IEG | WORLD BANK GROUP
Independent Evaluation Group | World Bank • IFC • MIGA

Approach Paper

Biodiversity for a Livable Planet: An Evaluation of World Bank Group Support for Biodiversity (FY15–24)

August 26, 2024

1. Background and Context

The Biodiversity Challenge

1.1 Biodiversity underpins the provision of critical ecosystem services, but it is being lost at an unprecedented rate and scale. Biodiversity is the variety of plant and animal life in habitats or ecosystems. Biodiversity contributes to critical ecosystem services—including oxygen, clean water, inputs to food production, and moderation of climate—which offer a variety of benefits to humans and broad aspects of the economy and are foundations for sustainable development and human well-being. Biodiversity also provides intangible benefits through cultural, recreational, and other values (Harmon 2004). However, biodiversity is being lost at an unprecedented scale and rate. Species of all kinds—mammals, birds, amphibians, insects, plants, marine life, terrestrial life—are disappearing at a rate that is tens to hundreds of times higher than the average over the past 10 million years (IPBES 2019). The abundance of plants and animals that are crucial for the livelihoods of people living in poverty has drastically diminished, undermining the resource needs of these people (Butchart et al. 2010, IPBES 2019, Kaimowitz and Sheil 2007). Global wildlife populations have declined by two-thirds over the past 50 years (Almond et al. 2022). This unprecedented rate of biodiversity loss is mainly due to human activity—from habitat conversion through deforestation, unsustainable use of resources, and pollution, exacerbated by the negative effects of climate change (CBD 2020). There are often systemic and underlying issues behind these activities—in particular the public good nature of biodiversity means that economic actors do not bear all the costs of biodiversity loss they cause or receive all the benefits from protecting it, so the value of biodiversity is not adequately reflected in their choices (World Bank Group 2020). Continued biodiversity loss at this rate could lead to "tipping points" beyond which ecosystems may collapse (Dasgupta 2021).

1.2 The biodiversity crisis is a threat to development with far-reaching implications for economies, food security, and human welfare. It is estimated that US$44 trillion of economic value generation—over half the world's total GDP—is moderately or highly dependent on nature and its services and, as a result, exposed to risks from biodiversity loss (WEF 2020). Loss of biodiversity poses a serious risk to global food security by undermining the resilience of agricultural systems to threats such as pests, pathogens,

and climate change. Seventy-five percent of the world's food crops depend at least in part on pollination; the annual value of global crops directly affected by pollinators is estimated to be between US$235 billion and US$577 billion (World Bank 2021c, IPBES 2016). Biodiversity and its associated services provide vital sources of local income, food security, safe water, energy, shelter, and medicine for at least 79 percent of the population living below the global poverty line (IIED 2014). Biodiversity loss increases the risk of human exposure to zoonotic pathogens, which can lead to pandemics (Keesing and Ostfeld 2021).

1.3 Biodiversity and climate change are inextricably linked. Biodiversity can provide a strong defense against climate change. Ecosystems and the biodiversity they contain are natural carbon sinks and contribute to stabilizing local and regional climates (UN 2022; Seymour, Wolosin, and Gray 2022). Peatlands—which sustain a rich and unique range of habitats and species around the world—store twice as much carbon as all the world's forests, and their protection and conservation can contribute to the reduction of greenhouse gas emissions (UN 2022). Restoring wildlife species and their role in natural ecosystems (such as fire suppression through grazing) can enhance natural carbon capture and storage (Schmitz et al. 2023). Forests help regulate local temperatures, rainfall patterns, and fire dynamics through biophysical processes that protect against local climate impacts (Seymour, Wolosin, and Gray 2022). Biodiversity also promotes ecosystem resilience and can offer protection against natural hazards. Mangroves, for example, provide vital coastal protection that can reduce disaster risk and limit economic losses for exposed communities (Hochard, Hamilton, and Barbier 2019). However, climate change is also a key driver of biodiversity loss and is degrading ecosystem health. Climate change can harm species' abundance because plants and animals may be unable to adapt to conditions that fall outside their historic climate variability range. Aligning biodiversity conservation and climate change goals can also be complex. Plantation forests can offer biodiversity benefits if they are managed for conservation goals, but they can also contribute to local biodiversity loss if they rely on only a few species or replace natural forest (Pawson et al. 2013).

1.4 Global efforts to address the biodiversity crisis have been insufficient. At the 1992 United Nations (UN) Conference on Environment and Development (known as the Earth Summit), 150 government leaders signed the UN Convention on Biological Diversity (CBD) to support the conservation of biological diversity, the sustainable use of the components of biological diversity, and fair and equitable sharing of the benefits arising from the use of genetic resources. This convention established specific objectives, and at the 2010 CBD Conference of the Parties (COP), governments formally signed up to 20 biodiversity targets under the *Strategic Plan for Biodiversity*. Most of the objectives of the CBD have not been achieved: none of the targets have been fully achieved, and only

six targets have been partially met (CBD Secretariat 2020). The adoption of the Kunming-Montreal Global Biodiversity Framework at COP15 in December 2022 gave renewed impetus for global efforts, setting out a pathway up to 2050 that includes halting and reversing biodiversity loss by contributing to biodiversity conservation, ensuring sustainable use and management of biodiversity, and minimizing negative impacts of human activity on biodiversity (CBD Secretariat 2020). At COP15, the global community set targets to effectively conserve and manage at least 30 percent of Earth's land and ocean by 2030.

1.5 Efforts to conserve and restore biodiversity that are based on science and the engagement of Indigenous peoples and local populations have been critical for protecting vital sources of biodiversity. Conservation is critical because biodiversity and many ecosystem services are not fully replaceable, and some are irreplaceable since substitutes are often imperfect or financially prohibitive (IPBES 2019). Conservation also offers value by protecting both known and yet to be discovered benefits of ecosystem services. Conservation activities that address habitat fragmentation and enhance climate resilience, invasive species management, poaching, and wildlife trade are pivotal to protecting biodiversity and ensuring ecosystems function well and reliably (Almond et al. 2022). Effectively designed conservation interventions can protect or restore biodiversity and slow its decline (Langhammer et al. 2024). Socially inclusive approaches are integral to these interventions' effectiveness. Indigenous peoples and local communities safeguard much of the world's remaining biodiversity, and forests on their land are better maintained, with a higher preserved biodiversity, than those on non-Indigenous lands (World Bank 2023). Good governance, including land tenure security and rights, equitable sharing of benefits, and preserving local knowledge, plays a critical role in the contribution of indigenous peoples and local communities to effective conservation (IPBES 2019).

1.6 Embedding biodiversity considerations in the management of productive practices is critical for maintaining global biodiversity and enhancing sustainable production (GEF 2016). There is growing evidence that conservation efforts must be complemented by more sustainable production and consumption patterns (World Bank 2021c, Leclère et al. 2020). Biodiversity considerations can be integrated into production practices in, for instance, agriculture, agroforestry, forestry, land management, and fisheries (Scherr and McNeely 2008; Harrison et al. 2022; Friedman 2018). Reversing global trends in biodiversity loss will also require action to transform and reduce global pressures on food systems, such as sustainable intensification and reducing food losses and waste (Leclère et al. 2020). Sustainably embedding biodiversity considerations in productive practices requires knowledge, a supportive policy and enabling environment, appropriate incentives for resource users, and strong resource

management institutions (FAO and UNEP 2020, Bélanger and Pilling 2019, World Bank 2021c).

1.7 Appropriate risk management is critical for avoiding and minimizing adverse impacts on biodiversity. At the global scale, three critical socioeconomic systems are driving biodiversity loss—land use and food; infrastructure and the built environment; and energy and extractives (WEF 2020). Applying rigorous safeguards and standards for development finance in line with best-practice principles can help minimize and manage adverse biodiversity impacts in these systems (Narain et al. 2023). Using a mitigation hierarchy (to anticipate risks and impacts, avoid them where possible, and otherwise to minimize, mitigate, or offset impacts) and using precautionary approaches in the design and implementation of development projects is critical to protecting, conserving, and sustainably managing biodiversity (World Bank 2016). Adopting risk mitigation approaches can include integrating biodiversity considerations to inform the design, siting, and implementation of projects (WEF 2020). Biodiversity offsets are one mechanism that have been implemented with the aim of balancing development and environmental goals and compensating for residual impacts. Yet, there are trade-offs and challenges in their application related to, for instance, biodiversity measurement, identifying equivalent offsets, and irreversibility of species loss (Yirdaw, Kanninen, and Monge 2023). Developing risk mitigation approaches can benefit from a robust process to assess risks, including adequate governance structures and metrics and targets for monitoring progress (WEF 2020).

Role of the World Bank Group

1.8 The World Bank Group plays an important role in addressing biodiversity loss. The World Bank has directly addressed threats to biodiversity loss since its first annual report on the environment in 1990, then with a primary focus on conservation. As part of its Environment Strategy (2012–22), the World Bank has continued to support client countries to conserve and restore critical biodiversity, while pivoting toward approaches that seek to integrate biodiversity considerations into national policies, planning and decision-making and by financing projects that directly and indirectly support biodiversity aims and that address the drivers of biodiversity loss. The World Bank and International Finance Corporation (IFC) provide financing, analytics, advisory, and policy engagement on biodiversity in its client programs, act as global conveners by supporting the biodiversity COP and the development of the Global Biodiversity Framework, and more recently by introducing innovative financing mechanisms (for example, green and blue bonds). There is also a move toward channeling financing to "nature-smart investments"[1] the development of the Global Biodiversity Framework. The World Bank, IFC, and Multilateral Investment Guarantee Agency (MIGA) apply environmental risk management standards through their Environmental and Social

Safeguards Policies (for World Bank projects approved before 2018), Environmental and Social Framework (for World Bank projects after as of 2018, with some exceptions), and Performance Standards (for IFC projects since 2006 and per revisions introduced in 2012).[2]

1.9 The Bank Group is placing a renewed emphasis on biodiversity and nature, including the need to take a whole-of-economy approach. In *Unlocking Nature-Smart Development: An Approach Paper on Biodiversity and Ecosystem Services* (World Bank 2021c), the World Bank highlights the importance of a whole-of-economy approach to address the drivers of biodiversity and ecosystem services loss, scaling up biodiversity financing, establishing a solid scientific and economic base for action, and implementing equitable and inclusive measures to address the biodiversity crisis. "Protecting Biodiversity and Nature" is one of eight global challenges that will be key to advancing the World Bank's new vision and mission to end extreme poverty and boost shared prosperity on a livable planet. The Global Challenge Program on Forests for Development, Climate, and Biodiversity seeks to scale sustainable forest landscapes and ecosystem solutions to enhance development, climate, and biodiversity outcomes. The World Bank, IFC, and MIGA are developing and operationalizing a mechanism for tracking the parts of their financing that support nature-positive interventions.

2. Purpose and Audience

2.1 The purpose of this evaluation is to assess the performance of the Bank Group in its efforts to address biodiversity challenges, with a focus on the country level. The evaluation will do this by assessing the relevance and effectiveness of the Bank Group's support for biodiversity conservation activities and the integration of biodiversity considerations in key production sectors. It will also do this by assessing the effectiveness of the Bank's support for risk management in projects that trigger relevant biodiversity-related standards. This evaluation is being undertaken in the context of sustained high interest in biodiversity by the Board of Directors and donors, and Bank Group prioritization of the biodiversity agenda as was recently highlighted in a Development Committee paper, which cites protecting biodiversity as one of several global challenges. The evaluation findings will inform the implementation of the Bank Group's strategic vision on biodiversity and nature, as articulated in its Approach Paper on Biodiversity and Ecosystem Services (World Bank 2021) and the Global Challenge Program on Forests for Development, Climate and Biodiversity.

2.2 The primary audience of this evaluation is the Bank Group Board of Executive Directors and Bank Group management and staff working on biodiversity conservation, key production sectors, or environmental risk management. The primary institutional counterparts include the World Bank Sustainable Development Practice Group

(especially the Environment, Natural Resources, and Blue Economy Global Practice) and the Infrastructure Practice Group (who implement many projects where biodiversity risk management systems are applied) in the World Bank; the IFC Manufacturing, Agribusiness, and Services Industry group, the IFC Climate Business Unit, the Environmental, Social, and Governance Advice and Solutions department, the IFC Environmental and Social Policy and Risk department; and the MIGA Economics and Sustainability department. The evaluation findings will inform the design and supervision of biodiversity-related operations in the World Bank and IFC and implementation of risk management policies across all three institutions. The evaluation findings will also be relevant to a broader audience, including environmental agencies, government officials, multilateral and bilateral agencies, donors, private sector actors, nongovernmental organizations, civil society, academia, and others.

3. Evaluation Scope and Questions

Evaluation Scope

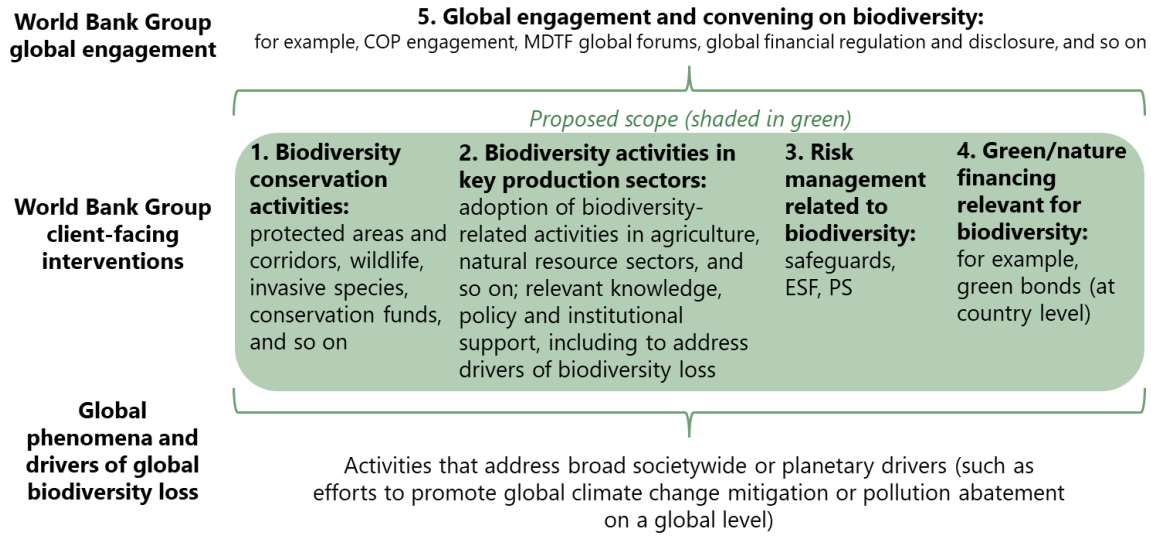
3.1 The evaluation is scoped around three main parameters: (i) definition of biodiversity applied in this evaluation, (ii) the Bank Group portfolio, aligned with the evaluation purpose, theory of action and respective roles of Bank Group entities and (iii) timeline of activities.

3.2 This evaluation focuses on biodiversity as it is defined in accepted international use. The evaluation is consistent with the UN CBD's definition of biodiversity or biological diversity, which is widely accepted and used by the international community: "the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems" (CBD Secretariat 2011). Biodiversity is a characteristic of ecosystems that makes them resilient to shocks and change and allows them to thrive.

3.3 The evaluation does not cover all nature-positive interventions. This evaluation covers biodiversity but not all of nature. Some nature-based solutions and sustainable practices provide ecosystem services and development benefits but with minimal contribution to biodiversity. For example, a monoculture plantation of exotic trees might provide slope stabilization, flood risk mitigation, and carbon sequestration but provides limited biodiversity benefits (Aguirre-Gutiérrez, Stevens, and Berenguer 2023). Therefore, the evaluation portfolio will not be directly comparable to the Bank Group data on nature-positive investments, as the evaluation by design will assess only a subset of nature-positive interventions.

