A multi-dimensional mapping of global biodiversity development finance

Abstract

Biodiversity finance is central to achieving the Kunming-Montreal Global Biodiversity Framework (GBF). Yet, donor reporting remains fragmented and inconsistent. We introduce a three-dimensional framework that distinguishes the goal, instrument, and ecosystem of biodiversity development finance. Using large language models (LLMs) to apply this framework, we classify 5.4 million official development finance (ODF) projects from 2000–2023. Despite an increase from USD 2.8 to 15.1 billion over this period, we estimate that biodiversity finance will remain 16-43% below the GBF Target of USD 30 billion annually by 2030. Biodiversity finance is concentrated in activities (e.g., 31% in pollution-control infrastructure) and spatially (e.g., 24% in China, India, Colombia, Brazil, and Vietnam). Overall, we find that the allocation of funding aligns well with countries' ecosystem needs, as measured by species richness and ecological restoration potential. The presented framework can help monitor and evaluate biodiversity finance across sources globally.

Introduction

Biodiversity loss has reached unprecedented levels, becoming a defining global challenge[1]. The goal of halting and reversing biodiversity loss has led to the adoption of the Global Biodiversity Framework (GBF) in Montreal in 2022[2] and a broad spectrum of interventions, from protecting areas and conservation to the sustainable management of natural resources, invasive species management, and pollution reduction. The estimated funding needs to achieve the GBF amount to USD 722–967 bn annually by 2030[3].

Current levels are below these needs, hence an increase in biodiversity finance is required, and this finance needs to be targeted to countries where investment can most reduce species extinction risk[4,5]. The GBF targets will primarily be implemented through national and subnational activities[6]. However, financial resources at the national level are often scarce, especially in developing countries. Therefore, the GBF calls for USD 30 bn annual support for biodiversity from developed to developing countries by 2030 (Target 19a)[2]. Official Development Finance (ODF), comprising Official Development Aid (ODA) and Other Official Flows (OOF), represents the primary international public funding channel to achieve this target[6].

Assessing progress toward this target and aligning financial flows with ecosystem needs requires a disaggregated understanding of biodiversity-relevant financial flows. Therefore, a systematic, coherent and policy-oriented reporting framework for biodiversity finance is needed[7–9]. However, existing approaches to track biodiversity finance, such as the Rio Markers used for international aid, face several limitations[10]. First, these markers lack granularity and do not provide information on the thematic focus[7,11,12]. Second, available data is not comprehensive: while ODA flows are tagged on a voluntary basis with varying usage across donors, Rio Markers are not used for OOF[7,11,12]. Third, classification is conducted manually by donors, which risks introducing inconsistencies across reporting entities[13]. As a result, estimates of international biodiversity finance differ widely[12], ranging from USD 78 bn annually (OECD, 2020)[14] to USD 200 bn (UNEP, 2023)[11].

Here, we introduce a biodiversity finance reporting framework ('Biodiv Cube') that integrates existing typologies[2,3,15–17]. Our framework enables classification of biodiversity finance across three dimensions; (i) the targeted *goal*, (ii) the implemented *instrument*, and (iii) the addressed *ecosystem*. Using a two-stage Natural Language Processing (NLP) pipeline, we analyze biodiversity development finance by identifying relevant projects from 5.4 million ODF projects spanning 2000–2023 and classifying them along the three dimensions of our framework.

We provide a granular, consistent, and scalable foundation for monitoring biodiversity finance and aligning it with conservation targets. As the first large-scale application of AI to biodiversity finance, this study demonstrates how language models can transform unstructured project data into policy-relevant evidence, thereby strengthening accountability across environmental agreements. Therefore, it opens up new avenues for research and better information for policymaking[18,19].

Methods

Framework conceptualization and validation

We developed a three-dimensional biodiversity finance framework (*goal*, *instrument*, *ecosystem*) by systematically aligning categories from five major typologies: the GBF Targets,[2] IPBES drivers,[17] Deutz et al.'s expenditure categories,[3] the GLOBE framework from BIOFIN,[16] and the IUCN Global Ecosystem Typology[15] (Supplementary Figure S1).

The biodiversity finance framework was developed through an iterative, expert-informed process. We engaged academics and practitioners with recognized expertise in biodiversity finance (Supplementary Table S11). In an initial round of semi-structured interviews, participants were asked to review each existing framework and identify their limitations, including gaps and blind spots. General questions were asked about institutional needs and the types of information considered essential beyond what existing frameworks provide. Insights from this first phase were synthesized to construct a systemic framework addressing the needs and shortcomings raised by interviewees. A subset of experts subsequently reviewed and validated the final framework.

The resulting framework structure accounts simultaneously for the *ecosystem* addressed, the *goal* targeted, and the *instrument* deployed. It reflects the full range of interventions needed to achieve the GBF, including pollution reduction, conservation, and sustainable resource management. Existing approaches often mix the distinction between activity goals and the ecosystems they address. Deutz et al.[3] and the IUCN[15] do not consider instruments or policy tools. Our framework preserves the information captured in these typologies while structuring it in a clearer and more systematic way. Categories were aligned, overlaps resolved, and definitions refined to ensure clear boundaries between classes (Supplementary Table S1).

Considering the GBF Targets[2], our framework explicitly separates threat reduction and sustainable use *goals* from implementation *instruments* (Supplementary Figure 1). For *goals* we distinguish restoration (Targets 2, 11), conservation and species protection (Targets 3, 4), invasive alien species management (Targets 6, 17), pollution reduction (Target 7), sustainable management of agriculture, aquaculture, fisheries, forestry and other natural resources (Targets 5, 10, 10, 12). For *instruments* we distinguish awareness and knowledge initiatives (Targets 16, 20, 21), infrastructure projects (Target 12) and policy, regulatory & governance tools. The latter includes participatory planning and sharing of benefits (Targets 1, 9, 13, 22, 23), biodiversity impact assessment and disclosure (Targets 14, 15), public policy reforms (Target 18), financial allocation (Target 19). Relative to the IPBES framework of drivers of biodiversity loss[17], we explicitly capture a project's potential to reduce pollution, invasive species, and direct exploitation. Land-use change is approximated by accounting for both sustainable management, conservation and restoration actions. Compared with the Deutz et al. assessment of the biodiversity financing gap[3], we cover all expenditure categories while explicitly distinguishing the ecosystems concerned (forest, coastal, urban, rangelands and croplands) and the specific biodiversity loss drivers targeted (invasive species, overexploitation through fisheries or agriculture, and gaps in protected areas). As in the BIOFIN approach[16], we distinguish pollution management, biosafety, sustainable use, protected areas and restoration as investment goals, and we capture investment in a green economy through infrastructure building instruments. In addition, our framework classifies each intervention by ecosystem type. The IUCN classification[15] highlights the need to distinguish terrestrial, marine and freshwater ecosystems to balance investment. We incorporate this distinction while adding greater granularity regarding the specific *goals* pursued and *instruments* employed.

Data

Our study draws on project-level data from the creditor reporting system (CRS) of the Organization of Economic Cooperation and Development (OECD)[20]. The CRS provides a comprehensive collection of 5.4 million project reports of Official Development Finance (ODF) projects from 2000 to 2023. The dataset comprises Official Development Aid (ODA) projects as well as Other Official Flows (OOF), which are both considered in this analysis under the term ODF to capture the full spectrum of official international financing relevant to achieving Target 19a of the GBF. Project reports are submitted to the OECD by bilateral, multilateral, and private donors. For each project, donors report various project-related information, such as *recipient country*, *project volumes (USD),* and *type of finance*, including ODF grants, loans, private development finance, equity investments, and other official

flows. Furthermore, each project is reported with a title, a short description, and a long description.

As input for our classification pipeline, we processed the data in the following steps. First, we concatenated the title, the short and the long description of each project into a single textual string. Second, we translated all non-English textual inputs into English using the Google Cloud Translation API[21], to ensure consistent language inputs for the classification. Third, we further preprocessed the English texts following common preprocessing steps from Natural Language Processing (NLP), such as lowercasing, punctuation removal, and stop word elimination. Since some project descriptions occur multiple times, we reduced the dataset for classification to the unique set of project descriptions.

Two-stage classification pipeline

We developed a two-stage classification pipeline to classify ODF projects regarding their impacts on biodiversity (Figure 7). In the first stage, we perform a relevance classification where we identify development projects relevant for biodiversity. In the second stage, we perform a multilabel classification to classify these projects according to the dimensions *goal*, *instrument* and *ecosystem*. All code and datasets that were used for the analysis are publicly available in a Github repository[22] and in a data drive[23].

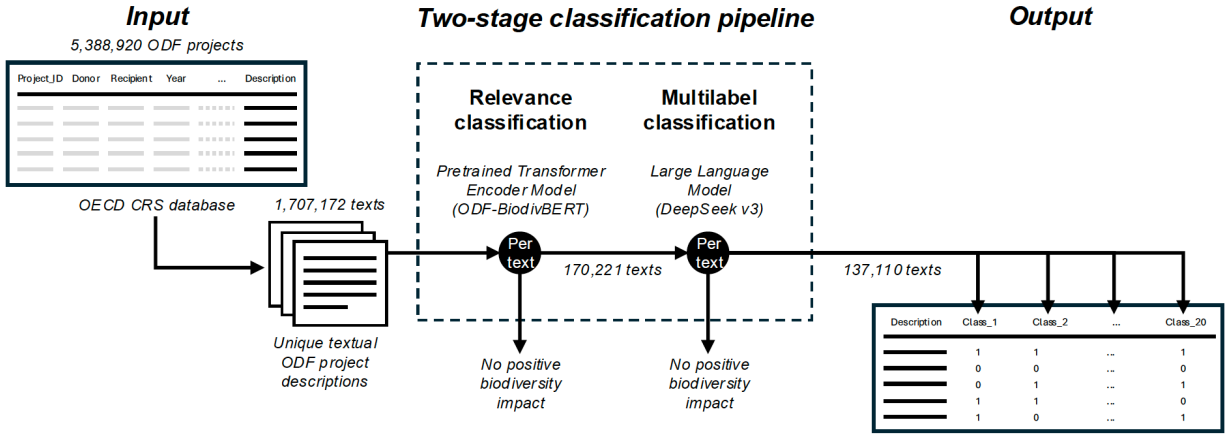


***Figure 7* | Schematic overview of the two-stage classification pipeline.** *Project-level information from the OECD Creditor Reporting System (2000–2023) was standardized, translated, preprocessed and reduced to unique textual inputs before being analyzed in a two-stage classification pipeline. A pre-trained, fine-tuned transformer encoder model (ODF-BiodivBERT) first identified projects with positive biodiversity impacts. Relevant projects were then classified by a large language model (DeepSeek v3) into goal, instrument, and ecosystem dimensions.*

For *relevance classification (1)*, we trained a binary classifier that filters project descriptions with a positive project impact on biodiversity. We applied the relevance classifier to

1,707,172 unique project descriptions, after removing duplicate texts from the full dataset (5,388,920 projects). This relevance filtering resulted in 170,221 descriptions identified as having a positive impact on biodiversity. For the *multilabel classification (2)*, we used an LLM in inference with a task instruction and few-shot examples in the prompt to map project descriptions onto specific classes along the dimensions *goal* (5 classes and 7 sub classes), *instrument* (4 classes), and *ecosystem* (5 classes). Individual classes and subclasses are listed in the Supplementary Table S1.

(1*) Relevance classification:*

We trained a binary classifier to filter a sub-sample of ODF projects that have a positive impact on biodiversity. We build on recent efforts to apply models such as Bidirectional Encoder Representations from Transformers (BERT) to enhance climate-related reporting in accounting, and on previous examples of using natural language processing for sustainability and environmental reports concerning the 17 Sustainable Development Goals,[10,24] climate-related development aid,[25] environmental claims made by companies[26,27], or the alignment of national with global biodiversity policy targets[28]. For this task, we opted for an efficient model to save computational costs, while substantially reducing the sample size of ODF projects classified during the subsequent stage of the multilabel classification[29–31]. Specifically, we fine-tuned a BiodivBERT model[32] which is based on BERT[29] and has been additionally trained on 1 million abstracts and 92,000 full-text articles related to biodiversity (Supplementary Table S12).

As input to the training, we manually annotated 2,000 randomly selected project descriptions from the original OECD CRS dataset, consisting of 500 descriptions each for principal and significant biodiversity Rio Markers, and 1,000 descriptions with no or unknown biodiversity relevance (i.e., Rio Marker 0 or empty field). The project descriptions were labeled via an isolated four-eye principle, where two researchers labeled the identical training data set individually according to relevance definitions from Supplementary Table S16. All project descriptions that did not yield the same binary label (8%) were extracted, reviewed and discussed again together with a third researcher. During training, we applied a stratified split of 70% training data, 15% validation data, and 15% test data.

As part of the two-stage pipeline, the relevance classifier serves the purpose of reducing the sample processed by the multilabel classified, which involves substantially higher computational costs. Therefore, recall is prioritized over precision, as false positive samples can still be filtered out in the subsequent classification stage. To reflect this, we applied a weighted cross-entropy loss for training the relevance classifier, assigning twice the weight to the positive class compared to the negative (we compare the 2:1 ratio in the cross-entropy

loss to the unweighted baseline in the Supplementary Table S13). This approach aligns with related work that adjusts loss functions to account for asymmetric error costs.[33–35]

We trained the relevance classifier 20 epochs using cross-entropy loss and the AdamW optimizer. Hyperparameters, including batch size (64) and learning rate (2 × 10^-5), were optimized during the training process to maximize performance. The binary classifier achieved an out-of-sample F1 score of 0.95 (see Supplementary Table S13).

(2) Multilabel classification:

Our biodiversity finance framework comprises three core dimensions (*goal*, *instrument*, and *ecosystem)* with corresponding classes (see Supplementary Table S1).

For the classification, we used the LLM DeepSeek-V3 via its public API[36]. We employed a prompt containing a task instruction and few-shot examples of annotated project descriptions to elicit rule-based, deterministic classifications (the full prompt is provided in Supplementary Table S14). The LLM classified each project, first, regarding its relevance to biodiversity and, if relevant, regarding specific classes from the dimensions *goal, instrument,* and *ecosystem*.

For each classification task, model performance was validated ex-post against a manually annotated benchmark dataset of 169 project descriptions that was stratified across classes and randomly selected. Labels were independently assigned by two authors under a four-eye principle to ensure reliability. The *goal* classification achieved an out-of-sample micro F1-score of 0.94 (macro F1 = 0.94), the *instrument* classification achieved an out-of-sample micro F1-score of 0.96 (macro F1 = 0.94), and the *ecosystem* classification achieved out-of-sample micro and macro F1-scores of 0.95. Detailed class-level performances are reported in Supplementary Table S15.

Project and funding accounting logic

We report 100% of the face value of biodiversity funding (ODF disbursements) for all projects identified as biodiversity-relevant by the classification pipeline. While this full-value approach likely overstates the share of funding directly targeting biodiversity, we adopt it because there is no globally consistent, operational percentage-allocation standard. For instance, BIOFIN's GLOBE provides attribution rates (1–100%) and a decision tree, but explicitly allows country-specific adjustments, making results context-dependent rather than fully comparable[16]. For Rio Markers, donors often apply coefficients (commonly 100% for 'principal' and 40% for 'significant') to estimate biodiversity finance[37,38], yet OECD surveys show wide variation: some members apply 30–50% to 'significant', others use

100%, and a few apply activity-level coefficients across a much broader range, undermining consistency across countries and years[39].

Biodiversity development finance predictions

We project future biodiversity development finance flows using historical compound annual growth rates (CAGR).

$$\text{CAGR} = \left(\frac{End\ Value}{Start\ Value}\right)^{\frac{1}{Number\ of\ Years}} - 1$$

To capture both long-term and recent dynamics, we calculate growth over two periods: the full time period (2000-2023) and the last recorded quarter (2018-2023). The resulting CAGR of the full time period is 7.5% and the CAGR of the last recorded quarter is 1.7% (see Supplementary Table S2 for End and Start Values for both periods).

Results

Our paper is structured as follows. First, we introduce the three-dimensional biodiversity finance framework (Biodiv Cube) based on existing typologies. Second, we analyze empirical data of biodiversity development finance along the Biodiv Cube dimensions, identifying trends, dominant project archetypes and spatial patterns. Finally, we evaluate how biodiversity development finance aligns with countries' ecological restoration potential.

Framework

The Biodiv Cube framework presented in Figure 1 integrates five established typologies that span biodiversity threats, priorities, expenditures, and ecological context: the GBF Targets[2], the IPBES drivers of biodiversity loss[17], the funding categories of the report of the Paulson Institute by Deutz et al.[3], the BIOFIN GLOBE taxonomy[16], and the IUCN global ecosystem framework[15], and was refined through expert interviews (see *Methods* and Supplementary Figure S1). These typologies differ in scope and often mix different levels of analysis. Some focus narrowly on a single perspective (e.g., ecosystems (IUCN) or loss drivers (IPBES)), while others combine multiple perspectives on goals, ecosystems or implementation techniques without explicitly distinguishing them (e.g., Deutz et al., BIOFIN, GBF Targets).

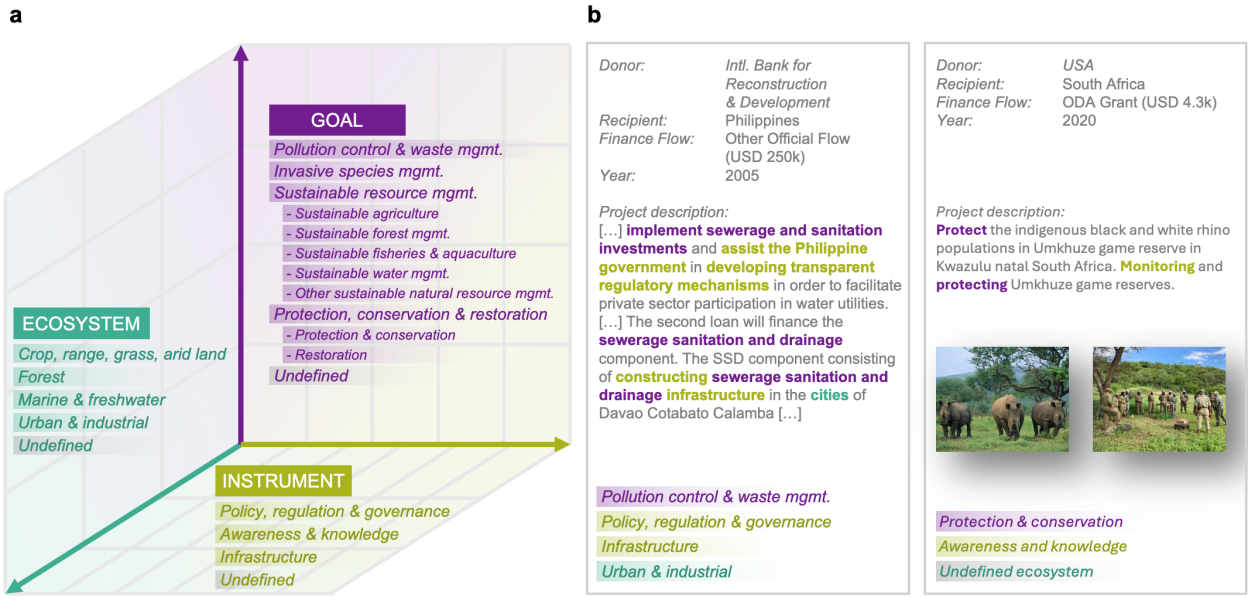


Figure 1 | Mapping projects to the biodiversity finance framework Biodiv Cube. a. *Schematic overview showing the three dimensions: goal, instrument, and ecosystem (see Supplementary Table S1).* ***b.*** *Example project description illustrating how the classification works[20,40]. Additional examples are provided in Supplementary Figure S2. Projects are assigned to one or more classes within each dimension (see Methods).*

The Biodiv Cube disentangles these perspectives by organizing them into three discrete dimensions, each spanning multiple classes. The *goal* dimension captures the purpose of the funding and answers the 'what?', i.e., the action that is undertaken to mitigate the drivers of biodiversity loss[41]. Biodiversity action encompasses a broad set of interventions[2–5,16], such as pollution control[42,43] (e.g., waste management or sanitation facilities), invasive species management[44,45], sustainable resource management in agriculture[46–50], fisheries[51,52], forestry[53–55], or water[56–58], and protection, conservation and restoration of ecosystems and species[59–61]. The *instrument* dimension distinguishes the implementation mechanisms used to achieve these goals (the 'how?'). It comprises formal policy, regulation or governance tools[62,63] (e.g., support for legal instruments, or certification, financial mechanisms), informal awareness and knowledge instruments[64–67] (e.g., training for capacity building, stakeholder engagement), and infrastructure investments[68–72]. The *ecosystem* dimension answers the 'where?', i.e., identifies the ecological context of implementation. It encompasses crop, grass- and drylands, forests, freshwater and marine ecosystems, and urban or industrial environments. Ecosystems shape implementation costs of restoration and conservation[73] and underpin international strategies and ecosystem-based planning[74,75]. Being able to distinguish the ecological context reveals where investment is lacking and provides proxies at the country level for action on critical habitats[76]. Together, these three dimensions enable a granular analysis of biodiversity finance.

