
Singapore	31	51	51	49	41	29	31	37	29	14	4
Sri Lanka	52	42	53	39	33	43	22	35	25	13	6
Taipei,China	42	54	64	50	36	30	35	34	20	16	5
Thailand	48	52	60	42	23	40	16	50	19	21	6
Viet Nam	51	63	62	41	33	23	17	47	23	21	9
Total	**48**	**48**	**55**	**38**	**32**	**33**	**22**	**36**	**25**	**16**	**5**

Notes: Numbers show the percentage of responses by economy to the question, "Which, in your view, are the most important government investments to address climate change impacts in the next 10 years? Select up to five." Green denotes a higher share; red denotes a lower share. Results are weighted by age, sex, location, and education.
Source: Abiad, A. et al. 2024. Voices of Change: Public Sentiment on Climate Change Policies in Asia. Background paper for the *Asia-Pacific Climate Report 2024: Catalyzing Finance and Policy Solutions*. Asian Development Bank.

As momentum for nature-based investment grows, attention is increasingly turning to how to ensure positive returns. Early movers—both governments and firms—are helping shape emerging nature markets where the right enabling conditions are in place. These include credible institutional partners, diversified revenue streams, outcome-oriented financing models, and clear policy signals that reward ecological performance. Together, such conditions reduce uncertainty and transaction costs, directing private capital toward viable, scalable NBS. Building dual literacy is equally essential: investors benefit from understanding ecological value and nature-related risks, while conservation actors enhance results by designing projects that meet standards of financial transparency and viability. Deepening this mutual understanding helps ensure that nature-based programs remain investable, measurable, and impactful over the long term.

1.3 Role of Finance in Nature-Positive Transformation

Despite growing attention, nature conservation and restoration remain significantly underfinanced. Of the estimated $270 trillion in global financial assets, only about $200 billion annually flows into nature-positive interventions—well below the $1.15 trillion needed each year by 2030 to meet global biodiversity targets. Less than 20% of this financing comes from private sources (BloombergNEF 2024; Davies and MacDonagh 2025). Closing this shortfall will depend on shifting from grants and project-based funding to approaches that mobilize private capital at scale. Public finance will continue to play a central role, particularly in supporting early-stage investments and high-risk contexts. Where incentives and risk-sharing mechanisms are in place, public funds can help reduce investment risks and crowd in private capital, enabling the development of nature-based programs that are financially viable, replicable, and scalable.

Scaling private nature finance depends on markets shifting from undervaluing nature to fully accounting for nature-related costs and benefits. Services such as carbon sequestration, water filtration, pollination, and soil health often remain unpriced or treated as free, leaving significant natural wealth hidden and undervalued. This mispricing can distort incentives, potentially limiting investment in nature and increasing risks for governments, businesses, and investors. Making nature's economic contributions more visible—by better integrating ecosystem services into national accounting, cost–benefit analysis, and financial decision-making—can help steer investment toward regenerative activities. Translating data and ecological insights into action—through consistent metrics and better integration into economic and financial frameworks—is key to building transparent and investable nature-based markets.

Public sector plays an important role not only through direct funding but also by aligning policies, regulations, and planning systems with nature-positive objectives. Rather than building new frameworks, upgrading existing ones to properly value and manage nature can strengthen credibility and enable scale. Budget frameworks can integrate nature-based investment priorities, while sector strategies and public procurement can be adjusted to reflect ecological outcomes. Incorporating nature into risk assessments, costings, and performance metrics can help ensure public spending contributes to long-term environmental and economic resilience. Development partners, including multilateral development banks, can support this transition by helping governments consolidate fragmented pilots, build capacity, and scale programs using standardized tools and technical assistance.

Effective scaling of nature finance depends on upgrading the broader "operating system" of governance, policy, and data. Governance sets the rules, policy drives implementation, and data provides the evidence base. Together, these pillars enable mechanisms and information systems that internalize ecosystem-related externalities. Integrating ecological considerations into policy, economic, and financial frameworks can better align market incentives with long-term environmental sustainability. When ecosystem services are reflected in national accounts and corporate reporting, nature's role in driving productivity, fiscal health, and trade competitiveness becomes clear. Upgrading operating systems can help address systemic market failures and shift capital flows away from degradation toward regeneration.

1.4 A Practical Path Toward Resilient, Nature-Positive Growth

This report presents a high-level strategic 10-year road map to guide policymakers in Asia and the Pacific in integrating nature into their economic decision-making. Building on emerging global approaches reflected in recent studies (Damania et al. 2025; Dasgupta 2021; WEF 2025) and key international initiatives such as the Kunming–Montreal Global Biodiversity Framework and the TNFD, the report highlights that integrating nature into fiscal, trade, and development frameworks—by recognizing and investing in ecosystems as living infrastructure—is among the most promising growth strategies available.

To support this transformation, the report identifies three priority shifts: (i) mainstreaming nature within economic and financial decision-making frameworks; (ii) upgrading governance, policy, and data systems to address market failures and create an enabling environment for scaling nature finance; and (iii) adopting a phased, capacity-tailored approach that allows economies at different stages to progress from foundational reforms to full institutionalization.

The following chapters explore these themes in detail:

Chapter 2 describes how undervaluing nature creates economic blind spots and market failures and examines how improved valuation alongside coordinated public and private finance can help close the investment gap for nature conservation and restoration.

Chapter 3 highlights the importance of upgrading the nature finance operating system—governance, policy, and data—to better reflect environmental costs and benefits in economic decisions, enabling sustainable management and scaling of nature finance.

Chapter 4 presents the practical aspects of nature-based investment. It demonstrates how NBS generate revenue while advancing environmental and development objectives; introduces a practical investment playbook that aligns projects with investor expectations on risk, return, and impact; outlines a comprehensive financing toolkit spanning public, blended, and private finance; and illustrates how digital infrastructure and technology enhance investability. It also discusses the role of landscape approaches and regional cooperation in scaling and sustaining these investments.

Chapter 5 outlines a 10-year phased strategy guiding policymakers from foundational reforms to fully embedding nature in economic and financial systems. It concludes with key recommendations for scaling nature finance effectively and fairly.

Chapter 2

UNLOCKING THE NATURE–DEVELOPMENT DIVIDEND

THIS CHAPTER:

- **Reveals an economic blind spot:** Traditional investment decisions often overlook nature's full contribution, creating missed opportunities and hidden liabilities.
- **Highlights nature valuation's importance:** Identifying, valuing, and embedding nature's contributions in balance sheets can unlock markets, guide investment, manage risks, and ensure current and future benefits are recognized.
- **Explains roles of public and private finance:** Mobilizing private finance, supported by catalytic public finance and blended instruments, can bridge the investment gap in nature conservation and restoration.
- **Describes market failures and policy distortions:** Mispricing, harmful subsidies, weak property rights, and short-term incentives distort markets. Aligning finance with nature requires upgrades to governance, policy, and data systems.

2.1 Accounting for Nature's Value

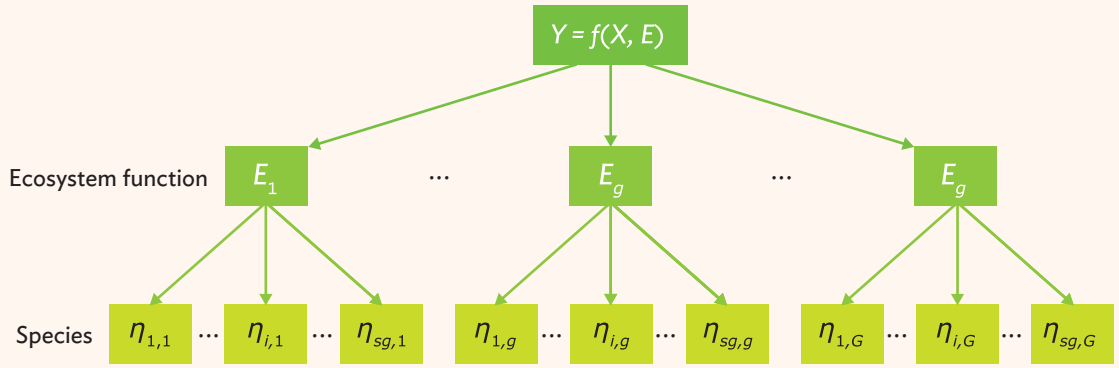
Understanding nature's role in the economy is essential to appreciating its full contribution. Biodiversity, a core component of natural systems, supports critical ecosystem services such as nutrient cycling, pollination, and climate regulation. Giglio, Rillo, and Stroebel (2025) present a framework in which biodiversity underpins the production of these ecosystem services, which—like labor and capital—function as fundamental inputs to the economy. This framework highlights complementarities among natural assets in the production of ecosystem services and provides a concrete analytical foundation for strategies that are both economically and ecologically viable (Box 2.1).

Box 2.1: Biodiversity and the Structure of Ecosystem Service Production

The overall supply of ecosystem services depends on the combined output of distinct ecological functions, supported by the diversity and interactions among species. The framework's upper tier illustrates that ecosystem services are complementary: severe degradation or complete loss of one vital function (e.g., water regulation) cannot be readily compensated by abundance in another (e.g., raw material provision) (box figure 1). This complementarity creates systemic vulnerability: if loss of species weakens a critical function, total flow of ecosystem services can decline sharply. The model thus highlights how biodiversity structure shapes both the productivity and resilience of ecosystems, and the economies that depend on them.

1: Ecosystem Service Production

The framework treats ecosystem services, supported by biodiversity, as a core factor of production alongside capital and labor.



Note: The model illustrates a hierarchical structure in which E denotes the production of aggregate ecosystem services, as a function of the population stock of different species ni,g across functional groups g.
Source: Giglio, S. et al. 2024. *The Economics of Biodiversity Loss.*

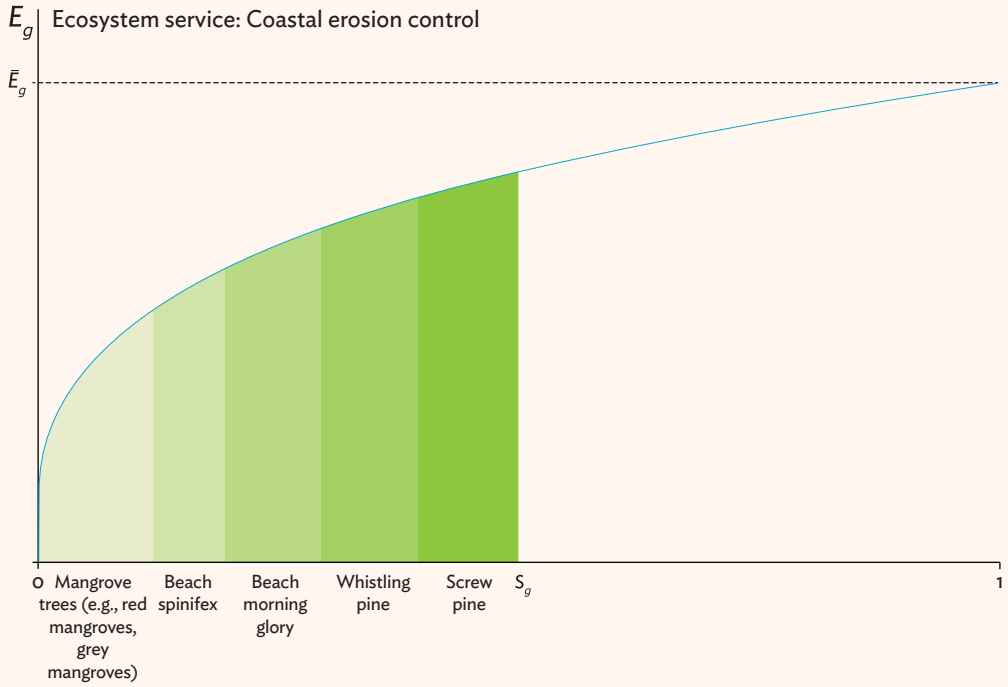
The model's nested structure reveals critical nonlinearities and tipping points in how loss of species affects ecosystem functions. In species-rich ecosystems, many species perform similar roles, creating "functional redundancy" that buffers ecosystem functions against species loss. This redundancy enhances stability and underpins the concave relationship between biodiversity and ecosystem productivity (box figure 2): when diversity is high, the loss of one species has only a small effect. Species-rich functions therefore lie on the flatter part of the biodiversity–productivity curve and are more resilient to shocks and disturbances. As species disappear and redundancy declines, each additional loss has a bigger impact. Once species richness falls below a threshold, ecosystem services and resilience can collapse.

continued on next page

Box 2.1 *continued*

2: Ecosystem Service Production and Biodiversity, Within Group

Ecosystems with higher species diversity tend to be more resilient to shocks.



Note: The columns with the different shades of green represent species (*Sg*) that provide the ecosystem service (*Eg*) coastal erosion control. An increase in species richness enhances ecosystem services, though at a diminishing rate due to partial substitutability among species.
Source: Giglio, S., J. Rillo, and J. Stroebel. 2025. *The Economics of Biodiversity Loss and Climate Change.*

Recent empirical research provides early evidence that biodiversity loss is influencing economic and financial risk. The study constructs proxies for biodiversity-related economic risk using sovereign credit default swaps, equity returns, and sectoral biodiversity exposure. Economies with fragile ecosystems—due to historical species loss or dependence on irreplaceable ecological functions—tend to exhibit higher sovereign risk premia (reflected in credit default swap spreads), particularly where natural capital is scarce relative to physical and human capital. In equity markets, sectors heavily dependent on specific ecosystem services—such as agriculture, fisheries, tourism, and resource extraction—show price sensitivity to biodiversity shocks, although these risks remain underpriced relative to climate risk.

These findings suggest that markets may be underestimating or only gradually incorporating complex, slow-moving, yet potentially severe biodiversity-related exposures. They also underscore the need for stronger models and better data to make biodiversity-related risks more visible and quantifiable for economic and financial decision-making.

References:
Giglio, S., J. Rillo, and J. Stroebel. 2025. The Economics of Biodiversity Loss and Climate Change: Implications for Asia and the Pacific. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Giglio, S. et al. 2024. The Economics of Biodiversity Loss. NBER Working Paper No. 32678. National Bureau of Economic Research.

Source: Authors.

Like any other form of capital, nature's contributions must be identified, valued, and accounted for to capture their full benefits and manage risks effectively. Current economic frameworks undervalue nature, treating vital ecosystem services—such as carbon sequestration, water filtration, pollination, and soil health—as free inputs rather than productive assets requiring investment and maintenance. The undervaluation prevents market prices from reflecting the economic value of these ecosystem services, distorting market signals and masking environmental risks that can translate into financial and operational challenges for businesses, governments, and investors across the region. This issue is not new. An early study in the Philippines compared the short-term economic gains from logging with the long-term value of conserving local ecosystems: while logging generated about $9.8 million in timber revenue, deforestation caused soil erosion and coral reef degradation that led to $27 million in long-term losses to tourism and fisheries (Hodgson and Dixon 1988; Pearce and Warford 1993). When natural assets are properly valued, hidden benefits—such as pollination in agriculture or the water regulation functions of managed watersheds—become visible, enabling more targeted policy design, focused investment, and stronger risk management.

Mainstreaming ecosystem services into program design, policymaking, and financial analysis can significantly improve both long-term returns on investment and sustainability. Investments that recognize nature's value are proving to be economically sound and environmentally essential. For example, in Cambodia's Pursat River Basin, the value of forest ecosystem services was estimated at $99 million, far exceeding the $22 million benefit from converting land to agriculture or charcoal production. The study also found that intact forests safeguard infrastructure and provide services worth 20 times the national investment in their protection (Rawlins et al. 2020). Similarly, in southern Thailand, conserving mangroves generated significantly greater economic value than converting them to shrimp farms. While shrimp farming offered short-term private gains of $7,707–$8,336 per hectare, the total mangrove value—including offshore fisheries and coastal protection—was estimated at $27,264–$35,921 per hectare (Sathirathai and Barbier 2001). While these estimates capture only the measurable aspects of ecosystem value, the actual worth of intact ecosystems is far greater, encompassing ecological, cultural, and long-term resilience benefits that are difficult to quantify (Box 2.2).

Quantifying ecosystem services enables governments to design fiscal policies and incentives that align economic behavior with environmental goals. When ecosystem services are measured systematically, governments can implement fiscal reforms—such as taxes, royalties, and targeted subsidies—that raise revenue while shifting incentives toward conservation. For example, valuing forest carbon sequestration can underpin carbon markets or emissions taxes that generate revenue while promoting forest conservation. Similarly, quantifying the water filtration and flood control functions of wetlands can justify conservation subsidies or implementation of water-use fees to safeguard these ecosystems. In fisheries, valuation of nursery habitats, sustainable fish stocks, and coastal protection can guide licensing and user fee reforms while strengthening the fiscal case for marine conservation.

Integrating ecosystem valuation into national accounts and corporate frameworks helps ensure that nature's contributions are considered in decision-making and long-term planning. By recognizing the economic role of natural capital, policymakers and businesses can better understand how ecosystems support productivity, fiscal health, and trade competitiveness. This visibility promotes better-informed investments and policies that align environmental and economic goals. While some ecosystem services—such as carbon sequestration and sustainable resource management—can be monetized through tools like carbon credits or eco-certification premiums, others like flood protection require coordinated public investment and policy to realize their full economic value. For example, Indonesia's System of Integrated Environmental and Economic Accounting compiles monetary estimates of ecosystem services such as timber production, carbon sequestration, and protected habitats. This approach helps assess trade-offs between development and conservation, informing policies such as the National Medium-Term Development Plan and nationally

Box 2.2: The Multiple Dimensions of Nature's Value

The valuation of nature captures its instrumental value: the benefits ecosystems provide to people through use, non-use, and option values. Use values include direct and indirect benefits such as timber, flood regulation by mangroves, and pollination. Non-use values reflect the importance people attach to biodiversity and habitats, such as unique species and sacred forests (IPBES 2022). Option values recognize the potential for future benefits, the discovery of medicinal compounds yet to be identified and the conservation of wildlife species with unknown ecological roles or genetic resources (Frank et al. 2025). Together, these illustrate how ecosystems underpin livelihoods, productivity, and resilience.

While this report focuses on nature's instrumental value as the foundation for mobilizing finance and informing economic policy, it also recognizes the broader spectrum of nature's worth. Intrinsic value affirms nature's right to exist independent of human benefit, while relational value captures the cultural, spiritual, and emotional connections that link people and ecosystems. The Convention on Biological Diversity (CBD) enshrined the intrinsic value of biodiversity (CBD 2007), and recent frameworks, including the Kunming–Montreal Global Biodiversity Framework (CBD 2022) and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2022), call for integrating diverse value systems in national strategies and reporting.

Recognizing intrinsic and relational values also aligns with the principles of Indigenous and Community Conserved Areas, where landscapes are managed based on spiritual and cultural ties to nature. Such values may not be easily represented in markets but are essential to long-term stewardship. Integrating these perspectives within valuation frameworks strengthens community rights and enhances conservation effectiveness (Dawson et al. 2021).

In sum, although this report centers on nature's instrumental value to the economy, it does so with full awareness that intrinsic and relational values are equally vital to sustaining ecosystems and the communities that depend on them.

References: :
CBD. 2007. The Convention on Biological Diversity.
___. 2022. Kunming–Montreal Global Biodiversity Framework. Convention on Biological Diversity. Montreal. 7–19 December.
Dawson, N., Martin, A., and Camfield, L. 2021. Indigenous and Community Conserved Areas: Pathways for Inclusive Conservation. *Conservation Science and Practice* 3(5).
Frank, E. et al. 2025. Option Value of Apex Predators: Evidence from a River Discontinuity. National Bureau of Economic Research Working Paper 34377.
IPBES. 2022. Summary for Policymakers of the Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat.

Source: Authors.

determined contributions (Castañeda, Raina, and Rexhepi 2019). Similarly, companies integrating ecosystem valuation into risk assessments and supply chain planning can better manage dependencies on natural capital and enhance long-term resilience.

Not all of nature's benefits can be fully known today, but preserving ecosystems safeguards their option value. Option value represents the potential for future, often unforeseen, benefits that would be lost if ecosystems are degraded beyond recovery. Nature's value extends beyond present uses, such as clean water or pollination, to include future possibilities that may be unknown or unmeasurable. Biodiversity—the variety of species and their interactions—may hold genetic resources that lead to new medicines, support agricultural resilience, or help manage future pandemics. During the 1970s–1980s, for instance, a bacterial blight in rice devastated yields across Asia until scientists, including those at the International Rice Research Institute, introduced a resistance gene, underscoring the importance of genetic diversity in safeguarding food security. The institute maintains the world's largest rice gene bank, including deposits in the Svalbard Global Seed Vault, as new strains continue to emerge, highlighting the need to preserve and expand genetic diversity as insurance against future threats.

It is important for valuation approaches to remain adaptive to fully reflect nature's evolving worth. Natural systems provide multiple layers of value, including immediate utility (food, water, and raw materials), future potential (genetic resources and ecosystem resilience), and risk reduction (climate regulation, disaster mitigation, and disease control). These benefits strengthen the economic rationale for conservation. As environmental conditions shift, scientific knowledge advances, and societal needs change, valuation methods must evolve to capture nature's dynamic contributions. Adaptive approaches help reveal latent and often unpredictable benefits that intact ecosystems may offer over time.

Effective valuation captures both market and nonmarket ecosystem services. Ecosystem services are valued differently depending on whether they are traded in markets. Marketed provisioning services—such as timber, crops, fish, and freshwater—are already priced and traded, and therefore easier to incorporate into conventional economic assessments. In contrast, nonmarket services—such as flood regulation, carbon sequestration, pollination, genetic diversity, and cultural values—lack direct market prices and are frequently overlooked. Yet these services are equally important, as they underpin environmental stability, sustain economic activity and human well-being, and strengthen resilience to climate change. For example, the collapse of India's vulture populations due to use of the veterinary drug diclofenac in cattle and other livestock revealed the immense hidden value of their sanitation role. Vultures feeding on contaminated carcasses died from kidney failure, and their disappearance led to surges in feral dog and rat populations, with cascading human health, economic, and cultural impacts (Frank and Sudarshan 2024). This case demonstrates how the loss of a single keystone species can trigger far-reaching ripple effects, underscoring the need for context-specific valuation of ecosystem services. Nonmarket services often require indirect valuation methods—such as avoided-cost or insurance models for regulatory services like flood control—and stated preference methods for cultural, spiritual, or recreational benefits not reflected in market transactions.

Multi-benefit valuation helps capture overall impact of ecosystem services that are often overlooked. Asia and the Pacific holds some of the world's largest mangrove carbon stocks and supports hundreds of millions of people living on vulnerable coasts, many of which are highly exposed to cyclones. Yet Hochard et al. (2025) find that most large-scale mangrove restoration projects are in areas with little storm exposure. This misallocation reflects a market inefficiency: blue carbon projects are often selected mainly for climate mitigation value, overlooking storm protection and broader socioeconomic and biodiversity gains. Targeting sites that maximize both carbon storage and coastal defense could yield similar climate benefits while protecting nearly 4 million at-risk people, effectively increasing returns on investment. For a coastal lagoon, for instance, priority services might include fish production, water purification, storm protection, and tourism. Framing investments around portfolios that capture economic, social, and ecological value in a multi-benefit package can substantially raise total returns.

Growing scarcity is increasing nature's marginal value, strengthening the case for proper valuation and strategic investment. Ecosystems are increasingly recognized as vital natural infrastructure that underpins economic stability, climate resilience, and human well-being—not merely as sources of raw materials (Asian Infrastructure Investment Bank 2023; Pörtner et al. 2023). As natural capital is depleted through deforestation, pollution, and habitat loss, remaining healthy ecosystems become more ecologically critical and economically valuable. The rising scarcity of natural capital highlights the need for economies in Asia and the Pacific to integrate nature into investment decisions and fiscal planning. As ecosystems face increasing pressure from urbanization, industrialization, and climate impacts, sectors such as agriculture, energy, and coastal infrastructure are especially at risk. Pricing this scarcity can unlock targeted conservation and restoration efforts while directing capital toward nature-positive investments that strengthen resilience and protect supply chains. Bridging this gap between rising value and limited investment requires aligning financial systems with nature-positive outcomes.

However, investment in nature remains critically insufficient, with the global biodiversity financing gap estimated at $942 billion per year (BloombergNEF 2024; Paulson Institute 2025). Despite growing awareness of the financial, economic, and development risks posed by environmental degradation—and the benefits of properly valuing and bundling nature investments—global financial flows into nature-positive interventions remain only a fraction of what is needed to meet biodiversity goals by 2030 (Chapter 1). Private finance accounts for less than one-fifth of nature positive investment overall, or roughly $35 billion (BloombergNEF 2024). Asia and the Pacific, although highly ecologically vulnerable, continues to receive less than 5% of global biodiversity finance (Davies and MacDonagh 2025; UNEP 2022). A key objective of this report is to help policymakers establish the enabling conditions needed to mobilize and scale nature finance.

2.2 Mobilizing Finance for Nature-Positive Economies

Public and private finance can be a powerful lever for supporting nature-positive economic transformation under the right conditions. Preserving and restoring ecosystems often requires investments that exceed government capacity, highlighting the critical role of private finance in delivering efficiency, innovation, and scalability. Given the right enabling conditions, private investors may be better positioned to price and allocate risk, deploy advanced financial instruments, and scale proven models. Meanwhile, public finance complements these efforts by mitigating early-stage risks and helping build market infrastructure through concessional tools like grants, guarantees, and below-market financing. Development finance institutions and multilateral development banks further support this process through technical assistance and risk-sharing mechanisms. Blended finance, which combines concessional and commercial capital, can help de-risk investments and attract private capital, enabling commercial lenders to enter as risks decline. Examples such as the Seychelles' debt-for-nature swap and Singapore's Financing Asia's Transition Partnership illustrate how these approaches can work in practice (SeyCCAT 2025; MAS 2024).

Beyond its catalyzing role, public finance remains essential for long-term investments that lack direct commercial returns and therefore cannot attract private capital. This includes funding defensive measures and public goods that do not generate immediate revenue—such as flood protection, disaster risk reduction, and clean water provision—which benefit society broadly but are not easily monetized or sold. Nature-based solutions (NBS) often deliver these services more cost-effectively than traditional gray infrastructure, but since they do not yield direct profits, private investors are unlikely to finance them. Large-scale conservation programs and initiatives requiring sustained commitment typically rely on public and philanthropic funding.