3.4 The portfolio is scoped to cover activities aligned with the theory of action, with a focus on the country level. Core activities—but not all that will be covered—are illustrated in figure 3.1 and in box 3.1. These includes (i) World Bank operations with activities that support conservation aims, including activities such as protected area management, ecological corridors, habitat restoration, nature-based tourism, addressing invasive species, illegal wildlife trade, relevant policy, institutional development, and financing. A preliminary portfolio review reveals there are an estimated 141 World Bank lending activities within scope; the World Bank also supports conservation aims in client facing analytics and strategies. (ii) Bank Group operations (World Bank, IFC, MIGA) that include practices designed to integrate biodiversity in key production sectors. To manage scope, this evaluation has chosen seven sectors/subsectors where the Bank Group has engaged in enough analytics and lending to derive generalizable findings, which are agriculture, agribusiness, sustainable land and seascape management, watershed management, sustainable forest management, and fisheries.[3] A preliminary portfolio review reveals there are an estimated 394 World Bank lending activities, 101 IFC investment projects, and 130 IFC advisory projects within scope (while noting that projects require further manual screening); the World Bank also supports this aim through client facing analytics and strategies. The review of client facing analytics will include systematic country diagnostics (n = 120); country partnership frameworks (n = 116); climate change and development reports (n = 52; published between FY15 and FY24). There are also multiple relevant analytics supported by PROGREEN, PROBLUE, the Global Program on Sustainability, the Wealth Accounting and Valuation of Ecosystem Services, and the Korean Green Growth trust funds that will be covered in this evaluation; and (iii) operations that have applied a biodiversity or biodiversity-related Safeguard, Environmental and Social Standard, or Performance Standard. A preliminary portfolio review reveals there are an estimated 141 World Bank lending activities within scope; the World Bank also supports conservation aims in client facing analytics and strategies. A preliminary portfolio review reveals there are an estimated 1,094 World Bank, 343 IFC activities, and 56 MIGA projects with risk management activities in scope.

Figure 3.1. Evaluation Scope



Source: Independent Evaluation Group.
Note: COP = Conference of the Parties; ESF = Environmental and Social Framework; MDTF = multidonor trust fund; PS = Performance Standards.

Box 3.1. Illustrative Activities in Evaluation Scope

Conservation activities:

- Protected area management (covering areas with varying categories of protection), including plans, training and capacity development, research, and engaging people in and around protected areas through co-management, training, financing, and jobs or livelihoods programs.
- Wildlife protection and management, including addressing poaching and trafficking, human-wildlife conflict, habitat protection, and endangered species conservation.
- Policies and institutions, including capacity building, financial sustainability, and strengthening legal and regulatory frameworks for conservation.
- Nature-based tourism in or adjacent to conservation areas.

Production sector activities—investments, analytics, training, policy, institutional development, access to finance to support the following:

- Sustainable land, landscape, and watershed management.
- Sustainable agriculture (regenerative, climate-smart agriculture, and so on) and agribusiness, including sustainable sourcing, traceability, and certification, and so on.
- Policies and mechanisms (including financial) that positively shift incentives and behaviors in key production sectors.
- Sustainable forest management, agroforestry, silvo-pastoralism, sustainable sourcing, and traceability and certification.

- Sustainable fisheries, aquaculture, and mariculture.

Biodiversity-related risk management activities:

- Biodiversity risk management in sectors that may have adverse biodiversity impacts, including roads and other large infrastructure, dams, agriculture and agribusiness, wind and solar power, manufacturing, forestry, and urban development.
- Actions that avoid or minimize biodiversity loss include site selection, physical access barriers, and choice and timing of activities. Actions that mitigate biodiversity loss include habitat restoration or improved management, community benefit sharing, livelihood restoration activities, species management interventions, biodiversity monitoring, and financial support for conservation. Biodiversity offsets include restoration of an area that was previously degraded.
- Engaging Indigenous peoples and local communities in the identification, management, and monitoring of biodiversity risks from projects; supporting conservation activities that respect Indigenous peoples' rights to land, forests, and resources; and promoting sustainable resource management practices in a manner that is accessible, culturally appropriate, and inclusive.[a]

Source: Independent Evaluation Group.
Note: This list includes examples of activities and is not exhaustive.
a. Environmental and Social Standard 7 paragraph 4 mentions that "Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities are inextricably linked to the land on which they live and the natural resources on which they depend. They are therefore particularly vulnerable if their land and resources are transformed, encroached upon, or significantly degraded. Projects may also undermine language use, cultural practices, institutional arrangements, and religious or spiritual beliefs that Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities view as essential to their identity or well-being."

3.5 The evaluation will not cover global engagement activities. To manage scope, the evaluation will not assess the Bank Group's global convening efforts since that requires substantially different evaluation methods and because lessons on convening were generated by the evaluation by the Independent Evaluation Group (IEG) of the Bank Group's global convening (2020), and due to the scoping decision to focus on the country level. Illustrative examples of global convening activities are the World Bank's convening role around the Kunming-Montreal Convention on Biodiversity COP that established the Global Biodiversity Framework, the World Bank's convening efforts around the Global Plastics Treaty, or emerging efforts to support global financial regulation and enhanced transparency, or disclosure that could have positive effects on biodiversity (that are also too new to evaluate). Although the evaluation will consider direct drivers of biodiversity loss in its effectiveness analyses (especially at the case level), the evaluation scope also omits global activities that address wider drivers (including global and economy wide) of biodiversity loss, such as efforts to promote climate change mitigation or wide-scale pollution abatement. Also, the links between biodiversity and zoonotic diseases is being covered through a One Health lens in a separate IEG evaluation on pandemic preparedness.

3.6 **Timeline.** The portfolio includes World Bank, IFC, and MIGA projects approved during FY15–24, except for the conservation activities portfolio where the portfolio includes projects approved during FY10–24 to ensure the portfolio includes enough projects, since EQ1 analysis focuses both on the evolution of the Bank's engagement in this space over time, and an analysis of environmental and development results.

3.7 The evaluation will build on previous IEG evaluations that have covered sectors included in the scope but that have not directly addressed biodiversity and will complement current and future IEG evaluations to provide comprehensive coverage through a portfolio of evaluations. Table 3.1 lists these evaluations and shows related topics they cover.

Table 3.1. Independent Evaluation Group Evaluations Related to Biodiversity

Evaluation	Coverage
Managing Forest Resources for Sustainable Development: An Evaluation of World Bank Group Experience (2013)	World Bank 2002 forest strategy; effects of forest interventions on poverty, economic growth, and environmental services
The World's Bank: An Evaluation of the World Bank Group's Global Convening (2020)	Global convening of the World Bank Group, including on climate and environment
*Natural Resource Degradation and Vulnerability Nexus: An Evaluation of the World Bank's Support for Sustainable and Inclusive Natural Resource Management (2009–19) (*2021)	Addressing natural resource degradation to reduce the vulnerabilities of resource-dependent people
Reducing Disaster Risks From Natural Hazards: An Evaluation of the World Bank's Support FY10–20 (2022)	Nature-based solutions for disaster risk reduction
*Making Waves: World Bank Support for the Blue Economy (2012–23) (*2024)	Integrated coastal zone management, marine spatial planning, and small-scale fisheries
Future evaluations	
Environmental and social framework (FY26)	Implementation of the environmental and social framework
Emergency health preparedness–One Health (FY26)	Environmental health interventions that address zoonotic diseases
Forests and REDD+ (FY27)	Forest governance, carbon instruments, plantation forests, and effectiveness of forest interventions
Water resource management (FY26)	Integrated water resource management, including water extraction and discharge

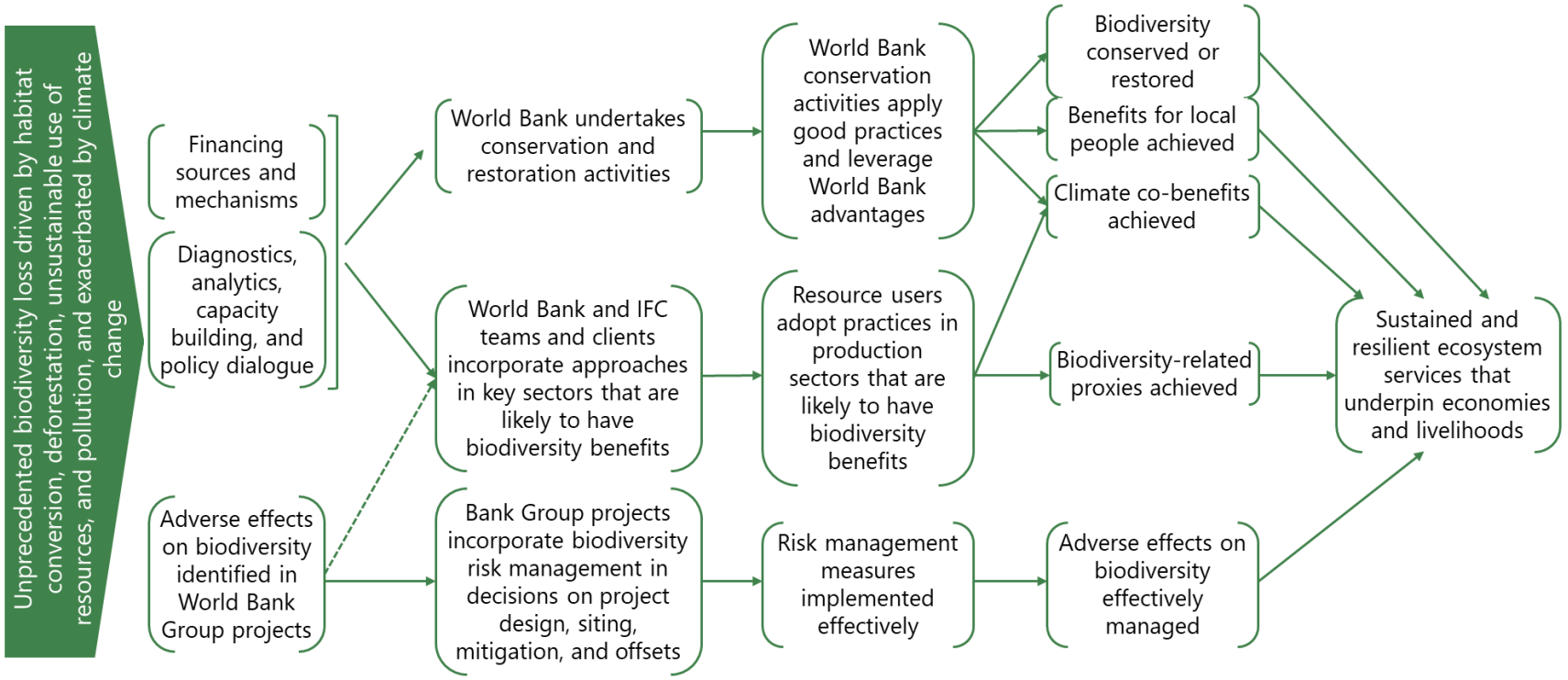
Source: Independent Evaluation Group.
Note: FY = fiscal year; REDD = Reducing Emissions from Deforestation and Forest Degradation.

Theory of Action

3.8 The evaluation is designed to assess the causal links laid out in a theory of action. The theory of action (figure 3.2) describes the intended causal logic of Bank Group

interventions on biodiversity that are within the evaluation scope, and the evaluation will test the strength of these causal connections. The evaluation will also assess more detailed nested theories for each pillar (appendix A).

Figure 3.2. Theory of Action



Source: Independent Evaluation Group.
Note: IFC = International Finance Corporation.

3.9 As depicted in the theory of action, the Bank Group uses a variety of tools and approaches to address biodiversity loss and supported resilient ecosystem services that underpin livelihoods and human welfare. The World Bank draws on concessional financing sources such as the Global Environment Facility and uses upstream diagnostics and analytics to inform design. These efforts are expected to incorporate good practices including efforts to adapt to context (taking note of existing resource use practices and legal frameworks), addressing direct drivers of resource degradation, community engagement (incorporating local communities), drawing on science and global and local knowledge, and establishing sustainable financing models. The World Bank also strives to select and design interventions in a way that draws on its institutional advantages. This may include engaging central ministries and working across ministries to support policy, regulation, financing, and governance; elevating environmental issues into economic dialogue; convening international partners; addressing systemic financing challenges (including by leveraging private sector finance); and creating pathways for scalability (such as by establishing demonstration and replication effects). These conservation projects articulate and expect to achieve biodiversity goals, development benefits for local people, and climate co-benefits. Development benefits for local people are necessary to achieve changes in behavior that will contribute to conservation and biodiversity goals.

3.10 The World Bank and IFC also undertake activities that promote the integration of biodiversity in key production sectors. Integrating biodiversity into production sectors may rely on upstream knowledge and client engagement that raises awareness of opportunities with Bank Group teams and country or private sector clients, and on financing sources and mechanisms that help teams and projects identify and implement biodiversity-integrated approaches. A wide variety of approaches and activities in production sectors may improve biodiversity, by fostering practices by resource users that directly improve habitat indirectly reducing pressure on resources (such as that from deforestation or unsustainable fisheries) or improving resource governance. Activities range from policy, governance, and institutional support, including to incentive desired behaviors (for example, commodity certification and traceability programs that address deforestation; land tenure security and resource rights that empower and incentivize resource users to act sustainably; forest governance that improves policy, planning, or enforcement) and technical approaches that promote the application and adoption of more biodiversity-friendly land and natural resource management practices, for example, regenerative agriculture, climate smart agriculture, silvo-pastoral approaches, fisheries management that relies on ecosystem-based best practices.

3.11 The World Bank, IFC, and MIGA seek to assess and manage biodiversity risks and impacts of projects through their risk management policies. They identify potential impacts on habitats and biodiversity and encourage projects to avoid adverse impacts, including through decisions on project selection, siting, and design. When this is not possible, they identify measures to minimize adverse impacts and restore or offset biodiversity in accordance with a mitigation hierarchy. In some cases, the Bank Group may choose not to support a project if it concludes that these measures will not be possible or sufficient. If the client appropriately implements these decisions and measures, then project-induced biodiversity risks are expected to be prevented and mitigated. If there are risks that cannot be mitigated or avoided and must be offset, then projects are expected to avoid net loss and preferably achieve a net gain in biodiversity.

3.12 All these actions are expected in turn to contribute to sustainable and resilient ecosystem services that underpin economies and livelihoods, though assessing this is outside of the evaluation scope.

Evaluation Questions

3.13 The evaluation asks the overarching question, How well is the Bank Group supporting clients to address biodiversity loss?

3.14 The evaluation examines this question through a relevance and effectiveness lens (as shown in the evaluation design, figure 4.1) and by posing three main evaluation questions supported by subquestions:

- **EQ1.** How well is the World Bank addressing biodiversity challenges through conservation focused activities?
    - EQ1a. How well is the World Bank applying good practice approaches in its biodiversity conservation activities?
    - EQ1b. To what extent are biodiversity conservation activities designed to leverage the World Bank's advantages?
    - EQ1c. How well are biodiversity projects achieving their biodiversity goals?
    - EQ1d. How well are biodiversity projects articulating and achieving their multiple benefits (economic, development, climate)?
- **EQ2.** How well is the World Bank Group supporting activities with potential biodiversity benefits in key production sectors, and are those activities likely to achieve such benefits?

- EQ2a. What has worked to enable the integration of activities with biodiversity benefits in engagements in key production sectors—in the Bank Group, with clients, and with resource users?
- EQ2b. Do projects with potential biodiversity benefits include evidence on proxies for biodiversity benefits, and are they achieving those proxies?
- EQ2c. How have activities with potential biodiversity benefits contributed to climate change benefits?

- **EQ3.** How well is the World Bank Group supporting clients to manage risks affecting biodiversity at the project level?
  - EQ3a. How well have biodiversity risk management policies been used to inform the design and support the effective implementation of projects that could have an adverse effect on biodiversity?
  - EQ3b. To the extent that evidence is available, has the application of biodiversity-related risk management policies mitigated biodiversity loss?