Biodiversity finance and the GBF target

On average, biodiversity development finance accounted for 4.8% of total annual ODF and has grown substantially between 2000 and 2023. The total number of projects increased ninefold, from 2,563 in 2000 to 22,520 in 2023, with notable acceleration in 2010 and after 2018 (Supplementary Table S2). Financial volumes also increased, albeit at a lower rate, from USD 2.8 bn in 2000 to USD 15.1 bn in 2023 (Figure 2, Supplementary Table S2), resulting in a decrease in project sizes (Supplementary Figure S4).

Figure 2 shows that the 2030 international biodiversity funding target will likely be missed based on an extrapolation of the historical trend (see *Methods*). Biodiversity development finance is projected to reach USD 15.7-17.5 bn by 2025 and USD 17.1-25.2 bn by 2030, remaining below the GBF Target of USD 20 bn in 2025 and USD 30 bn in 2030. Biodiversity development finance identified by the Biodiv Cube classification is higher than donor-reported Rio Markers (Figure 2a). This divergence stems partly from project coverage, as Biodiv Cube classifies ODA and OOF projects, whereas OOF projects are excluded from Rio Marker reporting. At the project level, the overlap between Biodiv Cube–classified projects and Rio-marked projects is limited (see Supplementary Table S3). More than half of Biodiv Cube projects (65%) lack a principal or significant Rio Marker. Conversely, approximately 100,000 Rio-marked ODA projects were not identified by Biodiv Cube as biodiversity-related (see Supplementary Table S3).

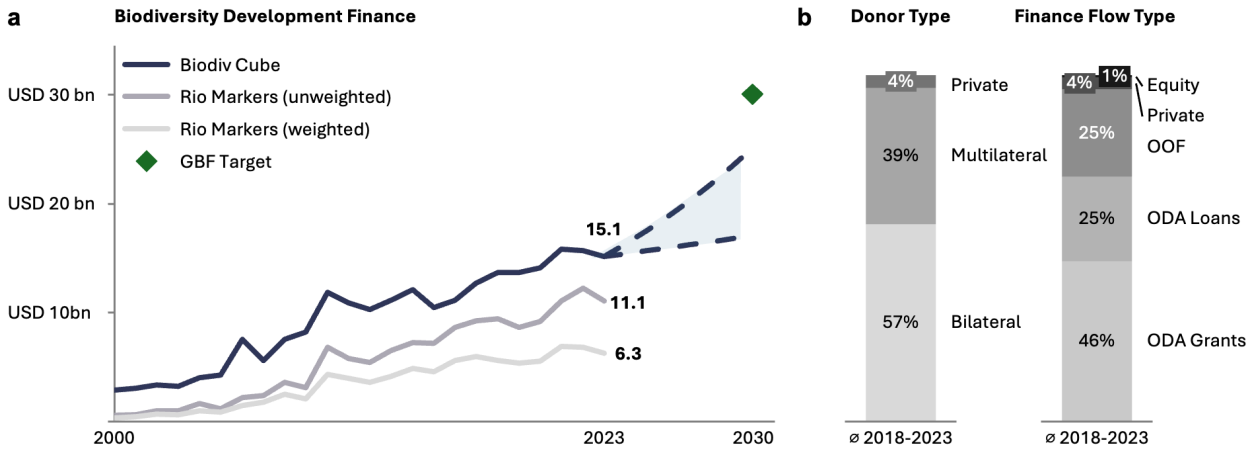


***Figure 2 | Biodiversity development finance (2000–2023) and projections**. **a.** Historical and extrapolated biodiversity development finance compared to the GBF funding target in 2030. Weighted Rio Marker assumes 100% attribution for 'principal' projects and 40% attribution for 'significant' projects (see Methods). Forward-looking estimates are based on compound annual growth rates (CAGR) calculated over the full 2000–2023 period for the upper bound and 2018–2023 for the lower bound (see Methods). **b.** Share of donor and finance-flow types in the most recent biodiversity development finance (2018–2023 annual average). Financial volumes show the full disbursement values of all OECD CRS projects identified by Biodiv Cube and cover ODA and OOF flows (see Methods).*

Over the full period, the largest contributors are the International Bank for Reconstruction and Development (USD 24.5 bn), Germany (USD 23.0 bn), and the International Development Association (USD 22.7 bn, see Supplementary Table S4 for the top 10 bilateral, multilateral, and private donors). Until 2006, the majority of biodiversity development finance originated from multilateral donors (Supplementary Figure S3). Since then, bilateral contributions have consistently accounted for more than half of the total annual funding (Figure 2b and Supplementary Figure S3). As research has shown that bilateral finance can be shaped by donor motives[77,78] and donor-recipient relationships[79], this shift warrants attention going forward. The majority of biodiversity development finance is provided as grants, while loans and other official flows each represent roughly one quarter of total volumes (Figure 2c and Supplementary Figure S3). Because many biodiversity-rich low-income countries face high debt burdens[80] and grants tend to deliver greater development impact than loans[81], grant financing is essential for enabling biodiversity interventions that would otherwise not occur. Private finance remains marginal, reflecting limited and inconsistent reporting by private donors in the OECD CRS database[13].

Trends across dimensions

Figure 3 disaggregates biodiversity development finance into the three Biodiv Cube dimensions. Three *goals* (pollution control, protection and conservation, and sustainable agriculture) together account for 70% of annual biodiversity development finance on average (Supplementary Tables S5 and S7). Agriculture projects show the strongest growth in project numbers, rising seventeen-fold from 443 in 2000 to 7,468 in 2023 and representing one-third of all projects in 2023 (Supplementary Tables S5 and S7). Pollution control projects make up about one quarter of the total project count per year (2,912 on average), while invasive species management projects remain underrepresented, averaging only 85 projects per year (Supplementary Tables S5 and S7) and receiving the lowest allocations per project (USD 0.3 mn on average). Conversely, pollution control projects are the largest (USD 1.3 mn on average), reflecting the capital intensity of waste management and sanitation. Restoration projects, though fewer in number, are also large (USD 1.2 mn on average) compared to protection and conservation (USD 0.6 mn on average), indicating the high costs of ecological restoration[82,83].

The most frequent *instruments* are low-budget knowledge and awareness activities, whereas the largest financial flows concentrate in relatively few, infrastructure-intensive projects. Infrastructure projects rise modestly (from 513 in 2000 to 1,784 in 2023, see Supplementary Table S6) but absorb the highest share of biodiversity development finance (on average 42% annually) reflecting the high average project value (USD 1.6 mn, Supplementary Table S8). Awareness and knowledge, as well as policy, regulation, and

governance initiatives each account for around 20% of annual finance flows, however they differ strongly in the number and size of projects. Awareness and knowledge projects expanded nearly twentyfold (from 752 in 2000 to 13,080 in 2023), mirroring the global rise of education and capacity-building priorities under the Aichi Targets, Sustainable Development Goals (SDGs) and GBF[2,84,85]. However, these projects remain small (USD 0.5 mn on average). Policy, regulation and governance measures expand more steadily (from 482 to 4,294), and average USD 1.0 mn per project.

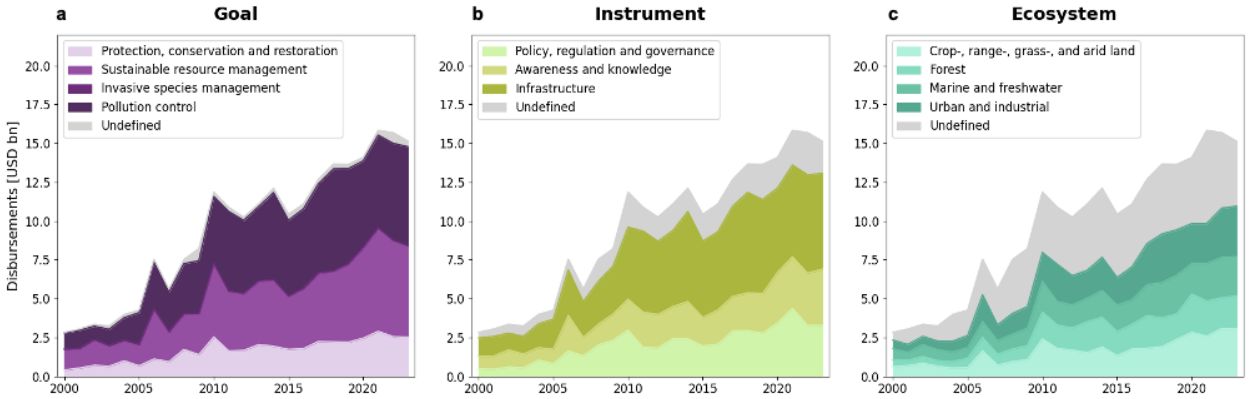


Figure 3 | Biodiversity development finance by goal, instrument, and ecosystem, 2000–2023*. Area charts represent the annual total disbursements (USD bn) for biodiversity identified by Biodiv Cube, disaggregated by goal, instrument, and ecosystem (see also Supplementary Tables S7 and S8). Disbursements are split proportionally when multiple classes apply for a project within one dimension. Values represent 100% of each project's reported disbursement (see Methods).*

From an *ecosystem* perspective, biodiversity development finance is distributed broadly across landscapes, with annual funding shares of 14–19% for each *ecosystem* class (Supplementary Table S8). Cropland, rangeland, grassland, and arid land ecosystems account for most projects (2,884 p.a. on average, see Supplementary Table S6) but are small (USD 0.7 mn). Fewer projects target urban and industrial ecosystems (946 p.a. on average) but these are large (USD 1.8 mn). Projects in forest and marine or freshwater ecosystems lie in between (1,611 and 1,901 projects per year, USD 0.8 mn and USD 0.9 mn per project). Lastly, it is noteworthy that project descriptions allow identifying goals better than instruments and ecosystem classification is the most difficult with about one-third of projects lacking information (see *Discussion*).

Project archetypes

The Biodiv Cube framework allows for the identification of project archetypes, that is, combinations of the three dimensions that frequently co-occur and attract large shares of funding. We identify three such project archetypes as shown in Figure 4.

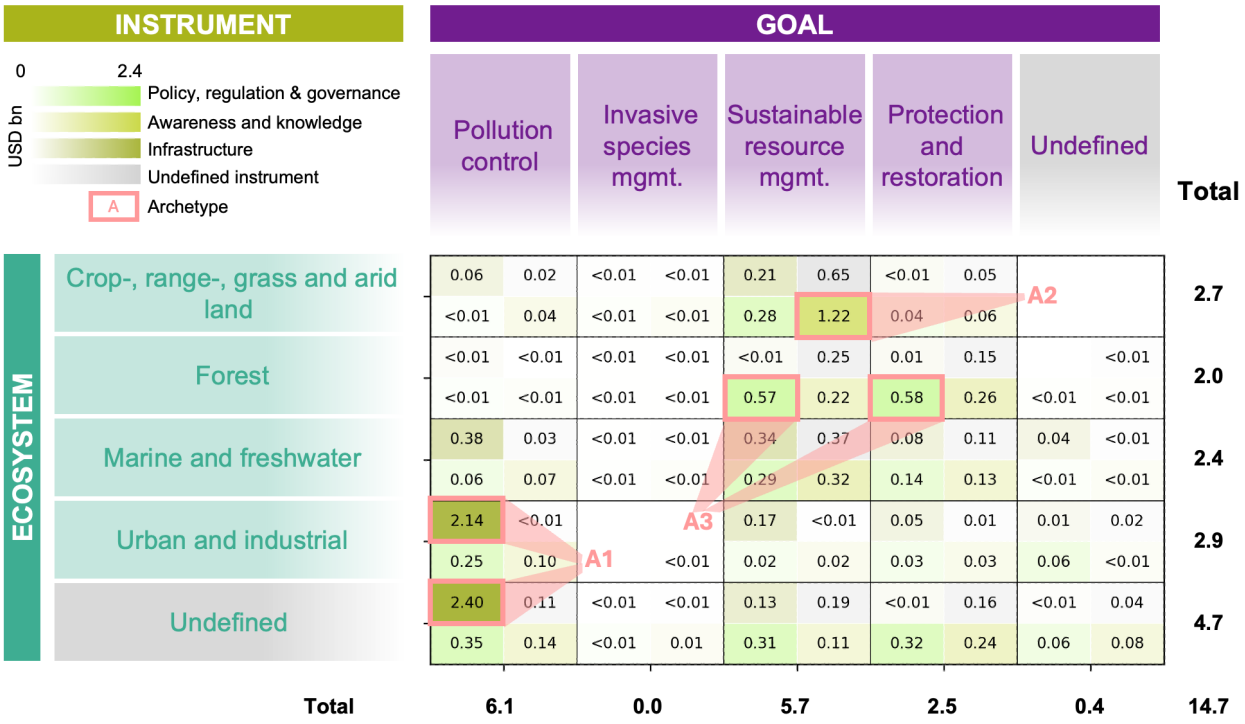


Figure 4 | Biodiversity development finance across project archetypes at the intersection of goals, instruments and ecosystems. *Color intensity indicates annual average funding disbursements for each cell in heatmap (annual averages 2018–2023, USD bn). Pairwise intersections of the three dimensions at higher granularity are provided in Supplementary Figure S5. Replications for annual averages of earlier periods (2000-2005, 2006-2011, 2012-2017) can be found in Supplementary Figures S6, S7, and S8.*

The largest archetype ('A1') represents financing for pollution-control infrastructure and totals USD 4.5 bn annually. To illustrate, this includes a wastewater disposal and sanitation project in Bolivia (see Supplementary Figure S2). The second archetype ('A2') comprises education and awareness initiatives for sustainable agriculture, totaling USD 1.2 bn per year. An exemplary project in Rwanda employs participatory and inclusive approaches to promote sustainable agriculture and enhance food security (see Supplementary Figure S2). The third archetype ('A3') captures financing for forest policy and totals USD 1.2 bn annually. It includes, for example, a forest conservation project in Indonesia, where a private foundation supported landscape policies (see Supplementary Figure S2). These project archetypes are robust in earlier time periods (i.e., 2000-2005, 2006-2011, 2012-2017), indicating that the thematic priorities of biodiversity finance have remained relatively constant (see Supplementary Figures S6-S8).

Geographic patterns

Because biodiversity is context-specific, the effectiveness of projects depends not only on the implemented activities on ecosystems, as shown in Figure 4, but also on the geographic location of the project[4,5]. We observe that biodiversity development finance is highly concentrated in few countries (Figure 5a). Specifically, the top five recipients (China, India, Colombia, Brazil, and Vietnam) together account for 23.5% of global funding, and China is the only country that receives more than USD 1 bn per year. Although African countries together receive the largest regional share (38%), per-country allocations are modest (0.5%), except for Egypt, Ethiopia, Tanzania, and Kenya, which receive between 1.7%-2.5% of global biodiversity development finance annually. Asian countries receive the second largest funding share (36% of the total), followed by countries from the Americas (21% of the total).

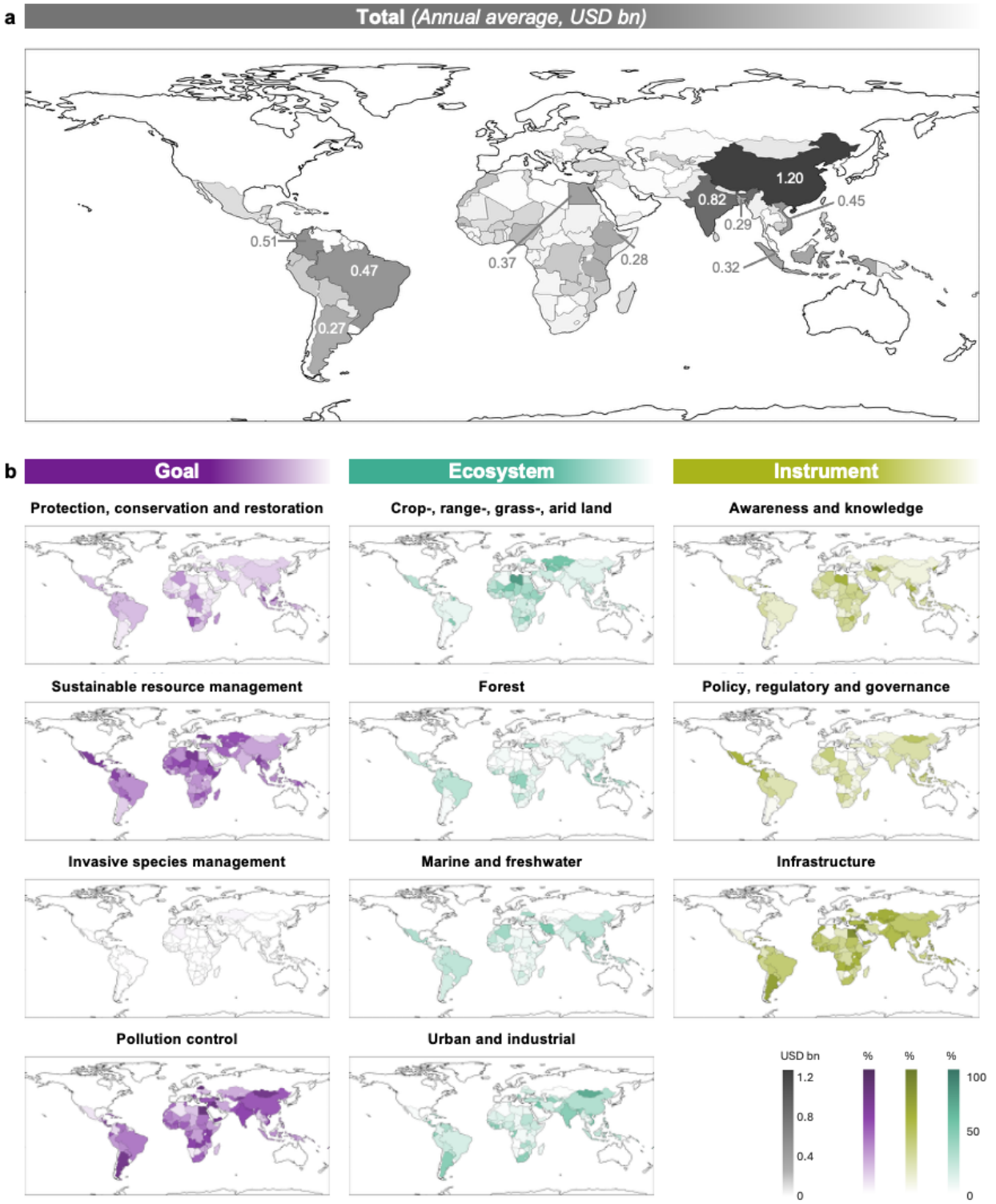


Figure 5 | Country-level distribution of biodiversity development finance across goal, instrument, and ecosystem classes (average annual disbursements, 2018–2023, USD bn). a. *Total volumes by country. Amount (USD bn) is indicated for the top 10 recipients.* ***b.*** *Relative distribution of finance flows across 11 Biodiv Cube classes (goal, instrument, and ecosystem) for each country. Values represent percentage shares: for every country, the contributions of all classes within a given dimension sum to 100%, irrespective of the country's absolute funding volume. A consistent color scale is*

used within each dimension to support comparability across countries. Finance flows with undefined classification in a dimension are not displayed. Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') account for 20% of the total annual average funding and are not displayed either. Replications for annual averages of earlier periods (2000-2005, 2006-2011, 2012-2017) show similar patterns and are displayed in Supplementary Figures S9, S10, and S11.

Figure 5b breaks down biodiversity development finance by *goal*, *ecosystem*, and *instrument*. Sustainable resource management and pollution control account for similar shares of annual biodiversity development finance (38% and 42% respectively) as shown in Figure 3. Yet, spatially, we observe different funding priorities on each continent. Large shares of total funding are allocated to sustainable resource management in Central Asia (Kazakhstan, Turkmenistan, Uzbekistan), Central America (Mexico, Colombia, Suriname) and North & Central Africa (Eritrea, Libya, Somalia). Pollution control, by contrast, is a funding priority in large South-East Asian countries (China, India, Mongolia), South America (Argentina, Brazil), in the Middle East (Egypt, Iraq, Yemen), and South Africa (Eswatini, Kenya, Zambia).

Mirroring the identified largest project archetype ('A1') in Figure 3, we observe that key recipients of finance for pollution control also receive more finance for infrastructure. However, the analysis also allows identifying countries where this relationship does not hold, for instance, Mongolia, which receives a lot of pollution funding proportionally, but this mainly goes to policy and regulatory instruments. To a lesser extent, we also observe a spatial concentration on the African continent for sustainable agriculture and knowledge and awareness campaigns according to the project archetype 'A2' (Libya, Timor-Leste, Somalia, South Sudan, Burundi, Malawi, Ethiopia, Guinea-Bissau).

