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Making Nature Visible to Markets: How to Reframe the Value of Nature for Sustainability Disclosures

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Abstract

Nature-related risks are now increasingly material to economic productivity and financial stability, challenging the long-standing treatment of nature in traditional economic models as external to economic systems. Accelerating biodiversity loss and ecosystem degradation are disrupting critical ecosystem services, such as water cycle, pollination and soil fertility, on which the local economies and value chains depend. A regional focus on Asia Pacific highlights an elevated exposure to nature-related risk due to comparatively higher dependence on the flow of ecosystem services in resource-intensive supply chains. Reframing ecosystem services as a form of capital is essential for catalysing business decisions for corporate strategy, financial risk management and capital allocation.

This article examines the alignment of nature-related reporting within the evolving global sustainability and policy architecture, with particular emphasis on the Kunming–Montreal Global Biodiversity Framework (KMGBF). It examines how KMGBF targets on mainstreaming biodiversity into economic decision-making are shaping regulatory trajectories and investor expectations, and how these developments parallel the evolution of climate governance under the Paris Agreement. In this context, the Taskforce on Nature-related Financial Disclosures (TNFD) is analysed as a practical and interoperable framework for identifying, assessing and disclosing nature-related dependencies, impacts, risks and opportunities.

Key barriers to adoption, including data fragmentation, tool limitations and institutional capacity gaps, are identified. Given these barriers, a phased approach to implementation, centred on value-chain hotspot identification and incremental integration, is needed to incorporate nature-related strategic considerations into risk management and disclosure processes. Ultimately, early engagement with nature-related issues is crucial because organisations that integrate nature into governance and risk management will be better positioned to enhance resilience, attract capital and contribute meaningfully to global biodiversity goals.

Introduction

Nowadays, the environmental economics and sustainable finance have increasingly embedded economic activity as a function of natural capital. Ecosystem services, such as fresh water, pollination, soil fertility, coastal protection, are no longer considered infinite inputs taken for granted but they are now regarded as the infrastructure that underpins economic production. For decades, these services have been treated as externalities—valuable but unpriced and therefore invisible and unaccounted for

in corporate balance sheets and financial risk assessments[1]. However, a growing body of research, policy frameworks and market practices now seek to translate ecosystem services into the language of finance by putting a monetary value of their contribution to Gross Domestic Product (GDP) so that businesses, investors and regulators can understand and account for their true value in decision-making[23]. Indeed, in one of the most influential papers in Nature, Costanza R., et al. (1997)[4] estimated the value of ecosystem services at around USD$33 trillion. That value has been updated to between USD$124 -145 trillion by 2014.[5]

To corporate leaders, sustainability practitioners and finance professionals, this article explains why that paradigm shift matters, how global policy and reporting frameworks are converging to make the value of nature more visible to markets, and what practical steps organisations can take now to manage nature-related risks and capture potential opportunities in the market.

Why natural capital matters to business

There is now a clear and undisputed evidence that ecosystem services underlie production across nearly every sector. Agricultural yields depend on pollinators and soil health; fisheries depend on healthy coastal and marine ecosystems; manufacturing and utilities depend on reliable water supplies; tourism depends on pristine landscapes and wildlife. When aforementioned ecological inputs are degraded, the consequences can be financial - reduced revenues, higher costs, disrupted supply chains and increased credit risk - or reputational – damage to brand equity, bad publicity- or even legal – law suits for loss and damages against big polluters.

Despite some persistent criticisms with this approach[6], translating ecosystem services into a monetary term— now commonly referred to as **natural capital**—is not an attempt to commodify nature's intrinsic value. Rather, it is a pragmatic tool to communicate in a common language with market actors who make business and governance decision based on financial metrics. Expressing dependencies and impacts and risks and opportunities in financial terms helps C-suite, investors and political leaders understand how changes in the flow of ecosystem services can affect cash flows, cultural values and creditworthiness. For many organisations, this paradigm shift is the first step toward integrating nature into enterprise risk management and strategic planning – by understanding the scale of potential financial impact.