At the same time, the challenge often lies not in the availability of capital but in the scarcity of investment-ready, nature-positive opportunities. Many initiatives—such as mangrove restoration, watershed rehabilitation, or sustainable land management—fall short of mainstream investor expectations for return, scale, and risk. Projects often lack clear ownership structures, predictable cash flows, or the governance capacity needed to attract investors with confidence. As a result, projects remain in the "valley of death": too large for philanthropic grants yet too early-stage or uncertain for commercial finance. Across Asia and the Pacific, many nature-related efforts remain at the pilot level—not because of limited potential, but because they are not structured in ways that enable capital to flow. Addressing this disconnect requires dual literacy—financial actors gaining ecological awareness, and conservation actors adapting to investment frameworks. Overcoming these barriers calls for systemic reforms in how markets value nature.

2.3 Addressing Market Failures and Policy Distortions

Nature investment remains limited largely because markets fail to account for the costs of degradation and the benefits of ecosystem services. Financial markets generally treat natural resources as externalities—factors not reflected in economic decisions—leading to misallocation of capital. This results in investments that degrade ecosystems while undervaluing natural assets like forests, wetlands, and coral reefs, which provide critical resilience and long-term economic value. Such mispricing, which is driven by several factors, distorts incentives across sectors and undermines efforts to align finance with nature-positive outcomes (Box 2.3).

Box 2.3: Market Failures and Policy Distortions

Market failures arise when prices and policies distort incentives, leading to the misuse or misallocation of natural resources.

- **Negative externalities** occur when the environmental costs of economic activities are borne by others but not reflected in market prices. For example, fertilizer and pesticide runoff can degrade wetlands by lowering water quality and ecosystem productivity (MacKinnon and Hatton 2025), but farmers lack incentives to limit use since these costs are not reflected directly in their expenses. Other examples include the deforestation-driven spread of malaria and zoonotic diseases (Busch 2025b) and biodiversity loss from traditional gray infrastructure.

- **Positive externalities** are unpriced benefits from economic activities—such as pollination, forest carbon sequestration, and urban green spaces—from which others gain without compensation. For example, in Colombo, Sri Lanka, urban wetlands lower local temperatures by up to 10°C, reducing air conditioning costs (Townshend 2025). Because these benefits are rarely priced, markets tend to underprovide such goods.

- **Public goods** such as flood protection are non-excludable and non-rivalrous. For instance, mangroves played a critical role in reducing damage and saving lives during the 2004 Indian Ocean tsunami (MacKinnon and Hatton 2025), while the loss of 40% of Colombo's wetlands contributed to more severe flooding in 2010 (Townshend 2025). Because of free-rider challenges, where someone benefits from a shared resource or public service without paying, private markets generally underinvest in these essential ecosystem services.

- **The tragedy of the commons** arises when commonly used resources, like fisheries or grazing lands, are overexploited because no entity holds exclusive rights. In Asia and the Pacific, 64% of commercially significant fish stocks, particularly shark and tuna, are currently overfished (Grainger and Green 2025). Rapid livestock growth in the People's Republic of China (PRC) in mid-1980s to the 1990s has placed pressure on pasturelands, prompting policy efforts toward sustainable management (Davies 2025). In the Philippines, extensive gathering of fuelwood has contributed to mangrove degradation, increasing vulnerability to storms.

- **Short-termism** reflects the tendency of markets to prioritize immediate returns over longer-term outcomes. In Asia and the Pacific, commodity-driven deforestation, logging, and land conversion account for about half of forest loss (Busch 2025b). Because immediate profits from deforestation are easier to monetize than long-term benefits like carbon storage and biodiversity, clearing forests often appears economically rational despite broader costs. This same bias also discourages investment in green infrastructure, which tends to be more cost-effective over time but costlier upfront (Townshend 2025).

- **Unclear property rights and weak governance** increase the risk of overuse and degradation of natural resources. Many Indigenous Peoples and local communities act as stewards of biodiversity but often lack formal rights to protect their resources, leaving them vulnerable to competing claims and extractive pressures. For example, overlapping land use licenses in Indonesia have undermined biodiversity protection (Eales 2025). Additionally, unclear ownership prevents land from being used as collateral, restricting access to finance in many cases (section 3.1.4).

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Box 2.3 *continued*

- **Omitting environmental costs and benefits in national accounting** distorts economic signals. Because gross domestic product (GDP) typically excludes the economic value of natural assets like mangroves, wetlands, and coral reefs, and overlooks environmental degradation, activities like deforestation may boost GDP in the short term while imposing long-term social costs that go unrecorded (Davies and MacDonagh 2025; Fenichel et al. 2025).

- **Harmful subsidies** undermine environmental goals. Subsidies for fossil fuels encourage continued reliance on polluting energy sources, while fertilizer and irrigation subsidies can worsen nutrient runoff, soil degradation, and deforestation (Davies and MacDonagh 2025). Similarly, fuel subsidies lower operating costs for fishing fleets, contributing to overfishing and depletion of marine stocks (Grainger and Green 2025).

References:
Busch, J. 2025a. Climate Mitigation Potential of Forests in Asia and the Pacific. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
___. 2025b. Forests in Asia and the Pacific: Climate and Biodiversity. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Davies, G. and R. MacDonagh. 2025. Designing Nature's Market: A Practitioner's Agenda for Private Sector Investment. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Eales, B. 2025. Bridging Climate and Biodiversity Law: Toward Coherent, Rights-Based Environmental Governance in Asia and the Pacific. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Fenichel, E. et al. 2025. Environmental-Economic Data and Statistics, Digital Infrastructure, and a Sustainable Future. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Grainger, C. and S. Green. 2025. Oceans and Coral Reefs in Asia and the Pacific. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
MacKinnon, J. and L. Hatton. 2025. Our Most Valuable Ecosystem—Status and Conservation of Wetlands in the Asia-Pacific Region. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
Townshend, T. 2025. Green Infrastructure. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Source: Authors.

Policy distortions further exacerbate these challenges by encouraging environmentally harmful activities while discouraging conservation and restoration. Estimates suggest that governments spend around $1.25 trillion annually on explicit subsidies for agriculture, fishing, and fossil fuels, while the unpriced social, health, and environmental costs of these subsidies amount to an additional $6 trillion every year (Damania et al. 2023). Such subsidies distort market signals and investment flows, reinforcing nature-negative activities and creating barriers to sustainable alternatives. In Asia and the Pacific, agricultural subsidies have historically supported production practices that contribute to deforestation, soil degradation, and water pollution, highlighting the need for policy reforms to better align incentives with ecosystem sustainability (Box 2.4). Chapter 3 explores these policy challenges in greater detail and discusses how addressing such distortions is essential for enabling sustainable finance.

Box 2.4: Agricultural Subsidies and Ecosystem Dynamics: Challenges and Opportunities

Subsidies in Indonesia have historically supported the expansion of palm oil production, a key agriculture sector. This expansion has been associated with increased deforestation and conversion of tropical forests and peatlands—important carbon storage ecosystems. In response, Indonesia introduced measures such as the Forest Moratorium (2011) and Palm Oil Moratorium (2018) to limit new permits in sensitive areas. These efforts have coincided with reductions in deforestation rates since 2015 (Busch and Engelmann 2017) and have enabled access to international climate finance, including concessional loans and forestry-related mitigation funding. Complementary initiatives, like the Indonesia Climate Change Trust Fund, further support conservation and sustainable land management projects. International partnerships, such as Norway's continued financial support for Indonesia's Forest and Other Land Use Net Sink 2030 plan, aim to strengthen these efforts.

In India, programs under the National Mission for Sustainable Agriculture promote sustainable farming practices—including organic farming, soil health improvement, and climate resilience—with goals to restore ecosystems and enhance agricultural sustainability. At the same time, subsidies for chemical fertilizers—important for crop productivity and food security—have been linked to soil acidification, nutrient imbalance, and nitrate contamination of groundwater in some regions (Kumar et al. 2022; FAO 2018). These outcomes highlight opportunities to better align fertilizer subsidy policies with sustainable nutrient management principles to support long-term soil health and productivity.

Agricultural subsidies in the People's Republic of China (PRC) aim to support staple crop production like rice and wheat, contributing to national food security. However, these incentives have also contributed to groundwater depletion—particularly in northern PRC—and soil degradation caused by monoculture and excessive fertilizer use. Conservation-oriented programs, such as the Grain for Green Program launched in 1999, offer grain and cash subsidies to encourage the conversion of marginal or erosion-prone croplands into forest or grassland, resulting in reduced soil erosion, increased biodiversity, and enhanced carbon sequestration (Liu et al. 2008). Integrating sustainability into agricultural subsidy frameworks can help align food security objectives with ecological resilience.

References:
Busch, J. and J. Engelmann. 2017. Cost-Effectiveness of Reducing Emissions from Tropical Deforestation, 2016–2050. *Environmental Research Letters*. 13 (015001).
Food and Agriculture Organization of the United Nations (FAO). 2018. *Assessment of Soil Nutrient Balance in India.*
Kumar, D. et al. 2022. Impact of Fertilizer Consumption on Soil Health and Environmental Quality in India. *Indian Journal of Fertilisers*. 18 (10). pp. 992–1005.
Liu, J. et al. 2008. Ecological and Socioeconomic Effects of China's Policies for Ecosystem Services. *Proceedings of the National Academy of Sciences*. 105 (28). pp. 9477–9482.

Source: Authors.

Many fiscal frameworks include features that can inadvertently create incentives misaligned with nature's preservation. Broad consumption subsidies, underpriced resource royalties, and budget rules that do not fully account for natural capital depreciation can contribute to environmental pressures. Public funding that favors extractive activities over restoration—along with policies in sectors such as agriculture, energy, and land use—can distort prices and externalize environmental costs. These factors may discourage private investment in nature-positive solutions and sustain growth models that overlook ecological impacts. Additionally, many biodiversity-rich economies in Asia and the Pacific face higher borrowing costs because credit ratings often fail to fully recognize their ecological assets or the economic risks posed by climate vulnerabilities. This incomplete assessment can raise financing costs and limit access to affordable capital for sustainable development.

However, finance cannot act alone; to be effective, it should be embedded within an enabling framework that fosters coordination, accountability, and predictable rules. To mobilize markets at scale, governments need to upgrade the "operating system" of governance, policy, and data infrastructure to establish mechanisms that align incentives and direct capital flows. Driving long-term, systemic transformation will require a broader policy toolkit spanning regulation, trade and industrial strategies, taxation, and public procurement. Together, these measures can ensure that market signals, fiscal instruments, and investment choices reflect both the costs of environmental damage and the long-term gains of restoration.

Governance, policy, and data form the essential operating system that—once strengthened—can enable pathways for nature-aligned development. Strong governance, anchored in environmental rule of law, establishes clear rules and responsibilities for managing natural capital and coordinating decisions. Effective policies translate environmental goals into action through regulations, fiscal measures, and market incentives that reduce uncertainty and promote nature-positive innovation. Integrated, high-quality data support valuation, risk assessment, budgeting, and monitoring. Together, these enabling factors provide the consistency and credibility needed for public and private actors to value, protect, and invest in nature (Zadek 2025). Chapter 3 outlines an agenda for governments to reform and upgrade this operating system of governance, policy, data—realigning incentives and creating the conditions for finance to flow at scale. Critically, this system should enable markets to internalize environmental externalities so that the costs of degradation and the benefits of restoration are reflected in market signals, fiscal policy, and investment decisions.

Chapter 3

GOVERNANCE, POLICY, AND DATA: THE OPERATING SYSTEM FOR NATURE FINANCE

THIS CHAPTER:

- **Highlights the importance of upgrading the nature finance "operating system"—comprising governance, policy, and data systems**—to address market failures that prevent environmental costs and benefits from being fully reflected in economic and financial decisions, enabling finance to scale effectively.
- **Explains how strengthening governance** supports sustainable management of natural capital.
- **Outlines the role of policy instruments** in translating environmental goals into actionable signals for investment.
- **Emphasizes the need for reliable, decision-grade ecological data** to enable accurate valuation, monitoring, and adaptive management.

Nature underpins the economies of Asia and the Pacific, sustaining key sectors and livelihoods across the region. Yet as Chapter 2 outlined, natural capital remains undervalued, and market failures and policy distortions continue to drive environmental degradation. Addressing these challenges requires more than finance alone—it involves creating the enabling conditions—through governance, policy, and data—that allow nature to be valued, priced, and financed as productive capital.

Upgrading the nature finance operating system can play an important role in supporting systemic change. Just as the digital economy depends on common standards and reliable infrastructure to operate at scale, nature finance benefits from a framework that encourages coherence, trust, and alignment across sectors. Anchored in sound governance, effective policies, high-quality data, and related enablers, this operating system can provide the consistency and credibility needed for public and private actors to better value, protect, and invest in nature (Zadek 2025). Governance sets the rules of the game by defining how decisions are made, enforced, and coordinated across institutions. Policy then helps translate environmental goals into action through regulations, pricing mechanisms, and fiscal incentives. Decision-grade data provides reliable information to value nature, monitor ecosystems, and support adaptive management and evaluation. Integrating these elements with complementary systems—including scientific methods for measuring ecosystem services and accounting tools for valuing natural assets—can help harmonize incentives and enable finance to scale effectively.

3.1 Governance: Establishing Credibility and Incentive Alignment

Governance shapes how decisions are made, enforced, and coordinated across institutions. It determines how powers are assigned and regulated, rights and responsibilities allocated, and enforcement mechanisms function to manage natural capital. Clear and consistent "rules of the game" help lower investment risks, build trust, and promote equitable sharing of benefits among local communities engaged in nature-based investments. Built around the pillar of environmental rule of law (EROL), which promotes fair, transparent, and consistent enforcement, strong governance can help correct market failures and strengthen institutional credibility. Achieving these outcomes often depends on coordination across sectors and levels of government, alongside inclusive engagement with Indigenous Peoples and local communities (IPLCs) to support durable and equitable results.

3.1.1 Establishing the Rules of the Game

Effective governance creates a predictable, rules-based environment that enables investors to recognize and value nature. By embedding ecological accountability into legal and economic systems, governance provides the clarity and confidence that support long-term investment. When laws clearly define rights, responsibilities, and enforcement mechanisms, ecosystems are more likely to be treated as productive capital rather than unpriced externalities. Governance typically operates across legal, economic, and institutional dimensions: (i) clear statutes and independent judiciaries establish enforceable environmental protections; (ii) fiscal reforms can align incentives with ecological goals; and (iii) strengthened monitoring and enforcement enhance transparency and compliance. Across Asia and the Pacific, governments are increasingly exploring such approaches—for instance, by strengthening environmental courts, reforming fiscal policies to reward conservation, and investing in monitoring and verification capacity.

High-level legal frameworks anchor ecological value in law, helping ensure that environmental limits are enforceable. Robust environmental statutes that clearly define rights, responsibilities, and environmental boundaries provide the foundation for credible governance. Independent judiciaries uphold these laws by interpreting and enforcing them fairly and transparently, reinforcing institutional trust and accountability. A notable example comes from the State of Victoria, Australia, where landmark court rulings in 2023–2024 precipitated the end of native forest logging to protect endangered species. This legal intervention reallocated labor and capital toward restoration, fire management, and ecotourism, supported by a $200 million Forestry Transition Program. As detailed in Box 3.1, the case illustrates how enforceable legal frameworks can redirect market behavior from short-term extraction toward sustainable, long-term asset management, generating both ecological and economic benefits.

Box 3.1: Ending Native Logging in Victoria: A Case of Environmental Governance

On 1 January 2024, the Victorian government ended native timber logging in state forests by repealing the *Sustainable Forests (Timber) Act 2004*, amending the *Forests Act 1958*, and dissolving VicForests. The decision was largely driven by two Supreme Court rulings that found VicForests in breach of environmental laws protecting endangered species, though the policy was also framed as an environmental and Indigenous stewardship initiative (Environmental Justice Australia 2023). These rulings safeguarded threatened species, ended native forest logging, and established a new legal precedent for applying the precautionary principle to wildlife conservation in Australia.

To manage the transition, the government established the Great Outdoors Taskforce and the Eminent Panel for Community Engagement to guide future forest use. It also launched the Forestry Transition Program to assist affected workers through alternative employment in land management and bushfire recovery (DEECA 2025). These reforms introduced an inclusive consultation framework through the taskforce and engagement panels, actively involving traditional owners, communities, and the public in shaping state forest management. They also embedded science-based assessments of forest values (biodiversity, carbon, water, and threatened species) into decision-making, driving data-driven regulatory reforms such as modernizing Regional Forest Agreements and forest zoning.

This case highlights strong environmental governance under the rule of law—where legislation protects biodiversity, communities can seek legal remedies, courts act independently, and governments respond constructively. The transition program further underscores how governance, when coupled with inclusive consultation and social protection, can support both ecological and economic resilience.

Sources: Environmental Justice Australia. 2023. *Two Landmark Court Wins for Our Forests in Two Weeks*.
Government of Australia, Department of Energy, Environment and Climate Action (DEECA). 2025. *Future of State Forests*.

3.1.2 Economic Governance and Enforcement: Turning Rules into Results

Economic governance frameworks help translate environmental goals into tangible incentives for investments in nature. These frameworks shape fiscal mechanisms, compensation schemes, and market-based instruments to align economic behavior with conservation outcomes. For example, the Ecological Protection Compensation Regulation of the People's Republic of China (PRC) institutionalizes fiscal rewards for conservation performance. The regulation channels more than $27 billion annually in central-to-provincial transfers, linking payments to measurable indicators such as water quality and forest cover. Complementary agreements, such as the Xinanjiang River Basin agreement, enable upstream and downstream provinces to trade payments based on verified ecological outcomes. Meanwhile, market-based instruments, including water-rights trading and carbon and biodiversity markets, diversify financing beyond public budgets. As illustrated in Box 3.2, this system shows how fiscal policy has been used to internalize ecological externalities and create predictable revenue streams for conservation.

Box 3.2: Unified Eco-Compensation Framework, People's Republic of China

After two decades of localized pilot programs, the People's Republic of China implemented the Regulation on Ecological Protection Compensation on 1 June 2024, creating a unified legal framework to incentivize environmental stewardship. This landmark regulation aims to consolidate a fragmented policy landscape into a coherent system, addressing a persistent challenge: the privatization of development benefits and the socialization of environmental costs.

The regulation establishes three primary mechanisms under a guiding principle of government-led, socially participatory, and market-oriented operation. This state-anchored approach reflects the constitutional principle of state ownership of natural resources. Its three pillars are the following:

Vertical compensation. Fiscal transfers from the central government to local governments support the protection of nationally significant areas like key ecological function zones. Annual transfers have reached nearly 200 billion yuan (Guo et al. 2025; China News Service 2024). Funds are allocated to provinces based on the area, importance, and conservation performance of their designated key ecological function zones. Local governments then use this funding for specific activities like enforcing grazing bans, hiring local rangers, or undertaking reforestation projects, directly linking national funds to on-the-ground protection.

Horizontal compensation. Legally enforceable agreements between jurisdictions, such as upstream and downstream provinces within a river basin, ensure that ecological outcomes are financially rewarded. A notable case is the Xinanjiang River Basin agreement, under which the downstream Anhui province pays the upstream Zhejiang province when annual water quality standards are met, with matching funds from the central government. If targets are missed, the payment direction reverses, creating a strong financial incentive for upstream provinces to control pollution and manage land use effectively.

Market-based mechanisms. These tools diversify funding beyond government budgets. They include integration with the national Emissions Trading Scheme for carbon and pilots such as the Yellow River Basin water rights trading system, which allows industrial and agricultural users to exchange rights and thereby encourage water conservation. The regulation also promotes certified green industries by offering preferential loans and tax benefits to enterprises engaged in ecotourism, organic agriculture, and sustainable forestry.

References:
China News Service. 2024. Half of China's Forests and Grasslands Included in the Eco-Compensation Scheme. ECNS Wire. 28 November.
Guo. D. et al. 2025. *Key Provisions of the People's Republic of China's Ecological Protection Compensation Regulation*. ADB Brief No. 348.
Xinhua. 2024. *China Releases Ecological Protection Compensation Regulations.* China Daily Government. 11 April.
China Justice Observer. 2024. *China issues Regulation on Ecological Protection Compensation.* 11 July.
State Council of the People's Republic of China. 2024. *Ecological Protection Compensation Regulation.* State Council Order No. 779. Promulgated 6 April 2024; effective 1 June 2024.

Source: Authors

EROL provides the institutional foundations that make enforcement credible, consistent, and transparent. As the operational backbone of governance, EROL ensures that rules are consistently applied and upheld by enabling judicial independence, empowering citizens and civil society to hold violators accountable, and supporting the enforcement of legal and contractual commitments. Across the region, emerging environmental courts—such as in Pakistan and the Philippines—are strengthening procedural justice and accelerating dispute resolution. Embedding EROL within governance systems enhances institutional credibility: when enforcement is consistent, the cost of capital declines and longer-term financing becomes more viable. In this way, EROL does more than uphold compliance—it underpins investor confidence and the effective functioning of nature-based markets.

Enforcement links rules to results, ensuring that legal commitments translate into environmental integrity and economic value. Governance achieves real impact when enforcement closes the gap between legal intent and environmental outcomes. Predictable enforcement enables compensation for ecosystem damage, recognition of restoration benefits, and protection of property and use rights. It also helps correct core market failures—such as overextraction, pollution, and underinvestment in public goods—by aligning liabilities and incentives. Strengthening enforcement capacity, transparency, and public access to environmental information are foundational public benefits that support both ecological resilience and financial stability. Investing in institutional aspects—such as trained inspectors, judicial capacity, forensic tools, and information systems—together with technologies like remote sensing and artificial intelligence-based monitoring, can extend enforcement reach and reduce costs (Davies and MacDonagh 2025).

Institutional coordination is a key function of strong governance. It is essential for consistently applying legal and economic frameworks across sectors. While legal and economic governance frameworks set the parameters for action, coordination enables ministries of environment, finance, and planning to align their mandates, share data, and enforce standards without duplication or conflict. This institutional coherence allows key policy tools—such as eco-taxes and biodiversity credits—to operate within a unified system that rewards compliance and transparency. Decision-grade data anchored in law and linked to reporting and disclosure requirements provide a common evidence base for all stakeholders. Together, strong governance and cross-sector coordination create the practical conditions needed to direct investment toward protecting and restoring natural resources.

3.1.3 Cross-Sector Coordination: Aligning Mandates and Managing Trade-Offs

Effective governance requires harmonizing institutional mandates, reducing policy contradictions, and embedding nature in economic decision-making. Building on the need for coordination, nature-positive finance depends on systemic coherence across ministries, agencies, and government levels to ensure that economic, fiscal, and environmental policies support shared goals (Zadek 2025). In many economies in Asia and the Pacific, institutional fragmentation undermines this coherence. Environmental authorities often lack jurisdiction over sectors that contribute most to degradation—such as agriculture, energy, infrastructure, and trade—while finance ministries are not always mandated to consider ecological risks or biodiversity outcomes. This can result in contradictory policies: conservation incentives coexist with harmful subsidies, land tenure rules encourage overextraction, and fiscal frameworks fail to account for natural capital losses. Without clear mandates and cross-sector coordination, capital remains misallocated and private investment limited.

Bridging silos benefits from political clarity, legal authority, and operational coordination. Achieving integrated governance involves more than technical adjustments—it calls for deliberate institutional reform. This includes revisiting mandates, clarifying legal competencies, and establishing coordination mechanisms that embed nature across public finance and planning systems. In some economies, national budget processes are beginning to incorporate screening tools to assess environmental externalities and nature-based impacts, while infrastructure planning increasingly considers ecological trade-offs. Fiscal and monetary authorities also play a role by aligning financial regulations and capital markets with long-term ecological risk—similar to how climate risk is now factored into stress testing. Clear institutional responsibilities and coordinated decision-making can help make nature a shared accountability across government rather than a specialized concern of one agency.

The need for coherence extends to disclosure and regulation. Voluntary sustainability commitments by companies, investors, or governments require a regulatory framework that ensures consistency, credibility, and accountability. Harmonization with global frameworks—such as the Taskforce on Nature-related Financial Disclosures (TNFD), International Sustainability Standards Board, and Science Based Targets Network (SBTN)—helps establish shared expectations. With supportive domestic legislation, these global frameworks can be translated into consistent reporting, reliable enforcement, and actionable outcomes. Effective implementation depends partly on regulatory agencies having adequate capacity to issue clear guidance, monitor compliance, and manage risks such as greenwashing. As seen in other sectors, market integrity relies on a strong supervisory architecture that makes sustainability commitments legally binding and enforceable.

Integrating nature into financial governance is critical to strengthening systemic resilience. As the financial implications of nature loss become clearer, institutions such as the Financial Stability Board and central banks are increasingly recognizing biodiversity loss as a macro financial concern. Reflecting natural capital within the financial system's core frameworks—rather than treating it solely as an environmental, social, and governance consideration—can help align financial decision-making with ecological realities. Emerging tools, such as the Network for Greening the Financial System's pilot nature stress test, are helping banks and regulators explore how environmental risks can be integrated into capital requirements and supervisory practices (Elderson 2025). By evolving financial governance in this direction, markets can gradually improve how they assess risk, allocate capital, and support environmental stability over the long term.

Effective governance also requires navigating the political economy of reform. Efforts to align public finance and regulatory systems with nature-positive outcomes often involve shifting mandates, reassigning resources, and revisiting long-standing incentives. Some institutions may lose influence or budgetary allocation, while others may gain new responsibilities. These dynamics can generate resistance or slow progress. Addressing them calls for sustained political commitment, transparent communication, and leadership that can manage trade-offs and build consensus. Government institutions themselves play a key role in driving reform—by aligning internal incentives and strengthening coordination across environment, finance, agriculture, and planning ministries. Ultimately, integrated governance is not only a technical exercise but also a negotiated process—one that benefits from institutional clarity, shared accountability, and a common vision for sustainable development.

Coordination is vital to ensure that high-level policy ambition translates into implementation across ministries, jurisdictions, and borders. Strengthening mandates, aligning incentives, and building multilevel governance structures help ensure that nature-based investments are delivered coherently and equitably. The Regional Flyway Initiative provides a transboundary framework for wetland conservation across 10 Asian economies, enabling alignment of ecological priorities with national development plans (see section 4.5). Within this framework, the South Dongting Lake eco-compensation mechanism in the PRC shows how sovereign investment can support local objectives such as sustainable agriculture and ecotourism through cross-sector collaboration. These cases illustrate how coordinated governance across scales and borders can translate policy commitments into effective, integrated delivery systems.