We observe that the forest policy archetype 'A3' is relatively concentrated in equatorial regions with 41% of the sustainable forest management funding flowing to Brazil, Colombia, Indonesia, and the African rainforest (DRC, Ethiopia, Cote d'Ivoire, Cameroon, Congo, Supplementary Figure S12). The funding flowing to invasive species management is very low (see Figure 3), but countries that receive a large part of this funding include Kenya, Nigeria, Brazil, Argentina and Uganda (see Supplementary Figure S13). Overall, spatial patterns across *ecosystems* are less clear compared to *goals*, which is surprising given the ecosystem differences across countries.

These geographical patterns translate into patterns across income groups (see Supplementary Figure S14). The higher a country's income level, the greater the share of funding it receives for protective and restorative actions, policy, regulatory, and governance-focused instruments, and projects in urban and industrial as well as marine or freshwater

ecosystems. The lower a country's income level, the larger the proportion directed toward sustainable agriculture, awareness and knowledge-based interventions, and activities in cropland, rangeland, grassland and arid ecosystems. For instance, policy-related finance is concentrated in a small group of upper-middle income countries, particularly in Asia and Latin America while awareness-related finance is more widely distributed across low- and lower-middle-income countries, although at lower volumes (Figure 5b, Supplementary Figures S14, S15, and *Discussion*). Funding shares for pollution control and forest-related activities remain comparatively stable across income levels, suggesting that these can be implemented regardless of income levels (Supplementary Figures S14 and S15).

As expected, funding flow types also vary by income level (Supplementary Figure S16). Low-income countries predominantly receive grants (78% of total), while lower-middle and upper-middle-income countries receive 40% and 23% respectively of their biodiversity development finance as loans. For upper-middle and high-income countries, OOFs represent a growing share, whereas private development finance remains at similar levels across all groups. This pattern aligns with climate finance trends in official development aid. However, the share of grants remains consistently higher across all income groups in biodiversity development finance compared to climate.[86]

Alignment with restoration potential

In the final part of the results, we directly contrast biodiversity development finance with each country's restoration potential. Namely, we compare national Species Threat Abatement and Restoration (STAR-R) scores with funding levels. The STAR-R score reflects both the quantity and ecological value of restorable ecosystems, indicating how much restoration in a given country could contribute to lowering global extinction risk for affected species[4].

We find a significant positive relationship between a country's restoration potential and the biodiversity development finance it receives (Figure 6, see also Supplementary Table S9). Hence, global biodiversity development finance is generally well targeted to reduce species extinction risk. This pattern is largely driven by funding for sustainable resource management (Supplementary Figure S17 and Table S9). In contrast, protective and restoration-specific funding shows no statistically significant association with restoration potential (Supplementary Table S9). As a result, while overall biodiversity development finance broadly aligns with restoration potential, the interventions most directly linked to restoration and protection do not. We also observe prominent outliers. On the one hand, China receives nearly three times the funding volume of Brazil despite a similar restoration

potential. On the other hand, Ethiopia, the Philippines, and Thailand receive little funding compared to their high restoration potential.

Figure 6 illustrates these patterns with quadrants (I) and (III) comprising countries where restoration potential and biodiversity development finance are broadly aligned. Countries in these quadrants exhibit either (I) above-median restoration potential at above-median funding, or the inverse (III). The 'underfunded' quadrant (IV) comprises countries with high restoration potential but below-median funding, i.e., high-return restoration opportunities that remain systematically overlooked. This group consists largely of countries that have transitioned into upper-middle-income status over time (e.g., Thailand, Venezuela, Malaysia, Iran, Cuba). However, it also contains some low-income (e.g., Liberia, Sierra Leone) and lower-middle-income countries (e.g., Timor-Leste, Papua New Guinea). The top left quadrant (II) contains countries with higher-than-median funding and lower-than-median restoration potential. It mainly comprises low-income countries (e.g., Niger, Burkina Faso, Malawi) and lower-middle-income countries (e.g., Egypt, Jordan, Uzbekistan, Senegal, Zambia, Lebanon, Laos).

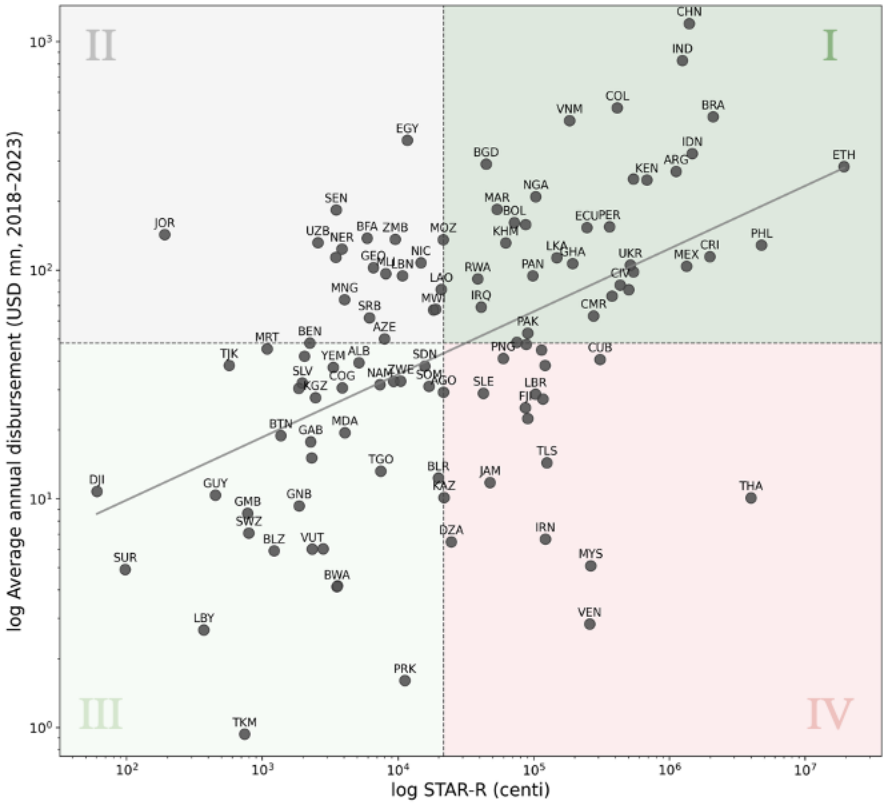


Figure 6 | Restoration potential vs. biodiversity development finance. *Relationship between countries' restoration potential (STAR-R centi-scores, calculated by summing values across all 5 km polygons within each country) and biodiversity development finance (USD bn, annual average 2018–2023). The solid line shows the fitted log–log regression*

(Supplementary Table S9). Dashed median lines divide the plot into four quadrants representing combinations of relative restoration potential and funding intensity: (I) high potential – high funding (alignment), (II) high funding relative to potential, (III) low potential – low funding (alignment), and (IV) high potential relative to funding. Replications for annual averages of earlier periods (2000-2005, 2006-2011, 2012-2017) are displayed in Supplementary Figures S18, S19, and S20.

Comparisons with other biodiversity indicators reveal that biodiversity development finance is directed primarily toward countries with high biological value rather than to those experiencing the greatest ecological decline (Supplementary Figure S21, Table S10). Finance aligns only weakly with measures of biodiversity loss, such as the Species Habitat Index (SHI)[87,88], or with indicators of protective action, such as the Biodiversity and Habitat Index (BDH)[88,89]. The BDH shows an unclear pattern, with funding directed both to countries with limited protection activity, such as China and India, and to those with well-established conservation systems (e.g., Brazil, Colombia and Tanzania). By contrast, indices capturing biodiversity richness[90] and national biodiversity state (NBI)[91] show the strongest significant positive correlations with financial flows, suggesting that biodiversity development finance flows to biodiversity-rich regions, while providing comparatively less support where ecosystems have undergone the most severe degradation.

Conclusion and Discussion

This study introduces a granular, consistent, and scalable foundation for measuring international biodiversity finance. First, it enables granular tracking of biodiversity-related finance flows by establishing a multi-dimensional framework comprising *goal*, *instrument,* and *ecosystem*. Second, it presents the most comprehensive mapping of biodiversity development finance to date by applying this framework to 5.4 million official development projects across time, reporting entities, and finance types. Third, it enables replicability in other biodiversity-relevant finance domains, including private finance and domestic public funding, by showcasing the framework's operability through an automated NLP pipeline. Together, these contributions enhance existing reporting systems and facilitate the monitoring of progress toward GBF Target 19 and broader biodiversity finance targets.

We find that biodiversity development finance has expanded strongly over the past two decades, yet projected growth remains below the GBF financing targets for 2025 and 2030. Limited overlap with established reporting through Rio Markers reveals issues in these reporting practices. Besides a thematic and spatial concentration of the provided funding,

we find that higher-income countries are more likely to receive funding for protective and restorative goals, policy action, and infrastructure, whereas lower-income countries receive smaller, grant-financed projects in sustainable agriculture and awareness-building. Overall, we find that biodiversity development finance is targeted at the ecological restoration potential at the country level.

Our analysis is subject to several limitations. First, project descriptions in the OECD Creditor Reporting System (CRS) are often brief, donor-authored, and vary in quality, limiting the precision of text-based classification. For instance, information on *instruments* and *ecosystems* is frequently incomplete (see Figure 3). Second, our analysis reports full disbursement values for identified biodiversity projects because there is no consistent, operational standard for proportional share allocation across thematic classes (see *Methods*). Consequently, our results may overstate the portion of finance directly targeting biodiversity outcomes. In turn, this further stresses the relevance of our finding that biodiversity finance is not on track to meet the 2030 GBF targets.

Future work could use the multi-dimensional Biodiv Cube framework to establish default coefficients by class to allocate funding shares of each project to different biodiversity activities and encourage more structured reporting of *goals*, *instruments*, and *ecosystems* in project descriptions. Beyond methodological refinement, an important next step is to examine how biodiversity development finance interacts with other financial flows, including domestic public budgets, private investments, and climate finance, to understand complementarities or crowding-out effects across sources. With greater transparency in the thematic and spatial distribution of biodiversity funding, future research should also assess whether current allocations reflect an efficient or equitable distribution in light of ecological needs and development priorities. Finally, exploring the political economy determinants of funding concentration, such as donor preferences, geopolitical interests, or institutional constraints, could help explain the observed divergences in priorities across geographies and income levels, and identify where strategic realignments might be warranted. While these questions lie beyond the scope of this paper, the framework and the data pipeline developed here provide a foundation for addressing them.

For policymakers, a pragmatic near-term step is to apply this framework as an overlay on existing CRS records, enabling automated classification without requiring changes to the core reporting architecture. Donors could directly improve data quality by providing concise project descriptions and by including basic structured metadata (*goal*, *instrument*, and *ecosystem*) at the time of submission. Beyond incremental improvements, a coordinated institutional effort is needed. A dedicated technical consortium, comprising the OECD, the

Convention on Biological Diversity (CBD), National Biodiversity Strategies and Action Plans (NBSAP) teams, BIOFIN, and academic partners, should establish standardized protocols for allocating funding shares across project classes. Such protocols (e.g., default coefficients) could replace current conventions, such as the use of 100% and 40% Rio Marker tags to describe whether a project fully or partially targets biodiversity. More granular and consistent information would enable governments to identify funding gaps, coordinate across instruments and ecosystems, and align allocations more explicitly with ecological opportunity and global biodiversity goals, while preserving continuity with existing reporting infrastructures.

Funding

No specific funding is declared.

Declaration of interest

The authors declare no competing interests.

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Supplementary Figures

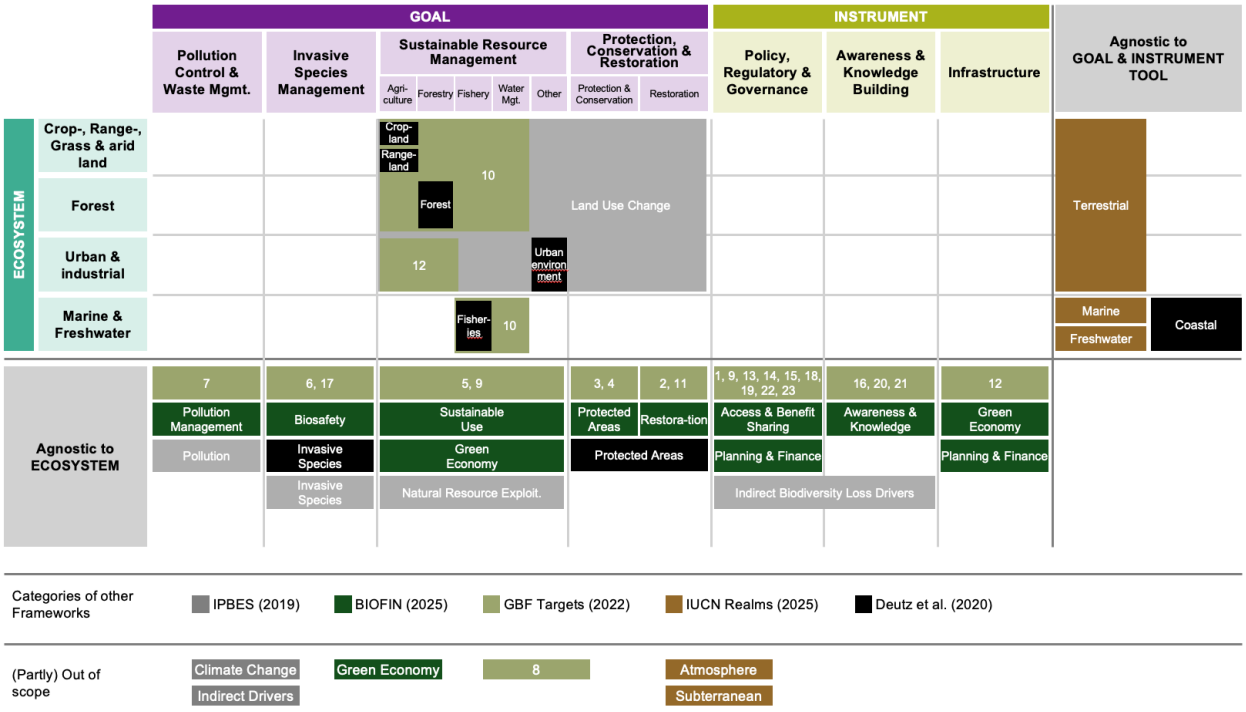


Figure S1 | Mapping of existing biodiversity frameworks to the biodiversity finance framework 'Biodiv Cube'. *The framework integrates three dimensions (goal, instrument, and ecosystem) yielding 16 classes (described in detail in Supplementary Information, Table S1). To ensure conceptual robustness and comparability, the framework is mapped against five existing biodiversity typologies: the IPBES drivers of biodiversity loss, the GLOBE expenditure framework from BIOFIN, the GBF Targets, the IUCN ecosystem typology and the funding categories of Deutz et al.*[1–5]

Example project (OECD CRS database)		Biodv Cube classification
Donor: *Recipient:* *Year:* *Finance Flow:*	Bloomberg Family Foundation Bilateral, unspecified 2018 Private development finance (USD 1mn)	*Sustainable fisheries & aquaculture* *Undefined instrument* *Marine and freshwater*
Project description: Program environment vibrant oceans; To support **sustainable fishing** practices and **protect coral reefs** estimated based on pf. These data were estimated by OECD based on publicly available irs/pf fillings to support **sustainable fishing** practices and **protect coral reefs**.		
Donor: *Recipient:* *Year:* *Finance Flow:*	USA South Africa 2020 ODA Grant (USD 4.3k)	*Protection and conservation* *Awareness and knowledge* *Undefined ecosystem*
Project description: **Protect** the indigenous black and white rhino populations in Umkhuze game reserve in Kwazulu natal South Africa. **Monitoring** and **protecting** Umkhuze game reserves.		
Donor: *Recipient:* *Year:* *Finance Flow:*	*Germany* Bolivia 2008 ODA Grant (USD 200k)	*Pollution control and waste management* *Sustainable water management* *Infrastructure* *Urban and industrial*
Project description: The WVU of selected small and medium-sized **cities** in Bolivia provide their population with **sustainable drinking water supply** and **wastewater disposal** services. Basic drinking water supply and basic **sanitation** cooperation program for water and **sanitation** in small and medium **cities**.		
Donor: *Recipient:* *Year:* *Finance Flow:*	EU Institutions Rwanda 2020 ODA Grant (USD 65k)	*Sustainable agriculture* *Awareness and knowledge* *Crop-, range-, grass and arid land*
Project description: The proposed project aims to contribute to the promotion of **sustainable agriculture [agriculture]** and food security in Rwanda, through ensuring **participatory, transparent, and accountable** district planning and budgeting. Overall objective **inclusive engagement** for change.		
Donor: *Recipient:* *Year:* *Finance Flow:*	David and Lucile Packard Foundation Indonesia 2017 Private Development Finance (USD 100k)	*Sustainable forestry* *Protection and conservation* *Policy, regulation and governance* *Awareness and knowledge* *Forest*
Project description: Program **conservation** and science. To help promote **integrated landscape approaches** for **sustainable forests [forests]** and **land use policy** and management at the subnational level in Indonesia. **Conservation** strategy fund.		

Figure S2 | Selected example projects from OECD CRS database including Biodiv Cube classification. *Example projects display information on donor, recipient, year, finance flow type, project description. The full list of Biodiv Cube is described in detail in Supplementary Information, Table S1.*

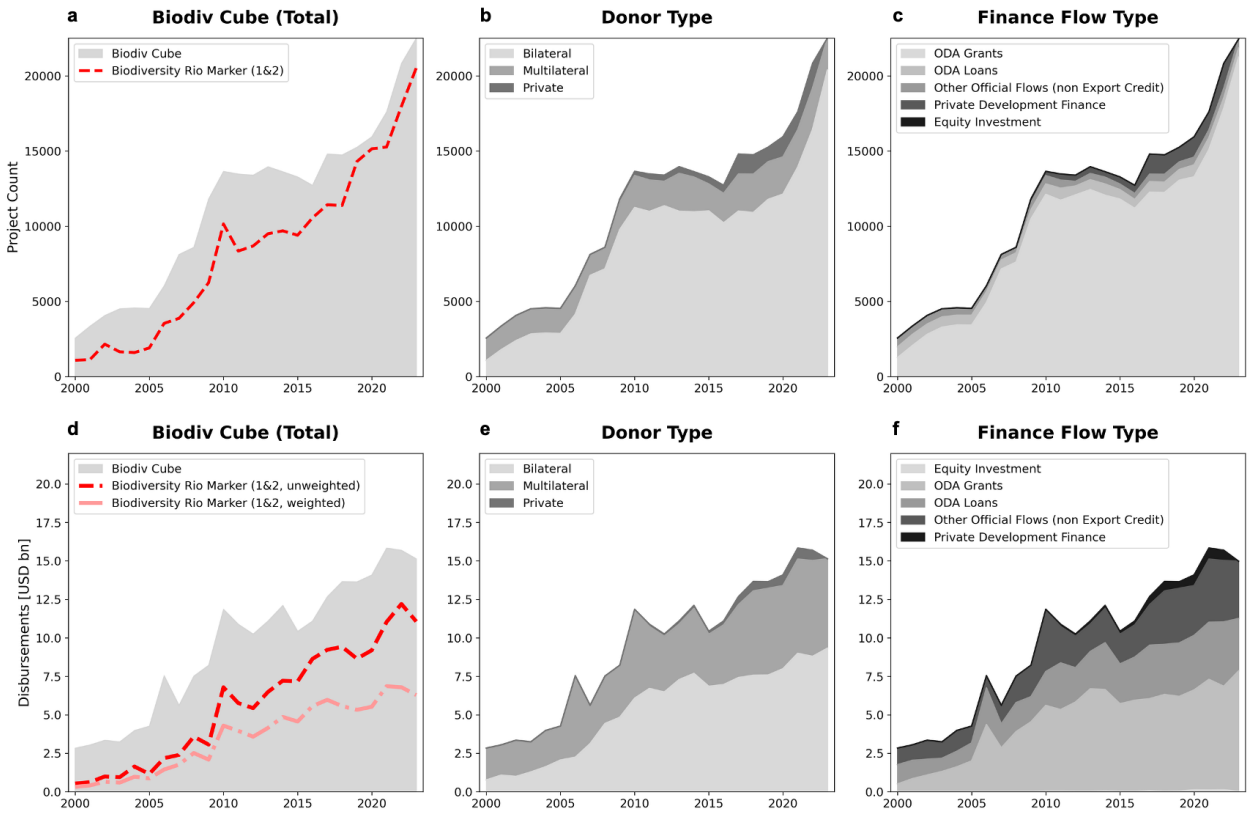


Figure S3 | Biodiversity development project count and finance over time (USD bn, 2000-2023). *Project count for* ***a.*** *all projects identified by Biodiv Cube classification and comparison to number projects in OECD CRS database with principal or significant Biodiversity Rio Marker,* ***b.*** *by donor type, and* ***c.*** *by finance flow type. Related biodiversity development finance (in USD bn) for* ***d.*** *all projects identified by Biodiv Cube classification and projects with principal or significant Biodiversity Rio Marker (weighted Rio Marker series assumes 100% attribution for 'principal' projects and 40% attribution for 'significant' projects). Related biodiversity development finance (in USD bn) by* ***e.*** *donor type and* ***f.*** *finance flow type.*