Asia Pacific economies are, in many ways, more exposed to nature-related risk than global averages. A report by PwC, based on ENCORE database suggested that 20% of APAC economies are rated high dependency on nature, compared to global average of 16%. The same report mentioned that 11 out of 14 APAC stock exchanges had more than 50% of market capitalisation highly or moderately dependent

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[1] Obeng-Odoom, F. (2022). *"Mainstream Economics and Conventional Environmental Policies."* American Journal of Economics and Sociology, 81(3), 697–732.
[2] 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), 134–153.
[3] Dasgupta, P. (2021). *The economics of biodiversity: The Dasgupta review* (Final report). HM Treasury. https://www.gov.uk/government/publications/final-report-the-economics-of-biodiversity-the-dasgupta-review
[4] Costanza, R., et al. (1997). *The value of the world's ecosystem services and natural capital. Nature, 387(6630), 253–260.*
[5] Costanza, R. *et al.* (2014) 'Changes in the global value of ecosystem services', *Global Environmental Change*, 26, pp. 152–158.

[6] Kosoy, N., & Corbera, E. (2010). *"Payments for Ecosystem Services as Commodity Fetishism."* **Ecological Economics, 69(6),** 1228–1236.

on nature[7]. The region's economic ecosystem—heavy reliance on agriculture, fisheries, forestry, and commodity supply chains—creates relatively more concentrated dependencies on nature. Population growth, urbanisation, rapid land-use change and intensive resource extraction further amplify this vulnerability. For financial markets, the higher-than-average dependency in APAC economies means that biodiversity loss and ecosystem degradation result in systemic financial risks.

For instance, corporates operating in Asia Pacific exposed to location-specific risks—water stress in river basins, pollinator declines affecting specialty crops, coastal erosion threatening ports and tourism assets, groundwater extraction sinking major urban centres—that require granular, location-based analysis. Popular and high-value Asian commodities, such as durian[8], bird's nest[9], and palm oil, are all directly dependent on animal species to sustain their yields. Financial institutions with lending portfolio or investment exposure across the APAC region must therefore develop the capacity to map value-chain hotspots and assess how ecological and ecosystem changes propagate through different aspects of livelihood and business activities.

Global policy architecture and the role of KMGBF

When the Kunming–Montreal Global Biodiversity Framework (KMGBF) was adopted by 196 countries at the United Nations Convention for Biological Diversity's COP 15 in November 2022, it represented a major milestone in global biodiversity governance[10]. It sets time-bound targets and establishes a policy architecture intended to mobilise national-level strategies, finance and implementation measures for biodiversity conservation and its sustainable use. For the private sector, KMGBF's Target 14 and 15's emphasis on mainstreaming biodiversity into economic decision-making and on reporting biodiversity-related risks and impacts created a policy backdrop that will increasingly shape regulatory expectations, and investor demands in the coming years.

KMGBF's policy structure mirrors that of the Paris Agreement in many important ways: global-level agreed targets cascade into National Biodiversity Strategy and Action Plan (NBSAP), which is nature-equivalence to the Nationally Determined Contribution (NDC), and then into organisational commitments and operational targets at the local level. This alignment creates an opportunity for corporate target-setting frameworks—such as Science-based Target Network (SBTN)—to become the biodiversity analogue of SBTi's corporate net-zero commitments. For companies and financial institutions, this global policy and governance architecture alignment signals a trajectory - voluntary action TODAY to meet increasing policy compliance and market expectations in the FUTURE.

