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Evaluation of GEF Support to Mainstreaming Biodiversity

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FULL REPORT



Global Environment Facility
Independent Evaluation Office

Evaluation of GEF Support to Mainstreaming Biodiversity

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Cover: Biological corridor created using biodiversity-friendly coffee plantations, Valle del Cauca, Colombia; by Anupam Anand/GEF IEO

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Foreword

The Evaluation of Global Environment Facility (GEF) Support to Mainstreaming Biodiversity was undertaken to assess GEF contributions to biodiversity mainstreaming and identify good practices and challenges in biodiversity mainstreaming interventions.

The concept of biodiversity mainstreaming, as it applies to this evaluation, is founded on the 1992 Convention on Biological Diversity, which states in its Article 4 that all parties shall “integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.” The GEF defines biodiversity mainstreaming as “the process of embedding biodiversity considerations into policies, strategies, and practices of key public and private actors that impact or rely on biodiversity so that it is conserved and sustainably used both locally and globally.”

In 2002 during the third replenishment of the GEF, the inclusion of biodiversity mainstreaming components within the project portfolio gained momentum as conservation efforts were extended from protected areas to productive landscapes and seascapes. Since then, a growing number of projects with biodiversity mainstreaming components and increased grant allocations have been funded, including in other focal areas such as international waters.

This first independent review of biodiversity mainstreaming by the GEF evaluates GEF support to

these projects, drawing on the portfolio and in-depth case studies in Colombia, India, and South Africa. The evaluation used a mixed-methods approach leveraging qualitative, quantitative, and geospatial methods. The in-depth country case studies comprised a review of project documents and literature, along with site visits and interviews with key stakeholders drawn from implementing and executing agency staff, the staff of civil society organizations, and project beneficiaries. The GEF Independent Evaluation Office also interviewed academics; staff of the Convention on Biological Diversity Secretariat; and government officials with relevant expertise in mainstreaming biodiversity and who were involved in the design, implementation, and evaluation of biodiversity mainstreaming interventions.

The findings were presented at the GEF’s 55th Council meeting in December 2018, as part of the Independent Evaluation Office’s Semi-Annual Evaluation Report. The preliminary findings of this study also contributed to the GEF report to the 14th Meeting of the Conference of the Parties to the Convention on Biological Diversity (COP 14), including side events at COP 14 in Sharm El Sheikh, Arab Republic of Egypt. The overall findings will be part of the GEF report to the COP 15 in Kunming, China.



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Acknowledgments

Anupam Anand, Evaluation Officer with the Independent Evaluation Office (IEO) of the Global Environment Facility (GEF), led this evaluation and coauthored the report. The core team members were IEO Consultants Hugo Navajas, Vinod Mathur, and Jessica Smith; they conducted and wrote the country case studies for Colombia, India, and South Africa, respectively. Sara El Choufi and Peixuan Zhou, IEO Evaluation Analysts, provided research assistance for the portfolio analysis.

The evaluation benefited from guidance and oversight provided by Juha Uitto, Director of the IEO. Supervision and quality assurance was provided by Geeta Batra, IEO Chief Evaluation Officer. Administrative support was provided by Evelyn Chihuguyu, Program Assistant, Malac Kabir, Research Assistant, and Marie-Constance Manuella Koukoui, Senior Executive Assistant. Nita Congress edited, designed, and laid out the publication.

The team is grateful for information, data, and insights provided by the Convention on Biological Diversity Secretariat, the GEF Secretariat, the GEF Scientific and Technical Advisory Panel, and the GEF Agencies.

For the Colombia case study, the team expresses its gratitude to the Office of International Affairs and External Relations of the Ministry of Environment and Sustainable Development, in particular Laura Bermúdez for organizing an ambitious and productive agenda. Thanks to Yaisa Bejarano for her assistance in organizing meetings and accompanying the mission to the Guaviare Department.

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For the India case study, the team expresses its gratitude to C.K. Mishra, Secretary, Ministry of Environment, Forest and Climate Change (MoEFCC), as well as to Nikunja K. Sundaray, MoEFCC Joint Secretary and GEF Operational Focal Point, and his office in providing valuable insights into GEF activities in India. Posthumous thanks also to Shikha Garg, MoEFCC Consultant.