4. Evaluation Design

4.1 The evaluation is designed to answer the evaluation questions through nine subquestions that assess relevance and effectiveness, as shown in figure 4.1. The evaluation poses relevance questions for EQ1 and EQ2 and effectiveness questions across EQ1, EQ2, and EQ3. This is because risk management policies are rules based, and the decisions to apply them require context-specific technical judgments that are difficult to validate at the portfolio level. Appendix A provides more details on the evaluation's methods and sources of evidence.

Figure 4.1. Evaluation Design

Source: Independent Evaluation Group.
Note: EQ = evaluation question; ERR = economic rate of return; ESF = Environmental and Social Framework; FY = fiscal year; IFC = International Finance Corporation; PRA = portfolio review and analysis; PS = Performance Standards; TTL = task team leader.

Methods to Assess Relevance

4.2 The evaluation will use a focused literature review, a review of Bank Group strategies and commitments, a coding protocol, content analysis, portfolio review, and qualitative analysis to answer EQ1a and EQ1b. To answer EQ1a, the evaluation will first carry out a focused literature review to inform the development of a portfolio coding protocol. The review will investigate the internal and external development and biodiversity literature on good practices in biodiversity conservation (across intervention types), including gray literature. The review will consider whether these good practices vary across critical contextual factors, such as socioecological systems. To answer EQ1b, the evaluation will use relevant Bank Group strategies and commitments and consultations with management to identify how the Bank Group frames its institutional advantages (that is, what strengths does the Bank Group bring?) in engaging on biodiversity conservation. These reviews will inform the design of a coding protocol on good practices and World Bank advantages. Then, the evaluation will conduct a content analysis at the project level and analyses at the portfolio level to assess application of good practices and alignment with World Bank advantages. The analysis will explicitly assess the degree to which interventions have changed over time. The evaluation will also conduct qualitative analysis (mainly through key informant interviews with World Bank staff) to derive explanatory factors for patterns observed in the portfolio analysis and where possible will quantify this analysis.

4.3 The evaluation will use a focused literature review, an activity taxonomy, a portfolio coding protocol, content analysis, portfolio review, key informant interviews, and case studies to answer EQ2a. Bank Group projects in key production sectors rarely articulate biodiversity benefits but may support sustainable resource management practices as part of pursuing sustained economic and social objectives. Many of these practices are also likely to have biodiversity benefits, even if these were not specifically articulated in project documents. This means that the evaluation cannot rely on assessing the articulation of biodiversity goals to judge whether or not a project is likely to have biodiversity benefits. Instead, the evaluation will conduct an assessment based on whether or not projects supported activities that, according to technical literature, are likely to lead to improved biodiversity outcomes in key production sectors. To do this, the evaluation will conduct a focused literature review of publications on adopting biodiversity-related practices in key production sectors. This will then support the development of a taxonomy of activity types that are likely to lead to biodiversity benefits. The evaluation will use this taxonomy to conduct additional portfolio screening to identify a final portfolio. The evaluation will develop a portfolio coding protocol, and for this final portfolio conduct a content analysis at the project level and analyses at the portfolio level to identify the adoption of practices that are included in the taxonomy. The evaluation will also conduct semistructured interviews with Bank Group staff to

identify explanatory factors and challenges for the adoption of these practices. These will be conducted on a representative purposive sample of projects that integrated activities with likely biodiversity benefits in key production sectors and "like" projects that do not integrate biodiversity benefits. By "like" we mean projects situated in similar contexts with similar objectives and activities. The evaluation will also use case analysis to answer EQ2a (see paragraph 4.6). The evaluation will not seek to assess if the degree of support for biodiversity-related activities is adequate or not.

Methods to Assess Effectiveness

4.4 The evaluation will use a focused literature review, content analysis, portfolio review, geospatial analysis, and other qualitative analysis to answer EQ1c and EQ1d. For conservation activities, the evaluation will assess effectiveness primarily in terms of biodiversity and development outcomes and assess climate outcomes where evidence is readily available. The focused literature review on identifying good practices in conservation will also identify good practices in measuring the effectiveness of biodiversity conservation interventions (metrics). For closed biodiversity conservation projects, the evaluation will conduct a content analysis at the project level using evaluations and validations to capture and assess the effectiveness of biodiversity conservation activities in terms of biodiversity benefits, local economic and social development benefits, and climate results where available. The evaluation will then assess and quantify these effects at the portfolio level. The evaluation will assess the evidence on effectiveness in projects against good practice metrics identified in the literature to assess achievement and identify measurement gaps. The evaluation will also use geospatial analysis to assess land use change in World Bank–supported protected area activities, for those projects that can be geo-referenced. The conservation literature shows significant existing evidence that protected areas are more effective than nonprotected areas at conserving biodiversity (Gray et al. 2016; Joppa and Pfaff 2011), though some degradation still occurs in protected areas. Therefore, the geospatial analysis will examine land use change (that is, forest cover) in protected areas and adjacent areas to assess changes in pressure on protected areas and will benchmark the level of degradation in World Bank–supported protected areas to the rates of degradation observed in literature for other protected areas. The use of other relevant species and habitat-related data will be used when feasible. For all conservation effectiveness methods, the evaluation will use a longer time span of projects, considering closed projects approved since fiscal year (FY)10, to yield a sufficiently large portfolio for analysis.

4.5 The evaluation will use portfolio review of proxy indicators, review of project economic analyses, and case studies to answer EQ2b and EQ2c. For key production sectors, the evaluation will assess effectiveness primarily in terms of proxies for

biodiversity assess climate outcomes where evidence is readily available, and consider development outcomes as critical explanatory factors for achieving uptake of biodiversity-related practices. The evaluation will first identify the extent to which key production sector projects with biodiversity-related activities include proxy indicators or other evidence that relate to achievement of biodiversity and climate benefits. The evaluation will rely on proxy indicators because portfolio scoping suggests that these projects do not have objectives framed in terms of biodiversity but instead are often framed in terms of productivity, income, food security, sustainable resource management or use, or climate mitigation or adaptation. Consequently, these projects usually do not measure biodiversity directly, but instead include proxy indicators that provide some evidence on activity-level implementation success or performance related to biodiversity. The evaluation will identify whether there has been change over time in the kind of proxy indicators used in projects. For closed projects, the evaluation will assess the achievement of these biodiversity-related proxies, and on achievement of climate results—it will not assess achievement of other core objectives, which are outside the evaluation scope. The evaluation will also review the economic analyses of projects to identify whether projects valued the ecosystem service benefits arising from biodiversity-related activities.

4.6 The evaluation will also use case study analysis to answer EQ2a and EQ2b. Exploratory case studies will provide evidence on how and why Bank Group teams, clients, and resource users have adopted biodiversity-relevant activities and practices and achieved biodiversity-related goals (see the Preliminary Case Analysis Design section in appendix A). Consultations with Bank Group staff and management emphasized that key production sectors are the areas where they are most interested in expanding their project pipeline and learning from the past. Consequently, the evaluation will focus its field-based assessments on these interventions. The scope of each case study will be the set of World Bank and IFC interventions relating to biodiversity for a specific activity type in a country. Case studies will adopt a systems approach: they will consider the drivers of biodiversity loss in that landscape and how World Bank and IFC interventions have addressed those drivers; resource governance and incentives; trade-offs faced by clients and resource users in adopting biodiversity-relevant practices; and how the World Bank and IFC work with other partners to achieve shared goals. The evaluation will select case studies with interventions that explicitly articulate biodiversity or biodiversity-related goals, since these cases are more likely to support exploratory learning. Also, case studies will be selected based on (i) the presence of substantial production sector interventions over a sustained period of time that will allow for effectiveness analysis; (ii) coverage across varying socioeconomic contexts; and in some cases (iii) the presence of IFC interventions. Case studies will use geospatial analysis of vegetation indices and other relevant proxies to (i) inform the

design of fieldwork and selection of site visits (for example, to investigate zones where substantial land use change has occurred), and (ii) to assess aspects of effectiveness of production sector interventions. Case studies will use key informant interviews, observation techniques or Earth observation technologies (for example, drones) and other qualitative methods, and will collect and draw on secondary data where available. The evaluation will also draw on fieldwork done by other IEG evaluations and will coordinate with the Global Environment Facility Independent Evaluation Office for ongoing assessments of World Bank projects.

4.7 This evaluation recognizes the complex challenges faced around biodiversity in Fragile and Conflict Affected Situations (FCS). As part of compounding fragility drivers such as climate pressures, forced displacement and conflict, biodiversity loss is often more prominent, and restoration more difficult to achieve. Amid this backdrop, investments in FCS face significant barriers in addressing biodiversity risks at the project level.

4.8 The evaluation will use content analysis, portfolio review, and focus groups to answer EQ3a and EQ3b. For risk management, the evaluation will assess effectiveness in terms of the biodiversity-related risks avoided, biodiversity impacts minimized, restored, or offset and adherence to Indigenous Peoples/SSA Historically Underserved Traditional Local Communities risk management activities where there is overlap with the biodiversity risk management activities. The evaluation will select a stratified random sample of projects that applied biodiversity-related safeguards, Environmental and Social Standards, and Performance Standards (table 4.1). Sampling will be needed because the portfolio of projects applying biodiversity risk management policies is very large (table 4.2). The sample will be stratified by sector, over time, and by environmental risk categories. For this sample, the evaluation will review project documentation on application of these standards. The portfolio review will cover operations approved during FY15–24, both active and closed. Information obtained from interviews on dropped and canceled projects will be integrated into these analyses, including as part of the Biodiversity Offset Compendium. Next, the evaluation will conduct focus groups with (i) Bank Group Safeguards/ESF and Performance Standards specialists, and (ii) project task team leaders and investment officers to identify success factors in incorporating and implementing risk management activities. The evaluation will also conduct a compendium on the issue of biodiversity offsets to derive learning on the Bank Group's approaches, implementation, and results.

Table 4.1. World Bank Group Biodiversity Risk Management Policies

Risk Management Policy	Applicability	Relevant Policies or Standards
World Bank Safeguard Policies	IPF projects approved between 2014 and 2018	• Operational Policy 4.04—Natural Habitats • Operational Policy 4.36—Forests • Operational Policy 4.10—Indigenous People
World Bank Environmental and Social Framework	IPF projects approved after October 1, 2018	• Environmental and Social Standard 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources • Environmental and Social Standard 7—Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities
IFC Performance Standards	All investment projects	• Performance Standard 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources • Performance Standard 7—Indigenous Peoples Environmental and Social Sustainability
MIGA Performance Standards	All investment projects	• Performance Standard 6—Biodiversity Conservation and Sustainable Management of Living Natural Resources • Performance Standard 7—Indigenous Peoples Environmental and Social Sustainability

Source: Independent Evaluation Group.
Note: IFC = International Finance Corporation; IPF = investment project financing; MIGA = Multilateral Investment Guarantee Agency.

4.9 Interviews and workshops will be conducted to discuss and validate emerging findings across all three pillars of analysis.

Evaluability

4.10 The preliminary portfolio indicates that there is a substantial portfolio of relevant Bank Group work across all three pillars (table 4.2). The portfolio includes World Bank, IFC, and MIGA projects approved during FY15–24, except for the conservation portfolio, which includes projects approved during FY10–24 to ensure enough closed projects with evaluative evidence on results. For biodiversity risk management, the portfolio includes projects approved under the safeguarding operational policies that preceded the Environmental and Social Framework, as few projects under this framework have closed. The evaluation portfolio was identified using a combination of project tags (such as sector, theme, industry, and business line codes, and application of relevant risk management policies), keyword searches, and manually supervised artificial intelligence tools (see appendix A for detailed methodology and description). For biodiversity in key production sectors, the portfolio identifies a universe of projects that may have included activities likely to improve biodiversity; determining which projects did so will be part of the evaluation methodology. There is substantial overlap across portfolio types. For

example, many projects include support for landscapes that include explicit protected area activities (pillar 1) and also support for sustainable agricultural or forestry practices (pillar 2). Many projects in forestry or agricultural sectors also apply biodiversity risk management policies.

Table 4.2. Preliminary Portfolio

Portfolio Type	Institution	Time Frame	Total Projects (no.)	Closed Projects (no.)
1. Biodiversity conservation activities	World Bank (lending)	FY10–24	141	85
2. Biodiversity activities in key production sectors	World Bank (lending)	FY15–24	394	152
	IFC (investments)	FY15–24	101	22
	IFC (advisory)	FY15–24	130	43
3. Biodiversity risk management	World Bank (safeguards)	FY15–24	550	199
	World Bank (ESF)	FY19–24	544	12
	IFC (Performance Standards)	FY15–24	343	177
	MIGA (Performance Standards)	FY15–24	56	11

Source: Independent Evaluation Group, with data from World Bank Standard Reports and Independent Evaluation Group DataHub.
Note: Many projects are in two or all three portfolio types. ESF = Environmental and Social Framework; FY = fiscal year; IFC = International Finance Corporation; MIGA = Multilateral Investment Guarantee Agency.

Quality Assurance Process

4.11 The Approach Paper and evaluation will undergo standard IEG quality assurance processes, including internal IEG and Bank Group management review and external peer review. This evaluation will be peer-reviewed by experts on biodiversity:

- **Balakrishna Pisupati** is head of Biodiversity, Land and Governance Program in the UN Environment Programme's Division of Environmental Law and Conventions.
- **David Kaimowitz** is the chief program officer at the International Land and Forest Tenure Facility and was formerly the manager of the Forest and Farm Facility at the Food and Agriculture Organization of the UN, the director of Natural Resources and Climate Change at the Ford Foundation, and the director general of the Center for International Forestry Research.

5. Expected Outputs, Outreach, and Tracking

5.1 **Expected outputs.** The main output will be a final evaluation report that will be delivered to the World Bank Board's Committee on Development Effectiveness after

integrating feedback from Bank Group management. The evaluation will also produce intermediate outputs to discuss emerging findings with key counterparts.

5.2 **Engagement.** The evaluation will be conducted in close collaboration with internal stakeholders. Throughout the evaluation process, the team will engage with relevant technical counterparts across the Bank Group (including Global Practices, industry teams, environmental risk management teams, country teams, and so on) as identified through stakeholder analysis. Regular consultations will be held at key stages of the evaluation to (i) seek feedback on preliminary findings; (ii) surface lessons that support operational learning; (iii) create ownership of the evaluation; and (iv) ensure the evaluation focus and findings are relevant and useful for the intended users. While developing the Approach Paper, the evaluation team consulted with Bank Group management and technical staff and conducted bilateral consultations with external stakeholders to inform the proposed scope and approach.

5.3 **Outreach and tracking**. A communications and influence strategy—including both internal and external forums—will be developed with IEG's Knowledge and Communications team. This strategy will include launching and disseminating the evaluation once it is disclosed and publicizing intermittent outputs such as knowledge-sharing lunches, contributions to Learning Weeks, briefings, blogs, and so on. Formal venues will be sought to engage relevant actors to encourage uptake of evaluation products and findings. For example, key conferences and events that could be targeted for wider outreach include forums like Innovate4Climate's annual global forum on innovative climate solutions. The evaluation peer reviewers will also help develop outreach suggestions as part of their wider networks.

6. Resources

6.1 This evaluation will be task managed by Lauren Kelly, lead evaluation officer and Stephen Porter, senior evaluation officer, under the guidance of Christopher Nelson, acting manager, Finance, Private Sector, Infrastructure, and Sustainable Development, and Carmen Nonay, director, Finance, Private Sector, and Sustainable Development. The team will include as core team members Joy Butscher, evaluation officer, Baker Lu, extended term consultant, Nina Rinnerberger, senior evaluation officer, Gabriel Stephan, short-term consultant, and Cecil John, short-term consultant. Harsh Anuj, data scientist, will provide data science inputs and Virginia Zulu, data scientist, will provide geospatial analysis inputs. Technical experts on biodiversity, land and environmental governance, and risk management, will be brought on to the evaluation team during the evaluation. This evaluation will be sent to the Bank Group management for review and submitted to the Committee on Development Effectiveness in the fourth quarter of FY25. The proposed budget is $1,383,000, including outreach and dissemination.