TNFD: a practical framework for nature-related financial disclosure

To this end, the Taskforce on Nature-related Financial Disclosures (TNFD) provides a voluntary, decision-useful framework designed to help organisations identify, assess, manage and disclose

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[7] Asia Investor Group on Climate Change & PwC. (2024). *Nature at a tipping point: A guide and case studies for Asia Pacific investors on managing nature-related risks*. https://aigcc.net/wp-content/uploads/2024/05/AIGCC-PwC-Nature-at-A-Tipping-Point_14-5-24.pdf

[8] GlobalGrowthInsights. (2026, January 5). *Durian fruit market size, share, growth, and industry analysis, by types (frozen pulp & paste, whole fruit), by applications covered (supermarket/hypermarket, convenience stores, specialist stores, online retailers, others), regional insights and forecast to 2035*. GlobalGrowthInsights. https://www.globalgrowthinsights.com/market-reports/durian-fruit-market-107177?utm_source=chatgpt.com

[9] dible Bird's Nest Market report page
DataHorizzonResearch. (2025, March 16). *Edible bird's nest market size, growth analysis & forecast report – 2033*. DataHorizzonResearch. https://datahorizzonresearch.com/edible-birds-nest-market-58735?utm_source=chatgpt.com

[10] Convention on Biological Diversity. (2022). *Kunming-Montreal Global Biodiversity Framework* (Decision 15/4, CBD/COP/15/L25). Secretariat of the Convention on Biological Diversity. https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf

nature-related dependencies, impacts, risks and opportunities. TNFD recommendations deliberately reflect the Task Force on Climate-related Financial Disclosures (TCFD) architecture with the same four pillars—Governance, Strategy, Risk & Impact Management, and Metrics & Targets—so that organisations already reporting on climate can integrate nature considerations into their existing reporting framework and infrastructure.[11]

A central operational feature of TNFD is the **LEAP** approach:

- **Locate** nature dependencies and impacts across operations and value chains
- **Evaluate** their relative materiality and exposure
- **Assess** the magnitude and likelihood of risks and opportunities
- **Prepare** management responses and disclosures

LEAP is designed to be iterative and scalable across organisations and value chains. Organisations can begin with broad industry or sectorial-level assessments and progressively refine them when their access to nature data and biodiversity reporting capacity improve over time.

Market adoption and early signals

Since its launch in September 2023, TNFD recommendations have seen rapid uptake among corporates, financial institutions and market intermediaries, rising to more than 700 entities by November 2025[12]. Unfortunately, a study by NUS and Kering in January 2025 revealed that only 13% of large Asia-Pacific companies have adopted key nature reporting framework, despite the region's enormous reliance on ecosystem services[13].

In essence, TNFD's recommendations emphasise value-chain mapping, hotspot identification, scenario analysis, using both qualitative and quantitative indicators. Early adopters include multinational companies and pioneering banks that have integrated TNFD-aligned assessments into sustainability reporting and risk management. Practical examples from adopters also show how nature considerations can influence financing terms and investor engagement. The early adopters provide two important signals to markets. Firstly, the nature-related disclosure can be operationalised in ways that inform business decisions. Secondly, credible nature commitments can unlock finance—through sustainability-linked loans, green bonds and other instruments—when they are tied to measurable targets and robust governance, as in this case of recent DBS $400 million sustainability-linked loan to the City Developments Limited[14].

For financial institutions, TNFD encourages portfolio-level assessments that encourage integration of climate-nature issues into credit risk frameworks, portfolio stress testing and investment decision-making to understand how nature loss and physical risks affects asset quality and credit risk. Insights from such analyses are increasingly relevant to responsible fund managers and risk analysts. A

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[11] Taskforce on Nature-related Financial Disclosures. (2023). *Recommendations of the Taskforce on Nature-related Financial Disclosures* (v1.0, September 2023). TNFD. https://tnfd.global/wp-content/uploads/2023/08/Recommendations_of_the_Taskforce_on_Nature-related_Financial_Disclosures_September_2023.pdf

[12] Taskforce on Nature-related Financial Disclosures. (n.d.). *TNFD adopters*. TNFD. https://tnfd.global/engage/tnfd-adopters/

[13] Centre for Governance and Sustainability & Kering. (2025). *Nature-related practices and strategies in Asia Pacific* (January 2025). National University of Singapore Business School. https://bschool.nus.edu.sg/cgs/wp-content/uploads/sites/145/2025/01/Nature-Related-Practices-and-Strategies-in-Asia-Pacific-Report-Jan-2025.pdf

[14] Zhu, M. (2024, June 25). *City Developments takes out $400 million sustainability-linked loan from DBS*. *The Straits Times*. https://www.straitstimes.com/business/companies-markets/city-developments-takes-out-400-million-sustainability-linked-loan-from-dbs

recent business impact scenario analysis on palm oil industry under intensified El Nino climate phenomenon suggested increased fertilizer costs and reduced sales volume. Moreover, 5 out of 16 upstream ecosystem players in the supply chain may incur credit downgrades[15].