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We thank all who volunteered their time to speak or provided support in the project site visits. Those interviewed were inspiring both in their passion and in their achievements, working in sometimes highly challenging circumstances. The team is also obliged to all project participants for their valuable contributions and for sharing their voices. Final responsibility for this report remains firmly with the Office.

Abbreviations

| | | | |
|-----------|--|-------|---|
| APR | annual performance report | M&E | monitoring and evaluation |
| BLU | Biodiversity and Land Use Project | NBSAP | national biodiversity strategic action plan |
| CAPE | Cape Action for People and Environment | PES | payment for ecosystem services |
| CBD | Convention on Biological Diversity | SANBI | South African National Biodiversity Institute |
| COCOMACIA | Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato | STAP | Scientific and Technical Advisory Panel |
| FNC | National Federation of Coffee Growers of Colombia | UNDP | United Nations Development Programme |
| GEF | Global Environment Facility | UNEP | United Nations Environment Programme |
| ha | hectare | WWF | World Wildlife Fund |
| IIAP | John von Neumann Environmental Research Institute of the Pacific | | |

The GEF replenishment periods are as follows: pilot phase: 1991–94; GEF-1: 1995–98; GEF-2: 1999–2002; GEF-3: 2003–06; GEF-4: 2006–10; GEF-5: 2010–14; GEF-6: 2014–18; GEF-7: 2018–22.

All dollar amounts are U.S. dollars unless otherwise indicated.

Executive summary

This is the first stand-alone evaluation of the Global Environment Facility's (GEF's) support to mainstreaming biodiversity interventions. The purpose of the evaluation is to assess the overall performance and effectiveness of GEF biodiversity mainstreaming projects, drawing on the portfolio and in-depth case studies conducted in Colombia, India, and South Africa. The study is based on evaluative evidence drawn from portfolio analysis of 471 biodiversity mainstreaming-related projects, and three country case studies looking at the experiences from GEF-3 through GEF-6. The three countries selected for the case studies are at different stages of the mainstreaming process in addressing drivers of biodiversity loss. They were chosen based on the portfolio analysis, which showed these three countries were in the top seven in terms of number of GEF projects and grant amounts. These countries have also had long-term complementary interlinked projects over the GEF replenishment periods and are representative of the opportunities and challenges faced by the GEF and its national and international partners in conserving biodiversity of global importance.

The evaluation used a mixed-methods approach. Methods included a desk review of documentation (project documents, midterm reviews, and terminal evaluations) and a literature review; site visits; and interviews with key stakeholders including government officials, implementing and executing agency staff, civil society organizations, and project beneficiaries. The GEF Independent Evaluation Office also

interviewed academics and agency staff; staff of the Convention on Biological Diversity Secretariat; and government officials with relevant expertise in mainstreaming biodiversity and who were involved in the design, implementation, and evaluation of biodiversity mainstreaming interventions.

Portfolio

The biodiversity mainstreaming portfolio is composed of 471 projects totaling \$2.34 billion in grants and \$12.73 billion in cofinancing. The number of biodiversity mainstreaming projects and levels of grant funding have been relatively consistent between GEF-3 and GEF-5, followed by a small increase in the number of projects and a slight decrease in total grant funding during GEF-6. There were steady increases in the cofinancing ratio achieved at the portfolio level, reaching 1:6 during GEF-6; this is in line with the target set by the GEF cofinancing policy. The mainstreaming portfolio has increased substantially in GEF-6 from previous replenishment periods, comprising 51 percent of projects and 55 percent of the funding. It is the GEF's largest portfolio, surpassing the size of the protected areas and protected area systems portfolio in GEF-6.

The regional distribution of biodiversity mainstreaming support is generally consistent with the world's globally significant biodiversity. Throughout successive cycles, GEF biodiversity mainstreaming support has been focused on the

Asia and the Pacific and Latin America and the Caribbean regions, followed by Africa. As of June 2018, the largest number of GEF projects supporting biodiversity mainstreaming is in Latin America (140 or 30 percent of projects) closely followed by Asia and the Pacific (129 or 27 percent projects), and Africa (110 or 23 percent projects); 46 projects were based in the Europe and Central Asia region. Almost three-quarters (73 percent) of mainstreaming interventions focus on encouraging the inclusion of biodiversity-friendly activities in production practices, and over half of the projects with mainstreaming biodiversity objectives are implemented in the forestry and agriculture sectors.