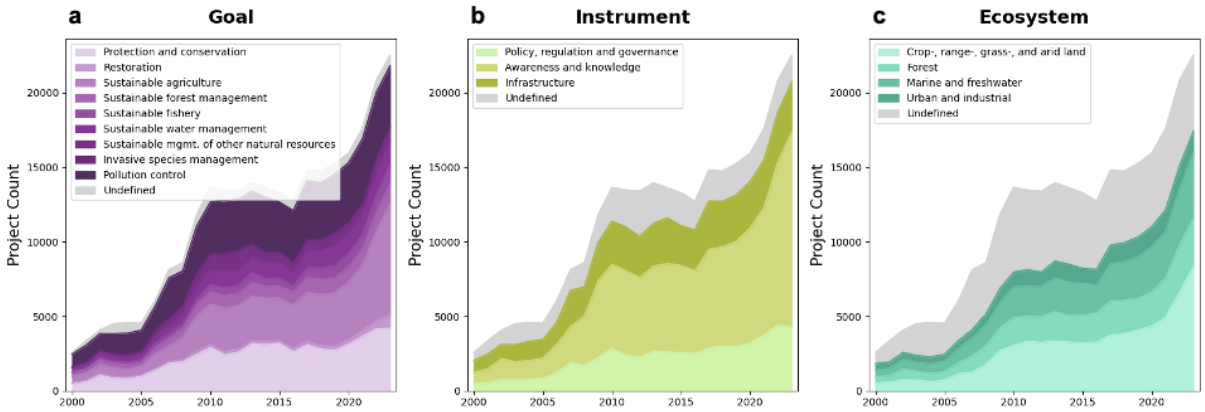


Figure S4 | Development of biodiversity project count over time (2000-2023). *Differentiated by class for the dimensions* ***a.*** *goal,* ***b.*** *instrument, and* ***c***. *ecosystem. Allocation is split proportionally for cases where multiple classes within one dimension apply, ensuring no double-counting of projects.*

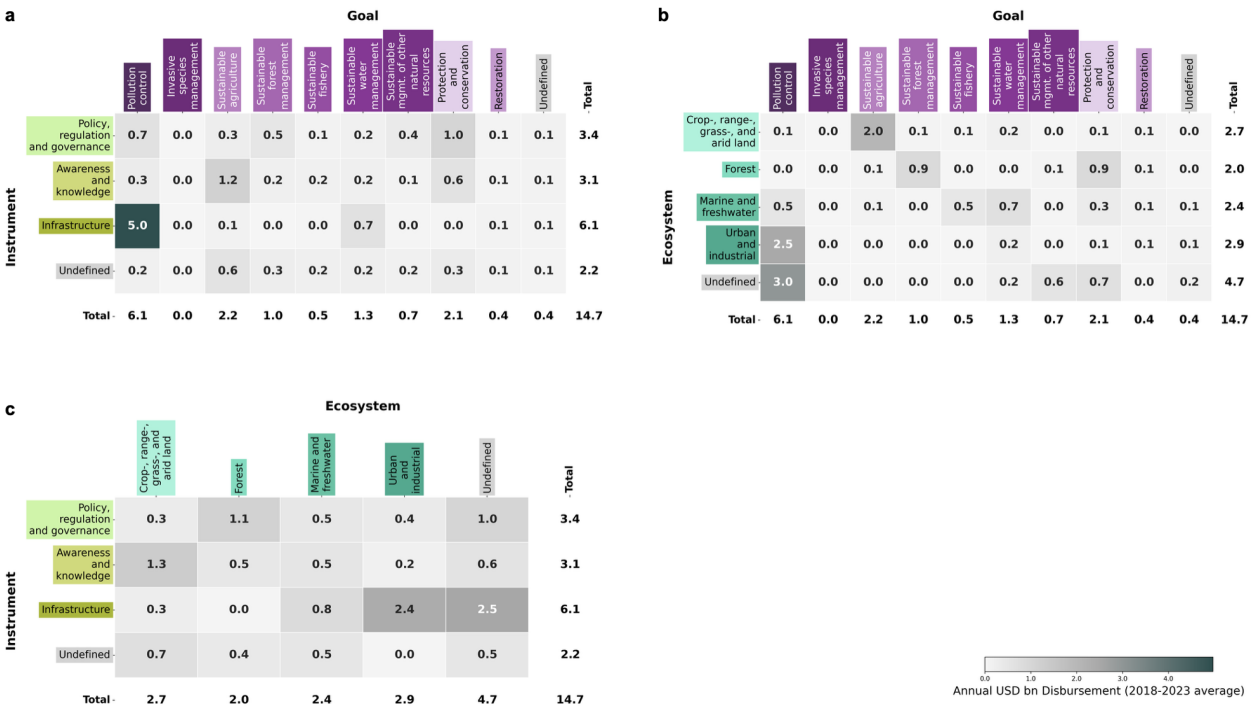


Figure S5 | Detailed view: Biodiversity development finance across goal (including sub-classes), instrument, and ecosystem intersections (average annual disbursements, 2018–2023, USD bn). *Finance flows are displayed in two-dimensional cross-sections of the three archetype dimensions, providing a more detailed view of the intersections of* ***a.*** *goal and instrument,* ***b****. goal and ecosystem,* ***c.*** *ecosystem and instrument, compared with Fig. 3 in the main text.*

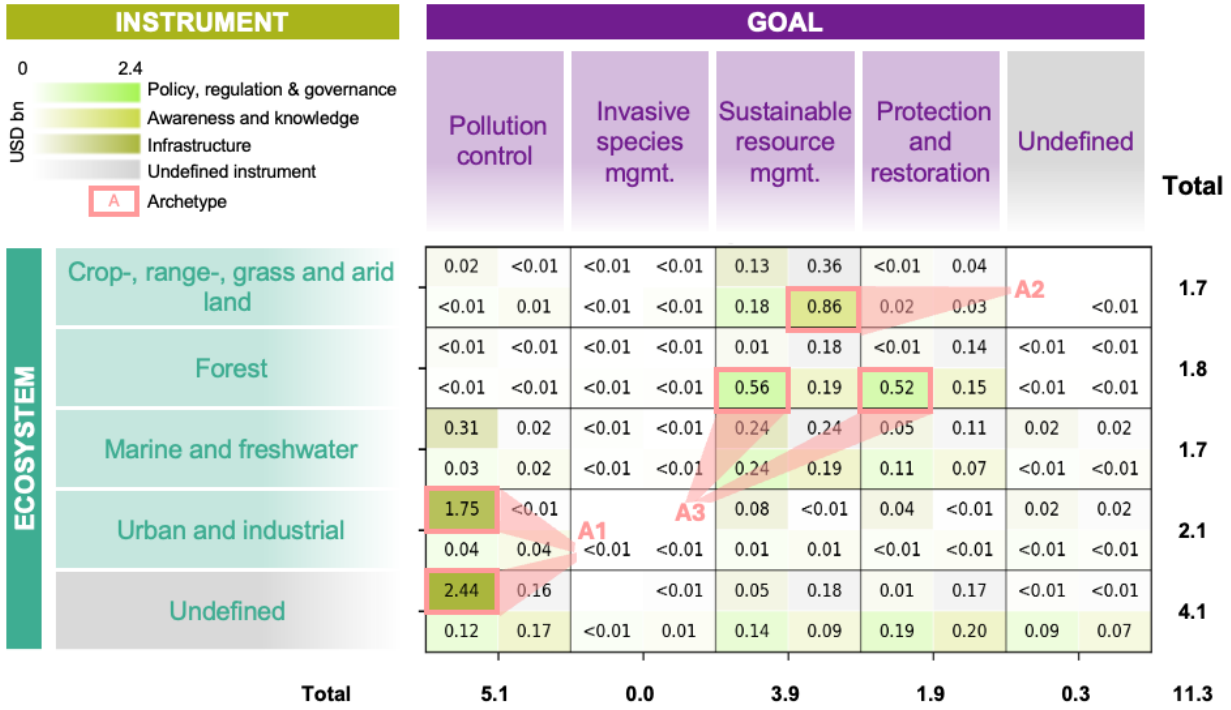


Figure S6 | Biodiversity development finance across project archetypes at the intersection of goals, instruments and ecosystems *(annual averages 2012–2017, USD bn)**. Color intensity indicates annual average funding disbursements for each cell in heatmap.***

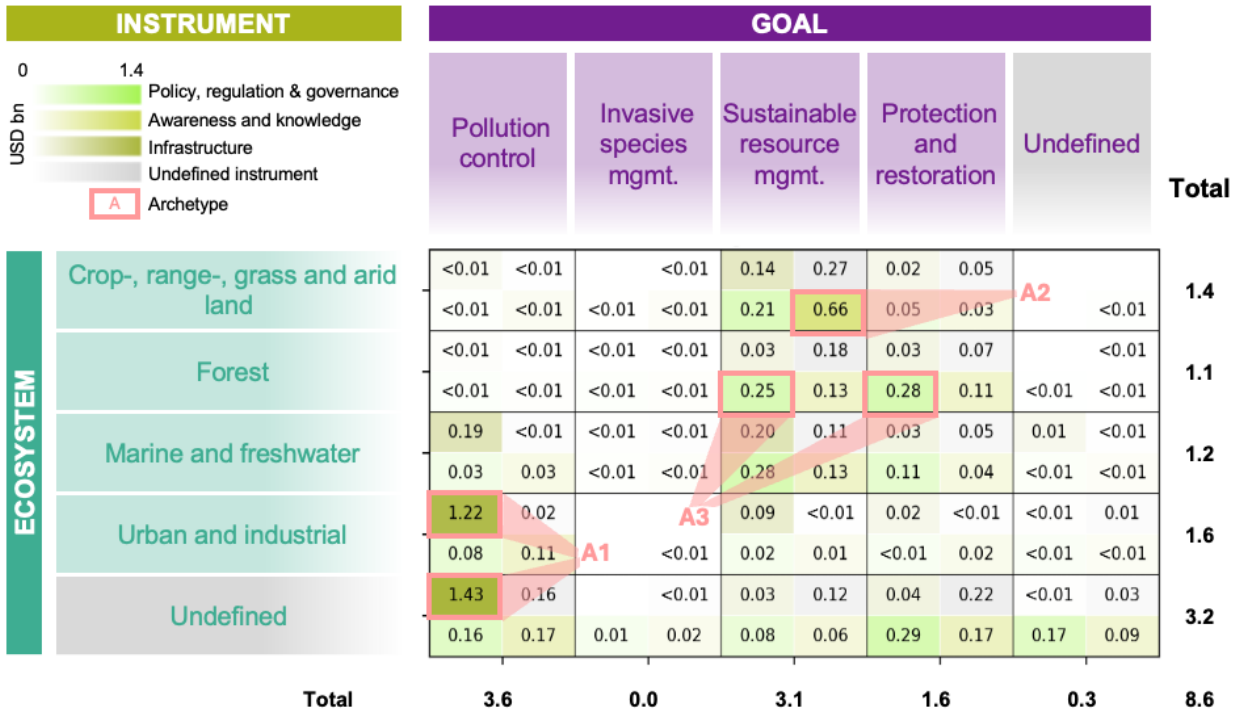


Figure S7 | Biodiversity development finance across project archetypes at the intersection of goals, instruments and ecosystems *(annual averages 2006–2011, USD bn). Color intensity indicates annual average funding disbursements for each cell in heatmap.*

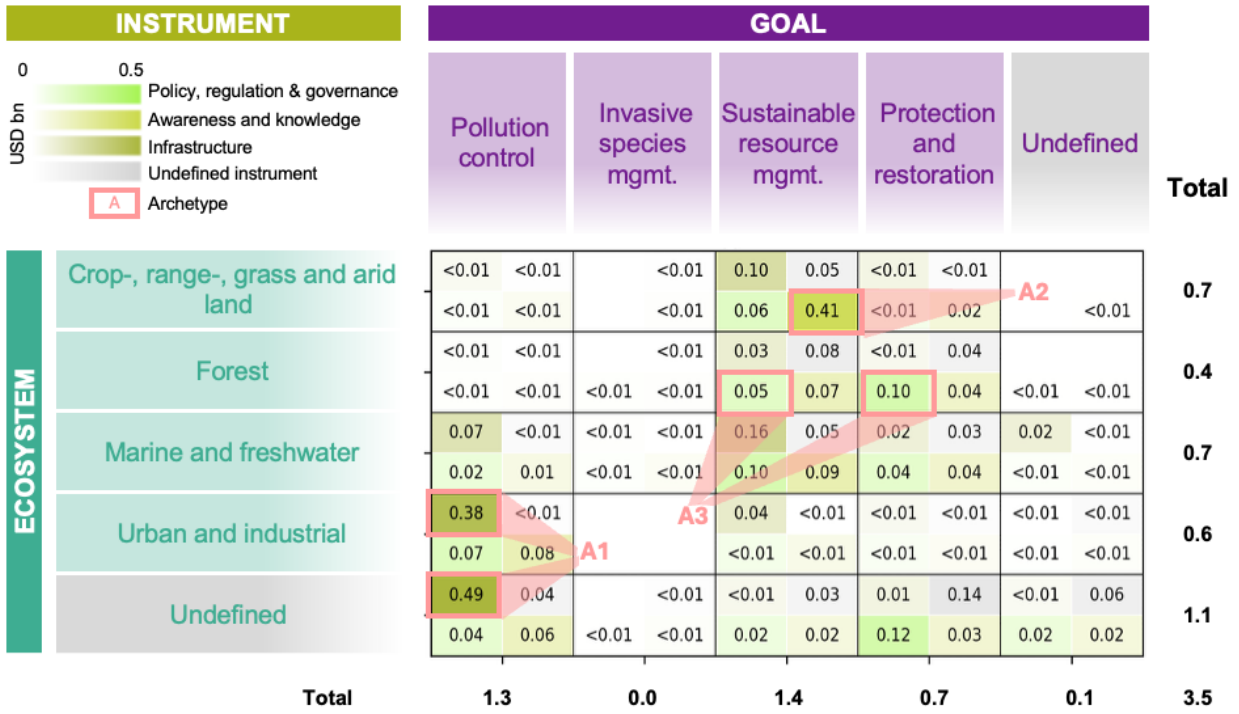


Figure S8 | Biodiversity development finance across project archetypes at the intersection of goals, instruments and ecosystems *(annual averages 2000–2005, USD bn)**. Color intensity indicates annual average funding disbursements for each cell in heatmap.***

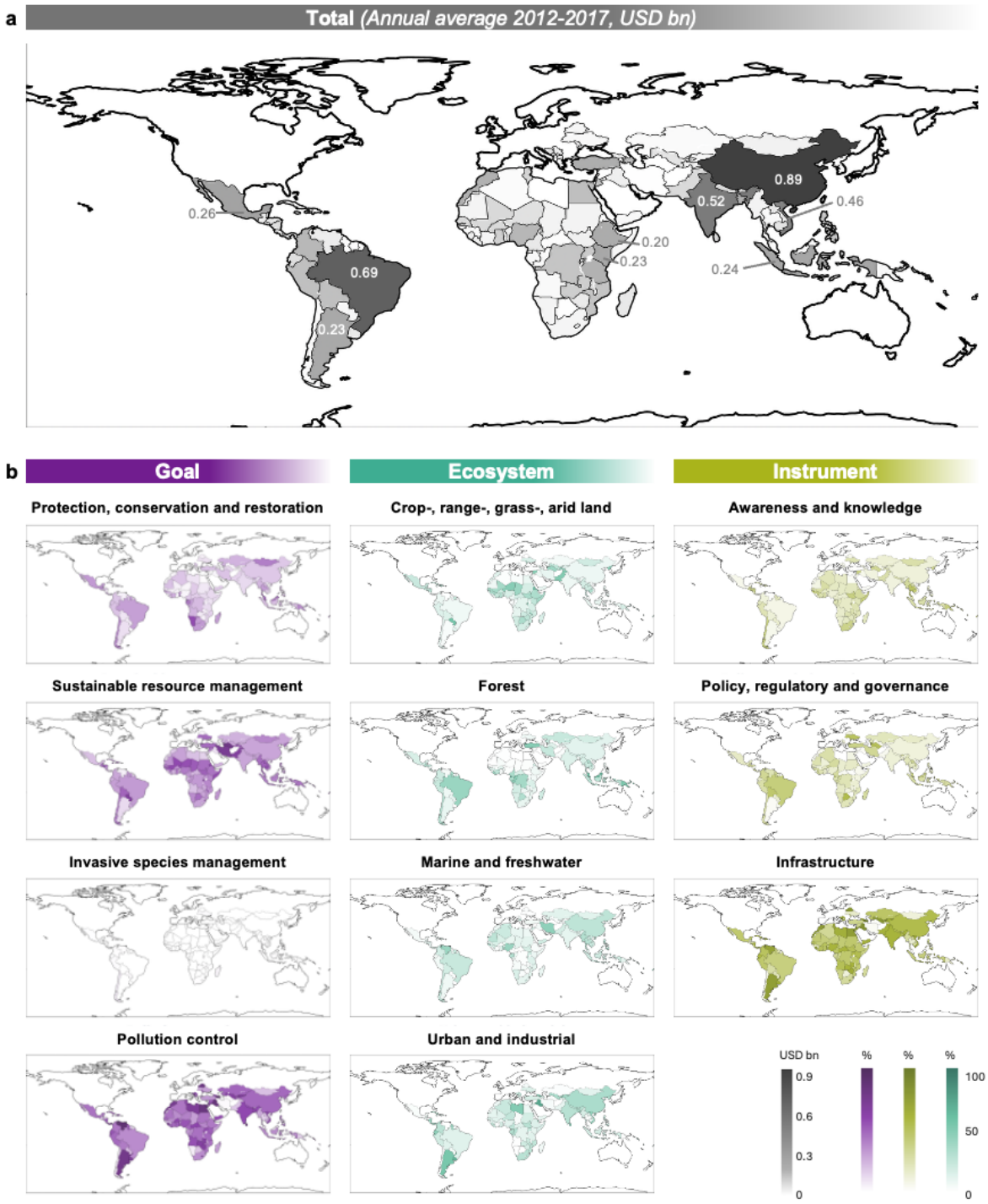


Figure 9 | Country-level distribution of biodiversity development finance across goal, instrument, and ecosystem classes (average annual disbursements, 2012–2017, USD bn). a. *Total volumes by country (annual average 2012-2017). Amount (USD bn) is indicated for the top 10 recipients.* ***b.*** *Relative distribution of finance flows across 11 Biodiv Cube classes (goal, instrument, and ecosystem) for each country. Values represent percentage shares: for every country, the contributions of all classes within a given dimension sum to 100%, irrespective of the country's absolute funding volume. A consistent color scale is used within each dimension to support comparability across countries. Finance flows with undefined classification in a dimension are not displayed. Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') account for 20% of the total annual average funding and are not displayed either.*