3.1.4 Equitable Governance: Ensuring Fairness, Inclusion, and Local Benefit Sharing

Safeguards help ensure that nature finance delivers inclusive and equitable outcomes. As investments in nature expand, they can create new value but also introduce new risks. Without appropriate safeguards, nature finance may deepen existing inequalities: benefits may accrue primarily to capital-rich actors, while local communities face restricted access to land, limited participation, or disproportionate burdens. Experience from carbon markets, conservation programs, and land titling efforts suggest that poorly designed interventions can reinforce power imbalances or displace vulnerable groups. Embedding equity considerations into governance frameworks from the outset can help mitigate these risks and foster more inclusive, enduring outcomes (Davies and MacDonagh 2025). Mechanisms for participation, accountability, and grievance redress also strengthen the legitimacy and stability in nature finance arrangements (Zadek 2025).

Inclusion mechanisms can enhance both the performance and resilience of nature-based investments. Inclusive governance is not only a matter of fairness, but it also improves the effectiveness of nature finance. Projects that incorporate co-ownership, revenue-sharing, or participatory management models tend to be more durable and cost-effective over time. When local communities have a stake in nature-based investments, projects benefit from stronger support, reduced conflict, and lower transaction costs. The Ol Pejeta Conservancy in Kenya offers one example: by integrating surrounding communities through co-managed grazing schemes and shared infrastructure, the conservancy built lasting partnerships that underpinned its ecological and commercial success (Chisika and Yeom 2021)(see section 4.2). Embedding equity mechanisms in financial instruments and regulatory frameworks can enhance resilience, attract concessional capital, and reduce long-term risk.

Governance frameworks play an important role in supporting fair processes, diverse rights and knowledge, and shared benefits and responsibilities. Procedural equity ensures that affected communities have meaningful participation in decisions influencing their environment. Recognitional equity affirms the diverse values, knowledge systems, and rights of all stakeholders, including Indigenous Peoples and customary landholders (Dawson et al. 2021; ILO 2024). Distributive equity focuses on fairly sharing financial benefits and ecological responsibilities. Operationalizing these principles requires clear mandates, transparent enforcement, and independent monitoring. For instance, in Nepal, gender-inclusive harvesting plans combined with targeted business training have empowered women-led enterprises to build sustainable livelihoods from community-managed forests, demonstrating how inclusive governance can foster both social equity and environmental stewardship (Box 3.3).

Equitable governance enhances the legitimacy, durability, and effectiveness of nature finance. When communities are meaningfully included in governance, nature-based investments are more likely to succeed and endure. Conversely, if finance mechanisms are perceived as extractive, exclusionary, or top-down, they may face public resistance, reputational risks, or policy reversals. Equity frameworks that promote participation, transparency, and fair benefit-sharing can help expand project pipelines, attract concessional finance, and lower investment risk. Public policies and financial systems also have a role in addressing entrenched global financial inequalities—for example, by avoiding higher borrowing costs for biodiversity-rich but low-income economies. Transparent, participatory governance helps ensure that investments reflect local priorities and contribute to lasting stewardship of ecosystems.

Box 3.3: Empowering Women Through Forest-Based Enterprises in Nepal

Nepal's constitution guarantees women equal rights to land, inheritance, and participation. Its forest policy reserves half of all Community Forest User Group leadership posts for women. Yet in practice, women's influence has remained mostly symbolic. Insecure tenure, limited access to credit and training, and disproportionate exposure to climate shocks continue to constrain their full participation.

In Awalpur and Sindhupalchok districts, Indigenous and lower-caste women have begun closing this gap by turning non-timber forest products into marketable goods. With seed grants and technical support from ForestAction Nepal and the International Development Research Centre (2021–2024), they organized producer collectives, secured gender-inclusive harvesting plans for Thakal and Sal leaves, and launched a line of biodegradable plates that replace single-use plastic. Revenues have been reinvested into low-impact spin-offs such as bamboo baskets, brooms, leaf handbags, nettle powder, lapsi candies, and shade-grown coffee, often coupled with agroforestry on previously fallow land.

Targeted capacity building underpinned the shift from cottage activity to enterprise. Training in bookkeeping, digital marketing and collective bargaining, combined with access to shared workspaces, allowed women to negotiate better prices and reach new municipal markets. As of 2025,18 women-led firms employ about 160 people directly and another 283 in raw material supply and pre-production.

The environmental gains are tangible. Regular removal of dry Sal leaves has reduced fire risk; planting of bamboo, broom grass, and coffee helps stabilize slopes and enrich soil; and a community-run nursery produces seedlings that reduce erosion along landslide-prone hillsides.

Scaling, however, remains difficult. Small community initiatives seldom meet investor thresholds, and concessional finance rarely filters down to the village level. Closing this gap may call for intermediaries to aggregate microenterprises, bespoke guarantee schemes, and stronger enforcement of the legal rights women already hold. Encouragingly, several municipal governments are beginning to co-fund expansion, showing how local public finance, inclusive governance, and catalytic seed capital can deliver lasting social and ecological gains.

Source: Dupar, M. and K. Lama. 2025. Multiple Wins from Indigenous Women's Craze for Eco-Enterprises in Rural Nepal. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

3.2 Policy: Correcting Distortions, Fostering Innovation, and Aligning with Global Standards

3.2.1 Aligning Market Incentives Through Policy Reform

Policy reforms help establish the economic incentives necessary to steer markets toward nature-positive investments. Even where governance frameworks provide clear rules, markets will not shift sustainably unless incentives actively reward restoration and penalize degradation. Correcting market distortions is therefore a central function of policy to ensure that the value of ecosystem services is accurately reflected in market signals, public accounts, and investment decisions. Four broad policy priorities guide this alignment: (i) establishing environmental pricing and fiscal incentive systems, (ii) phasing out environmentally harmful subsidies and redirecting support, (iii) creating predictable demand and investment for ecosystem services, and (iv) aligning domestic policies with evolving global market standards and trade frameworks.

Environmental pricing helps internalize the costs and benefits of nature in financial decisions. Tools like carbon taxes, emissions trading system, and pollution charges are increasingly used across the region to guide environmental behavior and channel capital toward more sustainable outcomes. For instance, Singapore's carbon tax—launched in 2019 for high-emitting sectors—started at S$5 per ton (~$3.70) and will progressively rise to S$80 (~$62) by 2030 (IETA 2025a). The Republic of Korea's mandatory emission trading system, established in 2015, covers power, manufacturing, transport, and buildings. It sets emission caps for over 800 of the country's largest emitters, allowing trading of allowances that create financial incentives to reduce emissions and invest in cleaner technologies (IETA 2025b). Uzbekistan is launching its national carbon emissions trading system in 2026, featuring carbon units—permits representing the right to emit one ton of CO_2 equivalent—along with a national registry and verification processes to create a credible market (Enerdata 2025). Beyond carbon, pricing mechanisms are expanding to water, biodiversity, and pollution. In South Asia, pilot programs linking irrigation charges to actual water use encourage efficiency and sustainable agricultural practices (Parween, Kumari, and Singh 2021; Mottaleb et al. 2019). In the PRC, the Environmental Protection Tax Law (2018) requires polluting entities to pay taxes on air and water pollutants, solid waste, and noise, promoting compliance and investment in cleaner production. By internalizing environmental costs, these mechanisms send clearer signals to markets and help channel investment toward nature-positive outcomes.

Fiscal incentives can improve the financial case for nature-positive activities by lowering costs, increasing returns, or shifting relative price signals. Tax breaks, subsidies, and outcome-based transfers support both public programs and private sector investments. For example, the Philippines allows renewable energy developers to apply accelerated depreciation on eligible plant, machinery, and equipment when income tax holidays are not applicable, sustaining investment in clean energy, and Viet Nam offers preferential corporate income tax rate to companies investing in renewable energy projects (Government of the Philippines, Department of Energy n.d.; Organisation for Economic Co-operation and Development 2025). The PRC's Grain for Green Program compensates rural households for converting cropland on steep slopes back to forest, protecting ecosystems while supporting livelihoods (Liu et al. 2008). India's Ecological Fiscal Transfers redistribute central government funds to states based on forest cover, linking ecosystem health to public revenue streams and incentivizing subnational conservation efforts (India, Press Information Bureau 2021). Public investments can shape broader economic incentives and market signals, and governments are increasingly incorporating climate and nature-related risks into public spending decisions—known as risk pricing—to account for long-term environmental liabilities; avoid future costs; and support resilient, nature-positive investments.

Innovative fiscal instruments are emerging to align capital flows with conservation and sustainability goals. Measures such as deforestation taxes, biodiversity offsets, and green budget tagging help integrate environmental priorities into fiscal policy and public spending. Sovereign and sub-sovereign debt instruments—including sustainability-linked bonds and debt-for-nature swaps—can channel public finance toward conservation while reducing borrowing costs. The Eternal Mongolia initiative, supported by The Nature Conservancy, exemplifies this potential: by combining debt refinancing with long-term conservation funding, it seeks to mobilize $198 million for protected area expansion, sustainable herding, and ecotourism, including $71 million from private and international donor sources (TNC 2024). These instruments demonstrate how fiscal policy can scale nature-positive investment through more efficient and targeted deployment of public funds.

Phasing out harmful subsidies is equally important for realigning market incentives with environmental objectives. While fiscal instruments can direct new capital toward conservation, removing harmful subsidies prevents ongoing environmental degradation. Globally, such subsidies exceed $1.8 trillion annually (Koplow and Steenblik 2022). In Asia and the Pacific, subsidies for fossil fuels, intensive agriculture, and unsustainable fisheries distort markets, driving overuse and ecosystem damage. Phasing out these subsidies remains a key step toward reducing environmental harm. For example, Indonesia's major fuel subsidy cut in 2015 helped curb

wasteful consumption and free resources for social programs and renewable energy, although more reforms are needed. Redirecting subsidies to sustainable alternatives—such as Environmental Conservation Mechanisms, which reward landowners or businesses for restoration and conservation—is equally important to support nature-positive outcomes. Decoupled income support, which links agricultural subsidies to environmental performance rather than output levels that drive overproduction and degradation, is gaining traction in some economies like Thailand. Regular reviews of subsidies and sunset clauses further ensure policies stay aligned with evolving environmental priorities and do not inadvertently sustain harmful or outdated practices.

Measures that stabilize demand for ecosystem services can help to mobilize private and public investment. Regulatory measures such as biodiversity offsets, ecological compensation, and land use zoning help safeguard ecosystem functions and steer development away from high-value conservation areas. Designating terrestrial and marine protected areas, along with other effective area-based conservation measures, is central to the global "30×30" goal—protecting 30% of the world's land and ocean areas by 2030 under the Kunming–Montreal Global Biodiversity Framework (CBD n.d.). These measures create clear obligations for developers to mitigate environmental impacts. For example, the PRC's ecological redlining policy restricts economic activities in ecologically sensitive zones and mandates compensation for any degradation, establishing regulatory certainty and sending a strong signal that environmental limits must be factored into investment decisions. Complementing these regulations, green public procurement programs—such as the Philippine Green Public Procurement Program—embed sustainability criteria in government purchasing, boosting market demand for eco-friendly products and services. Together, these policies create predictable conditions that encourage long-term investments in ecosystem health at the local and regional levels.

Aligning domestic policies with evolving international environmental standards and trade frameworks helps position markets to respond to global sustainability norms. The European Union's Carbon Border Adjustment Mechanism and related disclosure mandates are reshaping trade dynamics, prompting exporting economies to elevate their sustainability standards. Countries like Thailand and Viet Nam are advancing eco-labeling, sustainability certifications, and Environmental Product Declarations for agricultural and fisheries exports to improve access to environmentally conscious markets. Indonesia Sustainable Palm Oil certification aligns domestic standards with global expectations while supporting national priorities. Public environmental data platforms and comprehensive green finance taxonomies—such as Singapore's recently launched Singapore-Asia Taxonomy, which includes transition activities for hard-to-abate sectors, and Malaysia's principles-based Sustainable and Responsible Investment taxonomy alongside its Bond Pricing Agency Malaysia EKO data platform—enhance transparency and enable investors and policymakers to align domestic sustainability efforts with global trade and environmental frameworks (MAS 2023; Securities Commission Malaysia 2022; BPAM 2024).

3.2.2 Policies Foster Innovation and Nurture New Markets

Policies can also play a vital role in catalyzing innovation and creating new markets for ecosystem services. By supporting environmental research and development, pilot projects, and demonstration programs, governments can encourage breakthrough technologies and sustainable practices, especially in agriculture and ecosystem management. Collaboration between public–private sectors further help scale innovations, as seen in Japan's Green Transformation policy and the Republic of Korea's New Green Deal (GR Japan 2023; Government of the Republic of Korea 2020). Additionally, payment for ecosystem services (PES) schemes—such as Viet Nam's forest PES program—establish functioning markets by connecting ecosystem service providers (farmers and landowners) with beneficiaries (hydropower and water supply companies) willing to pay for these services.

Supporting small and medium-sized enterprises (SMEs), advancing technology adoption, and building local capacity are critical for fostering innovation in emerging nature markets. These efforts help ensure broader participation and locally tailored solutions. Policies that provide training, technical assistance, and access to finance enable SMEs to develop and scale sustainable solutions. Technology platforms and open data systems similarly improve information access and transparency, helping entrepreneurs and investors better understand ecological risks and opportunities. Together, these measures help strengthen the ecosystem for innovation, making nature-based investments more viable and widely accessible.

Ultimately, well-designed policy reforms make markets for nature work by correcting failures, aligning incentives, and reducing investment risks. Tools such as environmental pricing, fiscal incentives, subsidy reform, regulatory standards, and alignment with international frameworks embed environmental value into financial decisions and production systems. These measures enable private capital to engage at scale and shift market behavior toward nature-positive outcomes. For such reforms to be effective, they rely on strong governance and transparent, decision-relevant data, which together create the foundation for the next generation of nature-based investment strategies.

3.3 Data: Building Decision-Grade Systems for Nature Finance

High-quality, decision-grade data are a precondition for private investment. Despite the rapid growth of data from satellites, Internet of Things devices, mobile applications, and administrative records, much of this information remains fragmented, inconsistent, and poorly aligned with financial and economic decision-making frameworks. Key ecosystem metrics—such as extent, condition, and service flows—are often outdated, geographically uneven, or aggregated at national levels, masking important local trends. Many datasets lack time-series continuity and standardized methodologies, limiting their usefulness for interpreting ecological risks or generating credible investment signals. Institutional silos and fragmented governance across ministries further constrain coherent data management. Interoperable, high-quality data systems can help attract investment through nature-related financial products like biodiversity credits, green bonds, and sustainability-linked loans. Governments have a critical role in coordinating and investing in data infrastructure to address these barriers and align with global frameworks such as the TNFD and the SBTN.

High-quality data can help reveal the additional value created when nature is protected or restored. Beyond measuring degradation, granular, geospatial data on ecosystem services such as pollination, flood control, and soil fertility can influence risk assessments and pricing models. For example, healthy upstream forests can reduce downstream insurance claims, while mangrove restoration may avert billions in coastal infrastructure costs, translating ecological benefits into tangible fiscal savings and credit enhancements. Asia and the Pacific, where natural capital underpins both rural livelihoods and urban resilience, stand to gain considerably from data systems designed to be findable, accessible, interoperable, reusable, safe, and secure. As more biodiversity data are generated by private actors, issues of ownership, access, and equity could become increasingly important to ensure that data serve public as well as commercial interests.

Improving data quality, interoperability, and governance can improve the effectiveness of nature finance. Public investment and institutional collaboration are central to developing interoperable data systems with standardized methodologies and shared protocols. Indonesia's One Data initiative illustrates this approach, encouraging ministries to adopt a single metadata standard and share geospatial data openly (Cabinet Secretariat of the Republic of Indonesia 2019). As of October 2025, the initiative hosted over 450,000 datasets (Satu Data Indonesia). Such initiatives help build hierarchical models to assess natural

capital impacts from economic activity, reduce information silos, and integrate environmental data into national economic planning. The most effective data systems tend to be hybrid, where public agencies set standards and ensure data quality, while private firms and local communities contribute granular, localized information for detailed analysis and decision-making.

Building a functional data system depends on a coherent taxonomy and robust infrastructure to organize environmental data, link it with economic indicators, and make it accessible for analysis and policymaking. This section explores four key questions essential for developing data infrastructure that supports nature-positive finance and sustainable economies: (i) Why are environmental-economic data critical for financial, economic, and public policy decisions? (ii) How can environmental data be integrated into broader economic data systems? (iii) What is the current state of environmental-economic data in Asia and the Pacific? (iv) What actions are necessary to build inclusive, interoperable data systems that enable nature-positive decision-making across all sectors? Each of these questions is examined in turn.

3.3.1 The Role of Environmental Data in Financial, Economic, and Policy Decision-Making

Traditional economic measures like gross domestic product (GDP) provide an incomplete picture because they do not account for changes in natural capital. GDP tracks economic activity but typically excludes changes in natural assets. Unlike private firms that report detailed balance sheets of assets and liabilities, most economies have only a partial view of their total assets and natural liabilities. They rely primarily on GDP, which measures outputs over a given period but not long-term changes in natural resources or environmental assets (Brandon et al. 2021). As outlined in Chapter 2, this can create an "economic blind spot" where natural capital losses go unrecorded. For example, after the British Petroleum oil spill in the Gulf of Mexico, cleanup operations temporarily increased regional GDP, masking the extensive ecosystem damage that went unaccounted for (BEA 2010). Similarly, GDP may rise as forests are destroyed or fish stocks decline, leading to misleading assessments of productive base, future growth, and associated financial risks. By valuing and accounting for natural capital, economies can gain a fuller picture of potential risks and opportunities and make more informed, sustainable economic decisions.

Environmental data strengthen economic forecasting not only by capturing the benefits of nature investments, but also by revealing hidden risks to productivity. As discussed in Chapter 2, excluding natural capital from economic assessments can lead to hidden financial liabilities, higher risk premiums, and inefficient resource allocation. For example, studies in fisheries economics show that ignoring fish stocks results in flawed productivity estimates and weak policy responses, which in turn perpetuate environmental degradation and long-term economic losses (Fenichel et al. 2025). Integrating environmental-economic data clarifies these dynamics, reduces uncertainty, and improves the reliability of economic assessments.

Environmental data improves risk management by enhancing macroeconomic models and stress testing. As climate and biodiversity shocks increase in frequency and scale, reliable environmental data are increasingly important for estimating fiscal exposure and macro-financial risks (Box 3.4). For finance ministries and central banks, this means embedding climate and nature in debt sustainability analyses, financial stability assessments, and stress testing. For example, the Banco de España, in conjunction with the Eurosystem, is developing and deploying scenario analysis and stress testing tools to assess and monitor climate change-related risks (Banco de España 2021). Without data on hazard exposure, ecosystem resilience, and service flows, economies underestimate both the likelihood and severity of future shocks. Integrating nature into macroeconomic models helps governments to manage risks more effectively and support long-term economic stability.

Box 3.4: Nature as a Macro-Shock Buffer

With many developing Asian economies highly dependent on nature, continued ecosystem degradation could have substantial macroeconomic implications. Utilizing the Asian Development Bank multiregional input–output table and the ENCORE database, Bernabe et al. (2025) estimate that ongoing degradation of key ecosystem services—particularly water supply, water flow regulation, soil and sediment retention, flood control, local climate regulation, and storm mitigation—could gradually reduce developing Asia's gross value-added by a cumulative 2.8% relative to 2024 levels. This loss is nearly twice the estimated global loss of 1.7%.[a]

Nature-based buffers may warrant greater consideration in national resilience strategies—alongside traditional tools such as foreign exchange reserves and automatic fiscal stabilizers. Integrating nature earlier in fiscal planning could reshape sovereign risk profiles. For example, economies that maintain mangrove belts, upland forests, or urban wetlands may reduce disaster-related costs and narrow contingent liabilities, potentially even improving credit terms. Conversely, where ecosystems deteriorate, climate shocks may have knock-on effects through food prices, public health expenditures, and employment, amplifying fiscal pressures, especially in vulnerable economies.

From emerging research and evidence, a few policy directions can be explored: (i) integrating ecosystem degradation as a contingent liability in debt sustainability analyses and sovereign stress testing; (ii) aligning adaptation, disaster-risk-reduction, and biodiversity funding through joint ecosystem-based disaster risk reduction (Eco-DRR) initiatives that deliver multiple benefits across sectors; (iii) expanding the use of sovereign sustainability-linked bonds tied to ecological performance indicators—such as mangrove cover or watershed health—so that fiscal savings are directly linked to the integrity of natural systems.

Framing nature as a potential first line of defense against macroeconomic shocks, rather than as an afterthought in conservation budgeting, offers a pathway to align fiscal prudence with ecological stewardship and strengthen resilience.

Note:

[a] Although the model does not assign a timeline to these impacts, the shocks are based on multi-year trends in forest loss, crop yield reductions, and disaster damages, implying that effects would materialize over multiple years.

References:

Bernabe, J. et al. 2025. Developing Asia's Dependence on Nature. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Intergovernmental Panel on Climate Change (IPCC). 2022. Chapter 10: Asia. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

Zadek, S. 2025. Banking on Nature. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Source: Authors.

Granular environmental data enable more targeted and cost-effective public spending. Detailed environmental data allow conservation efforts to be directed to where they are most effective. For example, the Somerset Eel Recovery Project of the United Kingdom used environmental DNA to identify that physical barriers—not poor habitat—were blocking eel migration (see section 4.4). This insight helped channel investments toward low-cost, high-impact solutions, avoiding unnecessary habitat restoration. Likewise, governments frequently invest in flood defenses, irrigation, pollution control, and disaster relief to compensate for ecosystem degradation—actions that often substitute for lost natural services. Reliable data on ecosystem condition and functionality can help public budgets recognize these "defensive" expenditures and prioritize investments in natural infrastructure, which are often more cost-effective and resilient over time.

Better data enable smarter investment and more efficient budget planning. Valuing ecosystem services and tracking ecological condition allow planners to compare built and natural capital on equal footing. This improves cost–benefit analysis, long-term fiscal planning, and public investment management. Project screening processes can incorporate nature-related risks and benefits when environmental data are

integrated into appraisal systems. For example, with clear data on reduced downstream water treatment costs from an upstream forest, a firm or government can justify investing in forest maintenance as a form of defensive spending (Fenichel et al. 2025). Environmental-economic data also support intertemporal planning by linking ecosystem trends to future service delivery and infrastructure performance. This makes budgets more strategic, reduces waste, and enhances long-term returns on public investment.

Nature-related data are becoming essential for trade, investment, and market access. International markets are moving toward mandatory reporting of environmental impacts and dependencies. Economies without robust data systems risk exclusion from supply chains or penalties through green tariffs and import restrictions. Aligning with emerging standards also gives domestic firms better access to sustainable finance and premium export markets. Environmental data are now a competitive asset, both for economies seeking foreign investment and for firms seeking to prove compliance.

3.3.2 Integrating Environmental Data into Broader Economic Data Systems

Clear standards and taxonomies help integrate environmental data into economic systems. A coherent taxonomy for natural capital, ecosystem services, and environmental impacts enables alignment across diverse data sources, models, and financial disclosures. Environmental data often bridge physical units and monetary accounts. However, most measures like hectares, tons, or species counts do not directly inform economic decisions unless they are mapped into standardized accounting frameworks (Box 3.5). Stock-flow models that organize environmental assets alongside produced and human capital can make nature's contributions more explicit within macroeconomic and financial systems (Fenichel et al. 2025). Developing and adopting such standards is an essential step toward effective integration.

Valuing natural capital requires practical frameworks and stronger institutional coordination. Translating environmental data into actionable formats depends on valuation methods that are credible, comparable, and embedded in fiscal and policy processes. Shared approaches—even if initially imperfect—help align decisions across ministries, investors, and regulators. As with national accounts, valuation methods can improve through iterative refinement. In many economies in Asia and the Pacific, technical and institutional constraints—such as poor interoperability, limited analytical capacity, and unclear mandates—continue to hinder integration efforts. One consequence of low-quality data is defensive spending: funds allocated for flood defenses or water treatment to address damage caused by degraded ecosystems, damage that could have been avoided by protecting those natural areas in the first place, often at a lower cost. Better valuation enables a shift from reactive spending toward strategic investment in ecological assets, improving efficiency and resilience (Kölbel et al. 2020).

Building robust baselines is useful for assessing the effectiveness of nature finance. Reliable, longitudinal data allow economies to quantify ecological and financial returns, compare performance across investments, and refine policy and financing strategies over time. Without credible baseline measurements of ecosystem condition and service flows, it is impossible to evaluate whether nature-positive investments deliver genuine additionality. Integrating valuation and monitoring systems—through natural capital accounts, geospatial baselines, and standardized indicators—unlocks the hidden value of ecosystems and establishes a foundation for credible impact evaluation. This enables investors and governments alike to learn which governance, policy, and financing models deliver the most effective outcomes.

Global data standards are essential to scale markets for nature-related finance. Financial instruments such as biodiversity credits, conservation bonds, and sustainability-linked loans rely on clear, standardized metrics. Without consistent standards, environmental claims may lack credibility and markets will remain fragmented. Harmonized frameworks—such as those of the TNFD and SBTN—can help promote consistent

Box 3.5: Valuing Nature for Improved Policy and Planning, People's Republic of China's Gross Ecosystem Product

The People's Republic of China (PRC) has developed a national system that assigns a monetary value to nature's annual services. The gross ecosystem product (GEP) uses land cover maps, ecosystem service models, and local price data to convert flows such as clean water, flood regulation, carbon storage, and recreation into a single monetary figure—an ecological analogue to gross domestic product (Ouyang et al. 2020). The methodology involves mapping ecosystem stocks, quantifying the flows of ecosystem services they provide, assigning unit values based on market prices or willingness to pay, and aggregating these valuations to estimate the total contribution of ecosystem services. Because it relies mainly on data already held by statistical and planning agencies, GEP can be integrated into existing national account workflows.

Piloted in 2015 and now rolled out across more than 150 counties and 23 cities—from economically advanced regions like Guangdong, Zhejiang, and Shenzhen to headwater counties in Qinghai—GEP has become a budgeting tool and a performance metric. It anchors the PRC's ecological fiscal transfer formula and payments for ecosystem services schemes, channels compensation from downstream users to upstream stewards, guides ecological red-line zoning that locks in high-value habitats, and informs local cadre performance reviews (Hao et al. 2022; Liu, Jin, and Cheng 2025).

The city of Lishui provides a concrete example of its financial impact. When a development project reduces GEP, developers are compelled to pay a "Two-Mountain Company"—a new type of firm supplying ecosystem services—for off-site restoration to offset the GEP loss. During 2020–2021, 12 new "Two Mountain Banks" were established in Lishui to facilitate these transactions. These entities have launched a growing number of GEP-linked loans exceeding CNY 19 billion (about $2.9 billion) in 2020 alone (Lan and Liu 2022). These loans support ecological industries such as ecotourism and organic agriculture, directly financing the transition to a greener local economy. Measured by the volume of investment it has facilitated, GEP is becoming an example of an effective green financing program for natural capital.