[1] "Nature-smart" refers to approaches to policy, investments, and practices that include biodiversity and ecosystem service considerations from the perspectives of mitigating risks arising from the loss of nature and harnessing the economic and social benefits and opportunities that ecosystem services provide (World Bank Group 2021).

[2] Specifically, these policies include the following: OP4.04 on Natural Habitats; OP4.36 on Forests; Environmental and Social Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources; and Performance Standard 6 on Biodiversity Conservation and Sustainable Management of Living Natural Resources. Where relevant, OP 4.10 on Indigenous People, Environmental Social Standard 7 on Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities, and Performance Standard 7 on Indigenous Peoples Environmental and Social Sustainability Also applies.

[3] These key sectors do not represent all economic sectors that are beneficial for biodiversity: the Bank Group also for example supports traditional sectors such as wastewater treatment and waste management, national-level pollution management, and water resource management that could have positive effects on biodiversity. However, the evaluation will gain greater depth by focusing on key sectors where supporting biodiversity will require significant behavior change.

Bibliography

Aguirre-Gutiérrez, J., N. Stevens, and E. Berenguer. 2023. "Valuing the Functionality of Tropical Ecosystems beyond Carbon." *Trends in Ecology & Evolution* 38(12). https://doi.org/10.1016/j.tree.2023.08.012.

Almond, R. E. A., M. Grooten, D. Juffe Bignoli, and T. Petersen, eds. 2022. *Living Planet Report 2022—Building a Nature-Positive Society*. Gland, Switzerland: World Wildlife Fund.

Bélanger, J., and D. Pilling, eds. 2019. *The State of the World's Biodiversity for Food and Agriculture*. Rome: Food and Agriculture Organization Commission on Genetic Resources for Food and Agriculture Assessments. http://www.fao.org/3/CA3129EN/CA3129EN.pdf.

Butchart, S. H. M., M. Walpole, B. Collen, A. van Strien, J. P. W. Scharlemann, R. E. A. Almond, J. E. M. Baillie, et al. 2010. "Global Biodiversity: Indicators of Recent Declines." *Science* 328: 1164–1168. DOI:10.1126/science.1187512.

CBD Secretariat (Secretariat of the Convention on Biological Diversity). 2011. Convention On Biological Diversity: Text and Annexes. Montreal: CBD Secretariat. https://www.cbd.int/doc/legal/cbd-en.pdf

CBD Secretariat (Secretariat of the Convention on Biological Diversity). 2020. *Global Biodiversity Outlook 5*. Montreal: CBD Secretariat. https://www.cbd.int/gbo5.

CBD Secretariat (Secretariat of the Convention on Biological Diversity). 2022. "Kunming-Montreal Global Biodiversity Framework" CBD Secretariat, Montreal. https://www.cbd.int/doc/decisions/cop-15/cop-15-dec-04-en.pdf.

CBD Secretariat (Secretariat of the Convention on Biological Diversity), FAO (Food and Agriculture Organization of the United Nations), World Bank, UNEP (United Nations Environment Programme), and UNDP (United Nations Development Programme). 2016. "Biodiversity and the 2030 Agenda for Sustainable Development." Technical Note, CBD Secretariat, Montreal. https://www.cbd.int/development/doc/biodiversity-2030-agenda-technical-note-en.pdf.

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

FAO (Food and Agriculture Organization of the United Nations) and UNEP (United Nations Environment Programme). 2020. *The State of the World's Forests 2020. Forests, Biodiversity and People*. Rome: FAO. https://doi.org/10.4060/ca8642en.

Friedman, K. 2018. "Mainstreaming Biodiversity in Fisheries." *Marine Policy* 95: 209–220. https://doi.org/10.1016/j.marpol.2018.03.001.

GEF (Global Environment Facility). 2016. *Biodiversity Mainstreaming in Practice: A Review of GEF Experience*. Washington, DC: GEF.

Geller, G. N., G. Bohrer, J. Cavender-Bares, R. Chaplin-Kramer, F. P. Chavez, M. C. Dietze, T. E. Fatoyinbo, et al. 2022. *Biological Diversity and Ecological Forecasting: Current State of Knowledge and Considerations for the Next Decade*. Washington, DC: National Aeronautics and Space Administration.

Gray, C., S. Hill, T. Newbold, L. N. Hudson, L. Börger, S. Contu, A. J. Hoskins, S. Ferrier, A. Purvis and J. P. W. Scharlemann. 2016. "Local Biodiversity Is Higher Inside Than Outside Terrestrial Protected Areas Worldwide." *Nature Communications* 7: 12306. https://doi.org/10.1038/ncomms12306.

Harmon, D. 2004. "Intangible Values of Protected Areas: What Are They? Why Do They Matter?" *The George Wright Forum* 21 (2): 9–22. http://www.jstor.org/stable/43597897.

Harrison, R. D., K. Shono, V. Gitz, A. Meybeck, T. Hofer, and S. Wertz-Kanounnikoff. 2022. "Mainstreaming Biodiversity in Forestry." Forestry Paper No. 188, Food and Agriculture Organization, Rome; CIFOR, Bogor, Indonesia. https://doi.org/10.4060/cc2229en.

Hochard, J. P., S. Hamilton, and E. B. Barbier. 2019. "Mangroves Shelter Coastal Economic Activity from Cyclones." *Proceedings of the National Academy of Sciences* 116 (25): 12232–12237.

IIED (International Institute for Environment and Development). 2014. "Poverty and Biodiversity: Evidence about Nature and the Nature of Evidence." *Briefing*, March. https://www.iied.org/sites/default/files/pdfs/migrate/17213IIED.pdf.

IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). 2016. "The assessment report of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services on pollinators, pollination and food production." S. G. Potts, V. L. Imperatriz-Fonseca, and H. T. Ngo, eds. IPBES Secretariat, Bonn, Germany. https://www.ipbes.net/assessment-reports/pollinators

IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). 2019. Global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. E. S. Brondizio, J. Settele, S. Díaz, and H. T. Ngo (editors). IPBES secretariat, Bonn, Germany. https://www.ipbes.net/global-assessment

IRP (International Resource Panel). 2019. *Global Resource Outlook: Natural Resources for the Future We Want*. Nairobi, Kenya: United Nations Environment Programme.

IRP (International Resource Panel). 2024. *Global Resource Outlook: Bend the Trend. Pathways to a Liveable Planet as Resource Use Spikes*. Nairobi, Kenya: United Nations Environment Programme.

Joppa, L. N., and A. Pfaff. 2011. "Global Protected Area Impacts." *Proceedings of the Royal Society B: Biological Sciences* 278: 1633–1638.

Kaimowitz, D., and D. Sheil. 2007. "Conserving What and for Whom? Why Conservation Should Help Meet Basic Human Needs in the Tropics." *Biotropica* 39 (5): 567–574. http://www.jstor.org/stable/30045412.

Keesing, F., and R. Ostfeld. 2021. "Impacts of Biodiversity and Biodiversity Loss on Zoonotic Diseases." *Proceedings of the National Academy of Sciences* 118 (17). https://doi.org/10.1073/pnas.2023540118.

Langhammer, P. F., J. W. Bull, J. E. Bicknell, J. L. Oakley, M. H. Brown, M. W. Bruford, S. H. M. Butchart, et al. 2024. "The Positive Impact of Conservation Action." *Science* 384: 453–458. DOI:10.1126/science.adj6598.

Leclère, D., M. Obersteiner, M. Barrett, S. H. Butchart, A. Chaudhary, A. De Palma, F. A. DeClerck, et al. 2020. "Bending the Curve of Terrestrial Biodiversity Needs an Integrated Strategy." *Nature* 585 (7826): 551–556.

Narain, D., L. J. Sonter, A. M. Lechner, J. E. M. Watson, J. S. Simmonds, and M. Maron. 2023. "Global Assessment of the Biodiversity Safeguards of Development Banks That Finance Infrastructure." *Conservation Biology* 37 (4): e14095. https://doi.org/10.1111/cobi.14095.

Pawson, S. M., A. Brin, E. G. Brockerhoff, D. Lamb, T. W. Payn, A. Paquette, and J. A. Parrotta. 2013. "Plantation Forests, Climate Change and Biodiversity." *Biodiversity and Conservation* 22: 1203–1227.

Scherr, S. J., and J. A. McNeely. 2008. "Biodiversity Conservation and Agricultural Sustainability: Towards a New Paradigm of 'Ecoagriculture' Landscapes." *Philosophical Transactions of the Royal Society B: Biological Sciences* 363 (1491): 477–94. https://doi.org/10.1098/rstb.2007.2165.

Schmitz, O. J., M. Sylvén, T. B. Atwood, E. S. Bakker, F. Berzaghi, J. F. Brodie, J. P. Cromsigt, et al. 2023. "Trophic Rewilding Can Expand Natural Climate Solutions." *Nature Climate Change* 13 (4): 324–333.

Seymour, F., Wolosin, M. and Gray, E., 2022. "Not just carbon: Capturing all the benefits of forests for stabilizing the climate from local to global scales." World Resources Institute. https://doi.org/10.46830/wrirpt.19.00004

Udawatta, R. P., L. M. Rankoth, and S. Jose. 2019. "Agroforestry and Biodiversity." *Sustainability* 11 (10): 2879.

UN (United Nations). 2022. "Biodiversity—Our Strongest Natural Defense against Climate Change." United Nations Climate Action. https://www.un.org/en/climatechange/science/climate-issues/biodiversity.

WEF (World Economic Forum). 2020. *Nature Risk Rising: Why the Crisis Engulfing Nature Matters for Business and the Economy*. Geneva: WEF. https://www3.weforum.org/docs/WEF_New_Nature_Economy_Report_2020.pdf.

World Bank. 2012. *Towards a Green, Clean, and Resilient World for All: A World Bank Group Environment Strategy (2012–2022)*. Washington, DC: World Bank. https://openknowledge.worldbank.org/handle/10986/23746.

World Bank. 2016. *World Bank Environmental and Social Framework*. Washington, DC: World Bank.

World Bank. 2021a. *Changing Wealth of Nations: Managing Assets for the Future*. Washington, DC: World Bank.

World Bank. 2021b. *The Economic Case for Nature: A Global Earth-Economy Model to Assess Development Policy Pathways*. Washington, DC: World Bank.

World Bank. 2021c. *Unlocking Nature-Smart Development: An Approach Paper on Biodiversity and Ecosystem Services*. Washington, DC: World Bank.

World Bank. 2022. "Overview." In *Poverty and Shared Prosperity 2022: Correcting Course*. Washington, DC: World Bank.

World Bank. 2023. "Ending Poverty on a Livable Planet: Report to Governors on World Bank Evolution." Development Committee Report DC2023-0004, World Bank, Washington, DC.

World Bank. 2023. "Indigenous Peoples and local communities hold the key to successful high integrity carbon markets." https://blogs.worldbank.org/en/climatechange/indigenous-peoples-and-local-communities-hold-key-successful-high-integrity-carbon#:~:text=Indigenous%20Peoples%20(IPs)%20and%20local,of%20the%20world's%20remaining%20biodiversity.

Yirdaw, E., M. Kanninen, and A. Monge. 2023. "Synergies and Trade-Offs between Biodiversity and Carbon in Ecological Compensation." *Sustainability* 15: 11930. https://doi.org/10.3390/su151511930

Appendix A. Evaluation Design

This appendix includes the key questions, information sources, data collection and analysis methods, and the strengths and limitations associated with these (table A.1). It also lays out more detailed theories of change for each pillar that the evaluation will test and includes the preliminary case analysis design.

Table A.1. Evaluation Design Matrix

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
EQ1. How well is the World Bank addressing biodiversity challenges through conservation focused activities?				
EQ1a. How well is the World Bank applying good practice approaches in its biodiversity conservation activities?	Accepted good practice approaches in biodiversity conservation across intervention types and contextual factors (for example, socioecological systems)	Academic and gray literature (internal and external)	Focused literature review to identify good practices in biodiversity conservation that also considers context to inform the design of the PRA coding protocol	Good practices may vary across contexts. This can be mitigated by allowing for a degree of variation in good practice across a limited typology of contexts.
	Application of good practice approaches in relevant World Bank projects	Project documentation for relevant World Bank portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs)	PRA or content analyses of World Bank projects supporting biodiversity conservation to assess, over time, the use of good practices in different contexts (including with the aid of AI)	Project documentation may lack detailed information on interventions or approaches, or may not explain why certain efforts were not undertaken (for example, due to context). Mitigation measures include triangulating evidence across methods (see interviews below).
	Factors explaining the application of good practice approaches in relevant World Bank projects	Project documentation for relevant World Bank portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs); relevant World Bank staff	Qualitative and quantitative analysis of explanatory factors for PRA findings (for example, semistructured key informant interviews)	Information on the factors that support application of good practice approaches may be limited in project documents. We will triangulate the information from project documents with interviews.

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
EQ1b. To what extent are biodiversity conservation activities designed to leverage the World Bank's advantages?	World Bank institutional advantages in biodiversity conservation	Relevant World Bank Group strategy documents and commitments	Review of relevant Bank Group strategies and commitments to identify World Bank advantages to inform the design of the PRA coding protocol	Recent strategies may articulate forward-looking aspirations that were not World Bank advantages over the historic period. This can be mitigated by triangulating with consultations with World Bank management.
	Alignment of biodiversity conservation activities in relevant World Bank projects with World Bank advantages	Project documentation for relevant World Bank portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs)	PRA or content analyses of World Bank projects supporting biodiversity conservation to assess, over time, alignment with World Bank advantages	
	Factors explaining the alignment of biodiversity conservation activities in relevant World Bank projects with World Bank advantages	Project documentation for relevant World Bank portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs); relevant World Bank staff	Qualitative and quantitative analysis of explanatory factors for PRA findings (for example, PRA analysis to detect patterns; semistructured key informant interviews)	Information on the factors that support alignment may be limited in project documents. We will therefore triangulate the information from project documents with interviews.
EQ1c. How well are biodiversity projects achieving their biodiversity goals?	Achievement of biodiversity, local economic, social development, and climate results	Project documentation for relevant closed World Bank portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs)	PRA to capture and assess reported biodiversity, local economic, and climate results at the activity level	Project documentation and results frameworks may lack consistent information on multiple benefits across projects.
EQ1d. How well are biodiversity projects articulating and achieving their multiple benefits (economic, development, climate)?	Achievement of biodiversity results	Geolocations of World Bank–supported conservation areas; biodiversity-relevant indicators for remote sensing applications (for example, land cover modeling, ecosystem health assessment, biodiversity indices, ecological connectivity assessment,	Assessment of environmental effectiveness of protected area activities using remote sensing data and geospatial analysis on forest cover and other biodiversity proxies (including land use change in adjacent areas); to the extent that data are available, collect and analyze local socioeconomic data in relation to environmental change (this could	It may be difficult to systematically identify which specific protected areas were covered by World Bank projects. We will examine project documentation to identify supported sites, including with the aid of AI. Formal buffer zone data may not be available, so the analysis may assess land use change in adjacent areas using different radii around protected areas. Local

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
		illegal activities detection, and so on); secondary data on socioeconomic indicators	also include the use of spatial analyses)	socioeconomic data may be difficult to obtain in many areas. Literature shows that protected areas across the world still experience some degradation, so a judgment on effectiveness should not presume that no degradation occurs in World Bank PAs. The evaluation will benchmark performance of World Bank PAs by comparing to literature.
	Factors explaining the achievement of biodiversity, local economic, social development, and climate results	Project TTLs for projects with conservation activities	Quantitative and qualitative analysis of explanatory factors of effectiveness (for example, semistructured interviews)	Information on the factors that support effectiveness may be limited in project documents. We will therefore triangulate the information obtained from project documents with interviews.
EQ2. How well is the World Bank Group supporting activities with potential biodiversity benefits in key production sectors, and are those activities likely to achieve such benefits?				
EQ2a. What has worked to enable the integration of activities with biodiversity benefits in engagements in key production sectors—in the Bank Group, with clients, and with resource users?	Taxonomy of activities that are likely to lead to biodiversity benefits in key production sectors	Academic and internal and external gray literature (including from internationally recognized institutions focused on environmentally sustainable practices in key production sectors, such as the CGIAR system, the GEF, IFAD, FAO)	Focused literature review to identify taxonomy of activities with biodiversity benefits to inform portfolio identification and PRA coding protocol	
	Presence of activities with biodiversity benefits in relevant World Bank projects	Project documentation for relevant World Bank and IFC portfolio (for example, PADs, PPs, ICRs, ICRRs, PPARs, Board Papers (or	PRA or content analyses of World Bank and IFC projects and analytical work in production sectors to assess the adoption of activities with biodiversity	Project documentation may lack sufficiently detailed information on specific interventions or activities to allow activities to be assessed against the typology.