Findings and conclusions

RELEVANCE

The GEF's biodiversity mainstreaming portfolio has played a significant role in implementation of the global Convention on Biological Diversity and in its member countries. The GEF has been instrumental in supporting national policy reform and planning frameworks that promote biodiversity considerations across sectors and territories.

PROJECT DESIGN

Projects are explicitly designed to address recognized threats to biodiversity. In most cases, the reviewed projects had components and activities to address recognized threats to biodiversity with the aim of mitigating their effects on biodiversity of global importance. This objective is being pursued through diverse approaches which include the extension of landscape management practices, agroforestry and sustainable production systems, and biological connectivity linking vulnerable forests to protected areas. Implementation strategies are integrative and multitiered. Findings of applied research, field demonstrations, and extension have been transferred to senior sector and government

levels for the purpose of transforming productive models and informing policy decisions.

PERFORMANCE

Most of the GEF projects have successfully elevated biodiversity conservation to targeted sectors, institutions, policies, and territories with globally significant biodiversity. A smaller number of projects and national partners are successfully accelerating biodiversity mainstreaming across sectors, institutions, and territories. There are fewer cases of accelerated mainstreaming, by which mainstreaming processes gain in scale and momentum, and begin to have an effect at systemic levels. The acceleration of mainstreaming to a broader range and scale of actors involves incremental processes that build over time and exceed the lifespan of most projects. Acceleration is also influenced by external factors—the capacity and commitment of national partners, governance cycles and political conditions, resource availability, competing sector priorities—that fall outside the influence of most projects. As a result, many projects may require continuity into successive cycles to accelerate mainstreaming processes that enable the achievement of expected outcomes.

Similar positive influences and challenges affect outcomes in the biodiversity conservation and mainstreaming projects across the three case study countries. While the challenges are largely determined by specific national or landscape contexts, successful mainstreaming is ultimately influenced by the interaction of economic and environmental interests, institutional monitoring and enforcement capacities, communications and outreach capabilities, and the existence of enabling policy and legal-regulatory frameworks. Other positive features that facilitate mainstreaming include the presence of preconditions such as well-developed policy and regulatory frameworks for biodiversity conservation, recognized

and capable scientific research institutions and expertise, and favorable political contexts. Mainstreaming efforts are more successful when there are strong government champions who cut across organizational silos.

The potential for biodiversity mainstreaming is conditioned to a large extent by intervening factors that encompass project effectiveness and efficiency, the commitment of national partners, and externalities outside the project's control.

The progress achieved in mainstreaming biodiversity is directly influenced by intervening factors that are both directly related to the project's implementation performance—efficiency, timely output delivery, monitoring, and adaptive management—as well as external to the immediate project context—national capacities and institutional commitment, governance cycles, and political and policy conditions. Conversely, the implementation of several projects in the country samples was adversely affected by late approvals and startup, recruitment delays, and/or low partner capabilities and responsiveness.

ADDITIONALITY

The GEF biodiversity mainstreaming portfolio has contributed to legal-environmental, regulatory, governance, and socioeconomic additionalities that go beyond incremental cost benefits. These include innovative approaches based on multistakeholder partnerships linking grassroots organizations to regional research institutions, advocacy platforms, and national environmental authorities. Landscape management practices are validated on the ground and elevated to influence national policy and legislative-regulatory reform. Several projects have contributed to landmark biodiversity legislation; transformed core institutional/sector practices; and achieved measurable conservation impacts in forest cover, pasture, and other biodiversity indicators. However, capturing

other additionalities—such as socioeconomic and environmental impacts deriving from the GEF's support for biodiversity mainstreaming in productive landscapes and seascapes—is challenging.

THEORY OF CHANGE AND MONITORING AND EVALUATION

The GEF's theory of change for mainstreaming biodiversity is validated by the empirical experience of projects and provides a sound conceptual basis for their design and evaluation.

