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Innovative finance instruments to target long term biodiversity-positive outcomes

Executive summary

Current green and sustainability-linked bond frameworks remain structurally insufficient to finance biodiversity outcomes in agri-food systems. Through comparative analysis, expert consultations, and a covenant analysis, our study (which this brief is based on) demonstrates that existing instruments, including the International Capital Market Association (ICMA) Green Bond Principles, ICMA Sustainability-Linked Bond Principles, and the EU Green Bond Standard, are primarily climate-oriented, project-bounded, and largely silent on equity and value-chain complexity.

Drawing on the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) transformative change principles and the empirical work of the TCforBE project, we propose a new class of transformative biodiversity bonds. The study operationalises these through a full covenant template for a fictitious Colombian agri-food company. The transformative biodiversity bond covenant template integrates biodiversity-state Key Performance Indicators (KPIs), telecoupling safeguards, community governance, Payments for Ecosystem Services (PES), and outcome-linked coupon mechanics into a legally enforceable financial instrument.

Policy recommendations

- **Develop specific biodiversity bond guidelines** with mandatory, sector-specific KPIs aligned with IPBES, Taskforce on Nature-related Financial Disclosures (TNFD), and the Kunming-Montreal Global Biodiversity Framework.
- **Require telecoupling 'no-harm' tests** in all biodiversity-linked financial instruments and use national monitoring systems - e.g. the Institute of Hydrology, Meteorology and Environmental Studies, Forest and Carbon Monitoring System (IDEAM's SMBYC) - to verify the absence of supply-chain leakage.
- **Mandate community governance** that complies with the Free, Prior, and Informed Consent (FPIC) standard in bond covenants. This should include Indigenous Peoples' Local Communities (IPLC) representation in verification, baseline-setting, and remediation approval processes.
- **Introduce outcome-linked coupon mechanics** based on the financial characteristics of the issuer.
- **Extend the EU Green Bond Standard's taxonomy coverage** to require a full assessment of the biodiversity impacts across the entire value chain, including upstream and downstream impacts.
- **Establish cost-sharing compliance facilities within bond structures** to prevent an inequitable distribution of the burden on upstream smallholders and producers.

Lessons learnt

1. **Existing bond frameworks are climate-centric and biodiversity-blind:** Green bonds and sustainability-linked bonds remain structurally oriented toward climate metrics. Biodiversity is either absent or treated as a secondary category without binding KPIs, value-chain coverage, or equity obligations.
2. **KPI design is the central bottleneck:** Biodiversity metrics are non-commensurable, often proxy-based, and disconnected from ecological baselines. Without phased, location-referenced KPIs linked to ecosystem change, performance commitments are effectively unverifiable.
3. **Telecoupling and leakage are systematically ignored:** No current framework requires issuers to verify that biodiversity gains in one region are not offset by losses elsewhere along supply chains; a structural blind spot that undermines any nature-positive claim in globally integrated value chains.
4. **Equity is treated as an externality:** Smallholder farmers, Indigenous Peoples, and local communities bear disproportionate compliance costs yet are excluded from governance. No existing instrument mandates benefit-sharing, FPIC, or participatory monitoring as legally binding conditions.

Context

The global biodiversity financing gap is estimated at approximately USD 700 billion annually (UNEP Finance Initiative, 2025). Despite a rapid expansion of the green and sustainability-linked bond market; reaching approximately USD 2.9 trillion in outstanding volume by 2024 (Demski et al., 2025), investment directed at biodiversity-specific outcomes remains marginal. This deficit is particularly significant in telecoupled agri-food systems, where European consumption drives ecological pressures in biodiversity-rich regions of the Global South.

The EU has substantially expanded its regulatory framework for sustainability: through the Corporate Sustainability Reporting Directive (CSRD), the Corporate Sustainability Due Diligence Directive (CSDDD), the EU Deforestation Regulation (EUDR), the Biodiversity Strategy 2030 and the EU Green Bond Standard (EU GBS). These instruments set new standards for how biodiversity is assessed, governed, and financed. What remains underdeveloped is the financial architecture capable of mobilising capital toward long-term, biodiversity-positive outcomes in a manner that is socially equitable and operationally resilient.

Our study responds to this gap. Building on the analytical work from our previous studies for the TCforBE project, this brief addresses how biodiversity outcomes can be funded through innovative financial instruments. It integrates insights from four years of agile expert discussions, comparative bond framework analysis, and a case-based covenant analysis of twelve European agri-food bond issuances.