References:
Hao, C. et al. 2022. A Critical Review of Gross Ecosystem Product Accounting in China: Status Quo, Problems and Future Directions. *Journal of Environmental Management*. 322.
Lan, J. and K. Liu. 2022. Innovation and Practice of GEP application in Lishui.
Liu, K., M. Jin, and L. Cheng. 2025. County Green Transformation: How Does Gross Ecosystem Product Assessment Promote Common Prosperity? *Humanities and Social Sciences Communications*. 12 (1). Article 1823.
Ouyang, Z. et al. 2020. Gross Ecosystem Product: Concept, Accounting Framework and Case Study. *Proceedings of the National Academy of Sciences*. 117 (25). pp. 14593–14601.
Ouyang, Z. 2021. Gross Ecosystem Product (GEP) Accounting and Applications in China. Presented at the United Nations Statistics Division Forum of Experts on System of Environmental-Economic Accounting-Ecosystem Accounting.

Source: Authors.

definitions, measurement, and reporting of nature-positive outcomes. This transparency can reduce verification costs, build investor confidence, and lower perceived risk. It can also enable comparability across projects and jurisdictions, supporting broader capital flows. Standardized benchmarks help make ecological performance more measurable, enforceable, and investable.

3.3.3 Current State of Environmental-Economic Data in Asia and the Pacific

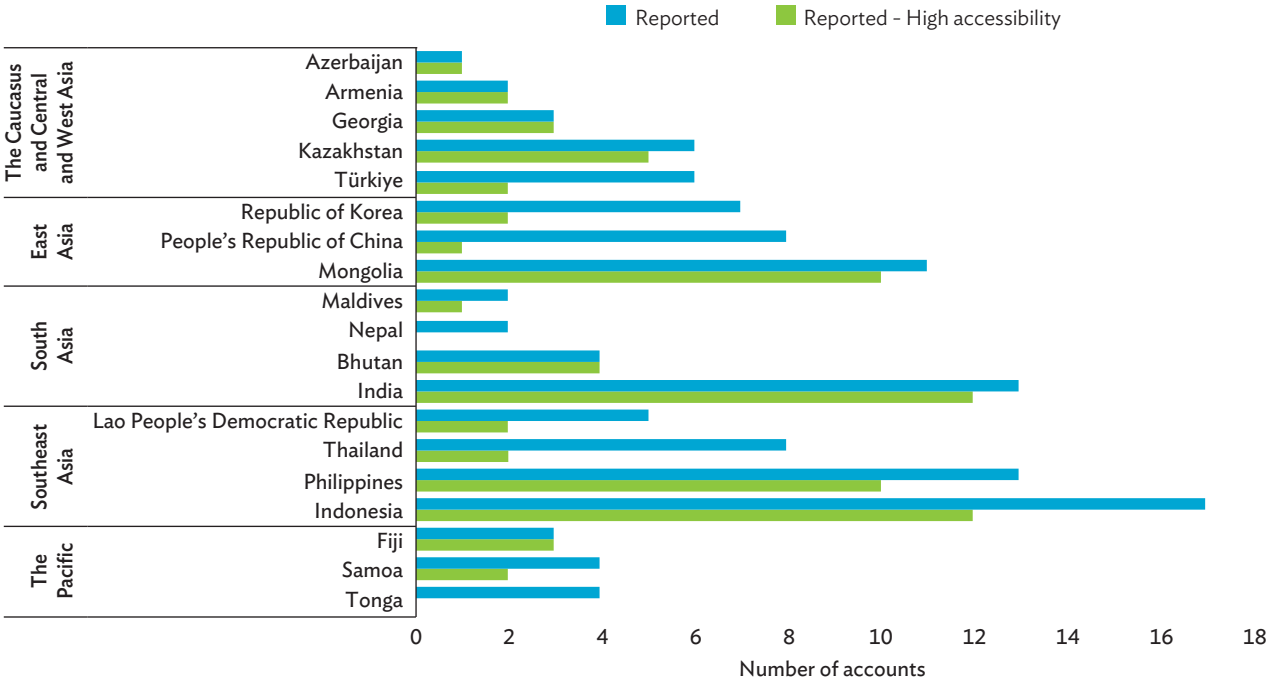
Environmental data systems in the region are expanding, with growing capacity and collaboration. Across Asia and the Pacific, many economies are building expertise in ecosystem valuation, geospatial analysis, and data science. Investments in technical infrastructure are supporting more sophisticated environmental monitoring, modeling, and planning capabilities. Natural capital accounting (NCA) pilots are generating valuable insights, while efforts to improve interagency coordination are helping environmental data inform policy processes more effectively. In transboundary ecosystems like the Mekong River Basin

and the Coral Triangle, progress toward harmonized data standards and shared governance frameworks is enabling more effective regional cooperation. Continued institutional strengthening, capacity building, and technological advances can help mainstream environmental data across planning, budgeting, and regulatory systems, creating the foundation for nature-positive investment at scale (Fenichel et al. 2025).

Improving the visibility and accessibility of environmental data is essential to increasing its policy impact. While technical progress is advancing, much of the data being generated remain difficult to access or are inconsistently reported. A study by Fenichel et al. (2025) highlights a significant gap between what economies produce and what appears in global reports such as the System of Environmental-Economic Accounting (SEEA) 2024 assessment (Figure 3). Out of the 36 possible environmental-economic Accounts, only a few economies report any, with Indonesia and the Philippines leading with 17 and 15 accounts, respectively. The study also highlights that some accounts listed as complete remain inaccessible or under development, while others local initiatives—such as Viet Nam's ocean accounting, Bhutan's gross ecosystem product (GEP) trial, and full ecosystem accounts from India and the PRC—are missing from the SEEA 2024 report. This limits the data's ability to inform decisions, attract investment, or support regional collaboration. Closing this visibility gap requires more than improved reporting; it also calls for open-access platforms, stronger data infrastructure, and regional knowledge-sharing systems to ensure that environmental data are not only produced but also used to deliver impact.

Figure 3: Implementation of System of Environmental-Economic Accounting in Asia and the Pacific, Number of Accounts

Many economies are actively advancing environmental-economic accounts, yet some remain difficult to access or are underutilized.



Note: Environmental-Economic Accounts include physical flow accounts (e.g., water, emissions, energy), environmental asset accounts (e.g., forests, minerals), and environmental activity accounts (e.g., environmental protection expenditure, resource management). "Reported" indicates that the account is included in the 2024 System of Environmental-Economic Accounting (SEEA) Global Assessment Results, with a maximum of 36 accounts possible. "High accessibility" refers to accounts with links provided in the SEEA report or those easily found via web search. Economies not included in the figure did not report any accounts in the SEEA report.

Reference: Fenichel, E. P. et al. 2025. Environmental-Economic Data and Statistics, Digital Infrastructure, and a Sustainable Future. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Source: Authors.

3.3.4 Actions Needed to Build Inclusive, Interoperable Data Systems that Support Nature-Positive Decisions Across All Sectors

Treat environmental data as public infrastructure. Like roads or power grids, environmental data provide essential infrastructure for public and private decision-making but often lacks sustainable financing. Because these data have public good characteristics—nonrival and nonexcludable—governments and development partners play a central role in building and maintaining the underlying architecture: collection systems, data governance, analytics, and user access. Adopting findable, accessible, interoperable, reusable, safe, and secure principles can ensure that systems are both technically sound and broadly usable. The most effective systems are hybrid—public agencies provide the statistical backbone, while private firms and communities contribute high-resolution and local data. When organized through interoperable platforms and shared taxonomies—and using trusted monitoring, reporting, and verification systems aligned with financial reporting standards—these systems can identify promising investment opportunities. For example, in Fiji, natural capital accounts revealed inefficiencies in water use, guiding more targeted investments in water infrastructure and setting appropriate water tariffs (ESCAP 2017).

Invest strategically in fit-for-purpose data systems that align nature with policy and financial decisions. Public investment can support national systems for the nature economy by linking environmental data with finance and economic planning (Fenichel et al. 2025; Zadek 2025). Coordination across ministries—environment, finance, statistics, and central banks—is essential to harmonize standards, reduce duplication, ensure interoperability, and enable broad application from fiscal policy to climate risk management. The PRC's GEP platform provides a case in point: counties now upload standardized land cover and price data layers into a central cloud platform, allowing provincial finance bureaus to allocate ecological transfer payments based on monetized ecosystem service flows (Box 3.5). Similar approaches can ensure that environmental data directly inform decisions on resource allocation, climate risk management, and sustainable infrastructure.

Align environmental data systems with fiscal frameworks using standardized methodologies. Integrating nature into national planning and finance depends on measurement approaches that align with how governments manage public resources. The SEEA provides a consistent global framework to track natural capital alongside economic indicators (Box 3.6). Adoption of SEEA allows economies to better understand fiscal risks from nature loss, assess ecosystem service values, and inform instruments like debt-for-nature swaps or sustainability-linked bonds. However, implementation remains uneven: as of 2025, only 53 economies have fully developed ecosystem accounts under SEEA (Fenichel et al. 2025). Scaling this work will benefit from investments in data interoperability, stronger collaboration between data producers and users, and capacity development not only for compiling accounts but also for interpreting and applying them in planning, budgeting, and regulation.

Box 3.6: Blueprinting and Prioritization in Environmental-Economic Statistics

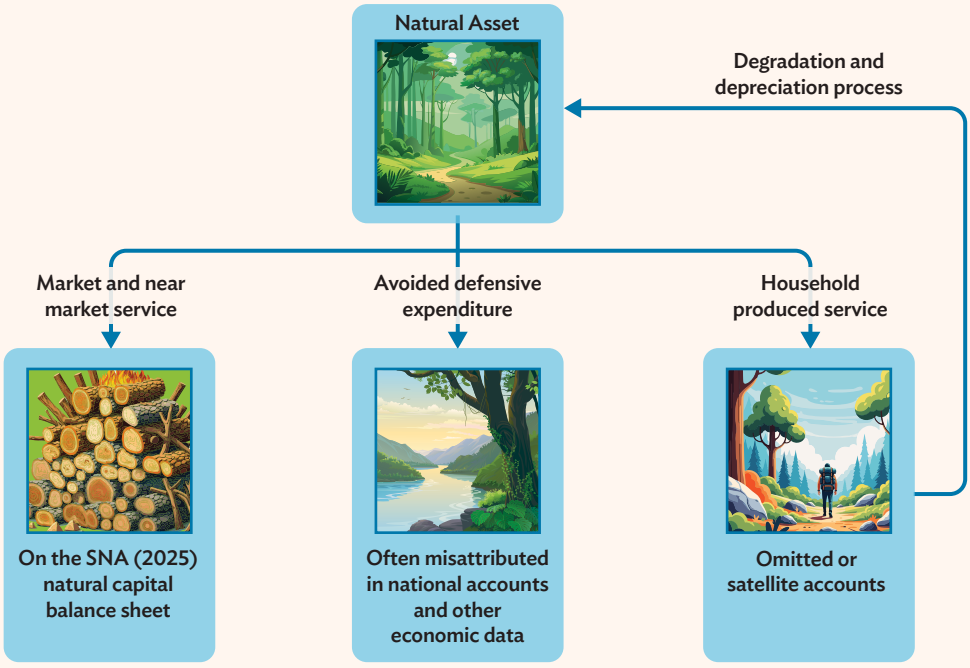
Developing robust environmental-economic statistics begins with clear prioritization and a structured blueprint, both of which should be developed together. In the early stages, the focus should be on natural assets and ecosystem services that have significant economic importance and are relatively easier to measure—either because data already exist or there is broad agreement on their value.

A well-designed blueprint provides a road map for gradual expansion. It should include a classification system aligned with national industrial classifications, complemented by a "nature sector" that links natural capital to economic sectors through supply–use tables and balance sheets. This helps avoid double counting and ensures compatibility with existing national accounts frameworks such as the System of Environmental-Economic Accounting (SEEA). Defining accounting boundaries, what is included or excluded, makes it possible to consistently measure and communicate the economic value that nature provides. The importance of this step is highlighted in both the Dasgupta Review (2021) and the Global Biodiversity Framework (CBD 2024).

Spatial considerations are equally important, especially in large or geographically diverse economies where natural capital is location specific. For instance, a particular type of natural asset, such as a forest may generate various types of services: timber, water filtration, avoidance of defensive expenditure and recreation. Each service contributes to the overall value of the forest, but not all are equally relevant for near-term decisions (Box figure). Prioritizing services that directly inform policy or investment choices makes the statistical system more actionable.

Finally, economists, statisticians, and the private sector should jointly lead this process, integrating private data with public frameworks to ensure coherence, interoperability, and relevance to economic planning. The system should be iterative, potentially revisited every 5–10 years, to reflect new data, technologies, and policy needs, with transparent communication on data structures and updates.

Defining and Measuring What Counts: Mapping a Forest's Services Across Economic and Accounting Systems



SNA = system of national accounts.

References:
Convention on Biological Diversity (CBD). 2024. *Kunming–Montreal Global Biodiversity Framework*.
Dasgupta, P. 2021. *The Economics of Biodiversity: The Dasgupta Review*.
Fenichel, E. et al. 2025. Environmental-Economic Data and Statistics, Digital Infrastructure, and a Sustainable Future. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Source: Authors.

Scale up the implementation of NCA to move from pilots to systems. While many economies have launched NCA pilots, broader policy impact depends on embedding them into national systems. Scaling up means applying advanced SEEA modules that include spatial data, service flows, and monetary valuation, and using the resulting accounts to guide fiscal decisions, assess trade-offs, and identify co-benefits. Several economies in the region, particularly in East and Southeast Asia, have made notable progress in developing natural capital accounts Pacific island economies such as Fiji, Palau, Samoa, and Vanuatu are integrating NCA into planning frameworks using the SEEA approach. In Indonesia, primarily through the System of Integrated Environmental and Economic Accounting, the government collects detailed data on timber, energy, and mineral resources, and uses depletion-adjusted GDP and related indicators to inform development strategies, tax policies, and asset management (Castañeda, Raina, and Rexhepi 2019). These efforts demonstrate how NCA can evolve from technical exercises into a core element of sustainable economic management.

Integrate environmental data into fiscal policy and public finance. Embedding nature into budgeting processes ensures that resource allocation reflects ecological risks and supports long-term resilience. When natural capital valuations and ecological degradation costs are integrated into fiscal planning, they help align economic incentives with sustainability goals. Adaptive governance—based on continuous learning and feedback—can make environmental data more actionable. For example, the Philippines' Climate Change Expenditure Tagging system requires government agencies to systematically classify budget items as climate relevant distinguishing between nature-based (green) and traditional (gray) investments. In 2025, this system aligned 18% of the national budget—about $20 billion—with climate goals, helping channel public finance toward priority actions under the country's climate strategy (CCC 2025).

Build inclusive and equitable data systems to empower all stakeholders. Data systems that are accessible, locally relevant, and inclusive are more likely to support sustainable and just outcomes. Strengthening local capacity—particularly in data collection, interpretation, and application—ensures broader participation and better outcomes. Respect for IPLCs data sovereignty and knowledge systems promotes equitable benefit-sharing and enhances data accuracy. Incorporating Indigenous and local knowledge enriches datasets and provides critical insights into ecosystem dynamics. Sex-disaggregated data in NCA enable budget allocations that reflect women's unpaid contributions to ecosystem management. Participatory governance, respect for data rights, and methodological flexibility help ensure that decisions reflect diverse perspectives and foster long-term stewardship.

Manage risks to biodiversity protection from excessive transparency in geospatial data. While granular, high-frequency data on species and ecosystems can improve monitoring and accountability, it may also expose sensitive ecosystems to risk. Publicly releasing real-time geospatial data on endangered species or critical habitats can inadvertently facilitate poaching, illegal logging, or land grabbing. Therefore, data systems benefit from safeguards—such as anonymization, restricted access protocols, and risk-based disclosure policies—to ensure that conservation gains are not undermined. Striking the right balance between openness and protection is particularly important where biodiversity is both ecologically unique and vulnerable to commercial exploitation.

Harness emerging technologies while ensuring ethical and inclusive adoption. Advances in satellite imagery, remote sensing, artificial intelligence, and Internet of Things are expanding the scope, speed, and precision of environmental monitoring (see section 4.4). These technologies offer scalable solutions in contexts where technical capacity or resources are limited. For example, satellite platforms now support real-time tracking of land use, forest loss, and coastal change, enhancing early warning systems and verification of nature-based investments (Box 3.7). Programs—such as the EU's Copernicus, which tracks land use, carbon emissions, and biodiversity; Digital Earth Pacific for regional environmental monitoring; Q-quatics' information systems for managing living aquatic resources; and Restor's global platform for mapping, monitoring, and managing ecosystem restoration efforts—all leverage advanced satellite technology and analytics

(European Environment Agency 2025; Pacific Community n.d.; Q-quatics n.d.; Restor n.d.). Inclusive governance and ethical safeguards are essential to ensure that technology adoption does not reinforce digital divides or data asymmetries. When responsibly deployed, digital tools can significantly enhance the reach and reliability of environmental data systems.

Box 3.7: Digital Earth Pacific—Advancing Environmental Monitoring with Satellite Technology

Satellite data systems enable near real-time monitoring of key indicators such as sea level rise, vegetation cover, and extreme weather events, helping policymakers and communities even in remote or underserved areas make informed decisions.

An example is Digital Earth (DE) Pacific, developed by the Pacific Community.[a] This earth observation platform draws on three decades of satellite data from the European Space Agency's Sentinel program and the United States National Aeronautics and Space Administration's Landsat satellites - to track changes in coastlines, geological formations, mangrove forest health, land cover, surface water levels, and other climate-related indicators across the Pacific. Cloud-based processing enables efficient, region-wide analysis and reduces costs compared with economy-level systems.

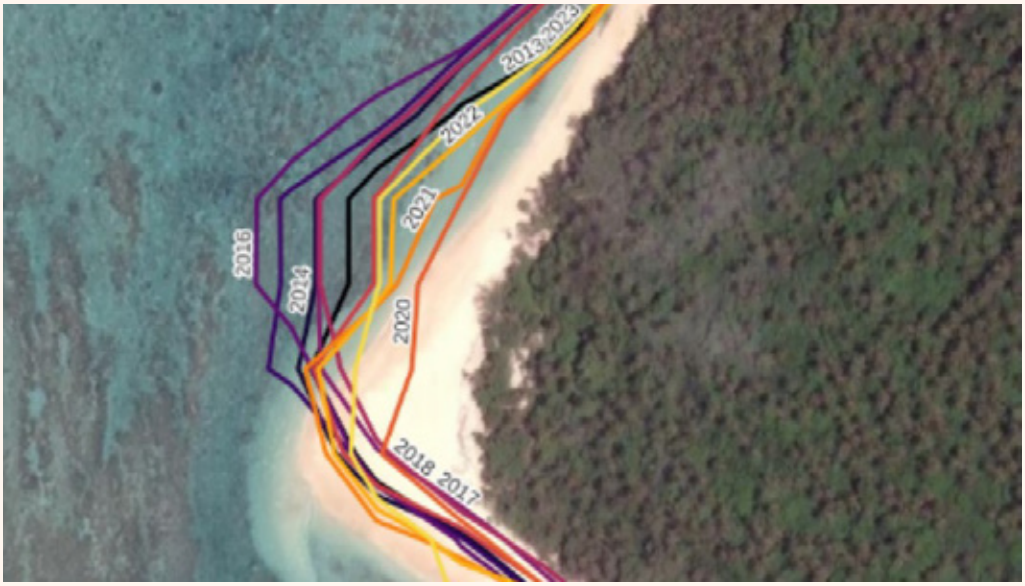
DE Pacific supports climate resilience, disaster preparedness, and sustainable development through several key applications:

Coastal and mangrove mapping. Covering 34,000 kilometers of Pacific coastline, DE Pacific helps identify areas where mangroves are eroding due to severe storms or human activity, and where they are regenerating naturally or through restoration projects, helping to target priority areas for intervention. The Management and Conservation of Blue Carbon Ecosystems in Pacific Island Countries (MACBLUE) project uses this data to support mangrove and seagrass management in Fiji, Papua New Guinea, Solomon Islands, and Vanuatu.

Land and coastal monitoring. Time-series satellite imagery reveals shoreline shifts due to storm surges, gradual sea level rise, and other factors (see image below). This information is particularly useful for disaster risk reduction and management planning, such as in vulnerable areas like the Cook Islands.

Coastal Changes in the Pacific

DE Pacific has used satellite imagery to track coastline changes across the region since 2000.



Source: DE Pacific.

continued on next page

Box 3.7 *continued*

Environmental enforcement. In Fiji, DE Pacific helps detect illegal gravel mining in remote river areas—activities that pollute waterways, damage fragile riverine habitats, and impose costly clean-up burdens on downstream users. In regions where on-the-ground monitoring is difficult or resource-intensive, satellite imagery enables authorities to identify violations and respond more effectively.

While still in its early stages, the platform is already delivering tangible value, with governments, communities, and civil society actively using its insights to guide actions in ecosystem protection, climate adaptation, and environmental governance.

Note:
[a] The Pacific Community is the principal scientific and technical organization in the Pacific region. Established in 1947, it is an international organization owned and governed by its 27 member countries and territories.

Source: Dupar, M., L. Green, and A. Mlisa. 2025. How Satellite Images Are Helping Islands Adapt to Climate Change. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

3.4 Integrating Governance, Policy, and Data into a Coherent Operating System

Governance, policy, and data provide the foundation for nature finance to function at scale by helping correct market failures and internalize environmental externalities. When governance structures (rule of law, enforcement, institutions), policy instruments (regulation, incentives, fiscal tools), and data systems (measurement, accounting, disclosure) operate in concert, they create the systemic conditions for markets to deliver more efficient, fair, and sustainable outcomes. Recognizing and properly valuing ecosystem services turns overlooked environmental costs into explicit factors that guide investment decisions. High-quality data provide the evidence base to set prices, monitor compliance, and verify outcomes, ensuring that social and environmental values are progressively integrated into financial flows.

The effectiveness of environmental data ultimately depends on policy frameworks that can translate insights into meaningful action. While ecosystem data, natural capital accounts, valuation studies, and geospatial tools provide the evidence base to understand ecological change, these insights can influence markets and resource decisions only when embedded within sound fiscal rules, regulatory frameworks, and investment planning. Many existing tools still emphasize financial inputs and expenditures rather than tangible environmental outcomes—such as cleaner air and water, restored ecosystems, or reduced emissions. Without stronger, outcome-oriented metrics, initiatives risk "greenwashing"—being labeled as nature-positive despite limited or unverified ecological gains. Emerging examples across the region illustrate efforts to close this gap. In the Philippines, pilot watershed accounts are beginning to guide public investment and intergovernmental fiscal transfers, though full integration is still evolving. Likewise, ecosystem valuations for services such as pollination and flood protection become economically relevant when linked to insurance regulations or subsidy reforms. Real-time satellite monitoring can also generate impact when linked with legal or financial systems that activate enforcement or payments. In practice, data and policy evolve together—robust data inform policy design, and adaptive policy integration converts evidence into effective market signals and outcomes.

Integrating governance, policy, and data helps direct finance toward its highest-value uses and supports long-term resilience and development gains. When externalities are priced and risks clarified, capital can more confidently support restoration, conservation, and sustainable use. Standardized natural capital accounts make ecosystem services visible in national budgets; clear governance frameworks reduce uncertainty around property rights and liabilities; and fiscal policies such as tax incentives or performance-linked subsidies create predictable revenue streams. Together, this integrated system lowers transaction costs, reduces investment risks, and makes nature-positive finance more competitive than unsustainable alternatives. Beyond mobilizing finance, a coherent operating system can expand fiscal space, stabilize revenues, and protect livelihoods, helping direct investments toward resilience, poverty reduction, and inclusive growth. In this way, nature shifts from a neglected externality to a recognized driver of prosperity and stability across Asia and the Pacific.

Chapter 4

MAKING NATURE INVESTABLE

THIS CHAPTER:

- **Sets out how nature-based solutions (NBS) create revenues** while delivering both environmental and development goals
- **Provides a practical investment playbook,** including key criteria for designing projects that meet investor expectations around risk, return, and impact
- **Maps out the complete financing toolkit** from public grants and regulation to private capital, market instruments, risk-sharing tools, and scalable investment vehicles
- **Shows how digital infrastructure and technology make nature investable** by generating verifiable data, enabling transparent markets, and reducing pressure on ecosystems
- **Highlights landscape-level and regional cooperation mechanisms** that enable economies of scale, cross-border ecosystem management, and shared financing platforms for nature-positive investments.

Scaling nature finance requires a fundamental shift in how nature is understood, valued, and financed. As outlined in Chapter 2, centuries of treating nature as an inexhaustible resource have contributed to environmental degradation and heightened economic and social risks. Financial and policy frameworks that have supported rapid industrial growth have tended to create incentives for short-term economic gain at the expense of long-term environmental outcomes. Properly valuing ecosystem services such as clean air and water, biodiversity, and carbon sequestration is the first step in unlocking economic opportunities and new markets.

To address the nature financing gap, private finance needs to scale significantly, but current market signals tend to undervalue nature. Because nature's critical services are often treated as economic externalities or public goods, they are not reflected in prices or balance sheets and thus do not fully inform investment decisions. Private capital needs to scale more than 25-fold to close the nature financing gap (Davies and MacDonagh 2025). Chapter 3 highlights how adopting systemic thinking—upgrading governance, policy, and data systems in an integrated way—can create the enabling conditions to transform natural capital into a more investable asset. However, beyond enabling conditions, there is also a need to make projects and programs themselves investor-ready.

This chapter focuses on practical approaches for making nature projects investable. It presents criteria for designing investor-ready nature programs and offers a toolkit of financing mechanisms spanning private, public, and blended finance for NBS. The chapter also briefly highlights the role of digital infrastructure, technology, landscape approach and regional cooperation in supporting project implementation, encouraging innovation and collaboration to align financial returns with measurable ecological impact.

4.1 Investing in Ecosystems Through Nature-Based Solutions

NBS generate revenues, reduce risks, and support livelihoods. They encompass actions that address societal challenges by protecting, sustainably managing, and restoring ecosystems, benefiting both biodiversity and human well-being (IUCN 2020). Through the preservation of natural capital and ecosystem services, NBS offer significant economic benefits. In Asia and the Pacific, mariculture is a rapidly growing activity that can meet rising seafood demand while supporting local economies; when farms are strategically located, production can expand while minimizing impacts on marine biodiversity (Ma et al. 2025). Similarly, restoring wetlands and forests not only enhances water quality and flood control but also creates sustainable job opportunities in restoration and maintenance activities. A mangrove restoration program in the Philippines helped preserve vital natural infrastructure essential to coastal protection while creating new livelihoods for local communities through sustainable fisheries and ecotourism (Box 4.1).