Underlying problems identified by the GEF Secretariat in collaboration with GEF partners and internal and external experts—loss of habitat in productive landscapes and seascapes, and decline of globally significant biodiversity outside protected areas—have been addressed, with greater attention being given (and resources invested) to biodiversity conservation in production landscapes and seascapes. The theory of change is further supported by the correspondence of its expected outcomes with those of the projects reviewed.

The theory of change has not been systematically applied in project implementation. The GEF's theory of change model for biodiversity mainstreaming is validated by project experiences in diverse contexts and is reflected in programming trends over successive cycles. It also recognizes the dynamic and nonlinear process of mainstreaming. Projects need to account for this nonlinearity in implementation and recognize the importance of dynamic adjustments. For example, projects with policy and regulatory change requirements need to be cognizant of changes in government legislative priorities or in champions for reforms.

The current monitoring and evaluation framework for GEF biodiversity projects does not appear to focus sufficiently on quantitative measures and on outcomes and impacts. Conventional project monitoring practices are generally limited in scope

to measure changes in habitat quality, forest cover, vegetation productivity, land use, species richness and evenness, or other indicators that offer insight on the state of biodiversity. Longer-term effects are even more difficult to track unless capacities exist at the country level, once technical activities are finished and the budget is closed. Although considerable effort has been invested in the design of monitoring and evaluation frameworks and specific, measurable, attributable, relevant, and timely (SMART) indicators, project indicators tend to remain qualitative instead of quantitative. Also, inconsistent baselines are frequently used that often rely on secondary data or are drawn from sources that apply different criteria and timelines, undermining reliable tracking of changes over time.

The GEF-7 core indicators and subindicators are a step in the right direction but are not adequate. While these hierarchical indicators are more efficient and relevant in line with earlier GEF Independent Evaluation Office recommendations, they are not adequate to capture the socioeconomic benefits, financial flow, and policy and regulatory reforms influenced by GEF interventions. Biodiversity mainstreaming indicators rely heavily on qualitative measurements and area estimates. There is also ambiguity surrounding the requirement to collect spatially explicit boundary information. Socioeconomic benefits influenced by GEF interventions need to be measured along with biodiversity-based indicators, since the success of mainstreaming projects depends on balancing trade-offs between socioeconomic benefits and environmental impacts.

Recommendations

- **Design mainstreaming interventions with a longer-term perspective and a resource envelope to ensure sustainability.** Sustainability of biodiversity mainstreaming depends on programming for multiple phases and accompanying financing, as standard project durations are often insufficient to enable ecological change, build baseline capacity, influence institutional mind sets, and change behavior. Mainstreaming interventions—including the most straightforward activities such as spatial and land use planning—depend on suitable preconditions and involve iterative processes. While the GEF theory of change and the GEF-7 biodiversity strategy reflect this understanding, GEF Agencies should design projects with a longer-term perspective and systematically apply the theory of change. Countries should explore sources of innovative financing, including private and public sector contributions to support the long-term transformation processes biodiversity mainstreaming interventions require.
- **Improve and strengthen M&E design and implementation.** Indicators at the project and portfolio levels should capture environmental, socioeconomic, financial, and policy and regulatory outcomes to assess performance, benefits, and trade-offs; and for adaptive management. Quantitative measurements of biophysical and socioeconomic impacts are needed to complement existing qualitative assessments. Measuring changes in biophysical attributes requires knowledge of spatially explicit delineated boundaries. Information technology-based solutions can be used to accomplish this, based on GEF experience in supporting similar initiatives. Biodiversity mainstreaming projects are time-intensive; assessing their outcomes and contributions in terms of incremental transformations presents a major challenge during a project's lifetime. To some extent, this can be overcome by in-depth assessments postcompletion for groups of projects that address common

issues and apply comparable approaches, or in countries that have a sequence of mainstreaming interventions over time.

- **The GEF should continue to leverage its convening power to improve policy design and process and strengthen interministerial and intersectoral collaboration.** In the context of countries allocating more resources to biodiversity mainstreaming and their evolving priorities, the GEF should continue to leverage its convening power to bring together different actors within governments, council members, funders, policy leaders, and partners to strengthen the policy process and build capacity. The GEF should work with countries and implementing partners to actively strengthen collaboration across relevant ministries and sectors. While such collaborations enable engagement with a broad range of stakeholders, these partnerships

also help address externalities such as market shocks, land tenure insecurity, political discontinuity, conflict, natural disasters, and climate change risks.