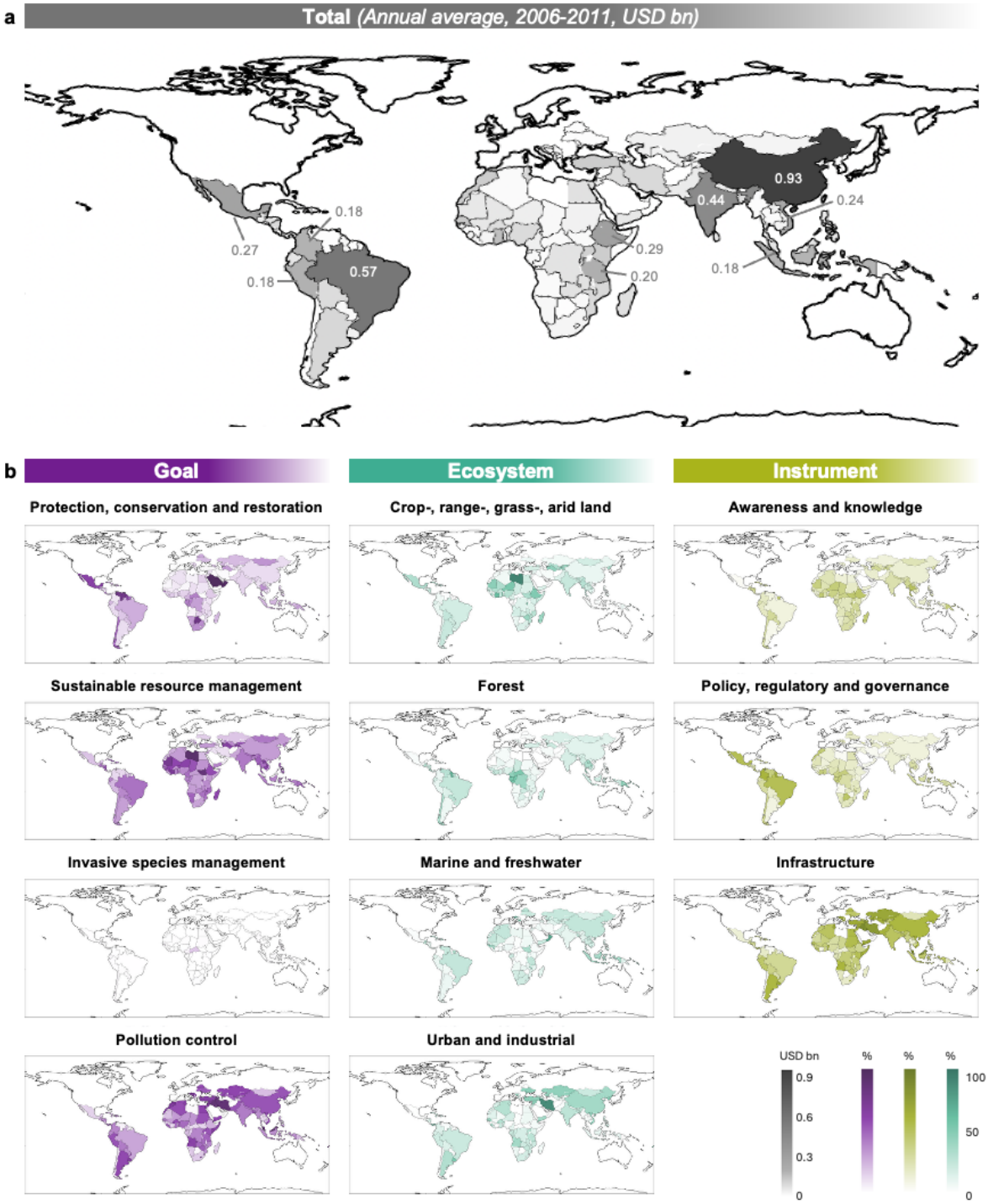


Figure 10 | Country-level distribution of biodiversity development finance across goal, instrument, and ecosystem classes (average annual disbursements, 2006–2011, USD bn). a. *Total volumes by country (annual average 2006-2011). Amount (USD bn) is indicated for the top 10 recipients.* ***b.*** *Relative distribution of finance flows across 11 Biodiv Cube classes (goal, instrument, and ecosystem) for each country. Values represent percentage shares: for every country, the contributions of all classes within a given dimension sum to 100%, irrespective of the country's absolute funding volume. A consistent color scale is used within each dimension to support comparability across countries. Finance flows with undefined classification in a dimension are not displayed. Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') account for 20% of the total annual average funding and are not displayed either.*

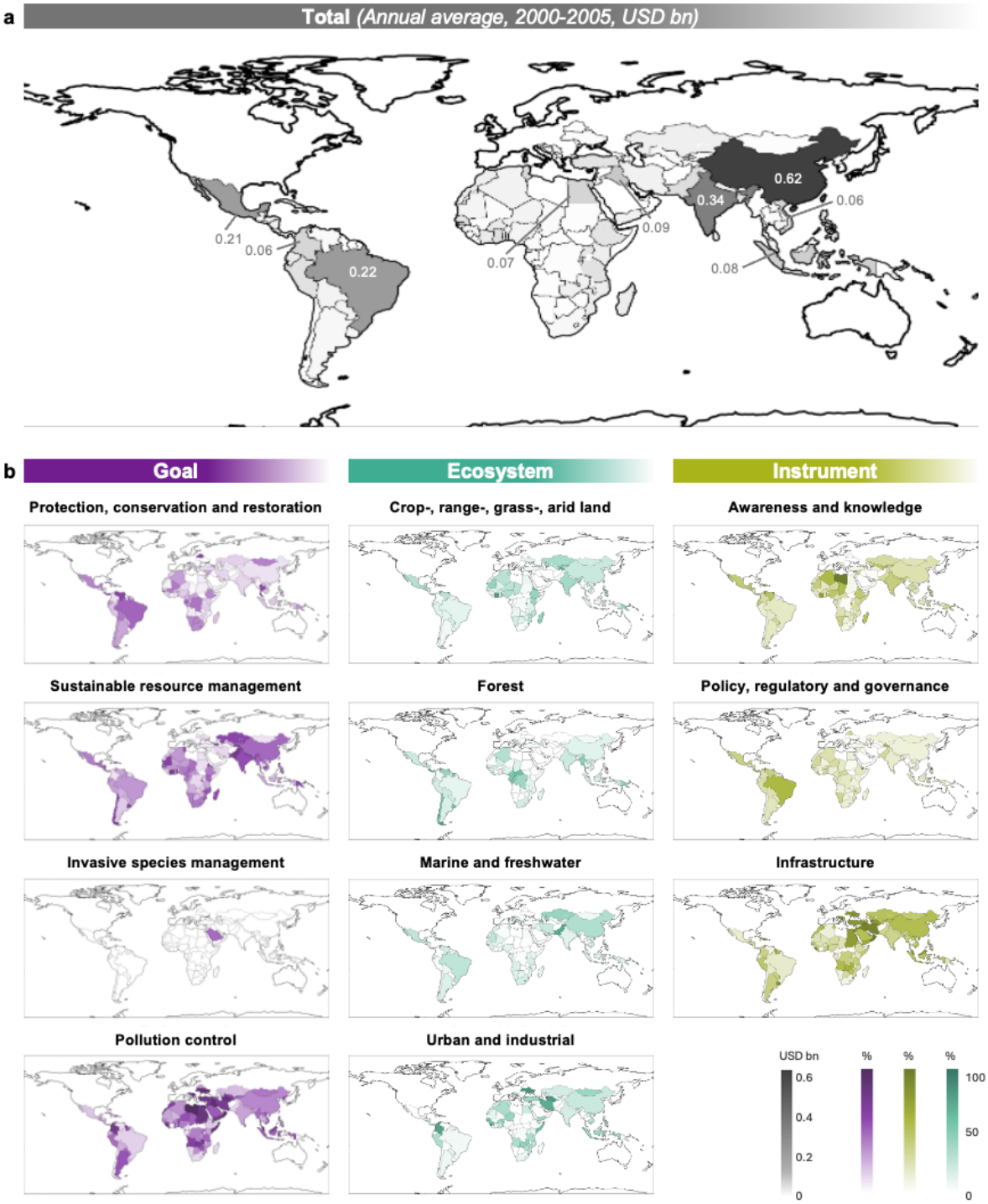


Figure 11 | Country-level distribution of biodiversity development finance across goal, instrument, and ecosystem classes (average annual disbursements, 2000–2005, USD bn). a. *Total volumes by country (annual average 2000-2005). Amount (USD bn) is indicated for the top 10 recipients.* ***b.*** *Relative distribution of finance flows across 11 Biodiv Cube classes (goal, instrument, and ecosystem) for each country. Values represent percentage shares: for every country, the contributions of all classes within a given dimension sum to 100%, irrespective of the country's absolute funding volume. A consistent color scale is used within each dimension to support comparability across countries. Finance flows with undefined classification in a dimension are not displayed. Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') account for 20% of the total annual average funding and are not displayed either.*

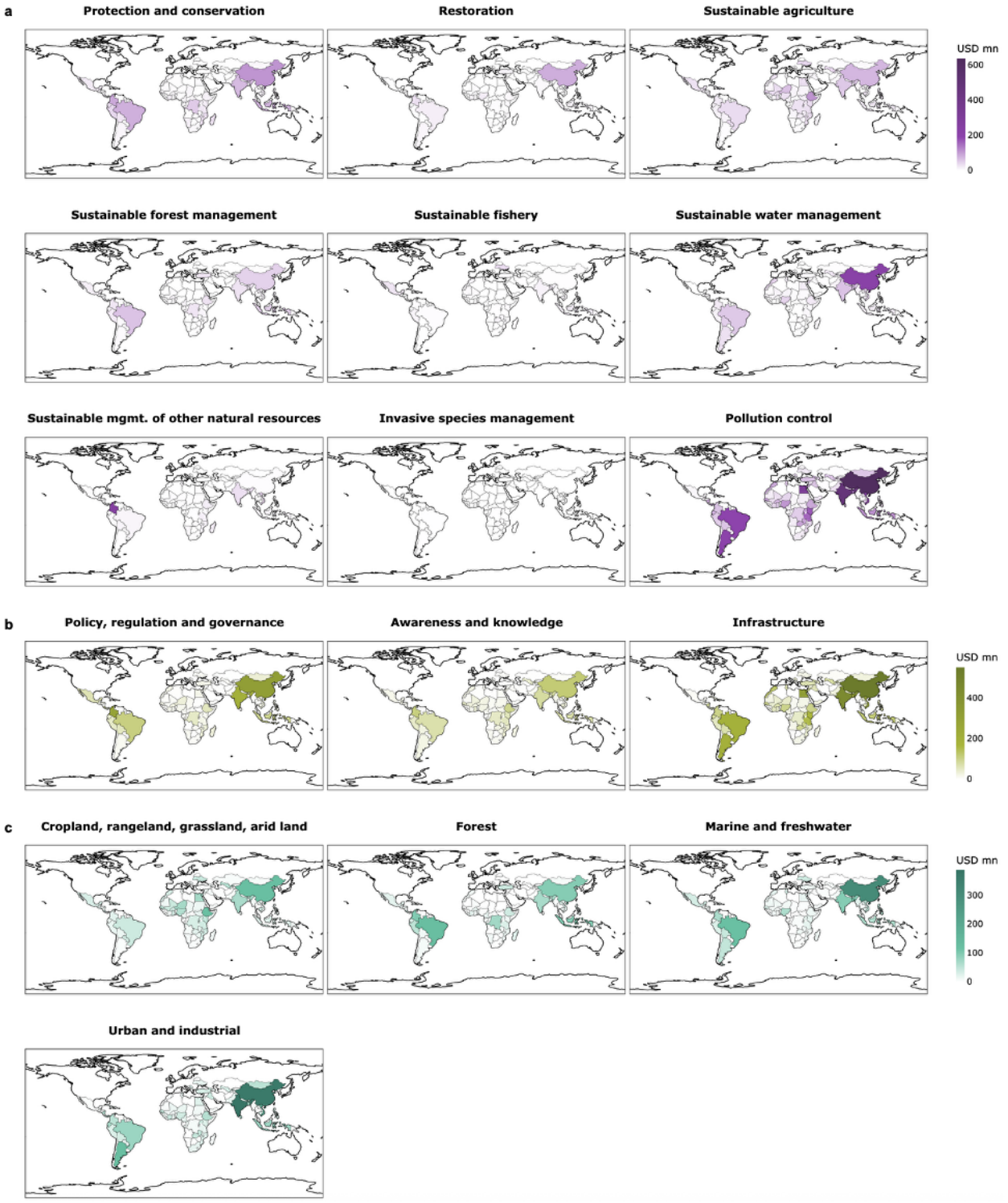


Figure S12 | Country-level distribution of biodiversity development finance across goal, instrument, and ecosystem classes (average annual disbursements, 2018–2023, USD bn). *Finance flows distinguished by 16 classes within the dimensions of* ***a.*** *goal,* ***b.*** *instrument, and* ***c.*** *ecosystem. A consistent color scale is applied within each dimension to enable comparability across panels. Finance flows with undefined classification in a dimension are not displayed. Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') account for 20% of the total annual average funding and are not displayed either.*

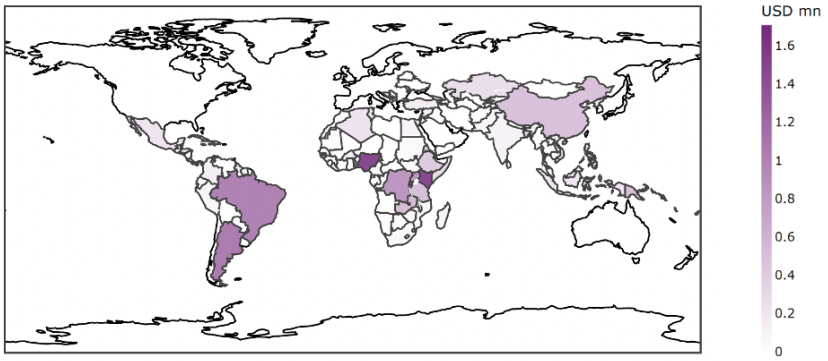


Figure S13 | Country-level distribution of biodiversity development finance for the goal invasive species management (average annual disbursements, 2018–2023, USD bn). *Finance flows directed to non-country recipients (e.g., 'Bilateral, unspecified', 'Africa, regional') are not displayed.*

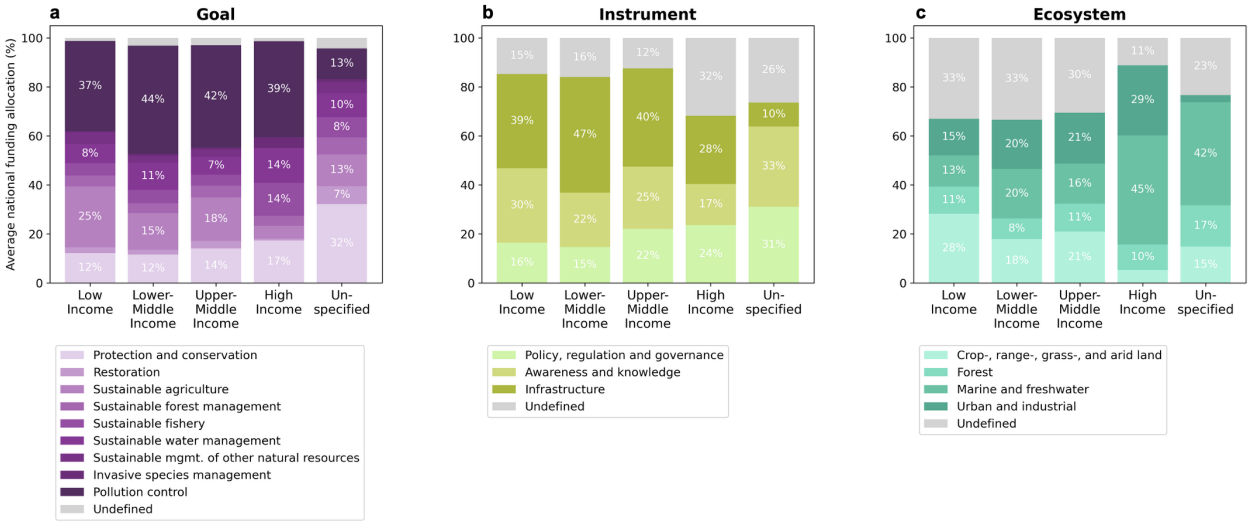


Figure S14 | Relative biodiversity development finance allocation by income group (average annual share, 2018–2023). *Each stacked bar shows the average national funding composition for countries within a given income group, expressed as the share of total biodiversity development finance allocated to each class in the dimensions* ***a.*** *goal,* ***b.*** *instrument,* ***c.*** *ecosystem. National funding shares were first calculated for individual countries and then averaged across all countries within the same income group, independent of total funding volume. 'Unspecified' refers to funding not attributable to a specific income group, mainly due to regional or multi-country recipients.*

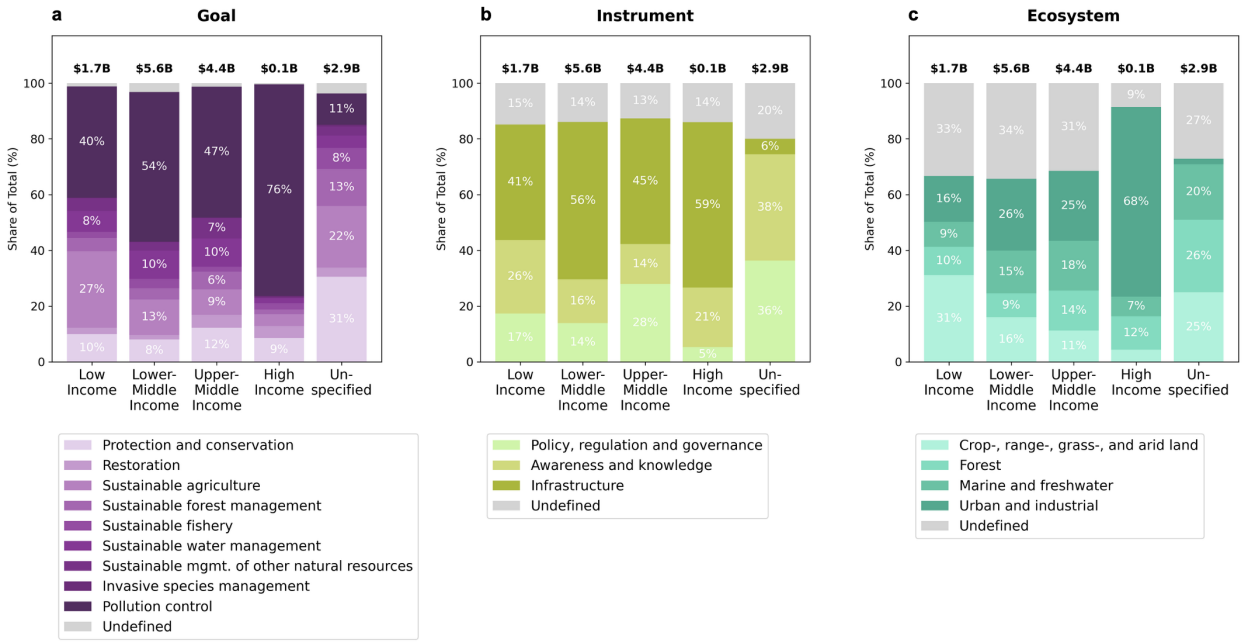


Figure S15 | Detailed view: Biodiversity finance disbursements by income group (%, average annual disbursement 2018–2023). *Stacked bar charts of* ***a.*** *goal (including sub-classes),* ***b.*** *instruments, and* ***c.*** *ecosystem categories as share of total annual disbursements per income group. Total disbursement volumes in USD bn/year are indicated above each bar. 'Unspecified' refers to funding not attributable to a specific income group, mainly due to regional or multi-country recipients.*

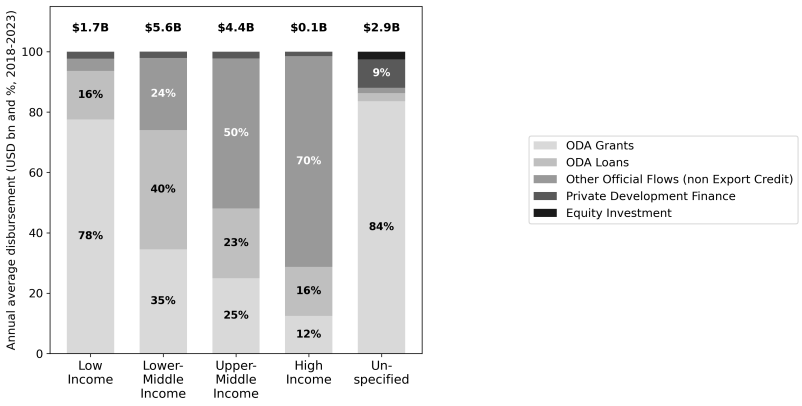


Figure S16 | Share of funding flow type across different country income levels (%, average annual disbursement 2018–2023, USD bn). *Total average annual disbursement volumes in USD bn are indicated above each bar. 'Unspecified' refers to funding not attributable to a specific income group, mainly due to regional or multi-country recipients.*