Barriers for widespread mainstreaming – data, tools and capabilities

Despite the interoperability of biodiversity and sustainability reporting and the recent policy momentum from KMGBF, three practical barriers still constrain widespread adoption: **data fragmentation**, **tool limitations**, and **capacity gaps**.

Data fragmentation: Biodiversity and ecosystem data are often dispersed across academic studies, government monitoring networks, proprietary databases, open-source platforms and local field surveys. Unlike greenhouse gas emissions—where standardised accounting frameworks and centralised registries exist—biodiversity data are frequently location-specific, heterogeneous and, in many cases, either not in a decision-ready format or hidden behind paywalls. Such fragmentation makes it difficult for corporate sustainability reporters to conduct consistent and comparable materiality assessments and disclosures.

Tool limitations. Expecting an increased demand in nature-related reporting, biodiversity assessment tools and platforms have proliferated, with more than 200 such tools listed on the TNFD tool catalogue as of December 2025. However, an independent evaluation by Constantino-Panopio et., al. (2025) discovered only a small subset of them support species-level risk assessment or provide data granularity required for effective corporate use cases. Many tools are designed for conservation planning rather than financial risk modelling, and interoperability between them is still severely limited. Reporting organisations therefore face a dilemma between using proxies that are easier to access but only provide generic and qualitative outcomes or investing in bespoke analyses that are costly and time-consuming.

Capacity gaps. Translating ecological data into financial metrics requires interdisciplinary skills—ecology, geospatial analysis, risk modelling and finance—that are scarce in most corporate sustainability teams. At this early stage of mainstreaming, boards and senior executives also lack the familiarity to interpret nature-related disclosures, and reporting teams lack capacity and practical case studies to guide implementation. To this end, TNFD, in collaboration with CISL, produced a whitelabel training material in 2025 to allow Institutes of Higher Learning (IHLs) to adapt and contextualise the training to suit unique audiences and socio-economic conditions in different countries. A regional Train-the-trainer (TTT) was conducted at the National University of Singapore from 7-9 May to enhance awareness and capacity of academics and practitioners in this domain and equip them with the skills to provide trainings on TNFD and nature-related issues in the region[16].

The aforementioned three barriers explain why many organisations adopt a staged adoption process: starting with pilot assessments in priority geographies or value-chain hotspots, capacity building through partnerships, and infrastructure developments and proceeding with incremental disclosure that improves in granularity over time.

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[15] University of Cambridge Institute for Sustainability Leadership (CISL). (2025). *Building capacity to identify and assess nature-related financial risks*. Cambridge: CISL

[16] Ko, L. N. Z. (2025). *Mainstreaming nature into business decision making?* Centre for Nature-based Climate Solutions, National University of Singapore.

A pragmatic roadmap for organisations

Fortunately, reporting organisations do not need perfect data to begin managing nature-related risks. The following pragmatic roadmap outlines steps that deliver tangible and immediate value while building the foundations for more sophisticated assessments.

1. Secure board and leadership buy-in. Nature-related risks should be embedded in corporate governance. Board members must be informed regularly on nature dependencies and the strategic implications for critical value-chain activities.

2. Map material topics and value-chain hotspots. Use value-chain mapping to identify hotspots, geographies and suppliers with high dependencies and impacts. They should be prioritised for reporting and action.

3. Start with water. Water is often the most convenient entry point because measurement methodologies are highly established, hydrological data are also widely available, and water stress can be priced for internal decision-making (like carbon price, any country/geography has a water price based on water availability). Water assessments provide a practical way to build cross-functional capability and demonstrate the business case for nature management.