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
		IRM books or PDS Concept Notes), XPSRs, XPSR EvNotes, PDS Implementation Plans or PDS Approval Notes or PDS Concept Notes, PCR, PCR EvNotes, and so on)	benefits (including with the aid of AI)	
	Factors explaining the uptake of activities with biodiversity benefits in relevant World Bank and IFC projects, and challenges for the adoption of these practices	Staff associated with reviewed portfolio and staff managing "like" projects without biodiversity integration	Semistructured interviews of a purposive sample of key Bank Group staff including (i) staff associated with reviewed portfolio and (ii) staff managing "like" projects without biodiversity integration, to obtain viewpoints on explanatory factors for uptake; qualitative content analysis of transcribed interviews to identify common and divergent views or themes	
	Factors explaining the uptake of activities with biodiversity benefits in relevant World Bank and IFC projects	Field-based assessments including site visits and interviews with World Bank and IFC staff, client governments (national and subnational) and firms, resource users, and other stakeholders as relevant; geospatial data on vegetation cover and other relevant proxies	Case analyses using interview protocols designed based on PRA findings to obtain client and resource user viewpoints on explanatory factors for uptake. Cases will focus on key production sectors. Case selection will be based on (i) the presence of substantial landscape interventions over a sustained period to enable effectiveness analysis; (ii) stratification by landscape, ecosystem, or intervention type; and (iii) for some cases presence of World Bank and IFC interventions. Cases	Resource constraints mean the number of field missions will be limited to a maximum of eight countries. To ensure that there are sufficient case numbers of similar cases for cross-case analysis to be meaningful, the evaluation will select two groups of similar project types, potentially projects in agriculture landscapes and mixed-use landscapes, and cover other project types by conducting desk reviews based on other IEG and partner evaluations.

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
			will use geospatial analyses to (i) inform the design of fieldwork and selection of site visits (for example, to investigate zones where substantial land use change has occurred), and (ii) to assess the effectiveness of landscape interventions through remote sensing. Comparative case analysis to draw within- and across-case lessons.	
EQ2b. Do projects with potential biodiversity benefits include evidence on proxies for biodiversity benefits, and are they achieving those proxies? EQ2c. How have activities with potential biodiversity benefits contributed to climate change benefits?	Evidence on (i) proxies for biodiversity benefits; and (ii) climate change benefits, in relevant World Bank and IFC projects	Project documentation for relevant World Bank and IFC portfolio of projects and advisory/analytical work (for example, PADs, PPs, ICRs, ICRRs, PPARs, Board Papers (or IRM books or PDS Concept Notes), XPSRs, XPSR EvNotes, PDS Implementation Plans or PDS Approval Notes or PDS Concept Notes, PCR, PCR EvNotes, and so on)	PRA to assess (i) the articulation and reporting of proxy biodiversity metrics over time; and (ii) results on biodiversity proxies and climate co-benefits for closed projects. ERR analysis to identify the presence of valuing relevant ecosystem services from biodiversity-related activities	Project documentation and results frameworks may lack consistent information on biodiversity proxies across projects. Mitigation measures include grouping "like" indicators or evidence.
		Field-based assessments including site visits and interviews with World Bank staff, client governments (national and subnational) and firms, resource users, and other stakeholders as relevant, and secondary evidence	Case analyses (see above) using interview protocols designed based on PRA and geospatial findings to obtain client and resource user viewpoints on explanatory factors for effectiveness	

Key Questions	Information Required	Information Sources	Data Collection and Analysis Methods	Limitations and Mitigation Measures
EQ3. How well is the World Bank Group supporting clients to manage risks affecting biodiversity at the project level?				
EQ3a. How well have biodiversity risk management policies been used to inform the design and support the effective implementation of projects that could have an adverse effect on biodiversity? EQ3b) To the extent that evidence is available, has the application of biodiversity-related risk management policies mitigated biodiversity loss?	The extent to which (i) biodiversity risk management policies have informed the design and implementation of projects that could adversely impact biodiversity; and (ii) biodiversity loss has been mitigated because of the application of biodiversity-related risk management policies.	Project documentation for relevant World Bank, IFC, and MIGA portfolios, including Environmental Social Review Summaries, Environmental Social Commitment Plans, Environmental Social Action Plans, Integrated Safeguards Data Sheets, Implementation Status and Results Reports, Annual Management Reports, Implementation Completion and Results Reports (ICRs), and Expanded Project Supervision Report (XPSRs).	PRA of biodiversity risk management documents for a stratified sample of projects to assess compliance and effectiveness (for example, mitigation outcomes). PRA will review documents under the World Bank Environmental Social Safeguards Policies OP 4.04 and OP 4.36, Environmental and Social, Framework ESS6, Performance Standard 6, and project supervision reports. The PRA will also review advisory/analytical work that focus on building biodiversity risk management capacity/readiness.	Supervision reports provide insights into compliance status but limited information on mitigation outcomes. PRA will include a sample of completed projects where possible (few available under ESF) and mature projects to assess results. Client reports provide deeper insights into implementation, but many are not filed in the system or are only available in local languages. Projects apply a broad safeguards framework rather than defining specific measures when multiple subprojects are involved. PRA will assess compliance and effectiveness of the framework rather than each subproject.
	Factors explaining the level of incorporation and implementation of biodiversity risk mitigation activities.	World Bank, IFC, and MIGA staff including safeguards, ESF, or PS specialists and project TTLs.	Semistructured focus groups to identify success factors in incorporating and implementing risk mitigation activities. Qualitative content analysis of transcribed focus group discussions to identify common and divergent views or themes.	Potential lack of candor or bias due to group dynamics. Mitigation measures include careful composition of groups, skilled moderation, emphasis on nonattribution, and providing a mechanism for anonymous feedback.

Source: Independent Evaluation Group.

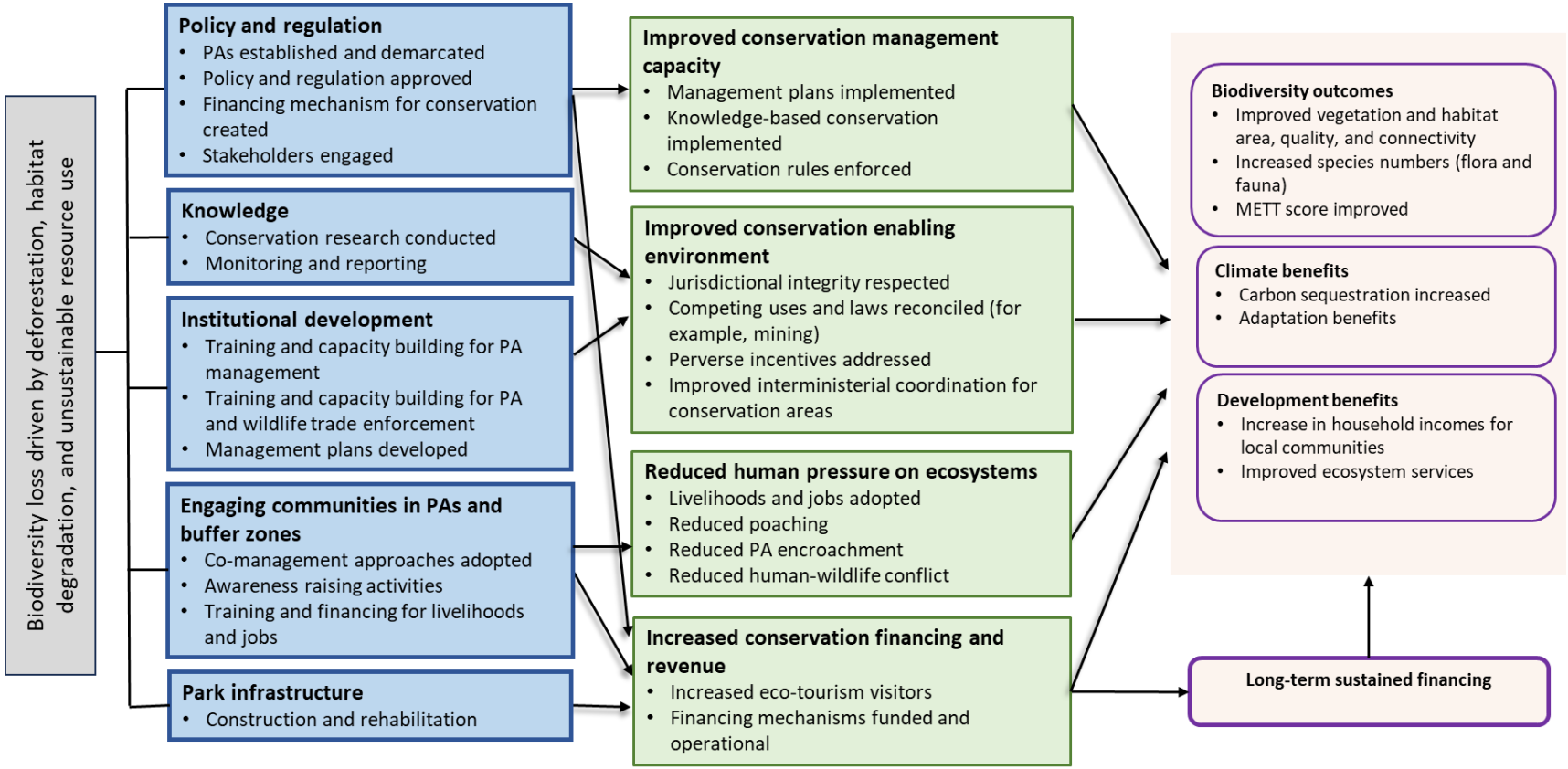
Note: AI = artificial intelligence; CGIAR = Consultative Group on International Agricultural Research; EQ = evaluation question; ESF = Environmental and Social Framework; EvNote = Evaluation Note; GEF = Global Environment Facility; ICR = Implementation Completion and Results Report; ICRR = Implementation Completion and Results Report Review; IEG = Independent Evaluation Group; IFAD = International Fund for Agricultural Development; IFC = International Finance Corporation; IRM = Institute of Risk Management; MIGA = Multilateral Investment Guarantee Agency; PA = protected area; PAD = Project Appraisal Document; PCR = Project Completion Report; PDS = Project Data Sheet; PP = Project Paper; PPAR = Project Performance Assessment Report; PRA = portfolio review and analysis; PS = Performance Standard; TTL = task team leader; XPSR = Expanded Project Supervision Report.

Theories of Change

Figure 3.2 laid out the overall theory of action that the evaluation will test. Nested theories of change provide a more detailed articulation of how each pillar of the evaluation is expected to contribute to improved outcomes, which will be tested by the evaluation.

For biodiversity conservation activities (figure A.1), policy reform and regulation can establish protected areas and other key enabling environment aspects, but these require institutional development and knowledge to operationalize and enforce. Engaging communities inside and adjacent to protected areas is necessary for building awareness, buy-in, and acceptance, and for supporting jobs and livelihoods that support development without placing pressure on conserved ecosystems. Financing mechanisms and ecotourism can play a key role in supporting sustained financing for conservation in the long term. If successful, these activities could support development benefits and improve biodiversity outcomes while also achieving climate co-benefits.

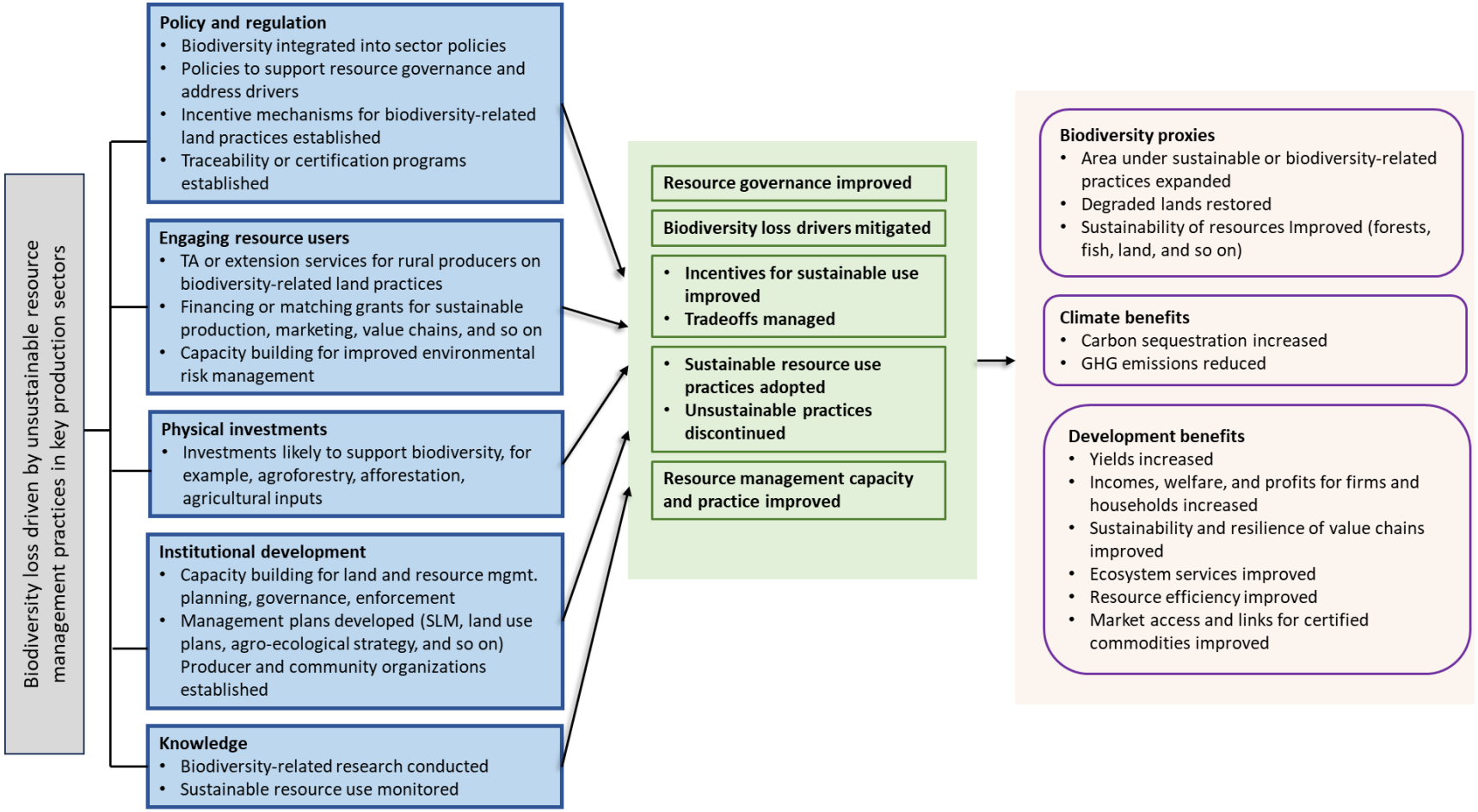
Figure A.1. Theory of Change for Biodiversity Conservation



Source: Independent Evaluation Group.
Note: PA = protected area; METT = Management Effectiveness Tracking Tool.