Box 4.1: Integrating Climate and Biodiversity Goals into Infrastructure Design

Rethinking infrastructure is essential to addressing climate change and biodiversity loss. Traditional gray infrastructure—such as concrete sea walls, roads, and buildings—is estimated to contribute approximately 79% of global greenhouse gas emissions, primarily from the energy, buildings, and transport sectors (EU 2025). Moreover, infrastructure development is linked to about 29% of species threats globally (WEF 2020). Aligning infrastructure planning with development, climate, and biodiversity objectives is therefore critical.

This shift calls for greater emphasis on green infrastructure—natural or nature-based solutions that meet infrastructure needs while advancing biodiversity and climate goals. For this report, green infrastructure refers to approaches like conserving and restoring seagrass beds for coastal protection instead of building sea walls, or rehabilitating wetlands to manage flood risks in place of concrete barriers. Integrating biodiversity and climate solutions into infrastructure requires holistic, coordinated approaches that maximize benefits and manage trade-offs. The examples below from Townshend (2025) illustrate this approach in practice:

- **Urban wetland planning in Colombo, Sri Lanka.** Following severe flooding in 2010 that caused approximately $50 million in damages and exposed the city's vulnerability, the government prioritized urban wetland management. Since the 1980s, Colombo had lost about 40% of its urban wetlands, significantly reducing its natural capacity to absorb excess rainfall. In response, a comprehensive wetlands management strategy was developed alongside dedicated institutional mechanisms to oversee conservation and planning. These efforts contributed to Colombo being accredited as an international wetland city by Ramsar in 2018.

- **Aquaculture-solar farm in Chongming Island, People's Republic of China.** Luhua Town has implemented an innovative aquaculture-solar model, where solar panels are installed above ponds used to farm Shanghai hairy crabs. The shade and cooler environment created by the panels reduce crab mortality, increasing yields. This dual-use green infrastructure benefits both parties: solar companies gain access to land for panel installation, and crab farmers earn rental income, creating diversified economic returns while supporting renewable energy and sustainable aquaculture.

- **Mangrove restoration in Siargao, Philippines.** Once heavily degraded due to fuelwood harvesting, Siargao's mangrove ecosystems provide critical coastal protection against extreme weather. A government-led restoration program combined protection measures with community engagement, enabling 95% of former mangrove cutters to transition to alternative livelihoods like ecotourism. Nearly 1,000 hectares of mangroves were replanted, with an 80% survival rate, restoring vital natural infrastructure that supports resilience and economic opportunities.

References:
European Union (EU). 2025. Press Release: New Report Reveals How Infrastructure Defines our Climate. 14 May.
Townshend, T. 2025. Green Infrastructure. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.
World Economic Forum (WEF). 2020. New Nature Economy – Report II: The Future of Nature and Business.

Source: Authors.

While NBS have gained traction, their implementation often focuses on isolated outcomes like carbon storage or flood protection. Such fragmented approaches may limit overall impact by missing the interconnected nature of ecosystems. A study revealed a consistent siting bias in large mangrove restoration projects across the region (Hochard et al. 2025). Projects in North Kalimantan, Indonesia, and the Indus River Delta in Pakistan tend to prioritize carbon storage in sheltered locations, while more exposed, storm-prone areas in Myanmar and other parts of Indonesia receive little restoration investment. This approach overlooks opportunities to optimize the multiple benefits of NBS, such as flood risk reduction and enhanced community resilience. Designing NBS to deliver multiple, complementary benefits enhances both ecological health and financial resilience, making investments more attractive and sustainable.

Scaling NBS requires adopting a systemic perspective that connects isolated pilots and small-scale projects into cohesive, investable programs. Rather than treating interventions as standalone efforts, a holistic approach integrates ecological, social, and financial dimensions across landscapes or regions (see sections 4.2 and 4.5). This enables the aggregation of smaller initiatives into larger, diversified portfolios with predictable outcomes and reduced risks, making them more attractive to private investors. For example, the Healthy Oceans Action Plan and the Ocean Resilience and Coastal Adaptation Trust Fund scale investments in marine ecosystem restoration and coastal resilience across Asia and the Pacific (ADB 2019; ADB 2024c). These programs integrate diverse projects—such as mangrove replanting, coral reef rehabilitation, and sustainable fisheries—into cohesive regional portfolios, enabling greater impact and long-term investment. The Accelerating Atoll Adaptation Initiative strengthens this approach by supporting vulnerable atoll nations like Kiribati, Maldives, the Marshall Islands, and Tuvalu in developing comprehensive, long-term adaptation strategies (Giardino 2025). These initiatives not only address immediate climate risks but also unlock programmatic financing, creating the necessary foundation for scaling NBS.

Unlike landscape-based projects, urban NBS usually rely on public funding, outcome-linked finance, and cost savings rather than direct revenue. Initiatives such as the PRC's "Sponge Cities" program show how interventions—including green roofs, parks, community gardens, and sustainable drainage systems—can reduce flood risk, improve water quality, and enhance public health (Rau 2022). In Singapore, the Active, Beautiful, Clean Waters Programme transforms canals, drains, and reservoirs into ecologically sustainable spaces using features such as stormwater detention systems and small wetlands that naturally slow and filter rainwater while creating recreational areas (Public Utilities Board 2024). Economic benefits, such as reduced disaster recovery costs, lower insurance premiums, and higher property values, provide a foundation for financing models that link ecological outcomes to measurable financial or social returns.

Scaling NBS requires shifting from reactive, problem-focused projects to the proactive development of investable opportunities. To attract private capital, projects must deliver secure cash flows and define clear ecological and financial outcomes from the start. Instead of relying solely on extensive primary data collection efforts, successful case studies and demonstration projects help prove investment viability and replicability. Large-scale, visionary initiatives can further build compelling narratives that inspire investor confidence and mobilize scalable financial flows. For investors, such narrative clarity and aggregation of outcomes help translate ecological performance into tangible risk-return profiles.

Delivering scalable NBS also depends on meeting private sector standards of professionalism and operational rigor. This means moving beyond traditional conservation approaches to embed transparent governance, strong fiduciary oversight, and operational discipline at the program or project level (Section 4.2). Outsourcing commercial functions, such as sustainable agriculture or tourism, to private sector specialists under performance-based contracts allows conservation groups to focus on ecological outcomes while ensuring financial viability. Developing this capacity requires targeted financial support to establish effective project-level governance systems that promote transparency and accountability, fostering trust and confidence among investors.

Standards for evaluating and reporting nature-related costs and benefits aid transparency, enhancing the viability of nature-based private finance. Scaling investor participation also depends on consistent standards for measuring and disclosing ecological performance. Initiatives such as the Taskforce on Nature-related Financial Disclosures (TNFD) help corporations identify, assess, and disclose nature-related risks and opportunities across their operations. By making ecosystem dependencies visible—and eventually reflected in financial terms—disclosure frameworks promote accountability and helps align private incentives with public environmental goals. Effective implementation requires decision-grade environmental-economic data and natural capital accounts that translate biophysical changes into financial language (Chapter 3). Governments can help reinforce this shift by progressively introducing nature-related disclosures, updating

fiduciary obligations to include nature considerations, and publishing natural capital accounts alongside national budgets. Efforts by bodies such as the International Public Sector Accounting Standards Board further standardize natural capital accounting (NCA) for public sector entities, integrating ecological values into public financial management. Financial regulators can further contribute by adjusting capital adequacy requirements to account for ecosystem fragility and location-specific exposure. Together, these measures move nature from being treated as an externality to a core balance sheet concern, positioning ecological stewardship as fundamental to financial resilience.

While NBS are a key entry point, sustainable finance must also extend to a wider set of nature-positive investments. These include biodiversity markets, regenerative production systems, and conservation-linked enterprises. As highlighted in Chapter 2, the core challenge is not capital scarcity but a shortage of well-designed, investable projects structured from the outset to meet financial criteria.

4.2 A Framework for Scaling Nature Finance Through Investable Programs

Scaling nature finance requires moving beyond grant-based models to a "pull-driven" approach. Unlike conventional "push-driven" models—where funding is sought after project development—pull-driven projects are built around reliable revenue streams, clear risk profiles, strong governance, and measurable impact. This approach makes nature investments financially attractive, scalable, and sustainable. Achieving this requires fostering dual literacy, where financial institutions understand natural asset values and conservationists design projects that meet financial criteria. For example, Fiji's Sovereign Blue Bond raises capital by selling bonds to investors, then uses the proceeds to finance marine conservation projects that generate measurable environmental benefits and provide financial returns (UNDP 2023). Similarly, emerging biodiversity credit schemes in Thailand are pioneering ways to value, verify, and trade ecosystem services, creating new market-based incentives aligned with conservation goals (UNDP 2025b).

For nature to become a credible asset class, investors need clear standards for assessing what makes projects investable. Drawing on extensive experience with several nature finance programs and transactions (Box 4.2), a practitioner-led perspective is useful for deriving practical, bottom-up design to complement top-down systemic reform (Davies and MacDonagh 2025). Four characteristics consistently underpin successful nature investments: (i) strategic triage that targets landscapes offering both ecological and financial returns; (ii) credible and capable counterparties that can execute effectively; (iii) clear risk mitigation strategies to protect cash flows; and (iv) circular financial flows that reduce long-term reliance on grants by ensuring that revenues from ecosystem services can be reinvested to sustain and expand the project over time.

Box 4.2: Scaling Nature-Based Solutions into Investable Opportunities

Scaling nature-based solutions requires proactively developing portfolios of investable opportunities in landscapes that combine ecological urgency with an enabling institutional and investment context. This entails delivering secure cash flows to attract private capital, with clearly defined ecological and financial outcomes while mitigating investor risks.

Wildlife Conservation Bond ("Rhino Bond"), South Africa
Launched in 2022, the Wildlife Conservation Bond, also known as the "Rhino Bond," is the first structured outcomes-based bond focused on black rhino population growth. It raised $150 million from private investors and is structured as a five-year bond listed on the Luxembourg Stock Exchange. The principal investment is held in a World Bank-managed treasury fund, with only the interest earnings funding conservation activities.

The bond's innovation lies in its conservation outcome-based structure wherein investors receive a return only if black rhino populations grow by at least 4% annually, verified through a third-party monitoring agent to ensure transparency and credibility. If successful, investors earn about a 3.5% return; otherwise, they recover only their principal, allowing a clear separation of capital risk and conservation performance. The Rhino Bond demonstrates how conservation outcomes can be embedded in transparent financial instruments and the role of global institutions in underwriting risk. It also points to investor interest in nature-based products, even when returns are modest, if design and risk management parameters are sound. However, since the bond does not generate new revenue from the landscapes themselves, it relies entirely on donor funding, limiting its scalability and circularity.

South Dongting Lake Project, People's Republic of China
Approved in 2024, the South Dongting Lake Wetland Ecological Restoration and Sustainable Development Project is the first project under the Regional Flyway Initiative. The South Dongting Lake, in northern Hunan Province, provides vital ecosystem services to surrounding communities, including food production, tourism, water provision, flood regulation, and habitat for migratory birds.

The project integrates outcome-linked compensation, nature-based enterprise development, and institutional reform into a coordinated financing mechanism for regional regeneration. A key component is the $21 million eco-compensation scheme that incentivizes local producers to shift to verified sustainable practices such as organic rice farming and sustainable aquaculture. Payments are released only upon demonstration of ecological improvement, using standardized outcome metrics and third-party verification. The eco-compensation mechanism facility includes a replenishment mechanism that aggregates diversified sustainable revenue streams such as tourism taxes, entrance fees, and reed sales, with the potential to generate up to $30 million per year. By implementing this circular financing scheme, the project significantly reduces longer term reliance on government subsidies and moves toward long-term financial self-sufficiency.

Ol Pejeta Conservancy, Kenya
Originally a loss-making cattle ranch, the 90,000-acre property was acquired in 2005 in a transaction led by Conservation Capital and restructured into a hybrid conservation-finance platform. The legal structure consists of a not-for-profit parent entity, Ol Pejeta Conservancy, built around a redeemable preference share model. Ol Pejeta Conservancy acquired 100% of the ordinary equity in a for-profit subsidiary, Ol Pejeta Ranching Ltd. The land and revenue-generating operations are held within the subsidiary, while the parent sets conservation priorities, oversees strategy, and supports livelihood development initiatives.

Financially, the model is built on multiple, independently performing revenue streams, including

- multiple third-party tourism concessions operating under long-term subleases and usage-based royalties;
- a vertically integrated cattle operation with trading partnerships involving local communities;
- a subleased agriculture program with embedded ecological standards;
- a 99-year, 66-home residential leasehold scheme structured as a joint venture; and
- restricted grant funding for flagship conservation and community initiatives.

The conservation impact has been significant. Ol Pejeta is Kenya's largest black rhino sanctuary and its first certified International Union for Conservation of Nature Green List site. Its ecological monitoring systems guide management decisions and are directly linked to the conservancy's tourism value proposition.

continued on next page

Box 4.2 *continued*

Borana Conservancy, Kenya
The Borana Conservancy in Laikipia County, Kenya is a privately owned, 30,000-hectare conservation landscape that has pioneered a land-based financial model to underwrite long-term ecological management. The landowning family retained legal ownership of the property but transferred economic rights to a new for-profit operating company governed by strict conservation guidelines. This company issued nine 99-year subleases to individual shareholder investors (four retained by the family), each linked to exclusive rights to develop conservation-compatible lodges and homes within designated areas of the conservancy.

The five traded subleases raised $18.5 million in capital, which endowed a Conservation Trust Fund designed to provide a financial buffer against unforeseen downturns. Routine conservation costs are covered by ongoing revenues, supported by shareholder underwriting obligations funded through commercial rights that now total $1.4 million per year, indexed and contractually guaranteed by leaseholders. Borana's income streams include high-end tourism lodges, a regenerative livestock enterprise, a small regenerative agriculture program, and targeted incremental grant support for ecological and community programs.

Source: Davies, G and R. MacDonagh. 2025. Designing Nature's Market: A Practitioner's Agenda for Private Sector Investment. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Strategic triage helps to ensure that capital flows to landscapes where it can have the most impact. This involves prioritizing areas based on ecological value, level of threat, likelihood of restoration success, clarity of land rights, and benefits to surrounding ecosystems. Instead of trying to protect every hotspot, triage focuses on well-governed, investable sites where restoration is feasible and risks are manageable. Clear land tenure and strong local institutions reduce financial risks and boost investor confidence. This careful selection helps ensure scarce funds go where they can generate the greatest impact and scale over time. It also supports aggregation and creates replicable models, making investments more reliable and strategic.

Capable counterparties are essential to effectively execute and sustain conservation projects. Private capital tends to flow to credible institutions, not abstract conservation goals. Nature investments are more likely to attract funding when managed by organizations that demonstrate clear strategies, fiduciary governance, audited accounts, stable leadership, and financial discipline. Critically, incentives should align financial returns with ecological results— for instance, through success payments or performance-based instruments that tie investor returns to verified conservation outcomes. High-performing counterparties also demonstrate outcome orientation, data fluency, and adaptability, with strong stakeholder coordination and risk management. They are typically able to communicate complex information clearly and align diverse stakeholders around a shared direction. Practitioner experience suggests that another key factor for success is the presence of a *vested counterparty*—an organization with deep roots in the landscape, trusted relationships with local communities and authorities, and a direct stake in the long-term success of conservation efforts.

Risk mitigation measures help protect projects from shocks that could disrupt revenues and erode investor confidence. Even well-conceived initiatives can fail if exposed to revenue volatility, operational setbacks, or political uncertainty. Diversifying income streams—combining carbon credits, tourism, and sustainable agriculture, for example—reduces dependence on any one source. Structures that capture revenue upfront, such as usage fees or royalties, provide greater transparency and stability than those reliant on residual profits, which are less predictable. Aggregation—bundling multiple smaller projects into a single, diversified investment vehicle—is often essential to achieve scale and attract institutional investors, who typically require substantial ticket sizes. Risk can also be reduced through intermediation, where professional fund managers provide investors access via a single, rated counterparty. Embedding outcome-based performance frameworks helps strengthen accountability and adaptive management.

Financial circularity enables projects to sustain and grow. Without credible pathways for cash flow regeneration, many initiatives remain dependent on grants, limiting scalability and investor appeal. Sustainable revenues, whether from ecosystem services, marketable commodities, or user fees, must first cover operational costs and support reinvestment, enabling landscapes to transition from grant dependence to financial self-sufficiency. Circular financial structures create self-replenishing systems, reinforced by public policies that eliminate harmful subsidies and foster ecosystem service markets. Where early revenues are limited, blended finance tools like first-loss equity or performance guarantees can provide bridging capital, with concessional support tapering as commercial income strengthens.

Inclusive stewardship is essential to ensuring that local communities are full partners in nature investments. Many nature investments have treated local communities as passive beneficiaries rather than active stewards. Without alignment between community interests and project objectives, even well-designed initiatives may underperform or face resistance. Meaningful local involvement helps secure critical buy-in and draws on ecological knowledge and governance systems. Leveraging women's traditional knowledge in payment for ecosystem services (PES) design can improve monitoring, restoration, and climate resilience while fostering innovation. In Nepal, women-led forest enterprises have combined sustainable harvesting with inclusive governance and capacity building to generate income and strengthen forest conservation and resilience (Box 3.3). Studies show that community-managed NBS often achieve stronger ecological outcomes, greater resilience, and broader socioeconomic benefits than externally imposed projects (Berkes 2004).

Scaling nature investments ultimately depends on mobilizing both public and private finance within an enabling environment. Despite growing recognition of their value, nature investments face systemic barriers—including market inefficiencies, limited risk-sharing mechanisms, and institutional capacity gaps. Overcoming these challenges requires a supportive ecosystem: nature-aligned public policies, innovative financial instruments, robust data and monitoring systems, and governance frameworks grounded in equity and local participation. Building on the operating system outlined in Chapter 3, the next section presents a practical toolkit for scaling nature finance, drawing from real-world structures and emerging investment strategies. The goal is to provide clear financial pathways that attract mainstream investors while ensuring that returns are measured holistically, capturing both financial flows and measurable economic and environmental outcomes.

4.3 Building a Nature Finance Toolkit

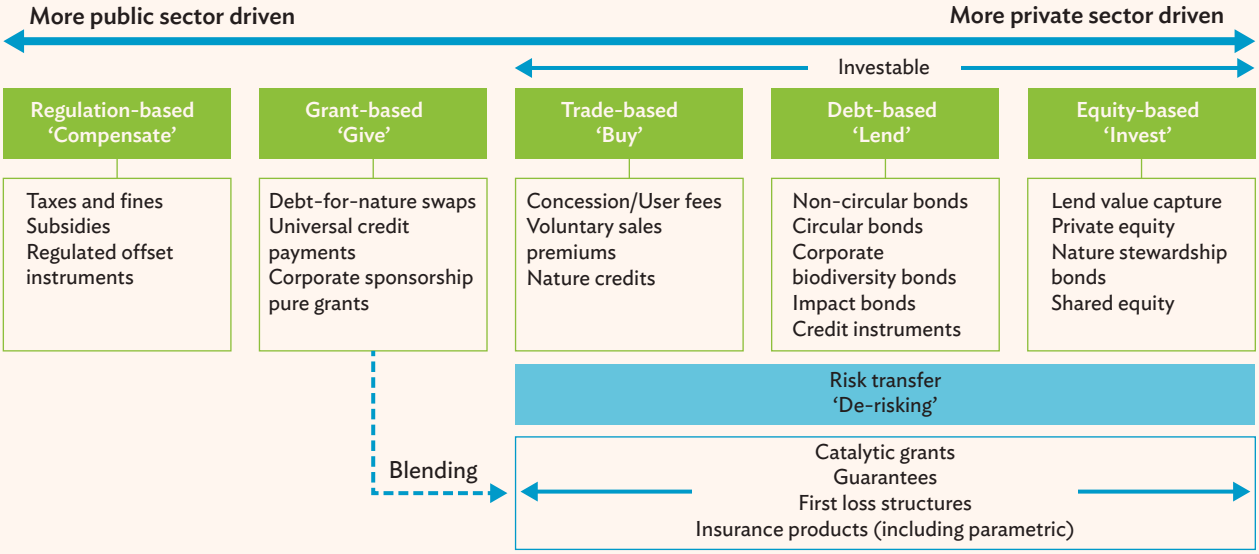
Moving beyond pilot projects to scalable nature-based investments requires a full capital stack that includes private, public, and blended finance. This stack comprises regulatory frameworks, catalytic grants and concessional finance, market or trade-based monetization mechanisms, risk transfer instruments such as guarantees and insurance, and large-scale capital deployment. Public sector tools such as regulation and grants form the foundation: regulation creates enforceable demand for ecological outcomes, while grants and concessional finance help de-risk early-stage investments and build capacity for growth. As projects mature, market mechanisms—such as tradable credits, concession fees, and PES schemes—monetize ecosystem functions, while risk transfer tools stabilize revenue streams, and structured debt and equity vehicles channel large-scale capital (Box 4.3). Although these layers are distinct, they are interdependent and work together—through blended finance structures—to create a framework that makes nature investments credible, scalable, and attractive to mainstream finance while supporting diverse initiatives in restoration, sustainable tourism, agriculture, energy, and forestry.

Box 4.3: A Nature Financing Toolkit

The Nature Financing toolkit provides a structured framework for classifying and selecting financing approaches suited to specific nature investment contexts. It organizes mechanisms according to the fundamental basis on which finance is provided, whether to compensate, give, buy, lend, or invest, and locates these along a continuum from public sector-driven to private sector-driven instruments (box figure).

Nature Financing Toolkit

Nature finance integrates public, private, and blended capital through a layered approach combining regulatory frameworks, catalytic grants, market-based monetization, risk-transfer instruments, and large-scale investment vehicles.



Source: Adapted from Designing Nature's Market: A Practitioner's Agenda for Private Sector Investment by G. Davies, 2025.

At the public end lie regulation-based mechanisms, typically state-led and compensatory in nature, including taxes, fines, subsidies, and regulated offset instruments. Adjacent are grant-based mechanisms, representing concessional or philanthropic capital deployed without expectation of repayment. These continue to play a central role in early-stage project development and capacity building.

The taxonomy then shifts into more investable domains, where private capital becomes increasingly relevant. Trade-based mechanisms concern market transactions for nature-linked goods and services, such as concession or user fees, biodiversity or carbon credits, and nature-linked product premiums. Debt-based mechanisms encompass repayable instruments including loans and bonds backed by nature-related cashflows, while equity-based mechanisms entail ownership or revenue-sharing structures such as land value capture or ecosystem-service enterprises.

Across this continuum, blended and risk-transfer instruments, including catalytic grants, first-loss guarantees, and insurance products, are used to reduce transaction risk and improve capital alignment between concessional and commercial sources. Collectively, the taxonomy functions as a practical decision-support tool for matching appropriate financing structures to landscape and counterparty conditions, thereby improving the efficiency and scalability of private sector engagement in nature finance.

Source: Davies, G. and R. MacDonagh. 2025. Designing Nature's Market: A Practitioner's Agenda for Private Sector Investment. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

By linking financial incentives to measurable environmental outcomes, innovative financial instruments can help channel capital into nature-positive investments. Tools like debt-for-nature swaps, performance-linked bonds, biodiversity credits, sustainability-linked loans, payments for ecosystem services, and blended finance vehicles have the potential to deliver both economic returns and environmental benefits. When tied to measurable outcomes, such as emissions reductions, improved watershed health, or biodiversity gains, these instruments redirect capital toward resilience, low carbon growth, and ecosystem restoration. For example, debt-for-nature swaps ease fiscal pressures while advancing conservation, performance-linked bonds lower borrowing costs for climate and biodiversity goals, and blended finance attracts institutional investors by reducing risk.

4.3.1 Creating Demand Through Regulation

To unlock private investment at scale, governments can use regulatory tools—such as eco-taxes, fines, offset mandates, and green procurement—to internalize environmental costs and create incentives for nature-positive outcomes. These mechanisms leverage state authority to shift market dynamics, turning nature loss into a financial liability and ecological restoration into a financial asset. For example, pollution taxes like Costa Rica's fuel tax directly disincentivize environmental degradation while providing reliable funding for conservation. Offset mandates like the Biodiversity Net Gain requirement of the United Kingdom (UK) oblige developers to compensate for ecological impacts by investing in biodiversity restoration (Government of the UK 2025). This creates demand for biodiversity credits, driving investment in conservation projects. Similarly, green procurement policies prioritize environmentally sustainable products and services, stimulating markets for eco-friendly goods and encouraging businesses to adopt more sustainable practices. Other regulatory measures like removing harmful subsidies or using agri-environment subsidies can further incentivize nature protection (Box 2.3).

Effective regulation provides long-term price signals that allow private developers to forecast cash flows from restoration activities. When fines and offset obligations are tied to independent trusted monitoring, reporting, and verification (MRV) systems, regulation reduces uncertainty and builds trust among stakeholders. Gradually tightening standards and prices over time gives markets the visibility and time they need to scale and adjust. Earmarking fiscal proceeds for reinvestments in nature, as in the PRC's Dongting Lake Fund, can further strengthen regulation's role as a driver of ecological finance rather than a constraint.

4.3.2 De-Risking and Seeding Through Grants and Concessional Finance

Grant funding and concessional capital are essential for unlocking early-stage nature investments, particularly in high-risk areas where private investors are hesitant to engage. When designed thoughtfully, these instruments can reduce risk, build credibility, and help create the conditions for private investment to follow. For example, debt-for-nature swaps in Belize and Ecuador convert sovereign debt into long-term conservation finance in exchange for ecological commitments (Box 4.4; Nedophil, Yue, and Hughes 2023). Performance-based grants, like the Global Environment Facility's support for the Rhino Bond, link funding to independently verified conservation outcomes (Box 4.2). Other tools—such as convertible grants (which can later be turned into equity or debt) and corporate sponsorships (like Coca-Cola's support for WWF's watershed conservation programs)—help tie funding directly to specific environmental goals. Blended finance combines concessional funds with private capital, helping to de-risk early-stage projects and demonstrate their potential for scaling.