4. Use a staged assessment approach. Begin with qualitative hotspot screening using open-access tools, such as ENCORE or WWF Water and Biodiversity Risk Filter. Progress to quantitative analysis of priority sites, and then integrate findings into risk assessment frameworks, scenario analyses and capital allocation decisions.

5. Invest in data partnerships. Collaborate with academic institutions, public agencies and data platforms to access and co-develop datasets. TNFD is currently working on a roadmap for action, including nature data value chain enhancements and a proposal for a Nature Data Public Facility[17]. When possible, prioritise open data where possible to reduce cost barriers and improve transparency.

6. Build internal capacity and training. Develop targeted training for board members, risk committees and sustainability teams. To this end, TNFD secretariat created white-label training materials and build capacity through train-the-trainer programmes to scale knowledge across geographies and sectors.

7. Align disclosure roadmaps with evolving standards. Design disclosure roadmaps that align with TNFD recommendations while preparing for interoperability with GRI, ISSB/IFRS and domestic regulatory developments. Indeed, both GRI and ISSB have begun aligning their work with TNFD concepts. The GRI Biodiversity Standard (GRI 101: Biodiversity 2024)[18] explicitly incorporates TNFD's LEAP approach and core disclosure themes while the ISSB recently has announced that future research and standard-setting on nature and biodiversity will draw on TNFD's frameworks, signalling a move toward interoperability and a more coherent global baseline for nature-related reporting[19]. Nevertheless,

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[17] Taskforce on Nature-related Financial Disclosures. (n.d.). Enhancing market access to global nature data. TNFD. Retrieved from [https://tnfd.global/enhancing-market-access-to-global-nature-data/](https://tnfd.global/enhancing-market-access-to global-nature-data/)

[18] Global Reporting Initiative. (2024). *GRI 101: Biodiversity 2024*. GRI. https://www.globalreporting.org/standards/standards-development/topic-standard-project-for-biodiversity/

[19] International Sustainability Standards Board. (2023). *ISSB to commence research projects on risks and opportunities associated with nature and human capital*. IFRS Foundation. https://www.ifrs.org/news-and-events/news/2023/12/issb-to-commence-research-projects-on-nature-and-human-capital/

phased adoption reduces implementation and alignment risk while national level KMGBF monitoring frameworks are still being implemented.

Recommendations for financial institutions

Financial institutions have a dual role to play. On the one hand, they must manage nature-related risks in their own operations and asset portfolios. On the other hand, they must mobilise capital toward nature-positive outcomes. Practical steps include:

1. **Integrate nature into credit risk frameworks.** Incorporate sector-level analysis and stress testing into underwriting and portfolio monitoring processes.
2. **Develop sectoral guidance.** Create sector-specific indicators and thresholds that reflect the physical and transitional risks and realities of exposed industries.
3. **Pilot sustainability-themed financial products.** Use sustainability-linked loans, blended finance and green bonds to incentivise nature-positive practices among borrowers.
4. **Engage with regulators and standard setters.** Participate in consultations and pilot programmes to ensure that policy frameworks contribute to nature-positive outcomes.

Conclusion

Nature is no longer considered an externality; it is a foundational infrastructure to world's economy and financial stability because our economies are embedded in nature, not external to it. The KMGBF and TNFD together create a policy and reporting architecture that highlights the value of natural capital to markets and provides a pathway for organisations to manage nature-related risks and seize nature-positive opportunities. Practical barriers—data fragmentation, tool limitations and capacity constraints—are real but are not insurmountable. By starting with most salient entry points, such as water or sector-level assessments, prioritising materiality assessments at value-chain hotspots, and building internal capacity through phased adoption, organisations can translate awareness into parctical action.

For markets in Asia Pacific, where exposure to nature-related risk is comparatively high, early strategic engagement with nature-related issues will strengthen resilience and position organisations to capture the financial and reputational benefits of the net-zero emissions and nature-positive transition. To this end, the next decade will be decisive. organisations that can translate ecological dependencies into decision-useful information will be better placed to manage risk, attract capital and contribute to global biodiversity goals.