Smallholder farmers, Indigenous Peoples and local communities bear disproportionate compliance costs despite operating with limited costs and bargaining power

Key findings

Structural gaps in existing frameworks

Comparative analysis of the ICMA Green Bond Principles (GBP), ICMA Sustainability-Linked Bond Principles (SLBP), and EU Green Bond Standard reveals persistent structural limitations. The ICMA GBP offers high issuer flexibility but no mandatory biodiversity KPIs, no enforcement mechanisms, and no value-chain coverage requirements. The ICMA SLBP allows biodiversity-related KPIs but imposes no binding requirements; moreover, coupon step-ups are often too small to constitute meaningful financial incentives. The EU GBS introduces regulatory enforceability through mandatory taxonomy alignment but lacks sector-specific biodiversity guidance and does not require full value-chain impact assessment. None of the three frameworks addresses telecoupling, leakage, or community governance as design requirements.

Gaps confirmed in practice

A case-based analysis of green and sustainability-linked bonds issued by twelve major European agri-food companies confirms these gaps empirically. Only two issuances explicitly allocate funding to projects related to biodiversity. Bond frameworks are frequently incorporated by reference but not legally embedded in the bond contract, rendering sustainability commitments non-binding. Where KPIs exist, they are primarily input-level and climate-related, without staged outcome tracking or ecological baseline linkage.

Expert consensus

The agile expert group, convened across four years of the TCforBE project and comprising specialists from capital markets, sustainability reporting, conservation finance, and financial reporting frameworks, reached a consistent judgment: current instruments privilege disclosure over performance, climate over biodiversity, and financial form over ecological substance. Credible biodiversity finance requires location-referenced KPIs; payments for ecosystem services; causal contracts embedded in covenants; and organizations capable of translating ecological science into financial terms. Further, it requires enforceable community governance structures.

Proposed instrument: transformative biodiversity bond covenant

In response, our study proposes a transformative biodiversity bond covenant template for a fictitious but institutionally grounded Colombian agri-food company as a reasoning path from diagnosis to legal design. The template is organised around five principles that define what a credible biodiversity bond must accomplish.

First, the instrument must ensure **accountability** to stakeholders. In many current bond structures, although sustainability goals are described in separate frameworks, they are not fully integrated into the legally binding contract.



When environmental standards tighten in one region, production often shifts to areas with weaker oversight. Ignoring this displacement effect can cause reported improvements to mask continued biodiversity loss elsewhere.

Accordingly, regulators should require that biodiversity targets in green and sustainability-linked bonds be contractually binding and directly linked to financial incentives or penalties under the EU Green Bond Standard and related frameworks.

Second, the instrument must address the **fair distribution of costs** and benefits. In global supply chains, it is often smallholder farmers, Indigenous Peoples, and local communities who implement biodiversity protection, despite operating with limited resources and bargaining power. Yet, these groups often bear the burden of compliance without adequate compensation. Therefore, EU regulation should mandate cost- and benefit-sharing mechanisms in biodiversity-linked bonds to prevent the shifting of compliance burdens onto upstream producers.

Third, the instrument must reflect the **spatial realities** of global supply chains. When environmental standards tighten in one region, production often shifts to an area with weaker oversight. Ignoring this displacement effect can cause reported improvements to mask continued biodiversity loss elsewhere.

Therefore, biodiversity performance metrics must include safeguards against leakage across sourcing regions. As a condition for recognizing KPI achievement in sustainable bond frameworks, policymakers should require value-chain-wide biodiversity risk assessments and mandatory leakage tests.

Fourth, the instrument must respect the **institutional and legal context** of the producer countries. Community participation should be more than just reporting; it should be embedded in the decision-making structures that define baselines, approve methodologies, and oversee corrective action. Regulatory standards for biodiversity bonds should require formal community participation aligned with FPIC in governance bodies responsible for monitoring and

Fifth, the instrument must treat biodiversity performance **as financially material**. Ecological outcomes should not be presented only in impact reports; they must be tied to enforceable contractual obligations. If biodiversity targets are missed, predefined financial consequences should follow. EU sustainable finance rules should recognise biodiversity performance as a material risk factor and require outcome-based financial triggers in biodiversity-linked debt instruments.

Only when these principles are embedded in binding contracts rather than voluntary sustainability statements can biodiversity bonds credibly support long-term, equitable, and system-wide change in telecoupled agri-food supply chains.

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