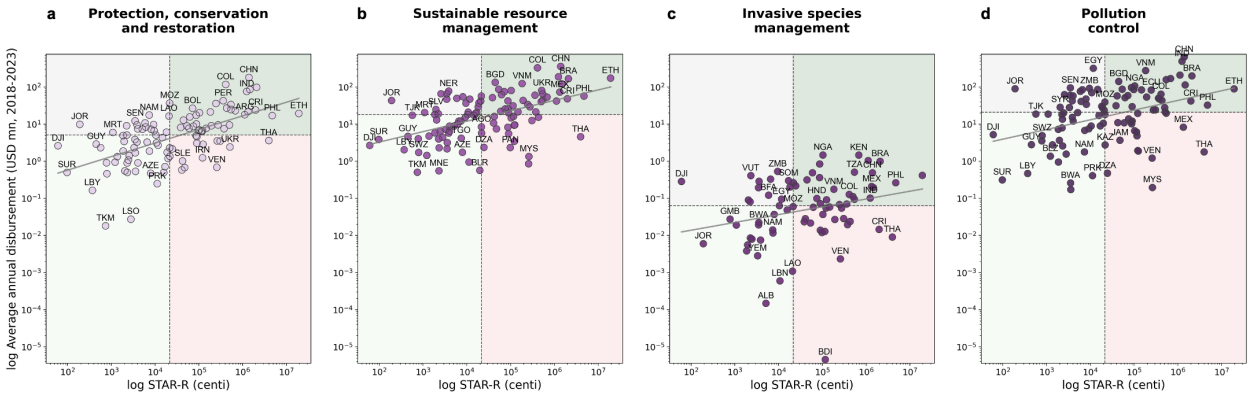


Figure S17 | Relationship between national restoration potential (STAR-R) and biodiversity development finance along different classes of goal dimension. *Classes comprise* ***a.*** *protection, conservation and restoration;* ***b.*** *sustainable resource management;* ***c.*** *invasive species management;* ***d.*** *pollution control. Disbursement volumes represent average annual volumes from 2018–2023 in USD bn, and funding is split proportionally for cases where multiple classes within the goal dimension apply.*

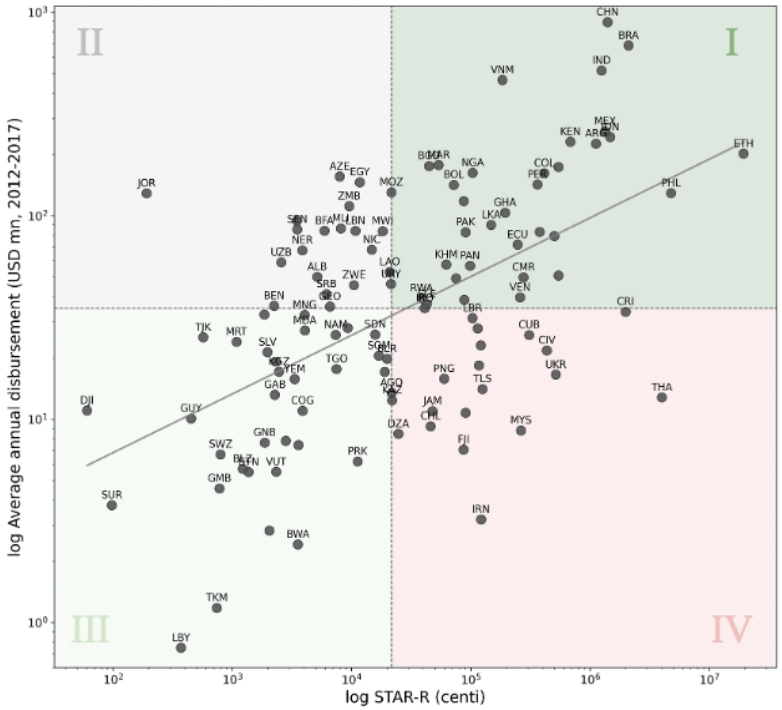


Figure S18 | Restoration potential vs biodiversity development finance (annual average 2012-2017). *Relationship between countries' restoration potential (STAR-R centi-scores, calculated by summing values across all 5 km polygons within each country) and average annual biodiversity development finance (USD bn, annual average 2012–2017). The solid line shows the fitted log–log regression (Supplementary Table S9). Dashed median lines divide the plot into four quadrants representing combinations of relative restoration potential and funding intensity: (I) high potential – high funding (alignment), (II) high funding relative to potential, (III) low potential – low funding (alignment), and (IV) high potential relative to funding.*

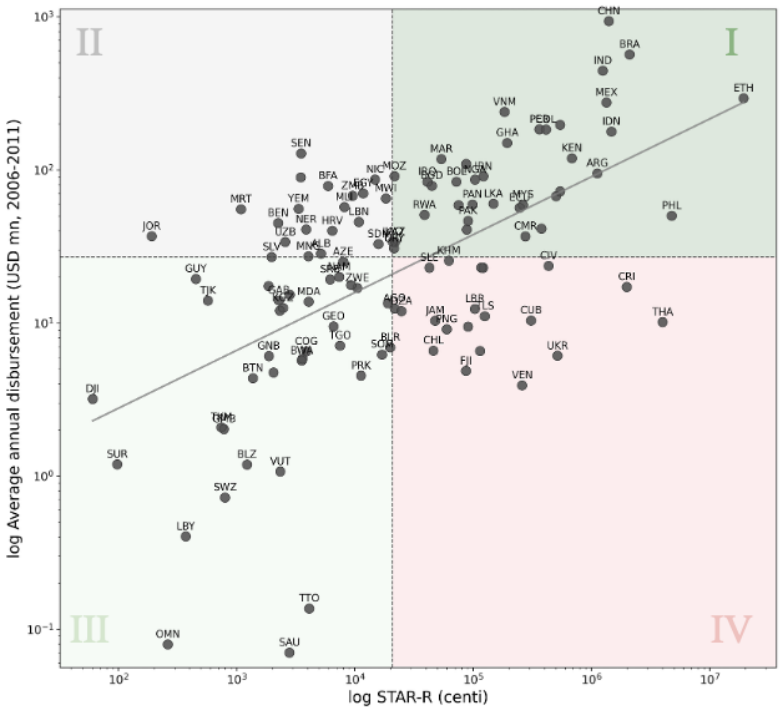


Figure S19 | Restoration potential vs biodiversity development finance (annual average 2006-2011). *Relationship between countries' restoration potential (STAR-R centi-scores, calculated by summing values across all 5 km polygons within each country) and average annual biodiversity development finance (USD bn, annual average 2006–2011). The solid line shows the fitted log–log regression (Supplementary Table S9). Dashed median lines divide the plot into four quadrants representing combinations of relative restoration potential and funding intensity: (I) high potential – high funding (alignment), (II) high funding relative to potential, (III) low potential – low funding (alignment), and (IV) high potential relative to funding.*

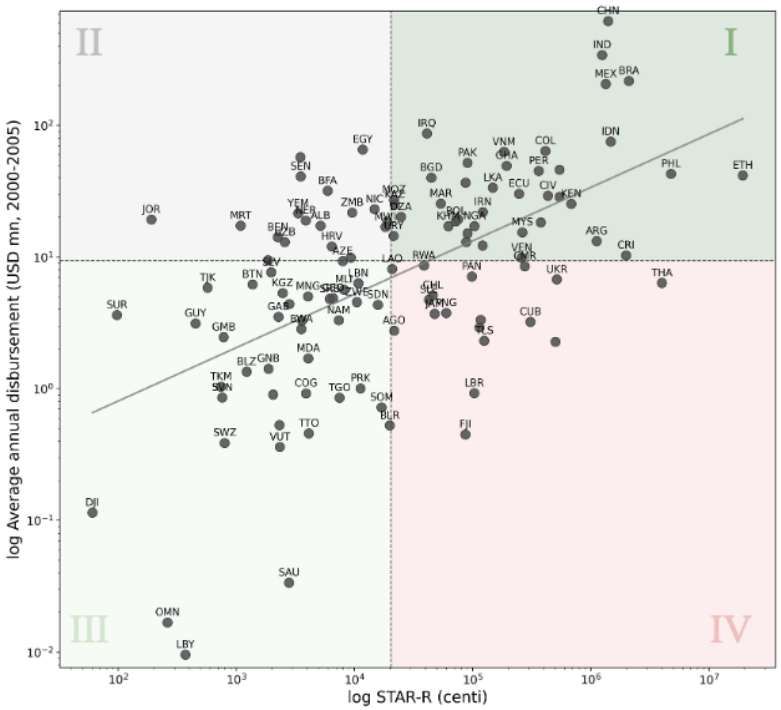


Figure S20 | Restoration potential vs biodiversity development finance (annual average 2000-2005). *Relationship between countries' restoration potential (STAR-R centi-scores, calculated by summing values across all 5 km polygons within each country) and average annual biodiversity development finance (USD bn, annual average 2000–2005). The solid line shows the fitted log–log regression (Supplementary Table S9). Dashed median lines divide the plot into four quadrants representing combinations of relative restoration potential and funding intensity: (I) high potential – high funding (alignment), (II) high funding relative to potential, (III) low potential – low funding (alignment), and (IV) high potential relative to funding.*

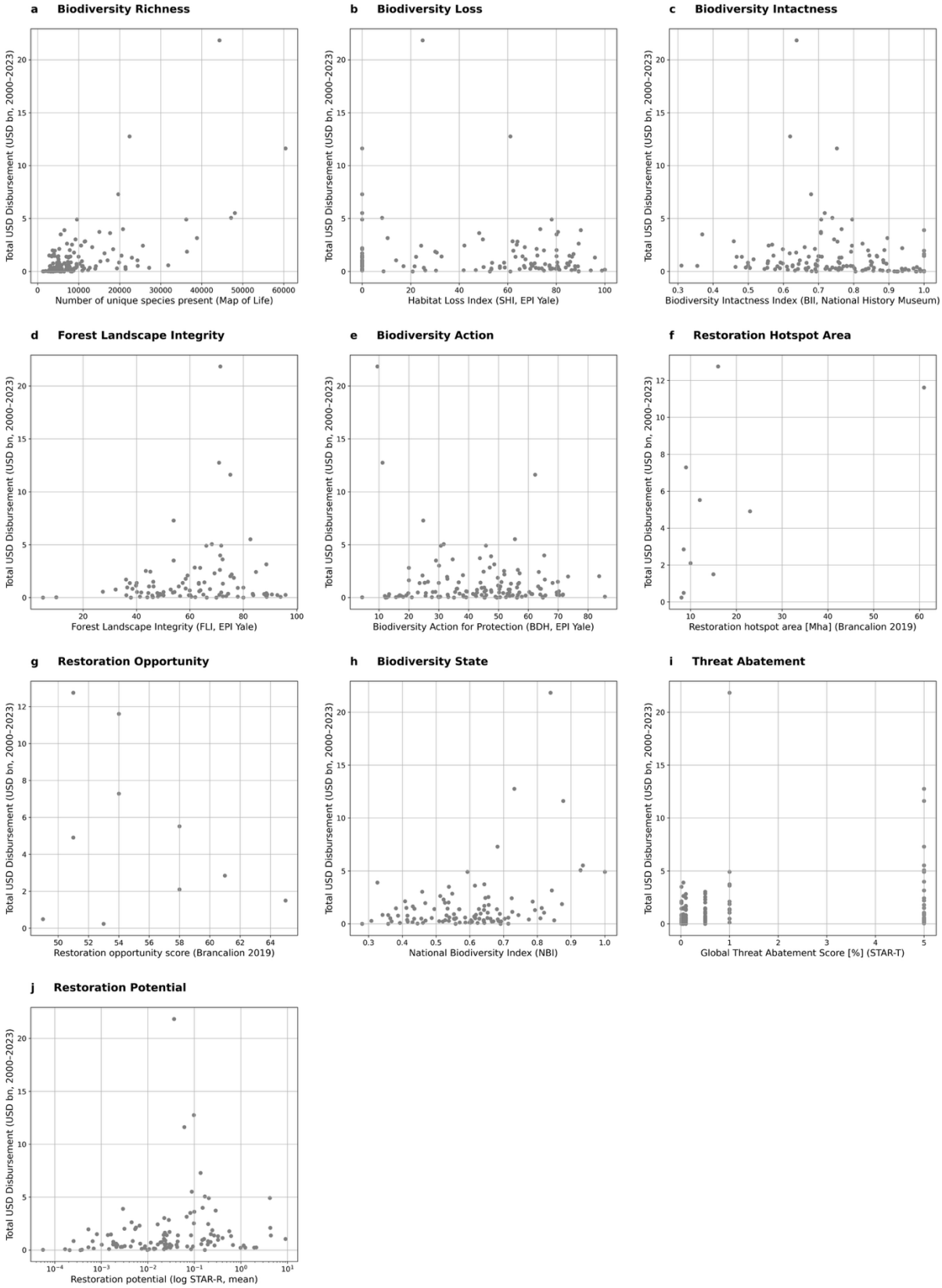


Figure S21 | Relationship between country-level biodiversity indices and average biodiversity development finance (annual average 2018–2023, USD bn). *Scatterplots depict the relationship between ten different biodiversity indices (x-*

axes) and annual average biodiversity development finance (2018-2023) in USD billion (y-axis) ***a.*** *Biodiversity richness (number of unique amphibian, bird, mammal, and reptile species per country, Map of Life)*[6] *shows a strong positive and statistically significant association ($\beta_1 = 0.0002$, $R^2 = 0.39$, $p < 0.001$). Countries with the greatest species richness (e.g., Brazil, Indonesia, Colombia) have consistently attracted higher disbursement volumes than less diverse countries. This suggests that biodiversity richness is one of the strongest predictors of funding allocation among all indicators examined.* ***b.*** *Biodiversity loss, assessed by the Species Habitat Index (SHI, Environmental Performance Index, Yale)*[7,8]*, reveals a weak negative association ($\beta_1 = -0.0139$, $R^2 = 0.03$, $p = 0.064$). Since lower SHI values (near 0) indicate greater habitat loss and higher SHI values (near 100) indicate less habitat loss, this relationship suggests that countries experiencing higher biodiversity loss have tended to receive higher disbursements. However, the effect is modest and only marginally significant, indicating that while funding directionally aligns with areas of greater habitat degradation, the overall targeting strength remains weak.* ***c.*** *Biodiversity intactness, expressed via the Biodiversity Intactness Index (BII, Natural History Museum)*[9]*, shows limited correspondence with funding levels, with high financial flows often directed to countries where intactness is already reduced, however the relationship between funding and BII is weak and non-significant ($\beta_1 = -2.04$, $R^2 = 0.015$, $p = 0.15$).* ***d.*** *Forest Landscape Integrity (FLI, Yale EPI)*[7,10] *estimates the degree of human disturbance and forest fragmentation. The regression shows a weak positive but statistically insignificant relationship ($\beta_1 = 0.023$, $R^2 = 0.02$, $p = 0.17$). Biodiversity development finance therefore shows no clear pattern with forest integrity, suggesting financial flows are not systematically directed toward degraded forest landscapes.* ***e.*** *Biodiversity Action (BDH, EPI Yale)*[7,11] *captures protective action and conservation policy effort. Results indicate a weak, negative, and statistically non-significant relationship ($\beta_1 = -0.021$, $R^2 = 0.02$, $p = 0.10$). Funding appears directed both to countries with limited protective action (e.g., China, India) and those with strong conservation performance (e.g., Brazil, Colombia, Tanzania), consistent with a dual allocation logic supporting both under-protected and actively protecting countries.* ***f. and g.*** *Restoration opportunities, identified by Brancalion et al. (2019)*[12]*, capture both the spatial extent of restoration hotspots and a normalized restoration opportunity score. Results show a positive but only marginally significant relationship between total restoration hotspot area and biodiversity disbursements ($\beta_1 = 0.166$, $R^2 = 0.36$, $p = 0.065$), suggesting that countries with larger areas suitable for ecological restoration tend to receive higher funding volumes. In contrast, the relationship with the normalized restoration opportunity score is weaker and statistically insignificant ($\beta_1 = -0.255$, $R^2 = 0.08$, $p = 0.42$). This difference likely reflects the nature of the indicators: while hotspot area measures the absolute spatial extent of restoration potential (in million hectares), the opportunity score expresses a relative, normalized measure of suitability, which reduces variance and therefore weakens statistical association with financial flows. The small sample size (N = 10) further limits inference strength.* ***h.*** *The National Biodiversity Index (NBI)*[13] *from CBD reflects species richness and endemism across major taxonomic groups, scaled between 0 and 1. Higher values indicate greater biodiversity. The NBI shows a positive and statistically significant relationship ($\beta_1 = 6.71$, $R^2 = 0.13$, $p < 0.001$), implying that more biodiverse countries (higher NBI) have received higher funding. However, given the index's age (last updated 2001), its explanatory power should be interpreted cautiously.* ***i.*** *The Species Threat Abatement and Restoration metric (STAR-T, IUCN)*[14,15] *quantifies how much global extinction risk could be reduced through threat-abatement actions in each country, based on the distribution and threat status of species. STAR-T exhibits a positive and significant association ($\beta_1 = 0.40$, $R^2 = 0.08$, $p < 0.01$). Countries with higher potential for global threat abatement tend to receive higher biodiversity disbursements, though the relationship remains modest in explanatory power.* ***j.*** *The mean STAR-R*[14,15] *score from IUCN represents the average per-5km-polygon restoration potential, providing a normalized measure independent of territorial size. Results show that finance flows are not consistently aligned with the mean restoration potential ($\beta_1 = 0.028$, $R^2 = 0$, $p = 0.90$).*

Supplementary Tables

Table S1 | Definition of biodiversity finance framework. *Framework covers three dimensions (goal, instrument, ecosystem), with in total 14 classes. Two classes (protection, conservation and restoration; sustainable resource management) have more detailed sub-classes.*

Dimen-sion	Class	Sub-class	Definition and scope
Goal	Protection, conser-vation and restoration	Protection and conservation	Preservation of existing biodiversity through the establishment, expansion, and management of protected areas. Includes species protection, prevention of habitat fragmentation, and creation of ecological corridors.
		Restoration	Initiation or acceleration of ecosystem recovery from a degraded state. Includes ecological restoration, rewilding, erosion control, and reclamation efforts that aim to re-establish ecosystem functionality and biodiversity.
	Sustainable resource manage-ment	Sustainable agriculture	Promotion of sustainable practices in agriculture and livestock management. Includes organic and climate-smart farming, agroforestry, agrobiodiversity, pollinator-friendly methods, and support to smallholder agricultural systems, where these contribute to biodiversity objectives.
		Sustainable forestry	Support for sustainable and participatory forest management, including reduced pressure on forest resources and the sustainable production of forest-based goods and services. May include community forestry, forest certification, or related forest governance activities.
		Sustainable fishery and aquaculture	Improvement of sustainability in aquaculture and wild fisheries. Includes management of aquatic resources, promotion of eco-friendly practices, and efforts to maintain biodiversity in marine and freshwater ecosystems.
		Sustainable and integrated water management	Efforts aimed at sustainable water use and integrated water resources management. Includes conservation of water resources, catchment and watershed planning, and strategies to maintain aquatic ecosystem integrity. Does not include water and sanitation interventions unless linked to broader ecosystem-based approaches.
		Sustainable management of other natural resources	Promotion of sustainable use or extraction of natural resources not explicitly covered under agriculture, forestry, fishery, or water management. May include general resource efficiency, land-use planning, and ecosystem-based approaches to development.
	Invasive species management		Prevention, containment or eradication of invasive alien species that pose a threat to native biodiversity. Includes detection and control strategies, as well as measures to manage biosecurity risks related to invasive species.
	Pollution control and waste management		Prevention, reduction or elimination of pollution in soil, water, air, and atmosphere. Includes management of waste (e.g., recycling, sanitation) and pollutants such as chemicals or plastics. Projects may involve organic agriculture, enhanced water quality, or improved sewerage and sanitation systems.

		Note: Initiatives addressing greenhouse gas emissions must explicitly link to biodiversity-related purposes to qualify.
	Undefined	Project goal is not specified in project description and cannot be allocated to any of the above instrument classes.
Instrument	Policy, regulation and governance support	Development, strengthening or enforcement of biodiversity-related policies, laws, governance structures, and financial mechanisms. Includes biodiversity strategies, conservation funds, land use regulations, and institutional coordination across levels and sectors. Note: Must involve formal, binding, or institutional mechanisms.
	Awareness and knowledge building	Promotion of public understanding, stakeholder engagement, and capacity building for biodiversity protection. Includes environmental education, community participation, awareness campaigns, and training programs for practitioners and policymakers.
	Infrastructure	Construction, rehabilitation or improvement of infrastructure with an environmental or biodiversity-related objective. Includes green infrastructure, irrigation systems, wastewater treatment, and facilities supporting pollution reduction, resource management, or ecosystem conservation.
	Undefined	Project instrument is not specified in project description and cannot be allocated to any of the above classes.
Ecosystem	Cropland, rangeland, grassland, and arid land	Projects implemented in agricultural or dryland environments. Includes sustainable farming systems, grassland restoration, soil conservation, and climate-resilient land management practices such as agroforestry.
	Forest	Projects in forest ecosystems, including tropical, temperate, or boreal forests. Activities include sustainable forest management, afforestation, reforestation, and forest conservation efforts.
	Marine and freshwater	Projects in aquatic ecosystems, such as oceans, lakes, rivers, wetlands, estuaries, or coral reefs. Includes sustainable fisheries, mangrove restoration, wetland rehabilitation, and marine biodiversity protection.
	Urban and industrial environment	Projects in cities, towns, or industrial zones. Includes urban biodiversity initiatives, green infrastructure, waste and sanitation management, and efforts to reduce industrial pollution.
	Undefined	Project ecosystem is not specified in project description and cannot be allocated to any of the above ecosystem classes.