In key production sectors (figure A.2), the World Bank Group primarily targets development objectives but also seeks to introduce sustainable practices in agriculture, land management, forest management, coastal zone management, fisheries, and other areas that are likely to lead to improvements in biodiversity. To successfully change behavior and adopt sustainable practices, these interventions must take a systemic approach: they must address underlying drivers of biodiversity loss, improve resource governance, address barriers to adoption such as knowledge and financing gaps, manage trade-offs between long-term sustainability and short-term yields, and create a supportive policy and institutional framework. These changes frequently require the support and coordination of multiple development partners working with the public sector, private sector, smallholders, and communities.

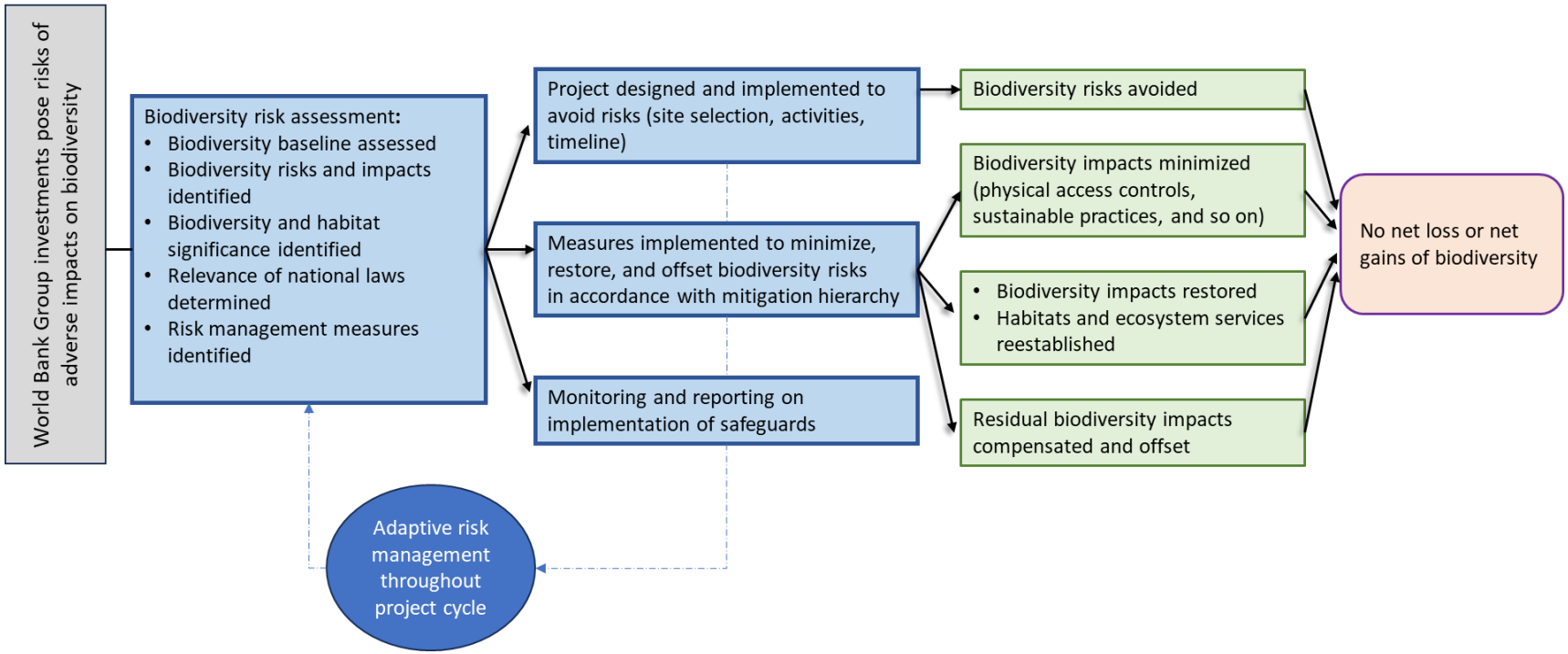
Figure A.2. Theory of Change for Key Production Sectors



Source: Independent Evaluation Group.
Note: GHG = greenhouse gas; SLM = sustainable land management; TA = technical assistance.

The Bank Group manages the possible adverse effects of its investments on biodiversity through its risk management policies. A biodiversity risk assessment is intended to identify risks to be managed, and to inform project design decisions to avoid such risks. For risks that cannot be avoided, the safeguarding processes is expected to identify measures to minimize, restore, or offset risks to biodiversity. Client countries and firms are required to implement these measures, and monitoring and reporting mechanisms are intended to inform adaptive management and help manage new risks that may be discovered during implementation or because of project restructuring. If risk management mechanisms are implemented well, they should lead to avoidance, minimization, or restoration of adverse effects and offsetting measures that compensate for any residual impacts. The overall goal of the process is at least no net loss, and ideally a net gain, for biodiversity.

Figure A.3. Theory of Change for Managing Biodiversity Risks



Source: Independent Evaluation Group.

Preliminary Case Analysis Design

The evaluation will use an exploratory case design to generate ideas, identify key issues, and develop hypotheses on how relevantly and effectively the World Bank can help achieve biodiversity outcomes in production sectors. Exploratory case analysis has been chosen because the Bank Group's explicit efforts to address biodiversity in key production sectors are relatively new, and because few projects explicitly articulate the intent of achieving biodiversity aims, but the Bank Group is interested in moving in this direction in its future interventions. Cases will be selected from different production sectors to derive learning about achieving biodiversity outcomes in different industry and geographic contexts. This section lays out preliminary details for these case studies. The specific case study protocol and data collection methods will be developed as part of the evaluation.

Case Scope

The scope of each case study will be the set of biodiversity-related World Bank and International Finance Corporation (IFC) activities relating to a key production sector in a country. These activities might be in a single lending or investment project, or in multiple interventions including analytics, advisory services, convening, or others. They might include policy and regulation, engaging resource users, physical investments, institutional capacity development, and knowledge work. They might be financed solely by the World Bank and IFC or in collaboration with development partners. The evaluation will conduct case studies in six countries.

Case Selection

The evaluation will select case studies with interventions that are explicit in their intent to achieve outcomes that could improve biodiversity to maximize learning from the case studies. Other case selection criteria include (i) timing: activities need to be mature enough for evaluation; (ii) geography: regional and country typology coverage (since capacity at multiple levels is a major assumption in the pillar 2 theory of change). The presence of IFC activities will also be included as a criterion in a subset of cases.

The selection of cases based on intent risks a bias toward projects that have a better chance of achieving biodiversity outcomes, but the bias may be necessary since any other case selection criteria runs the risk of eroding the learning potential in the cases.

Case Design

The case design will be uniform across activity types. Case studies will be designed to capture evidence on (i) the level of adoption of biodiversity-sensitive approaches by client governments, firms, and resource users across relevant activities; (ii) what factors

support or challenge this adoption (including development outcomes); (iii) the extent to which adopted approaches lead to biodiversity proxies and, where feasible, climate change outcomes, and (iv) explanatory factors that influence these outcomes.

Case studies will adopt a systems approach using triangulated evidence: they will identify the drivers of biodiversity loss in each landscape and how World Bank and IFC interventions have addressed those drivers, assess resource governance and incentives, identify trade-offs faced by clients and resource users in adopting biodiversity-relevant practices, and probe how the World Bank and IFC work with other partners to achieve shared goals. Case studies will use geospatial analysis of vegetation indices and other relevant proxies to (i) inform the design of fieldwork and selection of site visits (for example, to investigate zones where substantial land use change has occurred), and (ii) assess aspects of effectiveness of landscape interventions. Case studies will use key informant interviews including with clients, resource users, and other experts; will use observation techniques or Earth observation technologies (for example, drones) and other qualitative methods; and will collect and draw on secondary data where available.

The evaluation will generate findings based on triangulation across sources of evidence including project documentation and associated studies, relevant internal and external country-specific analytics, key informant interviews with Bank Group staff, geospatial data from remote sensing, economic data (for example, commodity prices and quantities), environmental data (for example, rainfall), key informant interviews with clients and other well-informed stakeholders, interviews with resource users in areas where land use change has occurred, and other tools to assess behavioral change. Data collection and analysis tools will be developed as part of the case design protocols during the evaluation.

Appendix B. Preliminary Portfolio

This appendix outlines the scope of the evaluation, methods for identifying the preliminary portfolio, and a descriptive analysis of the preliminary portfolio.

Portfolio Identification

To identify the projects that should be included in the preliminary evaluation portfolio, we used several portfolio identification methods and means of verification across the three portfolio pillars and across the Bank Group institutions, as outlined in this section.

Pillar 1. Biodiversity Conservation

World Bank

Identifying the universe of potentially relevant projects. To identify the World Bank portfolio for pillar 1, we began by identifying projects tagged with the biodiversity theme code (theme code 834). Using this output, we manually screened projects (using their project development objectives, component titles, and indicator titles) to develop a search taxonomy of biodiversity-related terms, listed in box B.1. We then used this taxonomy for text mining to supplement the theme code search to ensure comprehensiveness. A string search was conducted in key text descriptions of projects (project titles, project development objectives, key lending project document abstracts, project descriptions, activity summaries, component titles, component descriptions, and indicator titles). This combined approach generated an expanded list of 1,109 projects (after removing duplicates), of which 514 are lending and 595 are nonlending.

Box B.1. Search Taxonomy Used for Text Mining to Identify Pillar 1 Portfolio

biodiversity, biological corridor, biological divers, conservation area, conservation corridor, critical habitat, ecological corridor, ecosystem valu, fauna, flora, marine reserve, natural capital, natural habitat, payment for ecosystem service, payment for environmental service, payments for ecosystem service, payments for environmental service, poaching, protected area, specie, WAVES, wildlife

Source: Independent Evaluation Group.
Note: WAVES = Wealth Accounting and Valuation of Ecosystem Services.

Determining the in-scope evaluation portfolio. To determine the relevant in-scope portfolio from the universe of potentially relevant projects, we used manual screening assisted by artificial intelligence (AI) using the offline, open-source, Mistral 7b model running on a World Bank power desktop machine with an NVIDIA graphics processing unit card.

First, we developed specific prompts to categorize projects as in- or out-of-scope based on a set of instructions and examples. We developed three prompts tailored to the three lending instruments, and for each lending instrument, we used different text fields (project development objectives [PDOs], components, and indicators for investment project financing (IPF); PDOs and disbursement linked indicators for Programs-for-Results; and PDOs and prior actions for development policy operations). Then, the prompts and text data were fed to the model systematically for the projects for which all necessary text data was available. The model was instructed to provide an "in-out" categorization for each project, along with a brief explanation—grounded in the data—for its decisions. The model's generation parameters and the prompts were optimized for accuracy (as opposed to creativity) through iterative testing with examples.

This preliminary AI-assisted categorization efficiently narrowed the pool of projects by identifying those that potentially met or did not meet our evaluation scoping criteria. Subsequently, we conducted a manual verification to ensure the accuracy of the AI categorization and to adjust for any nuances or specific details the model might have missed. This blended approach helped achieve both efficiency and thoroughness in our identification process.

International Finance Corporation and Multilateral Investment Guarantee Agency

Pillar 1 does not include IFC and MIGA because they do not undertake biodiversity conservation activities.

Pillar 2. Biodiversity in Key Production Sectors

This section outlines the methods used to identify the potential portfolio of World Bank and IFC projects that include pillar 2 activities. It is important to clarify that these are projects that might include activities with biodiversity benefits, and that as part of the evaluation process and methods this portfolio will undergo further refinement. Specifically, we will (i) identify—through a focused literature review—the types of activities that are likely to lead to biodiversity benefits, and (ii) determine the presence of these activities in the identified World Bank and IFC pillar 2 portfolios.

World Bank

Identifying the universe of potentially relevant projects. To identify the relevant World Bank portfolio for pillar 2, we began by identifying projects tagged with relevant theme and sector codes, which are listed in table B.1. Using this output, we manually screened projects (using their project development objectives, component titles, and indicator titles) to develop a search taxonomy of terms relevant to pillar 2 projects, as listed in box B.2. We then used this taxonomy and text mining to supplement the sector and theme code search to ensure comprehensiveness. The search was conducted in key

text descriptions of projects (project document abstracts, project development objectives, project descriptions, activity summaries, component titles, component descriptions, and indicator titles). This combined approach generated an expanded list of 2,969 projects (after removing duplicates), of which 1,369 are lending and 1,600 are nonlending.

Table B.1. World Bank Sector and Theme Codes Used to Identify Pillar 2 Portfolio

Sector Codes	Theme Codes

• AX—Agriculture, Fishing, and Forestry:
  ○ AH—Crops
  ○ AL—Livestock
  ○ AB—Agricultural Extension, Research, and Other Support Activities
  ○ AT—Forestry
  ○ AF—Fisheries
  ○ AK—Public Administration—Agriculture, Fishing & Forestry
  ○ AZ—Other Agriculture, Fishing and Forestry
• LX—Energy and Extractives:
  ○ LB—Renewable Energy Biomass
	• 80—Environment and Natural Resource Management
	  ○ 83—Renewable Natural Resources Asset Management (all):
	  ▪ 831—Forests Policies and institutions
	  ▪ 832—Fisheries Policies and institutions
	  ▪ 833—Oceans
	  ▪ 834—Biodiversity
	  ▪ 835—Landscape Management
	  ▪ 836—Coastal Zone Management
	  ▪ 837—Watershed Management

Source: Independent Evaluation Group.

Box B.2. Search Taxonomy Used for Text Mining to Identify Pillar 2 Portfolio

afforest, agro-eco, agroeco, agro-forest, agroforest, area rehab, area restor, climate resilient agr, climate smart agr, climate smart livelihood, climate smart practices, climate smart production, climate-smart agr, climate-smart livelihood, climate-smart practices, climate-smart production, climate resilient agr, conservation agr, CSA, deforestation, eco-tourism, ecotourism, ecosystem, fisheries management, forest governance, forest management, good agricultural practices, grassland management, land management, land rehab, land restor, landscape management, nature positive, nature-positive, nature smart, nature-smart, nature-based solution, nature based solution, nature-based tourism, nature based tourism, organic agr, pollin, reforest, regenerative agr, SLM, SLWM, sustainable agr, sustainable fish, sustainable forest, sustainable land and water, sustainable land management, sustainable land mgt, sustainable landscape management, sustainable natural resource management, watershed management, wetland

Source: Independent Evaluation Group.

Determining the in-scope evaluation portfolio. To determine the relevant in-scope portfolio from the universe of potentially relevant projects, we used AI-assisted manual screening using the offline, open-source, Mistral 7b model running on a World Bank power desktop machine with an NVIDIA graphics processing unit card.

First, we developed specific model prompts to categorize projects as in- or out-of-scope based on a set of instructions and examples. We developed three prompts tailored to the three lending instruments, and used different text fields for each (PDOs, components,

and indicators for IPF; PDOs and disbursement linked indicators for Programs-for-Results; and PDOs and prior actions for development policy operations). Then, the prompts and text data were fed to the model systematically for the projects for which all necessary text data was available. The model was instructed to provide an "in-out" categorization for each project, along with a brief explanation—grounded in the data—for its decisions. The model's generation parameters and the prompts were optimized for accuracy (as opposed to creativity) through iterative testing with examples.

This preliminary AI-assisted categorization served to efficiently narrow the pool of projects by identifying those that potentially met or did not meet our evaluation scoping criteria. Subsequently, we conducted a manual verification to ensure the accuracy of the AI categorization and to adjust for any nuances or specific details the model might have missed. This blended approach helped achieve both efficiency and thoroughness in our identification process.

IFC

Identifying the universe of potentially relevant projects. To identify the relevant IFC portfolio for pillar 2, we used a systematic two-step approach. First, we identified investments and advisory projects mapped to pertinent tertiary sector codes and business lines, as detailed in table B.2. We then extracted all available text data from the IFC Disclosure Portal for investment services and Key Memo Details data for advisory services (AS) projects, and a comprehensive keyword search was conducted on this data set (see search taxonomy in box B.3.). It is important to note an unavoidable limitation of this step: we were limited to performing text searches on the text data available through the disclosure portal. These two processes combined yielded a universe of potentially relevant projects comprising 951 investment services and 1,002 AS projects (after removing duplicates).