Box 4.4: Case Study—The Belize Blue Bond

In 2021, Belize faced a dual crisis: a crippling sovereign debt burden exacerbated by the coronavirus disease 2019 (COVID-19) pandemic and the accelerating degradation of its most vital economic asset, the Belize Barrier Reef System. Public debt had soared to an unsustainable 133% of gross domestic product, pushing the country to the brink of its fourth default in just over a decade (Abratte 2023). In response, Belize executed a landmark debt-for-nature swap, a complex financial transaction that provided significant fiscal relief while generating long-term funding for marine conservation.

The deal, designed by The Nature Conservancy (TNC), allowed Belize to refinance its "Superbond," a $553 million Eurobond representing all its commercial debt. TNC, through a subsidiary, launched a tender offer to repurchase this debt from private creditors at 55 cents on the dollar. Since the transaction supported ocean and marine conservation, the buyback was funded by a new, lower-interest $364 million blue loan from TNC to Belize (GFI n.d.; TNC 2022).

The key innovation lay in how this new loan was financed. Credit Suisse issued a blue bond, a debt instrument designed to finance sustainable marine and ocean-based projects, to private institutional investors, such as pension funds, who are typically averse to high-risk sovereign debt. To make the bond attractive, the United States International Development Finance Corporation provided a political risk insurance policy, effectively guaranteeing the loan. This public sector guarantee transformed the high-risk debt into a low-risk, investment-grade asset (rated Aa2 by Moody's), unlocking private capital for Belize at favorable rates (GFI n.d.; TNC 2022).

The economic impact was immediate and substantial. The transaction reduced national debt by $189 million and cut debt service payments by about $200 million. Belize's credit rating was upgraded three notches by S&P. In return, the government made legally binding conservation commitments: protecting 30% of its ocean territory by 2026 and strengthening safeguards for mangrove habitats. Debt savings are expected to generate about $180 million over 20 years for an independent conservation trust fund, providing a steady financing source for these environmental goals (GFI n.d.).

The Belize Blue Bond is hailed as a pioneering model of blended finance. However, it has faced criticism for high transaction costs and for ceding some national sovereignty over environmental policy to external entities. While it offers a powerful proof of concept, its complexity suggests it remains a bespoke solution rather than a universally replicable blueprint for addressing the twin crises of debt and biodiversity loss.

References:
Abratte, M. 2023. Sovereign Restructuring of the Year. *LatinFinance*. 30 June.
Green Finance Institute (GFI). n.d. Government of Belize Debt Conversion for Marine Conservation.
The Nature Conservancy (TNC). 2022. Case Study: Belize Blue Bonds for Ocean Conservation.

Source: Authors.

The goal is to create financial circularity, where grants are linked to measurable milestones such as hectares restored, biodiversity improvements, or verified carbon credits. As projects mature and achieve these milestones, grants are gradually phased out and replaced with revenue-based or commercial financing. This transition is critical for ensuring long-term sustainability and reducing reliance on external funding. Instruments like grant-to-equity or grant-to-debt conversion can extend the impact of initial funding, turning grants into a springboard for further investment. For example, an ecotourism initiative in Chi Phat, Cambodia—initially grant-funded—demonstrates how early-stage support can evolve into financially self-sustaining conservation driven by community-led revenue (Everland 2022; Wildlife Alliance 2017). Such approaches allow grants to evolve from temporary support into enduring drivers of sustainable, investable solutions.

4.3.3 Monetizing Nature via Tradable Instruments

Monetizing nature involves creating clear, tradable rights to ecosystem services that translate environmental benefits into measurable financial flows. These include biodiversity credits, carbon credits, rights-based quotas, and eco-certification premiums. While carbon markets remain the most established,

biodiversity credit markets are growing rapidly, enabling corporations to invest in projects that deliver verified habitat or species gains. Rights-based quotas allocate legally enforceable usage limits—such as fishing or water rights—that can be traded, helping to manage resources sustainably while generating economic value. By using market-driven mechanisms such as forward credit sales, enterprises can unlock working capital, plan larger investments, and convert ecosystem benefits into financial returns.

One challenge in monetizing nature is creating clear, market-driven incentives that reward the conservation and restoration of ecosystem services. PES and eco-compensation schemes can address this by offering financial rewards for actions that deliver measurable environmental outcomes such as protecting watersheds or conserving biodiversity (Box 4.5). These mechanisms enable nature's benefits to be quantified and traded, creating a direct economic stake for local communities and landholders in maintaining healthy ecosystems.

Box 4.5: Market-Based Incentives for Nature

Payment for ecosystem services (PES) is a market-based tool that financially rewards sustainable land management to conserve ecosystems and deliver climate and development benefits. For example, Mexico's Pago por Servicios Ambientales program has reduced erosion and improved water quality while providing income to over 40,000 communities (Wunder, Engel, and Pagiola 2008). Costa Rica's PES helped reduce deforestation by over 80%, benefiting about 10,000 households (Murguia et al. 2022). In Viet Nam, PES mobilizes $55 million annually, supporting sustainable forest management and improving rural incomes for over 500,000 households (Do et al. 2018). Increasingly, digital technologies like remote sensing, mobile payments, and blockchain enhance PES programs by improving monitoring, transparency, and efficient delivery of payments. High-quality data and skilled human capital strengthen program design, implementation, and verification. By creating predictable revenue and measurable outcomes, PES attracts investment and drives scalable nature-climate solutions.

Biodiversity offsets can also incentivize conservation by requiring developers who damage biodiversity in one area to compensate by funding conservation projects, ideally within the same ecosystem or region, and aligned with broader conservation goals. In Mongolia, the national biodiversity offset program requires mining and oil developers to offset their impacts in priority conservation areas, particularly in ecologically significant regions like the Gobi Desert. A leading example is the Oyu Tolgoi copper mine's landscape-level offset scheme, which finances conservation of iconic southern Gobi species such as the Asiatic wild ass and Houbara bustard (Davies 2025).

Ecolabeling schemes are increasingly being adopted across Asia as a strategic tool to promote sustainable production and consumption by increasing the visibility of environmentally sustainable products. Examples include the Thailand Green Label, Ecolabel Sri Lanka, Green Choice Philippines, and Green Mark Uzbekistan (UNEP 2025). However, most ecolabeling programs remain voluntary, and their effectiveness is limited by the lack of transparent standards and benchmarks. Establishing robust verification mechanisms and enhancing transparency in criteria and public access to information are essential to increase the credibility, uptake, and overall effectiveness of ecolabeling schemes (ESCAP 2021).

References:

Davies, J. 2025. Asian Grasslands. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Do, T. H. et al. 2018. Payment for Forest Environmental Services in Vietnam: An Analysis of Buyers' Perspectives and Willingness. *Ecosystem Services*. 32. pp. 134–143.

Economic and Social Commission for Asia and the Pacific (ESCAP). 2021. *Eco-labelling: Low Carbon Green Growth Roadmap for Asia and the Pacific – Fact Sheet*.

Murguia, J. M. et al. 2022. Payment for Ecosystem Services in Costa Rica: Evaluation of a Country-Wide Program. *Inter-American Development Bank Discussion Paper*. IDB-DP-00950.

United Nations Environment Programme. 2025. Sustainability in the Building and Construction Sector in Asia: Promoting the Harmonization of Ecolabel Criteria for Cement and Steel. *One Planet Network*. 30 June.

Wunder, S., S. Engel, and S. Pagiola. 2008. Taking Stock: A Comparative Analysis of Payments for Environmental Services Programs in Developed and Developing Countries. *Ecological Economics*. 65. (4). pp 834–852.

Source: Authors.

Building trust and transparency is essential for tradable nature instruments to function effectively. This involves establishing clear and legally recognized ownership rights alongside standardized MRV systems to reliably quantify and track ecosystem services. Governance frameworks, often developed through public–private partnerships, help harmonize standards across jurisdictions and provide the regulatory clarity that institutional investors seek. Tools like single registries reduce risks such as the double counting of ecosystem service credits, while bundling diverse revenue streams—such as carbon, biodiversity, and water credits—can improve credit quality and reduce volatility. By simplifying investor due diligence and addressing key risks, these measures may help increase confidence and scale nature-based finance beyond niche markets.

4.3.4 Stabilizing Returns with Risk Transfer Tools

For nature-based investments to be viable at scale, measures should be taken to protect revenue streams from environmental and market shocks. Risk transfer instruments—such as insurance products, performance bonds, and multilateral guarantees—play a critical role in converting unpredictable risks into manageable, investable outcomes. Parametric insurance, for instance, provides payouts based on pre-agreed triggers like wind speed or rainfall levels, reducing delays and disputes in claims. For example, El Salvador's surf break insurance helps stabilize tourism income by compensating for extreme weather disruptions (Save the Waves Coalition 2024). In Indonesia, new regulations have enabled reef insurance and restoration through a government-managed trust fund, starting with pilot programs in the Gili Islands and supported by blended public and private finance (UNDP 2025a). Performance bonds, common in mining and infrastructure, are increasingly used in conservation to ensure accountability for achieving environmental outcomes. Guarantees, such as those offered by the United States International Development Finance Corporation to back blue bonds, can reduce default risk and attract private capital (Box 4.4). These instruments are often combined into layered risk structures that integrate guarantees, insurance, and pooled funds to improve financial resilience. The underlying principle is actuarial: using objective triggers to reduce uncertainty, pooling projects across regions to stabilize costs, and layering tools to cover different types of risk.

4.3.5 Scaling Capital via Debt and Equity

Nature finance can be scaled through structured debt instruments, which attract institutional capital and help channel large-scale investments into nature-positive projects. Green and blue bonds are important tools in this space, channeling large-scale capital toward nature-positive projects like reforestation, wetland restoration, and marine conservation. Typically issued by governments or development banks, these bonds access deep capital markets—especially in emerging economies—where even a small allocation toward nature finance helps close financing gaps. More advanced debt tools, such as sustainability-linked loans and bonds, tie financial terms to ecological performance, encouraging borrowers to meet conservation targets. Smaller projects can also be aggregated into special purpose vehicles to meet investor thresholds, while clearly defined key performance indicators and planned refinance structures help transition concessional funding into lower-cost, senior capital as projects mature. These adjustments improve investability and lower execution risk for institutional investors.

Private equity and venture capital provide direct investment through shared-equity, revenue-share, and ownership models, offering critical growth capital and operational expertise to scale nature-positive enterprises. Shared-equity structures enable co-ownership with local communities, aligning stewardship incentives, while revenue-share agreements provide transparent, predictable returns linked to business success. The Ol Pejeta Conservancy in Kenya is an example of an enterprise that blends commercial operations, community partnerships, and ecological stewardship as part of a conservation-finance

platform (Box 4.2). Well-designed equity deals often use waterfall structures to prioritize operating expenses and channel surplus returns to local stakeholders, embedding redemption rights to deepen community ownership over time. Supporting equity with modest grants for governance and compliance helps de-risk investments and build resilient, patient capital that values healthy ecosystems as long-term assets.

4.4 Technology for Implementing Nature Investment

Technology is a critical enabler for unlocking and scaling investment in nature. As nature investments enter mainstream financial markets, technological innovation plays three essential roles: (i) by making nature's value measurable and verifiable through accurate, granular data; (ii) by supporting transparent governance and market infrastructure; and (iii) by transforming how food and materials are produced to relieve pressure on ecosystems. Together, these advances help de-risk nature investment, increase market confidence, and make nature-based projects more investable, scalable, and impactful.

Digital infrastructure is essential for effective nature investment, providing the foundation for transparency, accountability, and outcome-based performance. As discussed in Chapter 3, technological advances in remote sensing, artificial intelligence, and big data analytics are improving the availability and consistency of environmental data. These tools underpin outcome-based finance by helping measure change over time, reduce monitoring costs, and standardize reporting. In doing so, they support more informed decision-making and help address investor concerns about performance, risk, and credibility.

Digital registries and trading platforms improve transparency and efficiency in environmental markets. They enable the issuance, tracking, and retirement of nature credits, whether for carbon, water, or biodiversity. These systems reduce the risk of double-counting, support price discovery, and may improve liquidity, making it easier for investors and developers to participate with confidence. For example, the UK's Biodiversity Net Gain Register provides the infrastructure for a compliance-led biodiversity credit market, helping projects like the proposed Eden Wildflower Bank to operate within a clear and structured framework (Davies and MacDonagh 2025). As regulatory demand grows, digital tools for market governance and verification are likely to play an increasing role in supporting credible and functional nature markets.

Technology can also support more strategic decision-making about where and how to invest in nature. Geographic information systems and other analytics tools allow users to overlay multiple layers of ecological, legal, and social data to identify locations where interventions are both feasible and likely to deliver lasting outcomes. For example, Conservation Capital's Nature Finance Activation tool is used to screen and prioritize opportunities during the early stages of investment planning (Davies and MacDonagh 2025). These approaches help move beyond opportunistic project selection toward more consistent, evidence-based investment strategies.

Ground-level technologies such as Internet of Things sensors and environmental DNA sampling complement remote sensing by expanding environmental monitoring options. Internet of Things devices can provide real-time data on conditions such as soil moisture, water quality, or wave height, while environmental DNA allows detection of particular species using simple soil or water samples. These tools offer cost-effective ways to track ecological indicators at high frequency and can be especially useful for financial instruments that depend on measurable triggers. For instance, parametric insurance schemes for coral reefs in Mexico and Fiji use wave data to trigger rapid payouts following storm events, linking ecological monitoring directly to financial response (SwissRe n.d.; PCRIC 2025) (Box 4.6).

Box 4.6: Pinpointing Conservation Investment with Environmental DNA

The European eel, a critically endangered species, has seen its numbers drop by up to 95% in the UK's Somerset Levels since the 1980s. This large, engineered wetland posed a challenge for conservationists with limited funds. The key question was whether the habitat itself was the problem or if barriers were stopping eels from reaching it. Traditional survey methods like netting were too costly, invasive, and inaccurate for such a vast 69,000-hectare area, slowing down effective conservation efforts (Halvorsen et al. 2020).

The Somerset Eel Recovery Project teamed up with NatureMetrics to use environmental DNA analysis. By sampling water, they tested for trace amounts of eel DNA in a noninvasive and cost-effective way, offering a clear view of eel distribution across the landscape. The results were striking: eel DNA appeared in the main rivers flowing into the Somerset Levels but was completely missing from the drainage ditches where eels used to be common. This pointed to artificial barriers—especially an electric pumping station—as impassable obstacles for eel migration (NatureMetrics 2023).

This clear evidence sparked a focused investment strategy. It led to simple, low-cost physical solutions like "eel ropes," installed in 2024 by volunteers to help eels bypass barriers. More importantly, the data inspired community involvement, including crowdfunding and educational initiatives like "Eels in the Classroom." With strong scientific proof, the project effectively engaged water managers and influenced larger conservation programs. The initial investment in environmental DNA technology reduced funding risks by precisely identifying the problem, unlocking a series of targeted financial, social, and physical actions to support eel recovery.

References:
Halvorsen, S. et al. 2020. Environmental DNA Analysis Indicates that Migration Barriers Are Decreasing the Occurrence of European Eel (Anguilla anguilla) in Distance from the Sea. *Global Ecology and Conservation*. 24.
NatureMetrics. 2023. Tracking and Reviving the Critically Endangered European Eel Using eDNA: Somerset Eel Recovery Project Case Study.

Source: Authors.

Technology is also transforming how food, materials, and other resources are produced, helping to relieve pressure on nature. Emerging bioeconomy innovations—such as precision fermentation, cellular agriculture, and wood-based biopolymers—offer alternatives to conventional land-intensive systems. By moving production into controlled environments like bioreactors and indoor facilities, these approaches can reduce land-use change and pollution—two major drivers of biodiversity loss. In Asia and the Pacific, where climate impacts, population growth, and limited arable land strain traditional agriculture, these technologies could also support food security by enabling more stable yields, lowering input needs, and diversifying nutrition sources. They may also help free up land for ecosystem restoration and rewilding. The Group of 20 (G20) High-Level Principles on Bioeconomy (2024) encourage this transition, calling for regenerative production methods and more efficient use of biological resources as part of a broader shift toward sustainable and resilient growth (Box 4.7).

Box 4.7: Precision Nutrient Management

Europe is shifting from broad, uniform fertilizer limits toward more precise, data-driven farming practices to better protect water quality and free land for nature restoration. Current regulations, like the European Union Nitrates Directive and Germany's *Düngeverordnung*, impose general fertilizer caps—often reducing nitrogen inputs by about 20% in high-risk red zones. While these limits reduce groundwater pollution, they can also lower crop yields on low-risk soils and don't always target the areas with the highest nitrate leaching (Heyl et al. 2023).

A more targeted solution is precision nutrient management using digital agronomy tools. Combining satellite data (such as red-edge indices), soil sensors, and yield monitors, farmers and regulators create detailed nitrogen-need maps at a fine scale of about 10 meters. These geospatial models, updated with real-time weather information, allow fertilizer use to be adjusted more accurately, with clear compliance documentation.

Pilot projects show farms using these techniques typically reduce nitrogen use by 25–35 kilogram per hectare, saving 8%–12% on fertilizer costs while maintaining or increasing yields. They also significantly cut nitrous oxide emissions. Additionally, precision nutrient management enables farmers to set aside up to 5% of farmland for ecological features like riparian buffers, pollinator strips, or agroforestry without affecting productivity.

This approach offers financial innovation potential. Water utilities facing costly nitrate removal systems increasingly see farm-level nitrogen reduction as a cost-effective alternative. By turning nitrogen reduction into a measurable and contractible environmental service, precision nutrient management supports new nature-based finance models (EIB 2023). This aligns intensive agriculture with Europe's biodiversity, climate, and water quality goals.

References:

European Investment Bank (EIB). 2023. Investing in nature-based solutions: Financing the transition to a nature-positive economy.
Heyl, K. et al. 2023. Achieving the nutrient reduction objective of the Farm to Fork Strategy: An assessment of CAP subsidies for precision fertilization and sustainable agricultural practices in Germany. *Frontiers in Sustainable Food Systems*. 7.

Source: Authors.

4.5 Scaling Nature Finance Through Landscape Approach and Regional Cooperation

Scaling nature finance further requires approaches that reflect the size and complexity of natural systems, along with economies' development needs. The landscape approach provides a framework for planning and investing more strategically across sectors and geographic scales, while regional cooperation helps extend this integration across borders and into global markets. Together, they enable more coherent, large-scale investments that align ecological priorities with economic and financial strategies. This coherence creates a pipeline logic—identifying opportunities at the landscape level, structuring them through regional collaboration, and scaling them with targeted finance—to move from concept to impact.

The landscape approach enables integrated planning where ecological systems and human activities intersect, mapping interventions across geographies, sectors, and institutions (Box 4.8). By considering upstream–downstream linkages and cross-sector impacts—such as agriculture's effects on water quality or land use on energy infrastructure—it aligns decisions with ecological and physical realities. This helps avoid siloed actions that undermine outcomes elsewhere, such as upstream logging increasing erosion and reducing reservoir capacity downstream. For example, the PRC's logging moratorium in the Yangtze and Yellow River headwaters reduced flood risks linked to deforestation (Yang 2017). In Viet Nam's Mekong Delta,

mangrove restoration reduced wave heights by 62%, strengthened flood protection, and increased rice yields—demonstrating the multiple dividends of working across systems (Ty et al. 2024). In Central Asia, planting native shrubs on degraded rangelands has helped stabilize slopes and improve forage availability (Davies 2025). Midstream and downstream measures—such as urban sponge parks to manage floods (Harrisberg 2022) and constructed wetlands in East Kolkata and the PRC's Taihu Lake that naturally treat wastewater and filter pollutants at scale (MacKinnon and Hatton 2025)—further demonstrate coordinated ecosystem management that balances conservation with sustainable development.

Box 4.8: A Seascape Approach to Marine and Coastal Nature-Based Solutions in Asia and the Pacific

Asia and the Pacific holds the world's richest marine biodiversity, including the longest and most diverse coral reef systems and numerous endemic species and unique ecosystems. These ecosystems buffer climate impacts by sequestering carbon and absorbing heat, yet they are under growing stress from warming seas, acidification, overfishing, pollution, and coastal development.

A seascape approach—which manages ridge-to-reef processes as one socioecological system—links upstream land use, estuaries and nearshore waters under shared governance and investment plans. This integration allows threats and solutions to be addressed jointly rather than in isolation.

Nature-based solutions (NBS) scaled through seascape planning have already delivered sizeable dividends. An analysis of NBS for flood management in Asia and the Pacific found that initiatives designed to deliver multiple benefits—including flood risk reduction, biodiversity conservation, and socioeconomic gains—achieved greater cost-effectiveness and stakeholder support than single-objective projects. This underscores the value of integrated approaches for coastal adaptation and resilience (Molnar-Tanaka and Surminski 2024). Since 2020, the Coral Triangle Initiative has supported 120 community coral-gardening sites across Indonesia, Malaysia, and the Philippines, increasing live coral cover by 18% in 3 years. Indonesia's "Building with Nature" program has restored 10,000 hectares of mangroves, while Viet Nam's Mangrove Fund has added 4,500 hectares. Crucially, several projects now combine land-and-sea actions: early evidence from the Pacific Seagrass Partnership shows that transplantation success rates double when watershed management to reduce nutrient runoff is financed in parallel with seagrass planting.

Scaling remains challenging. Technical capacity for coral propagation, seagrass farming, and hybrid gray–green breakwaters is limited; finance remains short-term; and responsibilities are fragmented across marine, coastal, and land use agencies. Governance gaps—such as unclear tenure, overlapping mandates, and weak integration of NBS into climate, disaster risk reduction, and coastal zone plans—continue to slow replication.

Progress depends on collaboration. Regional knowledge hubs, blue-carbon credit protocols that value full adaptation benefits, and blended-finance windows such as the Blue Natural Capital Financing Facility can attract private capital while supporting community co-management. International standards, including the International Union for Conservation of Nature Global Standard for NBS, the Blue Carbon Partnership, and the emerging Taskforce on Nature-related Financial Disclosures rules, provide investors clearer guardrails and performance metrics. Taken together, a seascape approach transforms isolated coral, mangrove, or seagrass projects into integrated coastal resilience strategies that unlock carbon markets, safeguard biodiversity, and protect millions of Asia and the Pacific residents from rising seas and storms.

References:

Grainger, C. and S. Green. 2025. Oceans and Coral Reefs in Asia and the Pacific: Safeguarding Biodiversity, Climate Resilience, and Sustainable Development. Background paper for the *Asia–Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Molnar-Tanaka, K. and S. Surminski. 2024. Nature-Based Solutions for Flood Management in Asia and the Pacific. *OECD Development Centre Working Paper*. No. 351. Organisation for Economic Co-operation and Development.

Source: Authors.

Building on this integration, coordinated action across different geographic scales and economic sectors can strengthen the long-term impact of nature investments. At its core, the landscape approach is a scale-sensitive planning tool—one that asks where the relevant ecological and socioeconomic boundaries lie. These may range from small micro-catchments to large transboundary systems such as the Greater Mekong Subregion or migratory corridors under the Regional Flyway Initiative (Box 4.9). Planning at this functional scale enables better alignment of priorities and interventions. Multi-stakeholder platforms and policy coordination mechanisms can help formalize this alignment, linking village land use plans to provincial zoning frameworks, national budgets, and, where relevant, regional or supranational agreements. This integrated approach can reduce conflicting objectives, improve policy coherence, and promote more strategic and efficient use of public and private resources.

Box 4.9: The Regional Flyway Initiative

The Asian Development Bank (ADB) Regional Flyway Initiative (RFI), launched in 2021 in partnership with the East Asian–Australasian Flyway Partnership Secretariat and BirdLife International, represents a strategic, landscape-level effort to conserve critical wetland ecosystems along the East Asian–Australasian Flyway. Spanning 10 developing member economies, the RFI aims to mobilize $3 billion over 10 years to sustainably manage a network of 147 scientifically prioritized wetlands essential for biodiversity, climate resilience, and community well-being.

Central to the RFI is its systemic approach, which acknowledges the interconnectedness of wetlands across migratory routes, ensuring that conservation efforts transcend individual sites and preserve ecological integrity throughout the flyway. By addressing key threat—such as habitat loss, pollution, and unsustainable agricultural practices—through integrated, landscape-scale planning, the RFI provides coordinated, multicountry interventions that maximize ecological benefits, enhance migratory bird populations, and strengthen ecosystem resilience.

Financially, the RFI leverages both traditional funding and innovative financing models, including blended finance mechanisms that combine public, private, and multilateral resources. Flagship projects, such as the People's Republic of China's South Dongting Lake initiative, demonstrate how targeted investments in habitat restoration, sustainable agriculture, and ecotourism can simultaneously advance biodiversity conservation, economic development, and climate adaptation goals (see Box 4.2). The development of a sustainable financing mechanism will further ensure continuous and stable funding for long-term ecosystem management, maintaining the sustainability and scalability of conservation impacts.

Effective data management is integral to the RFI's success. The initiative emphasizes standardized collection, transparent information-sharing, and rigorous analysis of ecological and socioeconomic data to inform decision-making and adaptive management practices. Continuous monitoring at both site-specific and regional scales ensures that conservation strategies remain relevant and effective.