Table S2 | Summary of yearly project-level count and disbursement statistics (2000-2023). *Disbursements are displayed in USD mn, descriptive statistics include minimum (min), 10th percentile (p10), first quartile (q1), median, arithmetic mean (mean), third quartile (q3), 90th percentile (p90), maximum (max), interquartile range (IQR = q3 − q1), standard deviation (std), and totals (total).*

		Project disbursement (USD mn)										
Year	**Project count**	min	p10	q1	median	mean	q3	p90	max	iqr	std	total
2000	2,563	0.000319	0.0190	0.0684	0.2559	1.1085	0.8856	2.5449	38.5158	0.8172	2.7848	2,841
2001	3,358	0.000041	0.0130	0.0547	0.2123	0.9081	0.7092	2.0426	60.6573	0.6545	2.6048	3,049
2002	4,069	0.000022	0.0127	0.0413	0.1561	0.8248	0.5843	1.8912	55.8614	0.5430	2.5936	3,356
2003	4,512	0.000010	0.0126	0.0400	0.1629	0.7195	0.5679	1.6719	50.5050	0.5279	2.0460	3,246
2004	4,573	0.000008	0.0131	0.0440	0.1592	0.8720	0.5527	1.5786	335.0133	0.5087	6.3931	3,988
2005	4,538	0.000019	0.0124	0.0460	0.1612	0.9409	0.6228	1.8979	198.8700	0.5768	4.4813	4,27
2006	6,043	0.000002	0.0126	0.0377	0.1400	1.2485	0.6396	2.3499	168.1781	0.6019	4.9942	7,545
2007	8,127	0.000002	0.0050	0.0293	0.1153	0.6917	0.4205	1.4006	100.0000	0.3911	2.8705	5,621
2008	8,603	0.000001	0.0126	0.0408	0.1352	0.8746	0.4880	1.4672	190.3938	0.4472	4.6090	7,524
2009	11,828	0.000009	0.0052	0.0226	0.0954	0.6957	0.3782	1.1907	319.5000	0.3556	4.7334	8,229
2010	13,653	0.000002	0.0064	0.0234	0.0971	0.8689	0.3707	1.3661	650.0000	0.3474	9.8460	11,864
2011	13,477	0.000001	0.0065	0.0265	0.1097	0.8080	0.4461	1.4357	208.5651	0.4196	4.1643	10,89
2012	13,400	0.000010	0.0048	0.0220	0.0964	0.7652	0.4169	1.3965	243.2192	0.3949	4.1850	10,254
2013	13,962	0.000001	0.0065	0.0273	0.1032	0.7952	0.4351	1.4567	170.1259	0.4078	4.1808	11,102
2014	13,630	0.000001	0.0080	0.0291	0.1100	0.8889	0.4909	1.6288	228.3908	0.4618	4.5472	12,115
2015	13,284	0.000002	0.0070	0.0254	0.1051	0.7855	0.4535	1.5305	146.2030	0.4280	3.5194	10,434
2016	12,726	0.000001	0.0087	0.0316	0.1194	0.8722	0.5075	1.7624	101.1881	0.4759	3.3976	11,099
2017	14,808	0.000001	0.0087	0.0310	0.1127	0.8567	0.4375	1.5641	169.0903	0.4065	3.7739	12,686
2018	14,748	0.000005	0.0087	0.0312	0.1181	0.9266	0.4890	1.6843	177.3440	0.4578	4.2342	13,665
2019	15,260	0.000001	0.0078	0.0299	0.1130	0.8944	0.4605	1.5948	185.6946	0.4306	3.9244	13,649
2020	15,954	0.000001	0.0073	0.0289	0.1072	0.8835	0.4404	1.5000	239.3162	0.4115	4.8962	14,095
2021	17,618	0.000001	0.0076	0.0300	0.1064	0.8993	0.4141	1.4527	700.0000	0.3841	6.9662	15,844
2022	20,838	0.000001	0.0035	0.0182	0.0736	0.7533	0.3003	1.1161	401.7247	0.2821	5.4430	15,696
2023	22,520	0.000001	0.0027	0.0124	0.0573	0.6724	0.2538	1.1038	400.0000	0.2414	4.1293	15,143

Table S3 | Alignment of Rio Marker labels and Biodiv Cube classification. *Analysis for all projects (2000-2023).*

Biodiv Cube			Rio Marker		
Classes		Total [# projects]	0/Empty [% of projects]	1 [% of projects]	2 [% of projects]
Totals	All (Yes)	274.092	*65%*	*18%*	*18%*
	All (No)	3.886.298	*97%*	*2%*	*1%*
Goal	Pollution control and waste management	77.985	*88%*	*10%*	*3%*
	Invasive species management	3.186	*38%*	*10%*	*52%*
	Sustainable agriculture	73.744	*69%*	*23%*	*8%*
	Sustainable forestry	27.639	*42%*	*31%*	*27%*
	Sustainable fishery and aquaculture	18.258	*51%*	*26%*	*23%*
	Sustainable and integrated water management	29.729	*80%*	*16%*	*5%*
	Sustainable management of other natural resources	15.826	*67%*	*20%*	*14%*
	Protection and conservation	73.698	*31%*	*21%*	*48%*
	Restoration	11.496	*46%*	*29%*	*25%*
	Undefined	14.624	*72%*	*15%*	*13%*
Instrument	Policy, regulation and governance support	76.491	*50%*	*22%*	*28%*
	Awareness and knowledge building	149.276	*59%*	*22%*	*19%*
	Infrastructure	66.631	*89%*	*9%*	*3%*
	Undefined	43.397	*63%*	*15%*	*22%*
Ecosystem	Cropland, rangeland, grassland, and arid land	76.992	*69%*	*23%*	*9%*
	Forest	44.196	*36%*	*25%*	*38%*
	Marine and freshwater	52.293	*60%*	*20%*	*20%*
	Urban and industrial environment	23.874	*91%*	*6%*	*3%*
	Undefined	97.880	71%	12%	17%

Table S4 | Top Donors of Biodiversity ODF (2000–2023). *The ten largest bilateral, multilateral, and private donors ranked by cumulative biodiversity development finance over time. Funding in USD bn.*

	Donor Type					
	Bilateral		Multilateral		Private	
Rank	Donor	Funding *[USD bn]*	Donor	Funding *[USD bn]*	Donor	Funding *[USD bn]*
1	Germany	23.0	International Bank for Reconstruction and Development	24.5	Bill & Melinda Gates Foundation	1.9
2	EU Institutions	17.5	International Development Association	22.7	Bezos Earth Fund	0.6
3	Japan	15.3	Asian Development Bank	16.2	Gordon and Betty Moore Foundation	0.4
4	United States	14.4	Inter-American Development Bank	13.2	David and Lucile Packard Foundation	0.4
5	France	10.6	Global Environment Facility	6.2	MAVA Foundation	0.3
6	United Kingdom	7.8	African Development Fund	2.9	Ford Foundation	0.2
7	Norway	6.8	African Development Bank	2.5	Oak Foundation	0.2
8	Canada	4.2	Food and Agriculture Organisation	0.9	Arcadia Fund	0.2
9	Netherlands	3.6	Climate Investment Funds	0.7	Bloomberg Family Foundation	0.1
10	Sweden	3.2	Green Climate Fund	0.7	Dutch Postcode Lottery	0.1

Table S5 | Project number distribution within dimensions of the dimension* goal *(2000-2023). *Class label allocation is split proportionally when multiple classes apply for a project within one dimension*

Year	Goal										Total
	Protection and conservation	Restoration	Sustainable agriculture	Sustainable forest mgmt.	Sustainable fishery	Sustainable water mgmt.	Sustainable mgmt. of other natural resources	Invasive species mgmt.	Pollution control	Undefined	
2000	476	62	443	206	101	218	82	14	874	88	2563
2001	639	60	470	252	107	262	108	15	1139	306	3358
2002	1083	62	613	323	144	315	165	16	1116	233	4069
2003	859	68	602	317	140	305	176	15	1349	682	4512
2004	842	61	521	307	188	313	153	22	1451	717	4573
2005	973	83	597	253	182	328	227	12	1409	473	4538
2006	1383	92	982	412	283	402	454	38	1625	372	6043
2007	1845	105	1069	500	293	491	517	42	2719	546	8127
2008	1939	122	1532	588	326	634	528	98	2278	559	8603
2009	2428	210	2395	719	356	791	832	165	3139	793	11828
2010	2896	200	2726	832	477	973	967	159	3444	981	13653
2011	2420	207	2936	840	522	1047	1129	140	3513	723	13477
2012	2564	213	2929	837	560	924	1307	126	3371	569	13400
2013	3154	186	3015	923	667	968	827	147	3523	552	13962
2014	3110	188	2909	794	523	1067	627	88	3681	644	13630
2015	3182	176	2879	803	521	1003	686	87	3329	619	13284
2016	2610	234	2916	856	420	889	637	86	3448	629	12725
2017	3067	257	3290	1018	639	1114	658	93	3959	714	14808
2018	2792	247	3429	1025	759	1136	680	116	3781	783	14748
2019	2699	272	3599	996	830	1365	699	120	3944	735	15260
2020	3118	320	3884	1015	884	1247	698	128	4014	647	15954
2021	3636	405	4378	1112	934	1285	695	115	4337	720	17618
2022	4153	525	6002	1245	1190	1384	987	117	4401	835	20838
2023	4192	908	7468	1333	1227	1664	881	91	4054	704	22520

Table S6 | Project number distribution in dimensions instrument and ecosystem (2000-2023). *Class label allocation is split proportionally when multiple classes apply for a project within one dimension.*

Year	Instrument				Ecosystem					Total
	Policy, regulation and governance	Awareness and knowledge	Infrastructure	Undefined	Crop-, range-, grass-, and arid land	Forest	Marine and freshwater	Urban and industrial	Undefined	
2000	482	752	816	513	526	402	460	441	734	2,563
2001	526	929	994	908	568	451	482	436	1,422	3,358
2002	769	1400	945	955	737	713	643	484	1,492	4,069
2003	727	1218	1150	1416	713	574	601	470	2,153	4,512
2004	761	1266	1282	1264	612	546	655	457	2,303	4,573
2005	824	1377	1234	1102	708	568	707	460	2,094	4,538
2006	1205	1919	1469	1450	1,129	766	928	542	2,679	6,043
2007	1877	2416	2437	1398	1,249	1,073	1,200	577	4,029	8,127
2008	1705	3312	1960	1626	1,757	1,282	1,376	749	3,439	8,603
2009	2241	5157	2557	1874	2,683	1,545	1,656	966	4,979	11,828
2010	2833	5650	2892	2278	3,058	1,839	2,080	993	5,683	13,653
2011	2376	5679	2946	2476	3,329	1,687	2,027	1,088	5,346	13,477
2012	2232	5368	2748	3051	3,235	1,725	2,025	979	5,436	13,400
2013	2664	5700	2881	2717	3,334	1,973	2,287	1,114	5,254	13,962
2014	2607	5936	3061	2027	3,264	1,770	2,233	1,225	5,139	13,630
2015	2539	5876	2657	2212	3,226	1,818	2,156	1,012	5,072	13,284
2016	2504	5551	2751	1920	3,265	1,970	1,867	1,058	4,566	12,725
2017	2867	6616	3248	2078	3,724	2,273	2,516	1,249	5,046	14,808
2018	2991	6673	3056	2027	3,839	2,221	2,587	1,297	4,804	14,748
2019	2960	7066	3117	2118	4,071	2,094	2,844	1,306	4,945	15,260
2020	3217	7715	3107	1915	4,338	2,309	3,015	1,353	4,939	15,954
2021	3741	8585	3162	2130	4,930	2,657	3,104	1,470	5,458	17,618
2022	4387	10978	3316	2158	6,610	3,157	3,757	1,560	5,755	20,838
2023	4294	13080	3362	1784	8,317	3,260	4,420	1,410	5,113	22,520

Table S7 | Annual disbursement distribution in dimension* goal *(2000-2023). *Values are displayed in USD bn. Disbursements are split proportionally when multiple classes apply for a project within one dimension.*

Year	Goal										Total
	Protection and conservation	Restoration	Sustainable agriculture	Sustainable forest mgmt.	Sustainable fishery	Sustainable water mgmt.	Sustainable mgmt. of other natural resources	Invasive species mgmt.	Pollution control	Undefined	
2000	0.339	0.078	0.56	0.239	0.062	0.429	0.045	0.003	1.045	0.042	2.841
2001	0.475	0.066	0.592	0.18	0.075	0.344	0.058	0.005	1.175	0.079	3.049
2002	0.659	0.056	0.745	0.237	0.083	0.481	0.102	0.004	0.869	0.12	3.356
2003	0.586	0.074	0.574	0.203	0.065	0.409	0.068	0.003	1.055	0.211	3.246
2004	0.941	0.063	0.46	0.229	0.083	0.47	0.073	0.01	1.451	0.207	3.988
2005	0.617	0.067	0.456	0.22	0.09	0.489	0.115	0.003	2.047	0.164	4.27
2006	0.922	0.2	1.457	0.478	0.156	0.836	0.28	0.013	3.06	0.143	7.545
2007	0.859	0.091	0.598	0.351	0.11	0.642	0.233	0.006	2.543	0.189	5.621
2008	1.659	0.08	0.815	0.427	0.224	0.478	0.305	0.049	3.223	0.265	7.524
2009	1.278	0.125	0.906	0.482	0.163	0.71	0.303	0.079	3.404	0.779	8.229
2010	2.364	0.178	1.871	1.016	0.233	1.225	0.341	0.059	4.297	0.278	11.864
2011	1.393	0.246	1.55	0.829	0.22	0.867	0.338	0.053	5.123	0.271	10.89
2012	1.457	0.217	1.396	0.824	0.214	0.803	0.406	0.033	4.698	0.206	10.254
2013	1.824	0.227	1.374	1.04	0.256	0.867	0.515	0.049	4.78	0.17	11.102
2014	1.575	0.37	1.555	1.115	0.229	0.974	0.386	0.029	5.6	0.281	12.115
2015	1.461	0.281	1.169	0.768	0.238	0.855	0.379	0.024	4.878	0.381	10.434
2016	1.488	0.302	1.581	0.77	0.242	0.842	0.436	0.015	5.114	0.308	11.099
2017	1.912	0.341	1.48	1.004	0.341	1.069	0.486	0.032	5.73	0.291	12.686
2018	1.794	0.436	1.637	0.905	0.413	1.201	0.368	0.037	6.567	0.308	13.665
2019	1.722	0.481	1.901	0.814	0.393	1.564	0.35	0.03	6.125	0.269	13.649
2020	2.054	0.409	2.391	1.123	0.453	1.219	0.608	0.057	5.558	0.221	14.095
2021	2.475	0.429	2.233	1.022	0.727	1.132	1.519	0.029	5.968	0.309	15.844
2022	2.156	0.406	2.669	0.922	0.658	1.163	0.767	0.027	6.24	0.688	15.696
2023	2.12	0.41	2.559	1.078	0.481	1.357	0.385	0.029	6.367	0.359	15.143

Table S8 | Annual disbursement distribution in dimensions instrument and ecosystem (2000-2023). *Values are displayed in USD bn. Disbursements are split proportionally when multiple classes apply for a project within one dimension.*

Year	Instrument				Ecosystem					Total
	Policy, regulation and governance	Awareness and knowledge	Infrastructure	Undefined	Crop-, range-, grass-, and arid land	Forest	Marine and freshwater	Urban and industrial	Undefined	
2000	0.494	0.819	1.162	0.367	0.654	0.399	0.723	0.562	0.503	2.841
2001	0.47	0.84	1.264	0.475	0.692	0.353	0.507	0.505	0.992	3.049
2002	0.614	1.099	1.073	0.57	0.86	0.42	0.774	0.527	0.776	3.356
2003	0.562	0.888	1.131	0.666	0.656	0.362	0.697	0.558	0.973	3.246
2004	1.052	0.804	1.524	0.607	0.546	0.402	0.635	0.688	1.717	3.988
2005	0.818	0.934	1.931	0.586	0.582	0.596	0.67	0.784	1.637	4.27
2006	1.654	2.279	2.927	0.686	1.653	0.864	1.017	1.721	2.29	7.545
2007	1.326	1.192	2.297	0.806	0.731	0.703	0.878	1.002	2.308	5.621
2008	2.02	1.332	2.754	1.418	0.958	0.819	0.945	1.332	3.471	7.524
2009	2.337	1.688	3.079	1.124	1.074	0.908	1.129	1.386	3.732	8.229
2010	2.996	1.982	4.626	2.259	2.424	1.725	1.968	1.864	3.882	11.864
2011	1.878	2.265	5.214	1.533	1.796	1.517	1.509	2.391	3.676	10.89
2012	1.838	2.152	4.706	1.557	1.694	1.436	1.472	1.885	3.767	10.254
2013	2.445	2.06	4.89	1.707	1.543	1.98	1.512	1.797	4.27	11.102
2014	2.432	2.388	5.79	1.505	1.899	1.915	1.723	2.133	4.445	12.115
2015	1.963	1.836	4.915	1.72	1.339	1.55	1.71	1.77	4.066	10.434
2016	2.074	2.206	5.014	1.805	1.772	1.588	1.572	2.126	4.041	11.099
2017	2.929	2.227	5.805	1.725	1.817	2.11	1.987	2.641	4.131	12.686
2018	2.952	2.43	6.461	1.821	1.917	1.86	2.264	3.13	4.494	13.665
2019	2.789	2.543	6.054	2.263	2.389	1.638	2.492	2.926	4.204	13.649
2020	3.442	3.263	5.421	1.969	2.843	2.458	1.967	2.574	4.252	14.095
2021	4.386	3.317	5.901	2.239	2.591	2.267	2.426	2.559	6.001	15.844
2022	3.301	3.353	6.329	2.713	3.089	1.976	2.595	3.174	4.862	15.696
2023	3.292	3.615	6.15	2.086	3.082	2.097	2.526	3.254	4.183	15.143

Table S9 | Regression results linking national restoration potential (STAR-R centi score) to biodiversity development finance flows. *Reported are the estimated slope (β_1), p-values, and coefficient of determination (R^2). Statistically significant relationships where p < 0.05 are highlighted (x*), highly significant relationships where p < 0.01 are highlighted (x**), and extremely significant relationships where p < 0.001 are highlighted (x***).*

	Slope (β_1)	p-value	R^2
Total disbursement	$1.74*10^{-5}$	0.02964*	0.044251
Protection, conservation and restoration	$1.96*10^{-6}$	0.10983	0.024168
Sustainable resource management	$9.27*10^{-6}$	0.00066***	0.104948
Invasive species management	$2.32*10^{-8}$	0.07794	0.029298
Pollution control	$5.72*10^{-6}$	0.20317	0.015377

While overall financing increases with higher restoration potential (Table S9, all β_1 positive) we find no significant correlation between restoration-potential (STAR-R) scores and ODF financing volumes directed specifically to protection and restoration activities ($\beta_1 = 1.96 \times 10^{-6}$, p = 0.20). This indicates that areas of greatest ecological restoration opportunity are not yet matched by larger funds for protective and restorative activities. Similarly, pollution control disbursements exhibit a weak, non-significant trend with national restoration potential. In contrast, significant positive associations between STAR-R score and biodiversity ODF emerge for overall volumes (total disbursements), for spending on sustainable resource management and for invasive species control.

Table S10 | Results of ordinary least squares (OLS) regressions examining the relationship between biodiversity-related ODF (USD bn, cumulated 2000-2023) and ten biodiversity indicators. *Reported are the estimated slope (β_1), intercept (β_0), coefficient of determination (R^2), and p-values. β_1 represents the change in biodiversity ODF associated with a one-unit increase in each respective index. Statistically highly significant relationships where p < 0.001 are highlighted (x***).*

Indicator	*N (countries)*	*Slope (β_1)*	*Intercept (β_0)*	*R^2*	*p-value*
(a) Biodiversity Richness	150	0.0002	-0.3280	0.3907	0.0000***
(b) Biodiversity Loss (SHI)	119	-0.0139	2.2674	0.0291	0.0637
(c) Biodiversity Intactness (BII)	136	-2.0419	2.9070	0.0154	0.1497
(d) Forest Landscape Integrity (FLI)	94	0.0232	0.2097	0.0202	0.1721
(e) Biodiversity Action (BDH)	134	-0.0212	2.3157	0.0202	0.1017
(f) Restoration Hotspot Area	10	0.1661	2.0857	0.3634	0.0651
(g) Restoration Opportunity Score	10	-0.2551	19.0558	0.0829	0.4199
(h) Biodiversity State (NBI)	106	6.7067	-2.3544	0.1255	0.0002***
(i) Threat Abatement (STAR-T)	129	0.4046	0.9908	0.0830	0.0009***
(j) Restoration Potential (STAR-R, mean)	114	0.0279	1.5612	0.0001	0.9046

Table S11 | List of exploratory expert interviews for the refinement of a biodiversity finance classification framework.