Table B.2. International Finance Corporation Business Lines and Sector Codes Used to Identify Pillar 2 Portfolio

Business Line for IFC Advisory Services	Tertiary Sector Name for IFC Investment Services
ESG • ESG—E&S Risk Management • ESG—Integrated ESG & Sustainability MAS • MAS—Agri Expertise • MAS—Agribusiness: Industry Standards • MAS—Agribusiness: SME Productivity • MAS—Agribusiness: Strategic Community Investment • MAS—Agribusiness Other • MAS—Crop Production • MAS—Sustainable Protein • MAS—Forestry & Land Uses	• Animal Aquaculture • Cattle Farming • Coffee, Cocoa, Tea • Dairy Products • Diversified Edible Agricultural Crops Production • Fishing • Fruits and Vegetables • Horticultural Products (Flowers) • Grains and Beans • Natural Fibers (Cotton, Sisal, Jute, and so on) • Other Animal Production • Other Vegetable Oil Crops (Coconut, Rapeseed, Peanut, Sunflower, and so on) • Palm Oil Plantations • Palm Vegetable Oil • Paperboard (Including Boxboard, Fiberboard) • Plantation Forests • Poultry Farming • Sugarcane and Beets

Source: Independent Evaluation Group.
Note: E&S = environmental and social; IFC = International Finance Corporation; MAS = Manufacturing, Agribusiness, and Services; SME = small and medium enterprises.

Box B.3. Additional Keyword Taxonomy Used for Text Mining to Identify the Pillar 2 International Finance Corporation Portfolio

climate smart ag; climate-smart ag; deforestation; Eucalyptus; fish; forest; good agricultural practice; good agriculture practice; Pulp mill; smallholder; sustainable ag; traceability
Source: Independent Evaluation Group.

Determining the in-scope evaluation portfolio. To determine the in-scope projects from the universe of potentially relevant projects, we undertook a thorough manual review of the publicly disclosed text for investment services projects and text in the Key Memo Details for AS projects (see box B.4 for the text fields used). This approach enabled us to conduct a preliminary assessment to determine the relevance of each project to our evaluation scope without reviewing project documentation, which would have been impractical within the Approach Paper time frame. Through this review, we identified 102 investment projects and 137 AS projects that met our inclusion criteria for the preliminary portfolio. During the manual review, we paid special attention to exclude false positives that arose from our keyword search, especially those related only to

Performance Standards. During the evaluation process, as outlined in our evaluation methods, we will refine the portfolio further, including by reviewing project documentation. For example, of note are 32 investments mapped to relevant tertiary sector codes that are yet to be reviewed since they lack text data on the IFC Disclosure Portal.

Box B.4. Text Fields Used to Manually Screen International Finance Corporation Investment Services and Advisory Services Projects

The team used the following text fields from the International Finance Corporation Disclosure Portal for investments:

(i) Project Description (ii) Overviewfund (iii) Riskimpact (iv) Esap (v) Review Scope (vi) Environmental Social Info (vii) Impact (viii) Result (ix) Risk Assessment (x) Role (xi) Contribution (xii) Environmental Social Issues (xiii) Sponsor (xiv) Cost Nature (xv) Investment (xvi) Location (xvii) Environmental Social Categorization Rationale (xviii) Riskfund (xix) Risk Impact (xx) Stakeholders (xxi) Mitigation Measures from the data set.

For advisory projects, the team used the following text fields from the International Finance Corporation Key Memo Details:

(i) Objectives Statement (ii) Statement of Market Failure (iii) Statement of Market Failure Original (iv) Strategic Relevance (v) Expected development impact for Public Disclosure (vi) Project description for Public Disclosure (vii) Project Description (viii) IFC Role and Additionality (ix) Context (x) Upstream_Comments (xi) MFD_Comments.

Source: Independent Evaluation Group.

Multilateral Investment Guarantee Agency

Pillar 2 does not include MIGA because the evaluation scope did not include these activities. MIGA may undertake some relevant activities, but consultations with MIGA suggest these are relatively few and the evaluation might not add much value by covering them.

Pillar 3. Biodiversity Risk Management

Identifying the universe and determining the in-scope evaluation portfolio. To identify pillar 3 projects across the Bank Group institutions (World Bank, IFC, and MIGA), we used their respective frameworks: the World Bank Safeguard Policies, the World Bank Environmental and Social Framework, and IFC and MIGA Performance Standards. These frameworks provide specific criteria for the identification of relevant projects—specifically, those projects that applied the biodiversity-related policies and standards listed in table B.3. This methodology ensured a thorough and consistent portfolio identification methodology across the Bank Group.

For the World Bank, operational data on safeguards and the Environmental and Social

Framework were retrieved from Standard Reports and Independent Evaluation Group (IEG) DataHub. For IFC and MIGA, operational data on Performance Standards were not readily available to IEG (an IFC report on active operations was available on the Sustainability Rating Tool, but this did not include closed operations). We therefore received the relevant Performance Standard 6 portfolio data from IFC and MIGA focal points.

Table B.3. Relevant Biodiversity Risk Management Policies Across World Bank Group Institutions

Risk Management Policy	Applicability	Relevant Policies or Standards	Projects (no.)
World Bank Safeguard Policies	2002–present	• Operational Policy 4.04: Natural Habitats • Operational Policy 4.36: Forests • Operational Policy 4.10: Indigenous People	*n* = 550, of which 199 are closed and 351 are active
World Bank Environmental and Social Framework	All IPF projects initiated on or after October 1, 2018	• Environmental and Social Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources • Environmental and Social Standard 7: Indigenous Peoples/Sub-Saharan African Historically Underserved Traditional Local Communities	*n* = 544, of which 12 are closed and 532 are active
IFC Performance Standards	2006–present	• Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources • Performance Standard 7: Indigenous Peoples Environmental and Social Sustainability	*n* = 343, of which 177 are closed and 166 are active
MIGA Performance Standards	2007–present	• Performance Standard 6 (PS6): Biodiversity Conservation and Sustainable Management of Living Natural Resources • Performance Standard 7: Indigenous Peoples Environmental and Social Sustainability	*n* = 56, of which 11 are closed and 47 are active

Source: Independent Evaluation Group.
Note: IFC = International Finance Corporation; IPF = investment project financing; MIGA = Multilateral Investment Guarantee Agency.

Description of Preliminary Portfolio

Pillar 1. Biodiversity Conservation

There are 141 World Bank lending projects approved during FY10–24 with pillar 1 in-scope activities, of which 56 are active and 85 are closed. Of the 141 projects, 9 are small grants, 17 are below US$3 million (of which 4 overlap with small grants), and 13 are

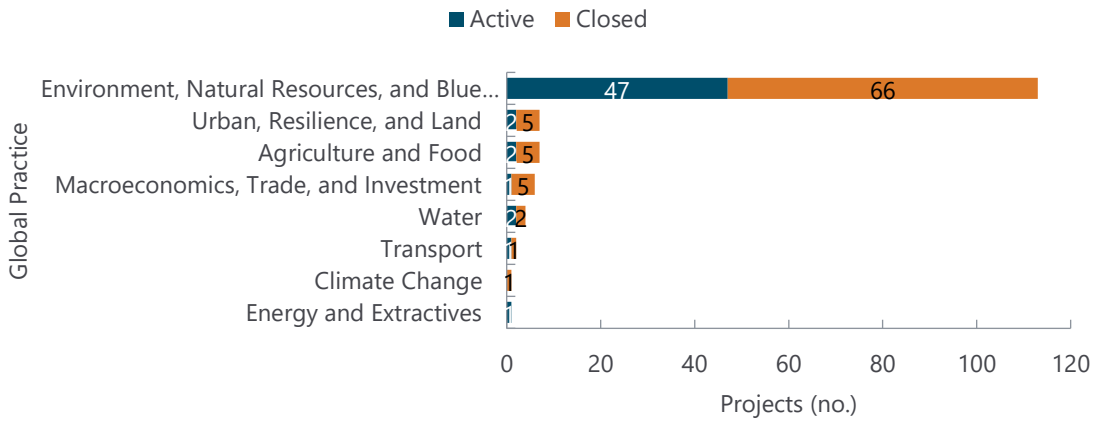
additional financing. Most of these projects are financed by the Environment, Natural Resources, and the Blue Economy Global Practice (113; 80 percent). Of the 85 closed projects (including additional financing), 56 unique projects have Implementation Completion and Results Reports (ICRs), of which 52 have Implementation Completion and Results Report Reviews (up to 3 more ICRs may be prepared by the end of FY24, and 8 more by FY25 Q2, based on closing dates and ICR production guidelines; data from IEG DataHub as of May 2024; see table B.4 and figure B.1).

Table B.4. Financing Volumes and Evaluation Presence for Conservation Portfolio

	Projects (no.)			Commitment (US$, millions)			Closed Projects with Ratings (no.)	
Lending Instrument	Active	Closed	Total	IBRD	IDA	TF	ICR	ICRR
IPF	55	78	133	606.46	3,660.32	696.73	56	52
New	48	72	120	606.46	3,450.32	565.07	—	—
AF	7	6	13	0	210.00	131.67	—	—
DPF	1	7	8	1,400.00	150.00	0	0	0
Total	56	85	141	2,006.46	3,810.32	696.73	56	52

Sources: Internal operations data systems; Independent Evaluation Group DataHub.
Note: The commitment amounts include all project costs, including but not limited to conservation activities. AF = additional financing; DPF = development policy financing; IBRD = International Bank for Reconstruction and Development; ICR = Implementation Completion and Results Report; ICRR = Implementation Completion and Results Report Review; IDA = International Development Association; IPF = investment policy financing; TF = trust funds.

Figure B.1. World Bank Pillar 1 Portfolio by Global Practice and Project Status



Source: Independent Evaluation Group.

Pillar 2. Biodiversity in Key Production Sectors

World Bank

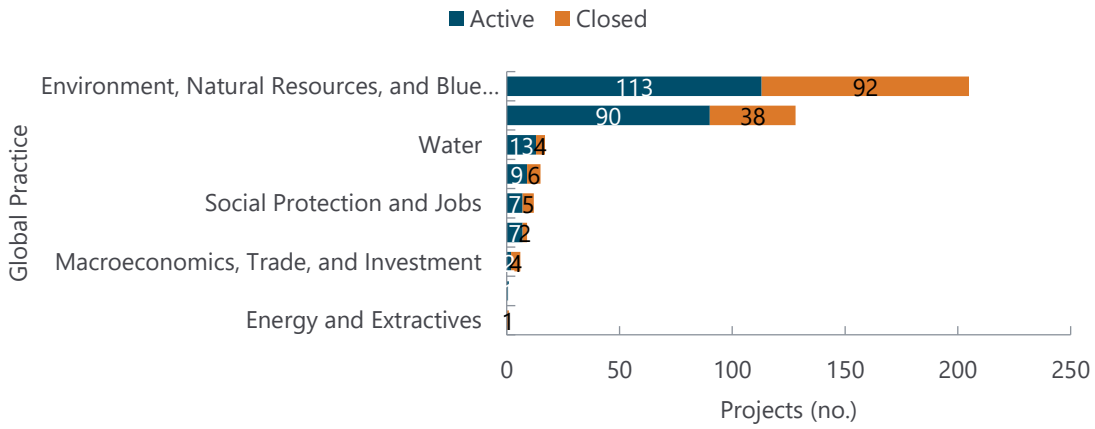
There are 394 World Bank lending projects approved during FY15–24 with pillar 2 in-scope activities, of which 242 are active and 152 are closed (see table B.5). Of the 394 projects, 40 are small grants, 28 are below US$3 million (of which 21 overlap with small grants), and 52 are additional financing. Most of these projects are financed by the Environment, Natural Resources, and the Blue Economy (205; 52 percent) and Agriculture and Food (128; 32 percent) Global Practices (see figure B.2). Of the 152 closed projects (including additional financing), 87 unique projects have ICRs, of which 68 have Implementation Completion and Results Report Reviews (data from IEG DataHub as of May 2024; see table B.5).

Table B.5. Financing Volumes and Evaluation Presence for World Bank Production Sectors Portfolio

	Projects (no.)			Commitment (US$, millions)			Closed Projects with Ratings (no.)	
Lending Instrument	Active	Closed	Total	IBRD	IDA	TF	ICR	ICRR
IPF	228	139	367	6,447.79	22,743.23	2,891.48	78	60
New	208	107	315	6.185.16	21,301.99	2,594.09	—	—
AF	20	32	52	262.62	1,441,24	297.39	—	—
DPF	2	11	13	785.00	1,016.90	0	8	8
P4R	12	2	14	2,975.60	1,100.00	0	1	0
Total	242	152	394	10,208.39	24,860.13	2,891.48	87	68

Sources: Internal operations data systems, Independent Evaluation Group DataHub.
Note: AF = additional financing DPF = development policy financing; IBRD = International Bank for Reconstruction and Development; ICR = Implementation Completion and Results Report; ICRR = Implementation Completion and Results Report Review; IDA = International Development Association; IPF = investment policy financing; P4R = Program-for-Results; TF = trust funds.

Figure B.2. World Bank Pillar 2 Portfolio by Global Practice and Project Status



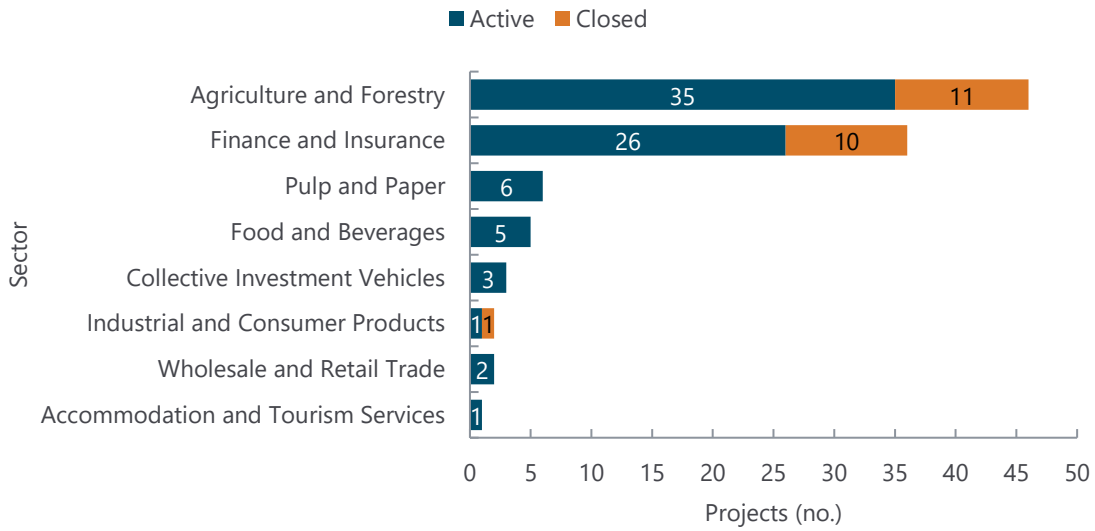
Source: Independent Evaluation Group.

International Finance Corporation

International Finance Corporation Investments

There are 101 IFC investments approved during FY15–24 with in-scope activities, of which 79 are active and 22 are completed. Among these 22 completed, 6 have been evaluated by IEG. Most of the investments are in agriculture and forestry (46) followed by finance and insurance (36; see figure B.3).