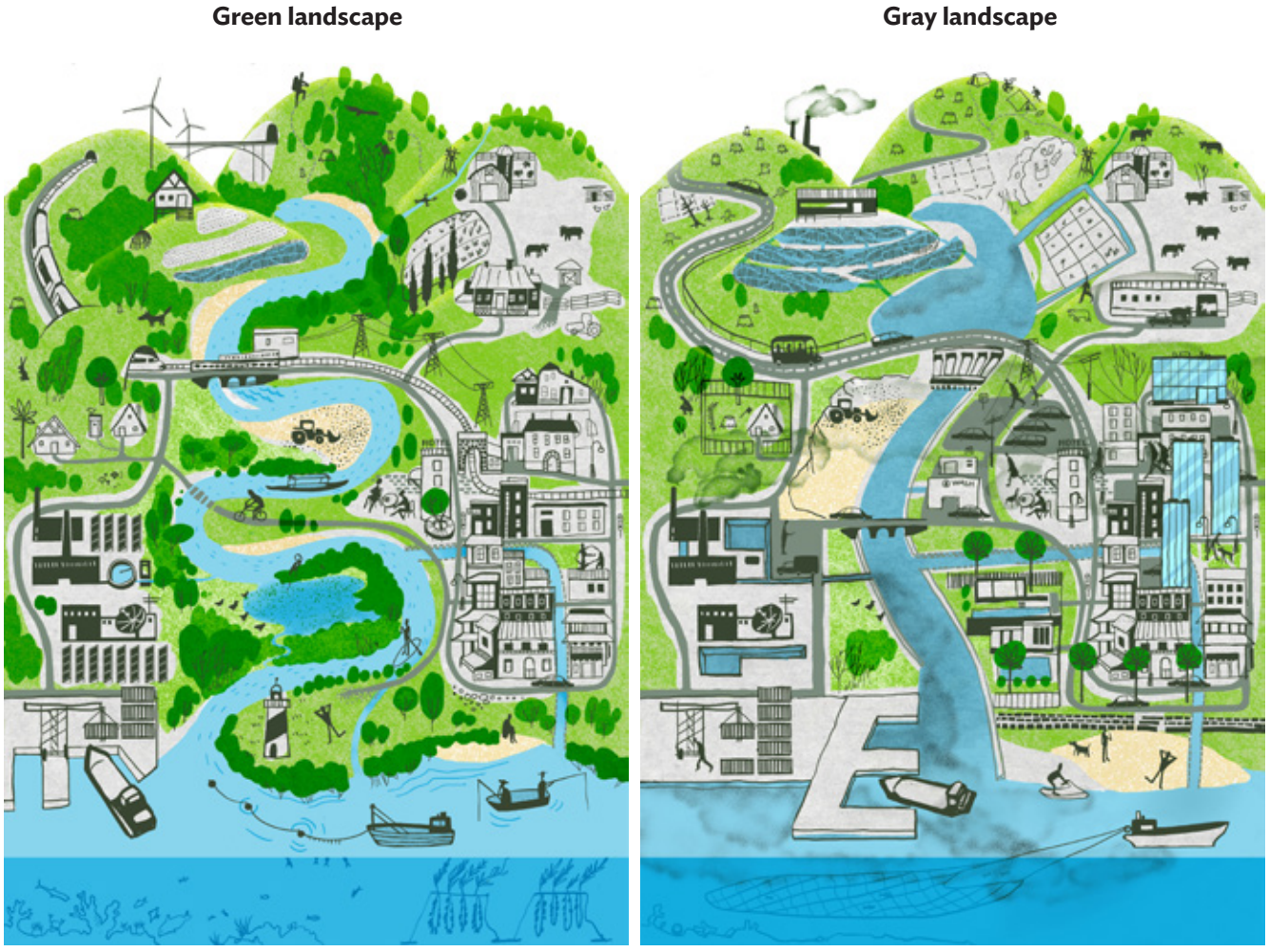
By integrating adaptable investment models tailored to local ecological and community contexts—covering habitat restoration, sustainable agriculture and aquaculture, pollution control, and ecotourism—the RFI delivers targeted benefits that support biodiversity, climate resilience, and local livelihoods. Aligned with global agreements such as the Paris Agreement and the Convention on Biological Diversity, the RFI offers a replicable blueprint for sustainable regional development and environmental stewardship.

Source: Asian Development Bank (ADB). 2023. Regional Flyway Initiative: Nature-Based Solutions to Reduce Greenhouse Gas Emissions and Strengthen Climate Resilience Across Asia and the Pacific.

To illustrate integrated, scale-sensitive planning, it is useful to visualize how different approaches can shape outcomes in practice. Figure 4 contrasts two development pathways. One pathway involves fragmented planning and extractive practices, resulting in ecosystem degradation and resource depletion. This "gray" pathway leads to environmental harm, increased climate vulnerability, and diminished social and economic well-being. In contrast, the other pathway features integrated management of land, water, and biodiversity, recognizing the vital connections between ecosystems and economic activities. This "green" pathway conserves natural resources while supporting sustainable livelihoods, enhancing climate resilience, and delivering lasting social and economic benefits (Antić, M. et al. 2025). By coordinating interventions across sectors and spatial scales—upstream, midstream, and downstream—this landscape approach aligns conservation and production goals, regenerates ecosystems, sustains communities, and strengthens long-term resilience.

Figure 4: Green Versus Gray Landscapes

A green landscape reflects coordinated nature-based investments that sustain ecosystem services, while a gray landscape reflects fragmented development that leads to degradation.



Source: Antić, M. et al. 2025. The Landscape Approach: A Guidance Note for Nature-Based Solutions and Gray Infrastructure. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Effective financing for nature investments depends on treating landscapes as integrated units rather than isolated projects. Aggregated mechanisms—such as blended finance, biodiversity credits, and ecosystem service payments—are typically more efficient and attractive to investors at scale. Individual projects often struggle to draw private investment due to high transaction costs and limited impact. The landscape approach enables bundling multiple interventions under a unified governance structure, reducing risks and improving efficiency. For instance, within the RFI, flagship projects like South Dongting Lake combine habitat restoration, sustainable agriculture, and ecotourism into integrated packages that attract capital from public, private, and multilateral sources while delivering measurable, multi-benefit outcomes.

Strategic prioritization within economies helps direct nature investments for maximum impact, but many ecosystems and environmental challenges extend beyond national borders. Addressing these transboundary landscapes requires cooperation among economies to align policies and actions. Strategic landscape triage can also be applied at the regional scale to identify areas of highest risk and opportunity, enabling more effective allocation of resources across shared ecosystems. This broader perspective is crucial for mobilizing investment at scale and ensuring that conservation and restoration efforts are mutually reinforcing rather than undermining one another. Building on the systemic, landscape-level approaches established within economies, the next step involves extending coordination and collaboration beyond national borders to manage shared ecosystems and natural resources more effectively.

Managing shared ecosystems and natural resources requires coordinated regional action to align policies, harmonize standards, and mobilize finance. Many significant ecosystems—such as the Mekong Basin, Central Asian rangelands, and migratory bird flyways—cross national boundaries, making regional cooperation essential. Shared policy frameworks help prevent "free riding" and ensure that restoration or protection efforts in one economy are reinforced, not undermined, by activities in others. Regional cooperation can also support national progress by harmonizing standards, reducing transaction costs, and creating more attractive conditions for investors. Platforms such as the Association of Southeast Asian Nations (ASEAN), Central Asia Regional Economic Cooperation (CAREC), and Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area can help align biodiversity crediting methodologies, standardize NCA, and develop pooled investment vehicles that spread risks across economies. Examples such as the ASEAN Taxonomy for Sustainable Finance (ASEAN Taxonomy Board 2024) and CAREC's water management frameworks demonstrate how regional collaboration can build market confidence and help scale nature investments effectively.

By collaborating at the regional level, economies—especially smaller economies—can strengthen their position in global markets and align more effectively with international frameworks. Regional cooperation can help pool efforts on nature-related disclosure and biodiversity-credit design, enabling economies with limited institutional capacity share technical expertise, reduce costs, and increase collective bargaining power in international finance. Knowledge sharing—through regional policy dialogues, joint training programs, and cross-border partnerships—can further strengthen institutional capacity and accelerate the uptake of effective practices. These regional initiatives act as force multipliers, supporting national policy reforms while aligning with global market expectations. More broadly, the landscape approach offers a practical bridge between global commitments and local realities. As economies in Asia and the Pacific scale up ambition under the Paris Agreement, the Global Biodiversity Framework, and Sustainable Development Goals, the landscape approach grounds these targets in ecological realism, institutional alignment, and financial viability.

Chapter 5

Advancing Nature Finance—A Road Map for Sustainable Growth and Resilience in Asia and the Pacific

THIS CHAPTER:

- **Reaffirms the importance of private capital in closing the nature finance gap**, supported by strategic public finance and robust governance, policy, and data systems.
- **Provides a 10-year phased, capacity-tailored implementation strategy**—from initial stocktaking and foundational reforms to the full institutionalization of nature in economic, fiscal, and financial systems.
- **Concludes the report** with key recommendations for action and highlights common pitfalls to avoid when scaling nature finance effectively and equitably.

Nature is increasingly recognized as a core economic asset fundamental to socioeconomic well-being, fiscal stability, and climate resilience. Realizing this potential involves mobilizing finance at scale, not only from public sources, which help create enabling conditions and support early-stage investments, but also from private capital, which can provide the scale, efficiency, and innovation needed to close persistent financing gaps. A clear phased strategy can guide economies through this transition: starting from assessing existing systems and capacities; moving toward upgrading governance, policy, and data frameworks; and ultimately anchoring nature within economic, fiscal, and financial systems. With thoughtful sequencing and support, nature-positive investment can become a central pillar of sustainable development across Asia and the Pacific.

Nature functions as living infrastructure that underpins built infrastructure and economic systems such as transport, water, energy, agriculture, and urban development. Forests, wetlands, and watersheds regulate water flows that sustain agriculture and hydropower; healthy soils support food security; and mangroves and coral reefs buffer coastlines and protect communities. Without healthy ecosystems, infrastructure investments—such as roads, water systems, and energy grids—become increasingly vulnerable to failure. Recognizing nature as essential infrastructure can open new opportunities to finance the transition toward sustainable economies while safeguarding critical environmental assets for the future.

5.1 Why Private Finance for Nature?

Mobilizing private finance at scale offers a practical way to close the growing gap between limited public funds and the rising costs of ecosystem degradation. Although the economic case for investing in nature is well established, the financing required for effective ecosystem management and restoration far exceeds what governments alone can provide. In Asia and the Pacific, investment needs are increasing amid intensifying environmental pressures such as deforestation, habitat loss, and biodiversity decline. Private capital offers a viable path to accelerate nature-positive investments through market-based solutions that align financial incentives with conservation and restoration objectives. Public finance plays a key role in creating enabling conditions and de-risking early-stage investments, laying the foundation to attract and scale private finance.

Private capital is more likely to flow into nature-based investments when nature is regarded as a credible and investable asset class. Many opportunities still fall outside mainstream investors' risk–return expectations due to limited data, unclear revenue models, and fragmented market structures (see Chapter 4). Strengthening dual literacy—enabling financial institutions to assess the value of ecosystem services while helping conservation actors design investable programs—can help bridge this gap. Experience highlights several factors that support successful investments: (i) selecting landscapes that offer both ecological and financial value, (ii) partnering with credible and capable implementers, (iii) applying sound risk mitigation strategies, and (iv) establishing circular financial flows that allow revenues from ecosystem services to sustain or expand future investments. Together, these elements can help build confidence and improve the long-term viability of nature-focused transactions.

Effective governance helps create the conditions for private investment in nature by defining how decisions are made, enforced, and coordinated across institutions. Clear allocation of rights and responsibilities, supported by enforcement mechanisms grounded in the environmental rule of law (EROL), helps reduce investment risks and build trust among stakeholders. Coordination across sectors and government levels minimizes conflicting mandates and strengthens institutional reliability. Equally important is the meaningful inclusion of Indigenous Peoples and local communities (IPLCs) to ensure that investments deliver equitable benefits and long-term stewardship. Enhancing governance also involves building institutional capacity—through training, technical support, and resource allocation—to improve enforcement, monitoring, and the effective implementation of policies and regulations that support sustainable private finance.

Supportive government policies help establish the foundations for nature-aligned markets to grow and scale. Addressing market failures and policy distortions is central to this effort, particularly where existing incentives drive ecosystem degradation or undervalue ecological assets. Reforms that align fiscal, regulatory, and trade policies with environmental objectives can help markets reward conservation and restoration rather than degradation. By internalizing environmental costs and incorporating nature-related considerations into financial systems, policies can gradually shift capital flows toward more sustainable and resilient outcomes.

Reliable, standardized, and accessible data systems—essential for valuing nature—help build market confidence and guide sound decision-making. Integrated natural capital accounting (NCA) frameworks—alongside investments in digital infrastructure, shared data standards, and open access platforms—can improve how the economic value of nature is measured, monitored, and reported. Clear decision-relevant data allow investors to assess ecological risks and returns while enabling public institutions to target resources and design policies that reflect environmental realities. Over time, stronger data systems can help reduce uncertainty, lower the cost of capital, and improve the visibility of nature-related investments within financial markets.

Given the multiple steps needed to transform markets and upgrade institutional frameworks, this report proposes a phased 10-year road map as a high-level guide to support economies in navigating the transition (Figure 5). Asia and the Pacific is a vast and diverse region, with varying ecological, economic, and social contexts that require tailored and differentiated approaches. A phased approach allows for building capacity, piloting innovative solutions, adapting governance and policy structures, and progressively scaling investments while managing risks. This gradual progression helps ensure that reforms are coherent, stakeholder engagement is meaningful, and investments deliver sustainable and equitable outcomes. The following section outlines multidimensional strategies to mobilize private finance for nature in Asia and the Pacific.

5.2 A Phased 10-Year Implementation Road Map

5.2.1 Phase 0: Taking Stock and Identifying Differentiated Starting Points (Year 0–1)

Economies can begin by assessing existing initiatives to build on proven pilots and avoid duplication. Many economies in Asia and the Pacific are not starting from scratch: pilots in NCA, ecosystem service valuation, and biodiversity finance already offer valuable lessons. For example, the work of the Asian Development Bank (ADB) on watershed ecosystem services in the Philippines, eco-compensation mechanisms in the PRC, and support for carbon market readiness in Papua New Guinea demonstrate diverse entry points suited to national contexts (Silver et al. 2025, ADB 2024b, ADB 2024d). Mapping these systems enables reforms to be tailored to institutional maturity.

Effective stocktaking covers governance frameworks, policy instruments, and data infrastructures concurrently. Governments can review existing environmental laws, fiscal incentives, valuation methods, data systems, and enforcement practices to identify strengths and areas for improvement. Some economies already embed environmental clauses in fiscal transfers, while others have adopted advanced geospatial datasets or disclosure mandates for monitoring, reporting, and verification. Recognizing such comparative advantages allows differentiated sequencing across the region.

Early coordination mechanisms help align pilots with national strategies and promote coherence. Without coordination among ministries, agencies, and key stakeholders, initiatives risk remaining fragmented. Governments can establish interagency task forces, working groups, or steering committees to consolidate existing initiatives under a shared road map. Coordination may also involve linking natural capital pilots with broader fiscal planning or finance sector reforms. Support from ADB and other development partners can facilitate regional peer-learning platforms where economies benchmark progress and exchange lessons from ongoing pilots.

Figure 5: 10-year Phased Road Map

The phased 10-year road map offers strategic guidance for economies in Asia and the Pacific to mobilize private finance for nature by strengthening governance, policy, data, and finance systems.

	Phase 0: Taking Stock (Year 0–1)	Phase 1: Laying the Foundations (Years 1–3)	Phase 2: Scaling and Integrating Systems (Years 3-7)	Phase 3: Institutionalization and Adaptation (Years 7-10 and beyond)
Integrated Governance	Conduct assessment of existing governance frameworks; policy instruments; and data infrastructures Establish early coordination mechanisms to align pilots with national strategies and build coherence	• Clarify and reduce overlapping mandates across ministries. • Formalize stakeholder engagement through protocols such as Free, Prior, and Informed Consent. • Establish anti-corruption safeguards and disclosure protocols.	• Strengthen regulatory enforcement and coordination. • Expand judicial capacity and establish permanent interministerial platforms.	• Entrench environmental rights and obligations in constitutions and statutes. • Establish regular review mechanisms, citizen assemblies, and participatory planning forums. • Embed Environmental Rule of Law, focusing on permanently resolving the governance failure of weak or inconsistent enforcement.
Policy		• Pilot and evaluate policy instruments addressing market failures.	• Reform subsidies and fiscal incentives. • Establish mandated offsets, eco-compensation schemes, and liability rules.	• Phase out harmful subsidies. • Embed eco-compensation, liability regimes, and taxation into mainstream fiscal policy.
Fit-for-Purpose Data Systems		• Identify priority ecosystems and compile fragmented datasets. • Introduce standardized frameworks for natural capital accounting (NCA).	• Expand coverage and granularity of natural capital accounts. • Embed natural capital into corporate and public reporting.	• Regular reporting and updating of natural capital accounts. • Embed NCA in macroeconomic planning. • Standardize valuation methodologies across the region. • Linking nature valuation into sovereign credit ratings, insurance models, and fiscal planning.
Nature Finance System		• Pilot early blended finance vehicles, nature-based solution pilots, and decentralized finance mechanisms to demonstrate proof of concept. • Set up simple but credible reporting protocols and cash flow models to build investor confidence.	• Align fiscal policy, regulation, and disclosure with the economic value of nature. • Establish nature-related disclosure and ink these to trade and financial markets.	• Integrate nature into monetary, regulatory, and capital market frameworks. • Establish professionalized conservation finance platforms to deliver predictable pipelines of investable projects. • Scale inclusive financial mechanisms to ensure direct benefits of Indigenous Peoples and local communities.
Cross-Cutting Actions	Technology and digital systems Measurement, reporting, and verification Capacity building and learning/nature literacy Inclusion and equity			
	Public Nature Finance → Private Nature Finance			

Source: Authors.

Phase 0 aims to help economies design reforms that are context-specific, opportunity-driven, and politically feasible. By cataloging governance strengths, policy instruments, and data readiness, economies can develop differentiated approaches that avoid one-size-fits-all solutions. With this diagnostic baseline, Phase 1 can proceed more strategically, directing resources where they can deliver the greatest impact.

5.2.2 Phase 1: Laying the Foundations (Years 1–3)

Building on the diagnostic findings from Phase 0, economies can initiate targeted foundational reforms that strengthen existing pilots and institutional assets. While Phase 0 focused on mapping efforts, Phase 1 translates that knowledge into practical actions addressing critical gaps in governance, policy, and data. Rather than launching new programs, the priority is to reinforce and upgrade current systems to build investor confidence and ensure coherence in government action.

Governance reforms can establish a nature-positive policy framework, institutional clarity, and minimum standards for participation and transparency. Drawing on ongoing nature investment efforts, governments may clarify mandates across ministries, reduce overlapping responsibilities, and formalize transparent standards. Early stakeholder engagement, particularly with IPLCs, can be supported through protocols such as Free, Prior, and Informed Consent (Eales 2025; Institute for Human Rights and Business 2022). Additionally, establishing basic anti-corruption safeguards and disclosure protocols early on helps prevent powerful interests from capturing emerging nature markets and prioritizing private gains over environmental and social benefits.

Introducing and gradually adopting policy instruments that address market failures can help ensure their effectiveness in practice. Economies often begin with simple payment for ecosystem services (PES) schemes and early subsidy reforms (such as redirecting harmful energy or agricultural subsidies) and introduce initial fiscal incentives such as tax breaks for nature-based solutions (NBS). As capacity grows, governments can experiment with early market frameworks such as biodiversity credit registries, eco-compensation funds, or green fiscal transfers. These initial measures signal to private actors that nature is valued as productive capital and lay the ground for more comprehensive reforms in later phases.

Data readiness focuses on establishing foundational standards and infrastructures. Building assessments during the stocktake, economies identify priority ecosystems, compile fragmented datasets, and introduce standardized frameworks such as the System of Environmental-Economic Accounting for NCA. Open access geospatial platforms enhance visibility of critical natural assets, while simplified digital disclosure protocols—such as streamlined Taskforce on Nature-related Financial Disclosures (TNFD) templates for small and medium-sized enterprises (SMEs)—can help build familiarity and lower entry barriers for private finance. Consistent taxonomies and standards across public, private, and community-generated data ensure that crowd-sourced and local monitoring systems contribute interoperably to national accounts and investment pipelines. At this stage, it is also critical to reach consensus on goals, timelines, and clearly phrased objectives to ensure alignment across stakeholders and enable coherent implementation of data strategies.

Finance reforms initially focus on piloting new approaches and establishing basic standards that can support investment. Early blended finance vehicles, NBS pilots—which demonstrate the financial viability and risk mitigation potential of ecosystem-based interventions—and decentralized finance mechanisms—which offer participatory, transparent ways to value, transact, and manage ecosystems—demonstrate proof of concept and strengthen investor confidence. Simple but credible reporting protocols and cash flow models further reinforce market trust. Eco-compensation schemes piloted in some regional economies,

such as the PRC, provide practical examples for pricing ecosystem services. Multilateral development banks (MDBs) and development finance institutions play a catalytic role at this stage by absorbing early risks and helping standardize templates for replication.

By the end of Phase 1, most economies typically have a basic, functioning system that signals commitment to investors and reduces policy uncertainty. Success at this stage is measured less by the amount of finance mobilized and more by whether governments have put in place the institutional, policy, and data frameworks required to advance confidently into Phase 2, which focuses on scaling up these efforts.

5.2.3 Phase 2: Scaling and Integrating Systems (Years 3–7)

Phase 2 focuses on expanding and integrating systems to enable nature-positive investments at scale. This involves addressing deeper market failures and policy distortions by aligning fiscal, regulatory, trade, and corporate disclosure frameworks with the true economic value of nature. By adopting a systemic approach that moves beyond isolated pilots, economies can establish predictable market conditions and incentives that embed ecosystem services within the broader economic framework, fostering sustainable private sector participation that advances nature restoration and delivers social and economic benefits.

Reforming subsidies and fiscal incentives plays a pivotal role in aligning public spending with sustainability goals. Across Asia and the Pacific, harmful subsidies in fossil fuels, fisheries, and agriculture often exceed investments in climate or biodiversity efforts by several multiples (Davies and MacDonagh 2025). Redirecting a portion of these expenditures toward sustainable practices can create fiscal space and strengthen the business case for private investment in nature. For example, shifting from broad fertilizer subsidies to targeted payments for soil restoration helps address environmental degradation while supporting markets for sustainable land management.

Regulatory instruments and market-based incentives that assign value to nature are essential for establishing effective markets for ecosystem services. Environmental damage—such as pollution, deforestation, and habitat loss—often remains unpriced, leaving natural resources undervalued. By requiring developers or emitters to compensate for environmental impacts through regulatory measures (such as mandated offsets and liability-based compensation) and market mechanisms (like biodiversity offsets, payments to restoration funds, and PES) governments can help internalize these external costs. Expanding proven schemes across the region helps ensure that environmental degradation is no longer cost-free and that restoration efforts benefit from predictable revenue streams.

Enhancing how companies and governments collect, report, and share information is critical to reducing the information gaps that deter investors. Because private finance is highly sensitive to uncertainty, the absence of standardized metrics or comparable data increases risk premiums. By aligning nature-related disclosures with international standards (e.g., TNFD) and embedding natural capital into corporate and public reporting, governments can lower information asymmetries and make ecosystem services visible in balance sheets and fiscal planning. Linking these disclosures to trade access and financial markets can provide stronger incentives for compliance. Economies advancing disclosure reforms during this phase position themselves as credible destinations for sustainability-linked investment.

Strengthening regulatory enforcement and coordination is central to addressing fragmentation and institutional gaps. Even well-designed policies are ineffective when compliance is weak or enforcement inconsistent. Expanding judicial capacity, clarifying institutional mandates, and establishing permanent inter-ministerial platforms can ensure that nature-positive policies are applied consistently. These actions reduce transaction costs, increase investor confidence, and lower the risk of policy reversals. For instance, Indonesia's success in curbing deforestation, achieved through coordinated enforcement among ministries, provinces, and local communities, illustrates the value of integrated governance.

Phase 2 marks the shift from pilots to functioning markets that embed nature within economic systems. With externalities priced, incentives aligned, and information asymmetries reduced, nature-positive investments can begin to operate at scale. By the end of this phase, financial institutions typically integrate nature-related risks into credit assessments; governments maintain stable fiscal instruments linked to ecosystem outcomes; and markets for biodiversity credits and restoration projects are active at national or regional scale, supported by sustainable supply chains.

5.2.4 Phase 3: Institutionalization and Adaptation (Years 7–10 and beyond)

Integrating nature into the core of economic governance is vital to addressing systemic market failures and ensuring long-term resilience. By Phase 3, economies move beyond scaling pilots and correcting distortions to institutionalize frameworks that internalize externalities, clarify property rights, and anchor ecosystem value across fiscal, financial, and economic policy. This consolidation phase establishes nature as a productive factor in the economy, comparable to labor and capital.

Governance at this stage becomes adaptive, inclusive, and firmly rooted in legal frameworks. Entrenching environmental rights and obligations in constitutions and statutes helps maintain policy continuity across political cycles. Regular review mechanisms, citizen feedback, and participatory planning forums enable governments to respond to changing ecological and economic realities. Incorporating EROL into core legal and governance systems strengthens enforcement and accountability. Examples include Bhutan's constitutional recognition of environmental rights and Latin American legal reforms that institutionalize community participation in land use planning.

Policy frameworks evolve to align fiscal and regulatory systems with environmental performance. Harmful subsidies are gradually phased out, while eco-compensation, liability regimes, and environmental taxation become part of mainstream fiscal policy. Carbon and biodiversity markets link with national development strategies, allowing investors to respond to price signals that reflect both the costs of degradation and the benefits of restoration. Governments can also integrate nature-related risks into debt sustainability analyses and sovereign credit ratings, helping correct markets' historical underpricing of long-term ecological costs. Such measures mark a shift from ad hoc reforms to systemic fiscal integration.

Data and information systems are institutionalized within national economic accounts. Natural capital accounts are reported alongside gross domestic product, regularly updated, and integrated into macroeconomic planning. Advanced and standardized valuation methodologies enable ecosystem services to be priced and traded with confidence. Linking these systems to sovereign credit ratings, insurance models, and fiscal planning reduces market uncertainty through transparent, reliable, and comparable information. Regional harmonization promotes consistent valuation of transboundary ecosystem services, such as shared water flows and migratory species, supporting regional investment platforms.

Finance becomes fully mainstreamed as nature is integrated into monetary, regulatory, and capital market frameworks. Biodiversity-linked mandates guide sovereign wealth and pension funds, while central banks and financial regulators incorporate ecological stress scenarios into their operations. Professionalized conservation finance platforms provide predictable pipelines of investable projects, addressing fragmentation and credibility gaps that constrained earlier phases. Inclusive financial mechanisms expand access so that IPLCs benefit directly from long-term capital flows, advancing equity and fair distribution.

Phase 3 consolidates the transition from short-term, fragmented projects to systemic, long-term markets that recognize nature as productive capital. By embedding nature across governance, policy, and data systems, economies can strengthen resilience, fiscal stability, and competitiveness. This paves the way for a future where the costs of degradation and the benefits of restoration are reflected in economic signals, allowing markets to operate efficiently and sustainably over time.

5.3 Conclusion

To translate ambition into action, ministries of finance and economic agencies can lead by making nature a core asset in national development strategies. Economies that embrace a systemic shift toward nature-positive investment are better positioned for long-term economic competitiveness, reduced volatility, and improved social outcomes. Strategic partnerships between the public and private sectors can align the strengths of both—public institutions providing governance, policy stability, and incentives, and the private sector contributing innovation, capital, and technical expertise. Together, these efforts reinforce development strategies that ultimately support people's livelihoods, environment, and overall well-being.