Interview content
A semi-structured interview approach was applied, using open-ended guiding questions to elicit expert views on how to categorize biodiversity-relevant financial flows. The discussions explored: • Approaches to categorization: How biodiversity finance should be classified (e.g., by drivers, pressures, or types of activities) and whether frameworks such as IPBES, BIOFIN, or GLOBE offer suitable reference structures. • Existing frameworks and data foundations: Experiences with and evaluations of biodiversity-related typologies and data sources, including the BIOFIN framework, the Conservation Evidence database, IUCN Red and Green Lists, threat lists, and spatially explicit conservation datasets. Experts discussed the usefulness and limitations of these resources for defining categories, identifying management needs, and linking finance to biodiversity outcomes. • Treatment of positive and negative impacts: How to represent both beneficial and harmful financial flows, and how to handle activities with mixed or uncertain biodiversity effects. • Granularity and regional differentiation: How to capture geographic variation in biodiversity drivers (e.g., agricultural expansion, invasive species, hunting) and whether categories should differ by ecosystem type or location. • Practical considerations and concerns: Alignment with existing reporting standards (e.g., multilateral development banks), inclusion criteria (broad versus strict definitions of biodiversity finance), and ways to reflect uncertainty in the classification.

List of Interviewees	
Institution	***Position***
Nature Positive Hub	Researcher
University of Oxford	Researcher
IUCN	Science and Policy Advisor
BIOFIN	Senior Technical Advisor
World Bank	Consultant
Federal German Ministry for Economic Cooperation and Development, Division Biodiversity	Advisor
Land Banking Group	Strategist

Table S12 | BERT Model comparison. *Three BERT models were considered, BiodivBERT was selected.*

	ClimateBERT	**ESGBERT**	**BiodivBERT**
Creator	Webersinke et al. (2022)[16]	Schimanski et al. (2023)[17]	Abdelmageed et al. (2023)[18]
Base architecture	DestilRoBERTa	BERT	BERT
Domain focus	Climate and Finance	Environment, Social, Governance (ESG)	Biodiversity
Pre-training data	Climate disclosures and financial reports	ESG-related texts and documents	Abstracts and full texts from biodiversity journals (Elsevier, Springer)
Tokenizer	DestilRoBERTa tokenizer	WordPiece (ESG-sppecific tokenizer)	BERT WordPiece
Model size	Ca. 82M parameters	Ca. 100M parameters	Ca. 100M parameters
Pretraining optimizer	AdamW	AdamW	AdamW
Fine-tuning optimizer	AdamW	AdamW	AdamW
Target applications	Climate commitments and financial analysis	ESG sentiment analysis, classification	Named entity recognition, relation extraction

Table S13 | BERT cross-entropy weight configurations and model performances on test set. *All performance tests were done with ODF-BiodivBERT, a fine-tuned BiodivBERT Model (see Methods and Supplementary Table S12). We use 'compute_class_weight' from scikit-learn to derive automatic cross-entropy weights based on inverse class frequency for the specification 'Automatic Weights'.*

	Baseline (unweighted)	**Manual Weights**	**Automatic Weights**
Cross-entropy weights (negative class, positive class)	(1,1)	(1,2)	(0.74468, 1.52174)
Accuracy	0.9333	0.9533	0.9233
Precision	0.9360	0.9548	0.9267
Recall	0.9333	0.9533	0.9233
F1-Score	0.9340	0.9537	0.9241

Table S14 | Multi-classification prompt for LLM. *'Targeted Action' refers to the dimension goal, 'Implementation Tool' refers to the dimension instrument, and 'Ecosystem Type' refers to the dimension ecosystem.*

Multi-classification prompt

Classify Official Development Assistance (ODA) projects based on their textual descriptions regarding their potential positive impact on biodiversity. Use a 4-dimensional multi-classification framework, assigning classes for:

- Dimension 0: No Biodiversity Project (Class 1)
- Dimension 1: Targeted Action – What is being done (Classes 2–11)
- Dimension 2: Implementation Tool – How is it supported (Classes 12–15)
- Dimension 3: Ecosystem Type – Where does it take place (Classes 16–20)

###Input: You receive textual project descriptions 'text'.

###Output Format for each 'text':

- 'No_Biodiv', … , 'Eco_Undefined': 20 labels (one for each class) either '1' if applicable, otherwise '0'.

###Rules:

- Do not modify textual project descriptions or unique text identifiers.
- Use only the 20 classes described below for labeling.
- Use only binary labels ('1' if the class applies, leave cell blank if it does not).
- Note that the dimensions 1 (Targeted Action), 2 (Implementation Tool) and 3 (Ecosystem Type) all have 'specific' biodiversity-related classes (2-10, 12-14, 16-19) and one 'fallback' class each (11, 15, 20)
- Classification Workflow:
  1. For each project, attempt to assign at least one specific class from Dimension 1 (Targeted Action: 2–10) and Dimension 2 (Implementation Tool: 12–14).
  2. If no specific class in either dimension applies, assign '1' to class 1 (No_Biodiv) and leave all other fields blank.
  3. If specific classes are assigned, proceed to: Assign at least one class in each of the three dimensions (1, 2 and 3). If no specific class fits for a dimension, assign the fallback class: 11 (Act_Undef), 15 (Impl_Undef), or 20 (Eco_Undef).
  4. If a project ends up with only fallback classes (11, 15, and 20), it is too general. Remove the fallbacks and assign only class '1' (No_Biodiv).

###Multi-classification framework:

Dimension 0: No Biodiversity Project (Class 1):

1. No Biodiversity Project ('No_Biodiv')

Only for projects where none of the classes 2-10 or 12-14 can be assigned '1'.

Dimension 1: Targeted Action (Classes 2–11):

2. Pollution Control & Waste Management ('Act_Pollut'): Assign '1' to all projects that target sanitation, sewerage systems, water quality enhancement / assessment, or the overall prevention, reduction, or elimination of pollution in soil, water, air, or atmosphere. This includes sanitation systems, waste management treatment, pollution mitigation strategies for chemicals and plastics, switching from conventional to organic agriculture, recycling of materials, or sustainable mining practices. Important: Any project mentioning sanitation, sewerage systems, or improving water quality through sanitation MUST be assigned '1' for 'Act_Pollut'.

3. Invasive Species Management ('Act_Invasiv'): Assign '1' to all projects that target the prevention, control, or removal of invasive alien species.

4. Sustainable Agriculture ('Act_Agri'): Assign '1' to all projects that target sustainable practices in agriculture and farming, sustainable crop and livestock management, agroforestry, agrobiodiversity, pollinator-friendly, organic, climate-resilient or climate-smart agriculture. Includes small-holder agricultural businesses. If this class applies, class 16 ('Eco_CropGrass') must be assigned 1 as well.

5. Sustainable forestry ('Act_ForestMgmt'): Assign '1' to all projects that target sustainable or participatory forest management or reducing pressures on forest resources, sustainable production of forestry products. If this class applies, class 17 ('Eco_Forest') must be assigned 1 as well.

6. Sustainable fishery and aquaculture ('Act_Fish'): Assign '1' to all projects that target the controlled or sustainable farming of aquatic species (fish, shellfish, aquatic plants), aquaculture and fishing practices. If this class applies, class 18 ('Eco_SeaWater') must be assigned 1 as well.

7. Sustainable and Integrated Water Management ('Act_WaterMgmt'): Assign '1' to all projects that target sustainable or reduced water usage and integrated or sustainable water management. Projects focused exclusively on sanitation are not included here; they are classified under class 2 ('Act_Pollut'). Projects that mention water management or supply without reference to sustainability or integrated practices also do not qualify for this class.

8. Sustainable Management of other Natural Resources ('Act_OthMgmt'): Assign '1' to all projects that target general / overall sustainable use of (natural) resources or sustainable (natural) resource management but are not specific enough to qualify for one of the classes 4-7. Can only be assigned '1' if none of the classes 4-7 are assigned '1'.

9. Protection and Conservation ('Act_Protect'): Assign '1' to all projects that target the protection or conservation of biodiversity, ecosystems, species or habitats. Includes the establishment / expansion / management of protected areas or national parks, introduction of wildlife corridors, control of wildlife trade, environmental protection, or other conservation efforts.

10. Restoration (‘Act_Resto’): Assign ‘1’ to all projects that target the restoration of degraded ecosystems or habitats or nature to a more functional or natural state. Includes improving biodiversity in urban areas. If an urban area is mentioned, class 19 (‘Eco_Urblnd’) must be assigned ‘1’ as well. Not in scope: restoration of buildings or historical sites

11. Undefined Action (‘Act_Undef’): Assign only if no other targeted action class (2–10) has been assigned ‘1’.

Dimension 2: Implementation Tools (Classes 12–15):

12. Policy, Regulatory and Governance Support (‘Impl_Regul’): Assign ‘1’ to all projects that target legal or policy changes benefiting biodiversity or the environment. Includes environmental and biodiversity laws, rights, legal practices, access and benefits sharing, institutions, the establishment of finance- grant- and credit-mechanisms, (inter-) institutional committees, mandates, governance, strategies and compliance with environmental standards.

13. Awareness & Knowledge Building (‘Impl_Know’): Assign ‘1’ to all projects that target awareness, information and collaboration to benefit biodiversity or the environment. Includes the education, training, empowerment, network building, promotion of best practices, participatory approaches, or support for communities, as well as research, data collection, monitoring, transparency, or information systems. Implementation primarily concerns local scale.

14. Infrastructure (‘Impl_Infra’): Assign ‘1’ to all projects that target the construction or improvement, rehabilitation or expansion of infrastructures and facilities. Examples include improvement of irrigation systems, water supply and sanitation facilities or waste management facilities.

15. Undefined Implementation Tool (‘Impl_Undef’): Assign only if no other implementation tool class (12-14) has been assigned ‘1’.

Dimension 3: Ecosystem Type (Classes 16–20):

16. Cropland, Rangeland, Grassland, Arid Land (‘Eco_CropGrass’): Assign ‘1’ to all projects that target agricultural, grazing lands, or agroforestry. General land management is not included and should be assigned to class 20 ‘Eco_Undef’.

17. Forest (‘Eco_Forest’): Assign ‘1’ to all projects that target forested areas.

18. Sea and Freshwater (‘Eco_SeaWater’): Assign 1 to all projects that target marine or freshwater ecosystems, such as rivers, lakes, watersheds, wetlands, marshes, oceans, or coastal zones.

19. Urban and Industrial (‘Eco_Urblnd’): Assign ‘1’ to all projects that target built and anthropized land such as cities, urban spaces, industrial areas.

20. Undefined Ecosystem Type (‘Eco_Undef’): Assign only if no other ecosystem type class (16–19) has been assigned ‘1’.

###Guidelines for Output: Use consistent formatting for responses, as defined below. Only provide the classification. Do not repeat or summarize the input post or add explanations. Only use the explicit information provided to you.

###Input Format:
Input =
{‘unique_text_identifier’: <unique_text_identifier>; ‘text’: <text>}

Output Format:
Return only the classification in exactly the format shown below, with no line breaks or extra spaces:

{<No_Biodiv>;
<Act_Pollut>;
<Act_Invasiv>;
<Act_Agri>;
<Act_ForestMgmt>;
<Act_Fish>;
<Act_WaterMgmt>;
<Act_OthMgmt>;
<Act_Protect>;
<Act_Resto>;
<Act_Undef>;
<Impl_Regul>;
<Impl_Know>;
<Impl_Infra>;
<Impl_Undef>;
<Eco_CropGrass>;
<Eco_Forest>;
<Eco_SeaWater>;
<Eco_Urblnd>;
<Eco_Undef>;
}

For binary classes: Use ‘1’ to indicate that a class applies and ‘0’ if it does not apply. For all other classes: assign values as described above. The order of values must strictly follow this sequence:

No_Biodiv; Act_Pollut; Act_Invasiv; Act_Agri; Act_ForestMgmt; Act_Fish; Act_WaterMgmt; Act_OthMgmt; Act_Protect; Act_Resto; Act_Undef; Impl_Regul; Impl_Know; Impl_Infra; Impl_Undef; Eco_CropGrass; Eco_Forest; Eco_SeaWater; Eco_Urblnd; Eco_Undef

Do not include class names, quotation marks, explanations, or any formatting (e.g., no JSON, line breaks, or comments). Do not print anything to the console. Only save the final classification labels for each project in a dataframe.

Examples:

Input: {2905761;funding of the un secretary generals highlevel panel on global sustainability and its secretariat}

Output: {1;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0

Input:{999;solar panel installation project to increase energy access and reduce carbon emissions in rural districts}

Output: {1;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0}

Input:{99;restoration of historic buildings and cultural monuments and rehabilitation of irrigated perimeters small and medium hydraulic}

Output: {1;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0;0 }

Input: {99999;mangrove restoration to improve coastal protection and carbon sequestration while supporting fish breeding victoria island}

Output: {0;0;0;0;0;1;0;0;1;1;0;0;0;0;1;0;0;1;0;0}

Input: {3567845;small scale agriculture with fertilizers reduction and transition to organic farming agroforestry and involvement of population for best practice sharing}

Output: {0;1;0;1;0;0;0;0;0;0;0;1;0;0;1;0;0;0;0}

Input: {3567845;productivity improvement and sustainable farming practices}

Output: {0;0;0;1;0;0;0;0;0;0;0;0;0;1;1;0;0;0;0 }

Input: {1456985;rehabilitation of the river watershed strengthening dialogue two components to the project technical assistance and capacity building for institutions to support rehabilitation of selected areas within the watershed halt the process of environmental degradation and reverse the degradation of the forest canopy improving the economic situation and respecting the environment}

Output: {0;0;0;0;0;0;0;0;0;1;0;1;0;0;0;1;1;1;0;0}

Input: {4069203;set up of small grants mechanism system global environment facility support the achievement of global environmental benefits through community based solutions that work in harmony with actions at local national and global levels}

Output: {0;0;0;0;0;0;0;0;0;0;1;1;1;0;0;0;0;0;0;1}

Input: {13636;promotes integrated and sustainable land use management in rural areas and harmonization of environmental laws}

Output : {0;0;0;0;0;0;0;1;0;0;0;1;0;0;0;0;0;0;0;1}

Input: {111847;bombay sanitation disposal project improving water quality strengthen the capacity of the water supply and sewerage department of the municipal corporation management of the provision of sewerage services including slum dwellers disposal}

Output: {0;1;0;0;0;0;0;0;0;0;0;0;0;1;0;0;0;0;1;0}

Input: {9999; Promote sustainable practices in mining by training and implementation of emission filters}

Output: {0;1;0;0;0;0;0;0;0;0;0;0;0;1;1;0;0;0;0;0;1;1}

Input: {999999;city-based biodiversity campaign and workshops for municipal planners and green infrastructure improvement}

Output: {0;0;0;0;0;0;0;0;0;0;1;0;0;1;1;0;0;0;0;1}

Input: {999999999;development and training in the field of water and sanitation}

Output: {0;1;0;0;0;0;0;0;0;0;0;0;1;0;0;0;0;0;0;1}

Input: {9999999994;sanitation facility and integrated water management for sustainable urban development}

Output: {0;1;0;0;0;0;1;0;0;0;0;0;0;1;0;0;0;0;1;0}

Input: {997;wastewater and sanitation}

Output: {0;1;0;0;0;0;0;0;0;0;0;0;0;0;1;0;0;0;0;1}

Input: {32356;watershed management pilot project apply lessons learned including soil and water conservation and erosion control measures carried out with the active participation of the communities improving range lands in degraded areas lands and revegetating badlands irrigation systems funding participative forest management and pollution reduction in soil}

Output: {0;1;0;1;1;0;1;0;0;1;0;0;1;1;0;1;1;1;0;0}

Input: {32378;mainstreaming sustainable use of natural resources in production practices of small producers}

Output: {0;0;0;0;0;0;0;1;0;0;0;0;0;1;0;0;0;0;1}

Input: {323745;project contributes to the rehabilitation of the watershed river lake management enforcement environmental compliance}

Output: {0;0;0;0;0;0;1;0;0;0;0;1;0;0;0;0;0;1;0;0}

Input: {12345;expansion of sanitation services to rural areas improving water quality and reducing disease transmission}
Output: {0;1;0;0;0;0;0;0;0;0;0;0;1;0;0;0;0;0;1}

Input: {123478;yala national park expansion of protected area introduction of compensation mechanism land management for local population benefit sharing}
Output: {0;0;0;0;0;0;0;0;1;0;0;1;0;0;0;0;1;0;0;0}

Now: perform the classification task as described above for each 'text'. Return only a single classification line per input, with labels in this fixed order and format. Do not include extra formatting, line breaks, or explanations.

Table S15 | Performance of multi-label classification.

Classifier	Accuracy	Precision	Recall	F1-Score	TP	FP	TN	FN
Model average	0.98	0.95	0.94	0.95	540	30	2493	32
No Biodiversity classification	0.98	0.80	0.92	0.86	12	3	153	1
Goal classification								
Pollution control and waste management	0.98	0.94	0.97	0.95	29	2	122	1
Invasive species management	0.99	0.87	1.00	0.93	13	2	139	0
Sustainable agriculture	0.99	0.97	1.00	0.98	31	1	122	0
Sustainable forestry	0.99	1.00	0.95	0.97	19	0	134	1
Sustainable fishery and aquaculture	1.00	1.00	1.00	1.00	16	0	138	0
Sustainable and integrated water management	0.97	0.93	0.82	0.88	14	1	136	3
Sustainable management of other natural resources	0.98	0.93	0.88	0.90	14	1	137	2
Protection and conservation	0.96	0.92	0.92	0.92	34	3	114	3
Restoration	0.99	0.93	0.93	0.93	14	1	138	1
Undefined	0.98	0.93	0.88	0.90	14	1	137	2
Micro average		0.94	0.94	0.94	198	12	1317	13
Macro average		0.94	0.93	0.94				
Instrument classification								
Policy, regulation and governance support	0.97	0.97	0.90	0.94	37	1	112	4
Awareness and knowledge building	0.98	0.97	1.00	0.98	86	3	65	0
Infrastructure	0.97	0.90	0.96	0.93	26	3	124	1
Undefined	0.97	1.00	0.87	0.93	27	0	123	4
Micro average		0.96	0.95	0.96	176	7	424	9
Macro average		0.96	0.93	0.94				
Ecosystem classification								
Cropland, rangeland, grassland, and arid land	0.99	0.97	1.00	0.99	33	1	120	0
Forest	0.98	0.93	0.96	0.94	25	2	126	1
Marine and freshwater	0.99	1.00	0.94	0.97	29	0	123	2
Urban and industrial environment	0.98	0.90	0.95	0.92	18	2	133	1
Undefined	0.95	0.94	0.91	0.92	49	3	97	5
Micro average		0.95	0.94	0.95	154	8	599	9
Macro average		0.95	0.95	0.95				

Table S16 | Relevance classifier labeling guidelines

Relevance label	***Guidelines***
1	Projects assigned a binary label of 1 are those that clearly and explicitly aim to protect, conserve, restore, or sustainably manage biodiversity, ecosystems, or natural resources. These projects include: • the protection and conservation of habitats or species (e.g., via national parks, wildlife corridors) • the restoration of degraded ecosystems (e.g., wetland or forest recovery) • the reduction of key pressures on biodiversity such as invasive species or pollution (e.g., via sanitation, plastic waste reduction) • natural resource management that explicitly mentions sustainable practices for the use of land (e.g., sustainable, organic agriculture, agroforestry, sustainable forest management, biodiversity-enhancing urban planning), water and sea (e.g., integrated water resource management, sustainable fishery and aquaculture) This category also includes biodiversity-related policies, legal frameworks, and governance mechanisms, provided they explicitly reference biodiversity, ecosystems, species protection, or natural resource conservation. Projects that involve nature-based solutions or ecosystem-based approaches to climate adaptation, disaster risk reduction, or sustainable development are included, provided they explicitly highlight biodiversity benefits. In all cases, the presence of clear language referring to biodiversity, ecosystems, habitats, species or sustainable resource use practices is required for inclusion under this category.
0	Projects assigned a binary label of 0 are those that do not include biodiversity-enhancing goals or instruments as described under the binary (1) label. These projects may focus on development assistance in areas such as hunger, health, hygiene, education, infrastructure, conflict prevention, or economic growth, but they lack an explicit objective to protect, conserve, restore, or sustainably manage biodiversity, ecosystems, or natural resources. This includes projects related to natural resource use, such as agriculture, irrigation, or fisheries, when the emphasis is solely on improving productivity or efficiency without reference to sustainability or biodiversity. Similarly, water and sanitation projects are excluded when they aim purely at service delivery or human health outcomes, with no mention of pollution control or ecosystem benefits. Projects involving policy support, planning, or governance are not included unless they contain clear references to biodiversity, ecosystems, or species. Vague or general terms such as “sustainability” or “resilience” are insufficient in the absence of specific biodiversity-related objectives.

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