Figure B.3. International Finance Corporation Pillar 2 Investments by Primary Sector

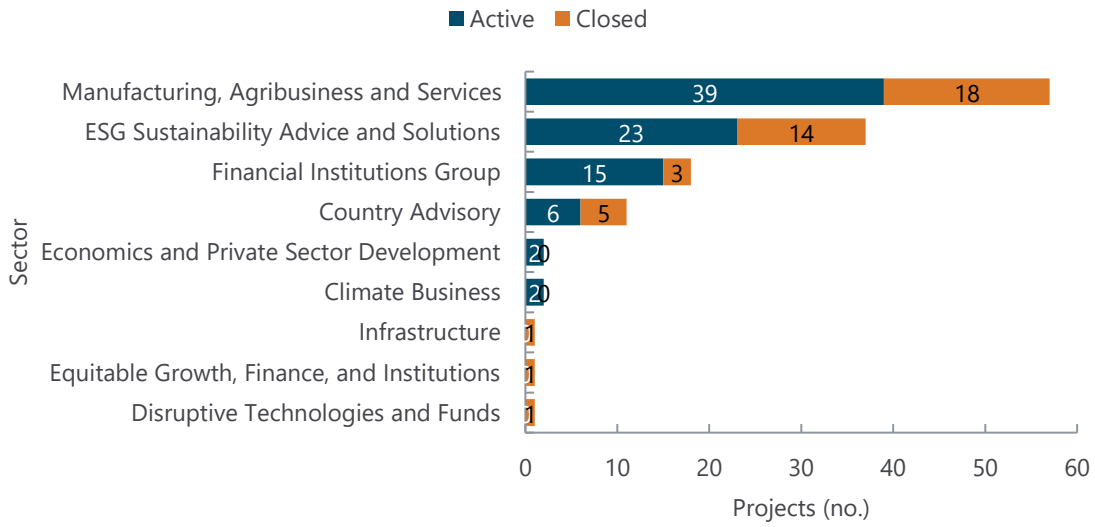


Source: International Finance Corporation.

International Finance Corporation Advisory

There are 130 IFC AS projects approved during FY15–24 with in-scope activities, of which 87 are active and 43 are closed. Among the closed AS, 4 have been evaluated by IEG and 27 have self-ratings. Most of the AS in the preliminary portfolio have Manufacturing, Agribusiness and Services and Environmental, Social, and Corporate Governance Sustainability Advice and Solutions as their primary business lines (see figure B.4).

Figure B.4. International Finance Corporation Pillar 2 Investments by Primary Sector



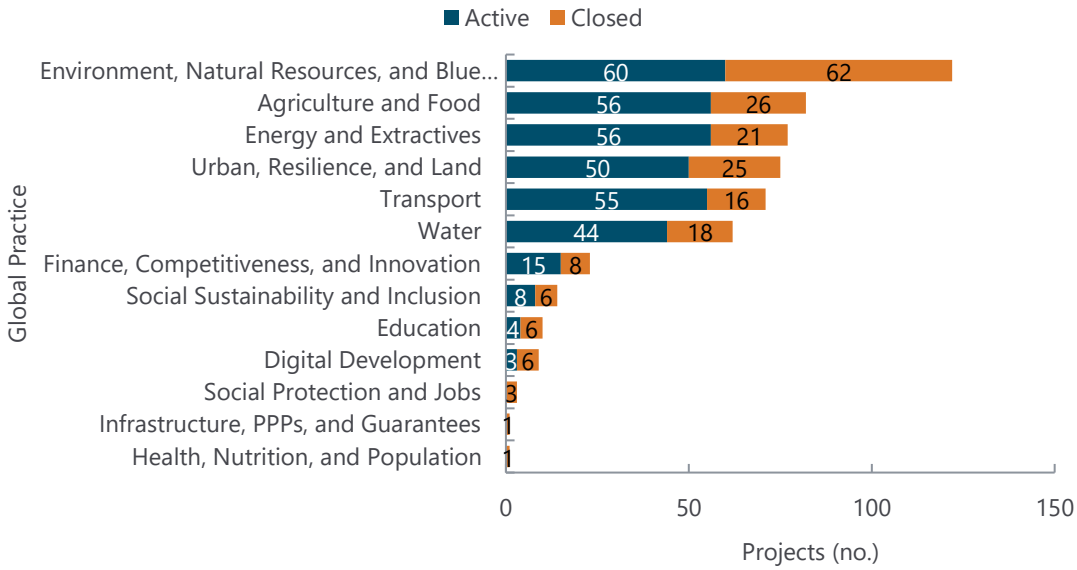
Source: International Finance Corporation.
Note: ESG = Environmental, Social, and Corporate Governance.

Pillar 3. Biodiversity Risk Management

World Bank Safeguard Policies

There are 550 World Bank lending projects approved during FY15–24 that apply Operational Policy 4.04–Natural Habitats, Operational Policy 4.36–Forests, or both, of which 351 are active and 199 are closed. Of these, 266 projects applied both operational policies, 260 projects applied Operational Policy 4.04 only (Natural Habitats), and 25 projects applied Operational Policy 4.36 only (Forests). The six Global Practices with the highest number of projects are Environment, Natural Resources, and the Blue Economy (122); Agriculture and Food (82); Energy and Extractives (77); Urban, Resilience, and Land (75); Transport (71); and Water (62). A total of 240 operations applied standards relevant to biodiversity (OP4.04 and OP4.36) and indigenous peoples (OP4.10). Of these, 94 are closed and 147 are active.

Figure B.5. World Bank Projects That Apply Operational Policy 4.04–Natural Habitats, Operational Policy 4.36–Forests, or Both, by Global Practice



Source: World Bank Standard Reports.
Note: PPP = public-private partnership.

World Bank Environmental and Social Framework

There are 544 World Bank lending projects that applied Environmental and Social Standard 6 during FY19–24, of which 12 are closed and 532 are active (as of February 2024; see table B.6). The overall environmental and social risk classification of these projects is as follows: 99 are high risk, 310 are substantial risk, 131 are moderate risk, and 4 are low risk. The environmental risk classification of these projects is as follows: 55 are high risk, 301 are substantial risk, 178 are moderate risk, and 10 are low risk. The seven Global Practices with the highest number of projects with environmental risks are Transport (94); Agriculture and Food (92); Environment, Natural Resources, and the Blue Economy (85); Energy and Extractives (81); Urban, Resilience, and Land (77); Water (61); and Finance, Competitiveness, and Innovation (38). A total of 205 operations applied ESS6 and ESS7 (indigenous peoples). Of these, 9 are closed and 196 are active.

Table B.6. Overall Environmental and Social Risk Classification of Projects That Apply Environmental and Social Standard 6, FY18–24

Risk Classification	Active	Closed	Total
High environmental and social risk	98	1	99
Substantial environmental and social risk	305	5	310
Moderate environmental and social risk	126	5	131
Low environmental and social risk	3	1	4
Total	532	12	544

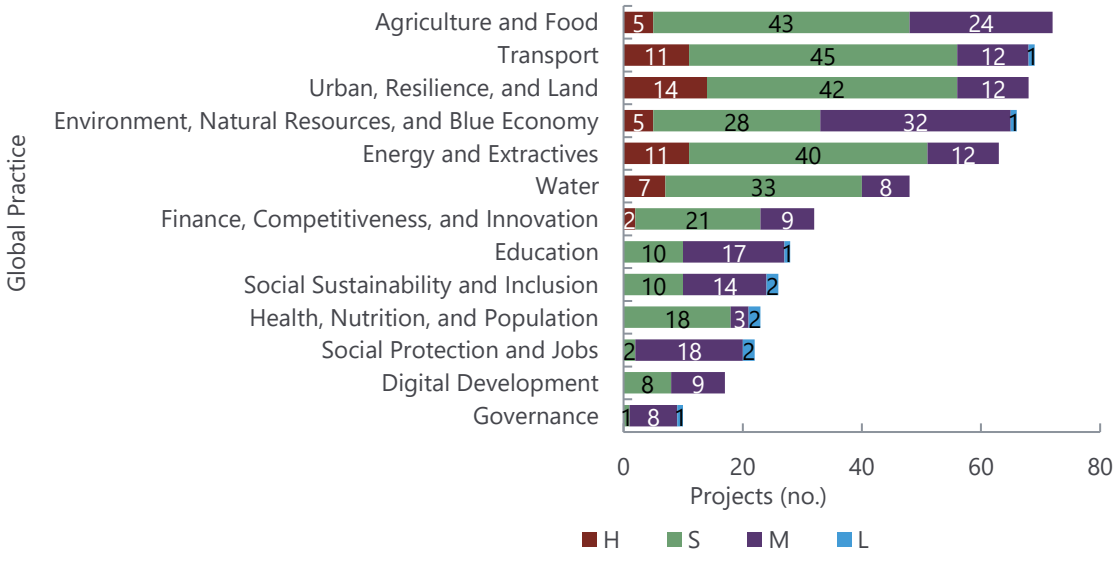
Source: Environmental and Social Framework Standard Report, World Bank Standard Reports.
Note: FY = fiscal year.

Table B.7. Environmental Risk Classification of Projects That Apply Environmental and Social Standard 6, FY18–24

Risk Classification	Active	Closed	Total
High environmental risk	54	1	55
Substantial environmental risk	297	4	301
Moderate environmental risk	174	4	178
Low environmental risk	7	3	10
Total	532	12	544

Source: Environmental and Social Framework Standard Report, World Bank Standard Reports..
Note: FY = fiscal year.

Figure B.6. Projects That Apply Environmental and Social Standard 6 by Global Practice and Environmental Risk Classification, FY19–24



Source: Environmental and Social Framework Standard Report, World Bank Standard Reports.
Note: ESS = Environmental and Social Standard; H = high environmental risk; L = low environmental risk; M = moderate environmental risk; S = substantial environmental risk.

International Finance Corporation Performance Standards

IFC uses three categories to reflect the magnitude of environmental and social risks and impacts:

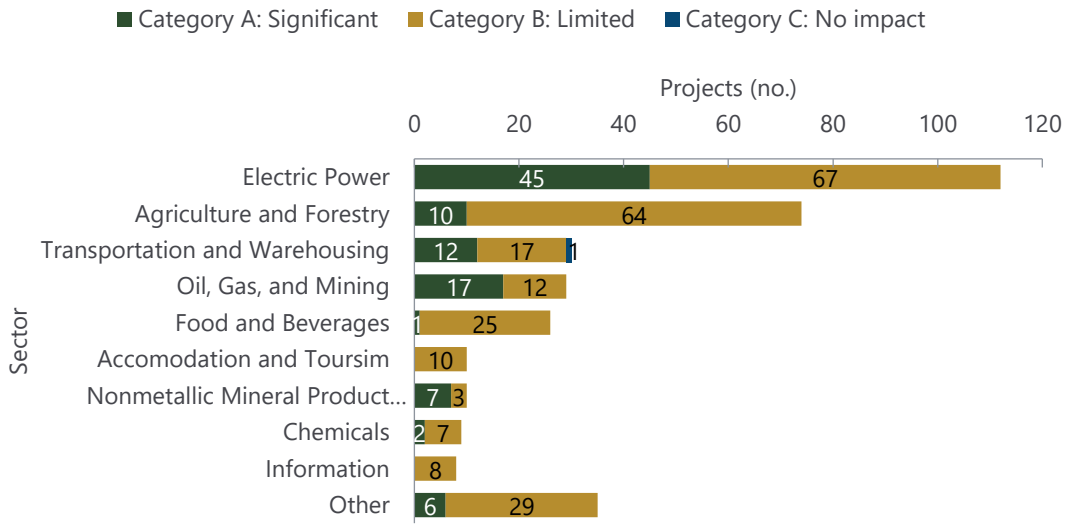
- **Category A.** Business activities with potential significant adverse environmental or social risks and/or impacts that are diverse, irreversible, or unprecedented. An Environmental Social Impact Assessment and Environmental Social Management Plan are required.
- **Category B.** Business activities with potential limited adverse environmental or social risks and/or impacts that are few, generally site-specific, largely reversible, and readily addressed through mitigation measures. An initial review of environmental and social risks and impacts must be conducted. An appropriate environmental and social instrument is required to assess impacts.
- **Category C.** Business activities with minimal or no adverse environmental or social risks and/or impacts.

During FY15–24, IFC approved 958 operations. Of these, 343 operations applied Performance Standard 6, with a majority being category B (70 percent of the operations), and the remaining portfolio being category A. Only one active project was categorized as C. Sixty-nine operations have Expanded Project Supervision Reports (49 closed, 20 active).

Geographically, most of the Performance Standard 6 portfolio was mapped to Africa, followed by Latin America and the Caribbean. By sector, the projects were mainly led by Manufacturing, Agribusiness, and Services and Infrastructure. In terms of biodiversity issues, projects addressed issues related to natural habitats, water resource management, certification of forests and plantations, and conservation enhancement.

Most of IFC's investments in the portfolio focus on electric power, including renewable energy, large hydropower, and thermal power generation (112 projects); agriculture and forestry including agribusiness, fruits and vegetables, crop production, and animal production/processing (74 projects); transport and warehousing (30 projects); oil, gas, and mining (29 projects); and food and beverages (26 projects). Other business lines such as tourism, mineral products, chemicals, and information were also notable with 8–10 projects in each area.

Figure B.7. Top Sectors Applying Performance Standard 6



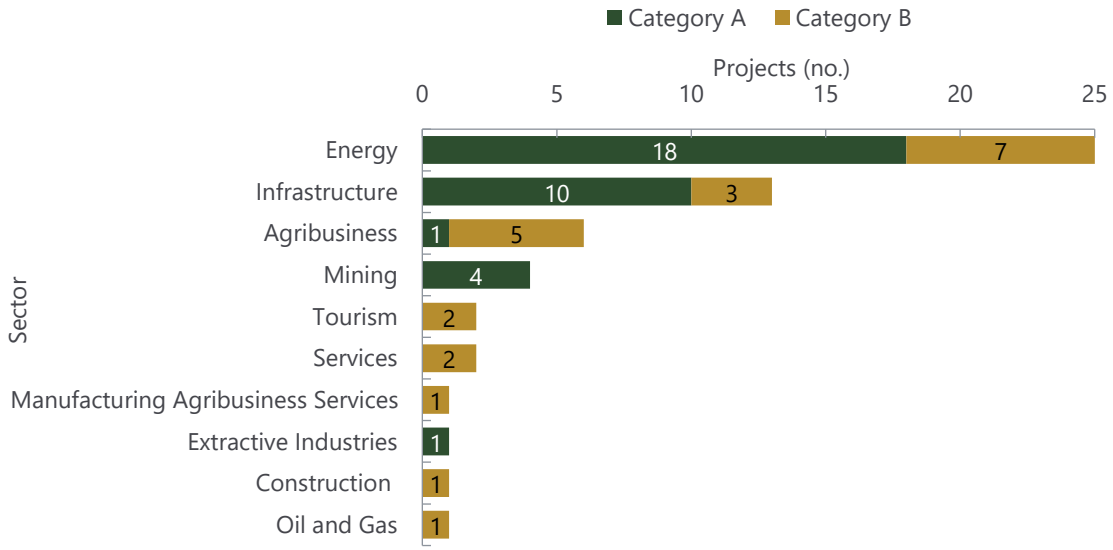
Source: International Finance Corporation.

Multilateral Investment Guarantee Agency Performance Standards

MIGA applies the same Performance Standards as IFC. During FY15–24, MIGA approved 376 projects. Of these, 56 projects applied Performance Standard 6, of which 45 are active and 11 are terminated or closed. Of these, 21 active projects and one terminated project were jointly implemented with IFC, including one project that also involved the World Bank. The remaining 25 active and 10 closed projects did not involve partnerships with IFC or the World Bank. There are 29 active operations and 10 terminated projects that have been effective for more than three years. Only four operations in the portfolio have Project Evaluation Reports completed by IEG.

A majority of MIGA's Performance Standard 6 portfolio (61 percent) are category A projects. Energy and infrastructure sector projects represent the largest sectors in MIGA's Performance Standard 6 portfolio.

Figure B.8. Multilateral Investment Guarantee Agency Operations Applying Performance Standard 6 by Sector and Environmental and Social Risk Category



Source: Multilateral Investment Guarantee Agency.