Scaling NBS requires more than financial innovation—it depends on building stronger financial and ecological literacy across institutions. Capacity building for financial actors, policymakers, and conservation practitioners is crucial to structure investable projects that meet the expectations of mainstream investors. As NBS transition from traditional grant-based models to more finance-driven approaches, tools such as biodiversity credits, blended finance, and performance-based bonds can help attract larger private capital flows. Public finance remains critical for de-risking investments and ensuring projects deliver multiple, reinforcing benefits such as climate resilience, biodiversity gains, and inclusive economic growth.

Recognizing the early-stage challenges of nature finance tools is vital for fostering realistic expectations and sustained progress. While biodiversity credits, carbon markets, and payment schemes for ecosystem services show promise in mobilizing private investment, these emerging instruments still face challenges such as fragmented standards, limited liquidity, and uncertain demand. Revenues generated from these tools can play an important role in supporting nature-positive actions, but they are most effective when combined with strong public investment, clear regulations, and sound fiscal reforms. Public sector efforts—through bolstering governance, policy, and data systems—enable these markets to develop, scale, and function reliably over time.

Key pitfalls to avoid include overreliance on market-driven approaches, static governance frameworks, neglect of equity and inclusion, and excessive dependence on NBS in some contexts. Given the high sensitivity and tipping points of many ecosystems, NBS must be applied carefully to prevent maladaptation—when well-intentioned measures inadvertently increase vulnerability or ecosystem stress—particularly where physical limits to adaptation are already evident. Hybrid NBS for coastal protection, combining natural buffers with engineered infrastructure, are being used to address these constraints in some Pacific economies. Similarly, markets alone cannot correct nature's undervaluation, close data gaps, or ensure equitable outcomes. Without strong governance, they may create perverse incentives or prioritize short-term gains

over long-term resilience. Governance systems must therefore remain adaptive to changing ecological and economic conditions by embedding iterative learning, regular policy reviews, and feedback mechanisms that enhance system resilience. Reliable data systems also play a key role by capturing ecological and financial information that supports continuous policy adjustments and evidence-based reform. Finally, meaningful participation from IPLCs, and vulnerable groups strengthens legitimacy, reduces social risks, and enhances both ecological and economic outcomes through fair benefit-sharing arrangements.

Cross-border coordination and a landscape or seascape approach are key to scaling nature finance. Regional platforms like the Association of Southeast Asian Nations (ASEAN), Central Asia Regional Economic Cooperation, and Brunei Darussalam–Indonesia–Malaysia–Philippines East ASEAN Growth Area can harmonize governance structures, taxonomies, and data systems, unlocking capital at scale. These platforms can standardize NCA, align crediting methodologies, and create pooled investment vehicles. By aligning ecological boundaries with economic and governance systems, a landscape approach can enhance resilience, improve the efficiency of public and private fund allocation, and contribute to better socioeconomic outcomes. Mainstreaming this approach into governance and investment frameworks will help economies translate global sustainability goals into scalable, investable strategies.

The report presents a clear road map for policymakers, investors, and stakeholders to drive a transformative shift by placing nature at the heart of economic and financial systems. By assessing current capacities and progressively improving governance, policy, and data frameworks, economies can stimulate private investment at scale, laying the foundation for long-term ecological restoration, resilience, and economic opportunity. Integrating nature into fiscal planning, sovereign debt management, and financial oversight presents a significant leadership challenge. The choices made in the coming decade will determine whether nature supports sustainable prosperity or exacerbates ongoing challenges. Leadership from finance ministries, central banks, and economic authorities is crucial, while collaboration with private investors, financial institutions, development partners, and multilateral organizations will help mobilize capital, de-risk investments, and ensure that both public and private efforts align to restore and sustain natural capital.
A coordinated, forward-looking approach to nature finance offers a unique opportunity not only to protect ecosystems but also to fundamentally reshape economies for lasting resilience, competitiveness, and inclusion. If effectively implemented, this decade-long transformation can redefine Asia and the Pacific's development model, where nature is not a cost to be managed but the foundation of prosperity.

REFERENCES

Abiad, A. et al. 2024. Voices of Change: Public Sentiment on Climate Change Policies in Asia. Background paper for the *Asia-Pacific Climate Report 2024: Catalyzing Finance and Policy Solutions*. Asian Development Bank.

Abratte, M. 2023. Sovereign Restructuring of the Year. *LatinFinance*. 30 June.

Antić, M. et al. 2025. The Landscape Approach: A Guidance Note for Nature-Based Solutions and Gray Infrastructure. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Arena, M. et al. 2015. *National Marine Ecosystem Service Valuation: Solomon Islands*.

ASEAN Taxonomy Board. 2024. *ASEAN Taxonomy for Sustainable Finance – Version 3*.

Asian Development Bank (ADB). 2019. *ADB Launches $5 Billion Healthy Oceans Action Plan*.

_____. 2022. *Asian Development Bank Ocean Finance Framework*.

_____. 2023. *Regional Flyway Initiative: Nature-Based Solutions to Reduce Greenhouse Gas Emissions and Strengthen Climate Resilience Across Asia and the Pacific*.

_____. 2024a. *Environment Action Plan 2024-2030: Toward a Nature-Positive Asia and the Pacific*.

_____. 2024b. *Hunan South Dongting Lake Wetland Ecological Restoration and Sustainable Development Project: Report and recommendation of the President*.

_____. 2024c. *Ocean Resilience and Coastal Adaptation Program (ORCA): Empowering Change Through Strategic Partnerships for People, Planet, and Prosperity*.

_____. 2024d. *Papua New Guinea: Supporting sustainable forest development (Technical Assistance Report No. 58180-001)*.

Asian Infrastructure Investment Bank. 2023. *Asian Infrastructure Finance 2023: Nature as Infrastructure*.

Banco de España. 2021. *COP 26 Individual Pledge by Banco de España as NGFS Member*.

Bassi, A. M. et al. 2021. *How Can Investment in Nature Close the Infrastructure Gap? An Estimate of How Much NatureBased Infrastructure Can Save Costs and Create Value Relative to Traditional Grey Infrastructure*. International Institute for Sustainable Development and United Nations Industrial Development Organization.

Berkes, F. 2004. Rethinking Community-Based Conservation. *Conservation Biology*. 18(3). pp. 621-630.

Bernabe, J. et al. 2025. Developing Asia's Dependence on Nature. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

BloombergNEF. 2024. Biodiversity Finance Factbook: Biodiversity COP16 Edition.

Bond Pricing Agency Malaysia (BPAM). 2024. BPAM Launches Eko Platform to Revolutionise Sustainability Reporting in Malaysia.

Brandon, C. et al. 2021. Integrating Natural Capital into National Accounts: Three Decades of Promise and Challenge. *Review of Environmental Economics and Policy*. 15 (1).

Buckley, R. 2024. Immediate Economic Significance of Nature, Climate, and Livelihood Anxieties. *One Earth.* 7 (7). pp. 1164–1166.

Bureau of Economic Analysis (BEA). 2010. *What Are the Effects of the BP Oil Spill on GDP and the National Accounts?*

Busch, J. and J. Engelmann. 2017. Cost-Effectiveness of Reducing Emissions from Tropical Deforestation, 2016–2050. *Environmental Research Letters*. 13 (015001).

Busch, J. 2025a. Climate Mitigation Potential of Forests in Asia and the Pacific. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

_____. 2025b. Forests in Asia and the Pacific: Climate and Biodiversity. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Cabinet Secretariat of the Republic of Indonesia. 2019. President Jokowi Issues Regulation on Satu Data Indonesia.

Castañeda, J., L. Raina, and D. Rexhepi. 2019. *Synthesis Report: Natural Capital Accounts and Policy in Indonesia*. World Bank.

Chen, P. et al. 2022. *Developing a System Framework for China's Natural Resources Balance Sheet from the Perspective of Sustainable Development*.

China Justice Observer. 2024. *China issues Regulation on Ecological Protection Compensation*.

China News Service. 2024. Half of China's Forests and Grasslands Included in the Eco-Compensation Scheme. ECNS Wire. 28 November.

Chisika, S. and C. Yeom. 2021. Enhancing Sustainable Management of Public Natural Forests Through Public Private Partnerships in Kenya. *Sage Open*. 11 (4).

Climate Change Commission (CCC). 2025. CCC, DBM Promote Fiscal Transparency in Climate Action Through CCET Orientation. News. 6 May.

Convention on Biological Diversity (CBD). n.d. Target 3 Conserve 30% of Land, Waters and Seas.

_____. 2007. *The Convention on Biological Diversity*.

_____. 2021. Natural Capital.

_____. 2022. *Kunming–Montreal Global Biodiversity Framework*. Convention on Biological Diversity. Montreal. 7–19 December.

_____. 2024. *Kunming–Montreal Global Biodiversity Framework*.

Damania, R. et al. 2023. *Detox Development: Repurposing Environmentally Harmful Subsidies*. World Bank.

Damania, R. et al. 2025. *Reboot Development: The Economics of a Livable Planet*. World Bank.

Dasgupta, P. 2021. *The Economics of Biodiversity: The Dasgupta Review*.

Davies, G. and R. MacDonagh. 2025. Designing Nature's Market: A Practitioner's Agenda for Private Sector Investment. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Davies, J. 2025. Asian Grasslands. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Dawson, N. et al. 2021. The Role of Indigenous Peoples and Local Communities in Effective and Equitable Conservation. *Ecology and Society.* 26 (3):19.

Do, T. et al. 2018. Payment for Forest Environmental Services in Vietnam: An Analysis of Buyers' Perspectives and Willingness. *Ecosystem Services.* 32. pp. 134–143.

Dupar, M., L. Green, and A. Mlisa. 2025. How Satellite Images Are Helping Islands Adapt to Climate Change. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Dupar, M. and K. Lama. 2025. Multiple Wins from Indigenous Women's Craze for Eco-Enterprises in Rural Nepal. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Eales, B. 2025. Bridging Climate and Biodiversity Law: Toward Coherent, Rights-Based Environmental Governance in Asia and the Pacific. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Economic and Social Commission for Asia and the Pacific (ESCAP). 2017. *Implementation of System of Environmental-Economic Accounting in the Pacific: Achievements and Lessons*.

_____. 2021. *Eco-Labelling: Low Carbon Green Growth Roadmap for Asia and the Pacific – Fact Sheet*.

Elderson, F. 2025. *From Charting the Course to Staying the Course: The Path Ahead for Climate and Nature Risk Supervision*. European Central Bank.

Enerdata. 2025. Uzbekistan Plans to Launch Carbon Emissions and Trading Mechanism in 2026. 15 July.

Environmental Justice Australia. 2023. *Two Landmark Court Wins for Our Forests in Two Weeks*.

European Investment Bank (EIB). 2023. Investing in nature-based solutions: Financing the transition to a nature-positive economy.

European Union (EU). 2025. Press Release: New Report Reveals How Infrastructure Defines our Climate. 14 May.

Everland. 2022. Award Winning Community-Based Ecotourism. 3 June.

Fan, X. et al. 2025. Agricultural and Socioeconomic Effects of Vegetation Restoration on the Loess Plateau, China. *Geography and Sustainability*, 6(5), 100326.

Feng, X. et al. 2016. Revegetation in China's Loess Plateau Is Approaching Sustainable Water Resource Limits. *Nature Climate Change*. 6. pp. 1019–1022.

Fenichel, E. et al. 2025. Environmental-Economic Data and Statistics, Digital Infrastructure, and a Sustainable Future. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Food and Agriculture Organization (FAO). 2007. *Restoring the Loess Plateau: Sustainable Development Through Rehabilitation and Land Management*.

_____. 2018. *Assessment of Soil Nutrient Balance in India*.

Frank, E. and A. Sudarshan. 2024. The Social Costs of Keystone Species Collapse: Evidence From the Decline of Vultures in India. *EPIC Working Paper*. Energy Policy Institute at University of Chicago.

Frank, E. et al. 2025. *Option Value of Apex Predators: Evidence from a River Discontinuity*. National Bureau of Economic Research Working Paper. No. 34377.

Giardino, A. 2025. Navigating the Rising Tide: Transformational Adaptation for Resilient Atoll Nations. *Development Asia*. 25 March.

Giglio, S. et al. 2024. The Economics of Biodiversity Loss. *NBER Working Paper No. 32678*. National Bureau of Economic Research.

Giglio, S., J. Rillo, and J. Stroebel. 2025. The Economics of Biodiversity Loss and Climate Change: Implications for Asia and the Pacific. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Global Center on Adaptation. 2025. *State and Trends in Adaptation 2025: Small Island Developing States*.

Government of Australia, Department of Energy, Environment and Climate Action (DEECA). 2025. Future of State Forests.

Government of the Philippines, Department of Energy (DOE). n.d. RE Developers.

Government of the Republic of Korea, Ministry of Foreign Affairs. 2020. National Strategy for a Great Transformation: Korean New Deal.

Government of the United Kingdom. 2025. Unlocking benefits for people, nature and climate: Actions to jointly address climate change and biodiversity loss in England.

GR Japan. 2023. Overview of Japan's Green Transformation (GX).

Grainger, C. and S. Green. 2025. Oceans and Coral Reefs in Asia and the Pacific. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Green Finance Institute (GFI). n.d. Government of Belize Debt Conversion for Marine Conservation.

Greenstone, M. 2024. The Economics of the Global Energy Challenge. AEA Papers and Proceedings.

Guo. D. et al. 2025. *Key Provisions of the People's Republic of China's Ecological Protection Compensation Regulation*. ADB Brief No. 348.

Halvorsen, S. et al. 2020. Environmental DNA Analysis Indicates that Migration Barriers Are Decreasing the Occurrence of European Eel (Anguilla anguilla) in Distance from the Sea. *Global Ecology and Conservation*. 24.

Hao, C. et al. 2022. A Critical Review of Gross Ecosystem Product Accounting in China: Status Quo, Problems and Future Directions. *Journal of Environmental Management*. 322.

Harrisberg, K. 2022. What Are 'Sponge Cities' and How Can They Prevent Floods? *World Economic Forum.*

Heyl, K. et al. 2023. Achieving the nutrient reduction objective of the Farm to Fork Strategy: An assessment of CAP subsidies for precision fertilization and sustainable agricultural practices in Germany. *Frontiers in Sustainable Food Systems*. 7.

Hochard, J. et al. 2025. Unlocking the Full Value of Mangrove Climate Solutions in Asia and the Pacific: A Case for Co-Benefit Premiums. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Hodgson, G. and J. Dixon. 1988. *Logging Versus Fisheries and Tourism in Palawan: An Environmental and Economic Analysis*. Occasional Paper No. 7. East–West Environment and Policy Institute.

Hoegh-Guldberg, O. et al. 2015. Reviving the Ocean Economy: The Case for Action—2015. WWF International.

ICLEI Southeast Asia Secretariat. 2024. *Enhancing Climate Change Resilience of Coastal Communities in Del Carmen: Mangrove Restoration and Beyond*.

Institute for Human Rights and Business. 2022. What is Free, Prior and Informed Consent (FPIC)? 13 December.

Intergovernmental Panel on Climate Change (IPCC). 2022. Chapter 10: Asia. In: Climate Change 2022: Impacts, Adaptation and Vulnerability. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.

Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES). 2022. Summary for Policymakers of the Methodological Assessment Report on the Diverse Values and Valuation of Nature of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. IPBES secretariat.

International Emissions Trading Association (IETA). 2025a. Korea ETS at a Glance. *IETA Business Brief*.

_____. 2025b. Singapore Carbon Tax at a Glance. *IETA Business Brief*.

International Labour Organization (ILO). 2024. Examination of Instruments Concerning Indigenous and Tribal Peoples. 24 July.

International Union for Conservation of Nature (IUCN). 2020. Ensuring Effective Nature-Based Solutions. *IUCN Issues Brief*.

Jensen, O. et al. 2025. Public Perceptions of Climate Change and Nature Conservation. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Kölbel, J. et al. 2020. Can Sustainable Investing Save the World? Reviewing the Mechanisms of Investor Impact. *Organization & Environment*. 33 (4). pp. 554–574.

Koplow, D. and R. Steenblik. 2022. Protecting Nature by Reforming Environmentally Harmful Subsidies: The Role of Business. *Earth Track*.

Kumar, D. et al. 2022. Impact of Fertilizer Consumption on Soil Health and Environmental Quality in India. *Indian Journal of Fertilisers*. 18 (10). pp. 992–1005.

Lai, Q. T. et al. 2021. A Closer Look into Shrimp Yields and Mangrove Coverage Ratio in Integrated Mangrove-Shrimp Farming Systems in Ca Mau, Vietnam. *Aquaculture International*. 30 (1). pp.123–137.

Lan, J. P. and K. Q. Liu. 2022. *Innovation and Practice of GEP Application in Lishui*.

Liu, J. and J. Diamond. 2005. China's Environment in a Globalizing World. *Nature*. 435. 30 June.

Liu, J. et al. 2008. Ecological and Socioeconomic Effects of China's Policies for Ecosystem Services. *Proceedings of the National Academy of Sciences*. 105 (28). pp. 9477–9482.

Liu, K., M. Jin, and L. Cheng. 2025. County Green Transformation: How Does Gross Ecosystem Product Assessment Promote Common Prosperity? *Humanities and Social Sciences Communications*. 12 (1). Article 1823.

Ma, D. et al. 2025. Strategic planning could reduce farm-scale mariculture impacts on marine biodiversity while expanding seafood production. *Nature Ecology & Evolution (9). pp. 565-575.*

MacKinnon, J. and L. Hatton. 2025. Our Most Valuable Ecosystem - Status and Conservation of Wetlands in the Asia-Pacific Region. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Molnar-Tanaka, K. and S. Surminski. 2024. Nature-Based Solutions for Flood-Management in Asia and the Pacific. *OECD Development Centre Working Paper*. No. 351. Organisation for Economic Co-operation and Development.

Mondal, S. et al. 2021. Can Yield, Soil C and Aggregation Be Improved Under Long-Term Conservation Agriculture in the Eastern Indo-Gangetic Plain of India? *European Journal of Soil Science.* 72 (4). pp. 1742-1761.

Monetary Authority of Singapore (MAS). 2023. *Singapore-Asia Taxonomy for Sustainable Finance | 2023 Edition*.

_____. 2024. Singapore Commits US$500 Million in Matching Concessional Funding to Support Decarbonisation in Asia. Media releases. 12 November.

Mottaleb, K. et al. 2019. Understanding Clients, Providers and the Institutional Dimensions of Irrigation Services in Developing Countries: A Study of Water Markets in Bangladesh. *Agricultural Water Management.* 222. pp. 242–253.

Murguia, J. et al. 2022. Payment for Ecosystem Services in Costa Rica: Evaluation of a Country-Wide program. *Inter-American Development Bank Discussion Paper.* IDB-DP-00950.

NatureMetrics. 2023. Tracking and Reviving the Critically Endangered European Eel Using eDNA: Somerset Eel Recovery Project Case Study.

Nedophil, C., M. Yue, and A. Hughes. 2023. Are Debt-for-Nature Swaps Scalable: Which Nature, How Much Debt, and Who Pays? *Ambio*. 53. pp. 63–78.

Nguyen, T. V., and T.H. Huynh. 2022. Comparison of Environmental Conditions and Economic Efficiency Between Organic and Non-Organic Integrated Mangrove–Shrimp Farming Systems in Ca Mau Province, Vietnam. *Journal of Ecological Engineering*. 23 (6). pp. 1–10.

Organisation for Economic Co-operation and Development (OECD). 2024. *Infrastructure for a Climate-Resilient Future*. 9 April.

_____. 2025. *OECD Economic Surveys: Viet Nam 2025*. 20 June.

Ouyang, Z. et al. 2020. Gross Ecosystem Product: Concept, Accounting Framework and Case Study. *Proceedings of the National Academy of Sciences*. 117 (25). pp. 14593–14601.

Ouyang, Z. 2021. Gross Ecosystem Product (GEP) Accounting and Applications in China. Presented at the United Nations Statistics Division Forum of Experts on SEEA Ecosystem Accounting.

Pacific Catastrophe Risk Insurance Company (PCRIC). 2025. PCRIC provides a payout on ground-breaking coral reef policy following TC Rae.

Pacific Community. n.d. Digital Earth Pacific.

Parween, F., P. Kumari, and A. Singh. 2021. Irrigation Water Pricing Policies and Water Resources Management. *Water Policy.* 23 (1). pp.130–141.

Pascal, N. et al. 2015. Economic Assessment and Valuation of Marine Ecosystem Services: Vanuatu. Marine and Coastal Biodiversity Management in Pacific Island Countries.

Paulson Institute. 2025. Financing Nature: The Unabated Biodiversity Finance Crisis Interim Report.

Pearce, D. and J. Warford. 1993. *World without End: Economics, Environment, and Sustainable Development*.

Pörtner, H. et al. 2023. Overcoming the Coupled Climate and Biodiversity Crises and Their Societal Impacts. *Science*. 380 (6642).

Press Information Bureau. 2021. The Report of the Fifteenth Finance Commission. 1 February.

Public Utilities Board. 2024. Active, Beautiful, Clean Waters: Design Guidelines 5th Edition.

Q-quatics. n.d. Online Global Information Systems on Aquatics Species.

Rau, S. 2022. Sponge Cities: Integrating Green and Gray Infrastructure to Build Climate Change Resilience in the People's Republic of China. ADB Brief No. 222.

Rawlins, M. et al. 2020. Valuing the Ecosystem Services Provided by Forests in Pursat Basin, Cambodia. World Bank.

Restor. n.d. Welcome to Restor.

Roe, S. et al. 2021. Land-Based Measures to Mitigate Climate Change: Potential and Feasibility by Country. *Global Change Biology.* 27 (23). pp. 6025–6058.

Salcone, J., L. Brander, and A. Seidl. 2016. Guidance Manual on Economic Valuation of Marine and Coastal Ecosystem Services in the Pacific. Report to the MACBIO Project.

Sathirathai, S. and E. Barbier. 2001. Valuing Mangrove Conservation in Southern Thailand. *Contemporary Economic Policy*. 19 (2). pp. 109–122.

Satu Data Indonesia. Datasets (accessed 15 October 2025).

Save the Waves Coalition. 2024. Oriente Selvage, El Salvador Dedicated as Newest World Surfing Reserve. 18 November.

Securities Commission Malaysia. 2022. SC Unveils Principles-Based Sustainable and Responsible Investment Taxonomy for the Malaysian Capital Market. 12 December.

Seker, A. and M.K. Isguven. 2025. The nexus between biodiversity and sovereign credit ratings: Global environmental and economic interdependencies from a sustainability perspective. *Sustainability*. 17. 11. 4977.

Seychelles Conservation and Climate Adaptation Trust (SeyCCAT). 2025. *The Seychelles Debt-for-Nature Swap: A Case Study*.

Silver, J., J.A. Goldstein, S. Wolny, A. Guerry, A. Bautista, T.J. Dizon, K.R. Fortus, M. Pelli, J.N. Samson, D. Bantasan, G. Castillo, C. Predo, A.J. Sajise, and H. Francisco. 2025. *Enhancing integrating watershed management through natural capital approaches. People, Planet, Prosperity Final Report: The Philippines.* The Natural Capital Project at Stanford University. State Council of the People's Republic of China. 2024. Ecological Protection Compensation Regulation. State Council Order No. 779.

Smithsonian National Museum of Natural History. n.d. What Is Biodiversity?

SwissRe. n.d. Protecting the World's Second Biggest Coral Reef with an Innovative Parametric Solution.

System of Environmental-Economic Accounting (SEEA). 2025. Natural Capital Accounting and Valuation of Ecosystem Services Project.

The Nature Conservancy (TNC). 2022. Case Study: Belize Blue Bonds for Ocean Conservation.

_____. 2024. The Nature Conservancy secure 'Eternal Mongolia', a Pathway to Achieve the Nation's Climate and Biodiversity Goals.

Townshend, T. 2025. Green Infrastructure. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Ty, T.V., et al. 2024. Coastal Erosion Dynamics and Protective Measures in the Vietnamese Mekong Delta. *Journal of Marine Science and Engineering.* 12(7).

United Nations Conference on Trade and Development (UNCTAD). 2025. Sustainable Ocean Economy—A Key and Fast-Growing Sector at Risk. Global Trade Update.

United Nations Development Programme (UNDP). 2023. Launch of Fiji's First-Ever Sovereign Blue Bond.

_____. 2025a. Coral Reef Insurance Project in Indonesia Passes Milestone with Issuance of Critical Regulation.

_____. 2025b. Thailand Biodiversity Finance Plan (2023–2027).

United Nations Environment Programme (UNEP). 2022. State of Finance for Nature. Time to Act: Doubling Investment by 2025 and Eliminating Nature-Negative Finance Flows.

_____. 2025. Sustainability in the Building and Construction Sector in Asia: Promoting the Harmonization of Ecolabel Criteria for Cement and Steel. *One Planet Network*. 30 June.

US Energy Information Administration. n.d. Biomass Explained.

Verdone, M. and A. Seidl. 2017. Time, Space, Place and the Bonn Challenge Global Forest Restoration Target. *Restoration Ecology*. 25. pp. 903–911.

Wildlife Alliance. 2017. Recognition of Cardamom Ecotourism Offerings. 19 January.

World Bank. 2007. Restoring China's Loess Plateau. News. 15 March.

World Economic Forum (WEF). 2020. *New Nature Economy Report II: The Future of Nature and Business.*

_____. 2025. *Finance Solutions for Nature: Pathways to Returns and Outcomes*.

World Health Organization (WHO). 2024. Diarrhoeal disease.

World Resources Institute (WRI). 2025. Financing Restoration Implementation.

Wunder, S., S. Engel, and S. Pagiola. 2008. Taking Stock: A Comparative Analysis of Payments for Environmental Services Programs in Developed and Developing Countries. *Ecological Economics.* 65 (4). pp. 834–852.

Xinhua. 2024. China Releases Ecological Protection Compensation Regulations. China Daily Government. 11 April.

Yang, H. 2017. China's Natural Forest Protection Program: Progress and impacts. *Forestry chronicle.* 93 (2). pp. 113–117.

Zadek, S. 2025. Banking on Nature: Making Nature Count for Sustainable Development. Background paper for the *Asia-Pacific Climate Report 2025: Unlocking Nature for Development*. Asian Development Bank.

Asia–Pacific Climate Report 2025

Unlocking Nature for Development

About 75% of GDP in Asia and the Pacific depends on nature, but it remains overlooked in economic planning. Healthy ecosystems support public health, livelihoods, fiscal stability, and climate resilience. Scaling nature finance requires upgraded governance, policies, and data.

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ASIAN DEVELOPMENT BANK
6 ADB Avenue, Mandaluyong City
1550 Metro Manila, Philippines
www.adb.org