- **Include systematic analysis of associated benefits and trade-offs in project design.** Project designs should include provisions for systematic analysis of benefits and trade-offs of socioeconomic and ecological outcomes, both ex ante and ex post, associated with biodiversity mainstreaming interventions. Due consideration should be given to transitional costs and short-term socioeconomic trade-offs that may precede benefits.

1: Introduction

1.1 Global mainstreaming context

International institutions see the mainstreaming of biodiversity—integrating biodiversity issues into broad policy, planning, and practice—as a mechanism for addressing the drivers of biodiversity loss and achieving multiple environmental and development goals. To this end, organizations such as the Global Environment Facility (GEF) have been mainstreaming environmental conservation and sustainable development into their policies, programs, and financing decisions. The concept of biodiversity mainstreaming, as it applies to this study, is founded on the 1992 Convention on Biological Diversity (CBD), which states that all parties shall “Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies” (CBD 1992, 5).

Mainstreaming biodiversity has been a challenge. The 2011–2020 CBD Strategic Plan for Biodiversity and Aichi Biodiversity Targets emphasizes that “there has been insufficient integration of biodiversity issues into broader policies, strategies, programmes and actions, and therefore the underlying drivers of biodiversity loss have not been significantly reduced” (CBD 2010, 6). The strategic plan identifies one of the key entry points for achieving a positive outcome as “action to address the underlying causes of biodiversity loss, including production and consumption patterns, by ensuring that biodiversity

concerns are mainstreamed throughout government and society” (CBD 2010, 7). Indeed, a recent study noted that by spreading transformational practices at landscape and seascape scales, biodiversity mainstreaming links protected areas to the more than 85 percent of global landscapes and seascapes that fall outside the world’s protected area system (Huntley and Redford 2014).

The GEF has put increasing emphasis on mainstreaming as its biodiversity strategy has evolved over the GEF replenishment periods. The GEF defines biodiversity mainstreaming as “the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that biodiversity is conserved, and sustainably used, both locally and globally” (Huntley and Redford 2014, 14). The cumulative experience and lessons of the GEF’s conservation efforts over the years have underscored the importance of mainstreaming—across sectors, institutions, and geography—as a key driver of long-term success for biodiversity conservation.

- The inclusion of biodiversity mainstreaming components within the project portfolio gained momentum during **GEF-3**, as conservation efforts were extended from protected areas to productive landscapes and seascapes.
- During the **GEF-4 and GEF-5** cycles, mainstreaming was a specific objective within the biodiversity strategy focusing on agriculture,

forestry, fisheries, and tourism. During GEF-5, biodiversity mainstreaming targeted productive sectors and landscapes and seascapes outside protected area systems.

- The **GEF-6** cycle continued this vision, seeking to ensure that interventions were spatially targeted and support the conservation or sustainable use of globally significant biodiversity. Also in GEF-6, the integrated approach pilots were launched to promote biodiversity mainstreaming in production landscapes.
- The **GEF-7** Biodiversity Focal Area Strategy, with its emphasis on integrated programming, indicates a better alignment with recent CBD Conference of the Parties guidance (COP 13; CBD 2016). Under GEF-7, biodiversity mainstreaming continues to be a strategic objective of the biodiversity focal area. The GEF-7 strategy reflects a growing tendency toward more programmatic and integrated approaches at the landscape and seascape levels, thereby consolidating GEF efforts, focuses, and investments. Specifically, the strategy identifies nine entry points for mainstreaming biodiversity across sectors and within production landscapes and seascapes.¹ The inclusion of natural capital assessment and accounting as an entry point reflects a particularly significant evolution. Natural capital assessment and accounting is crucial for making a strong business case for

biodiversity; its inclusion as a separate program in GEF-7 significantly advances the biodiversity mainstreaming agenda. And the introduction of impact programs in GEF-7 will focus efforts on addressing the drivers of biodiversity loss in globally important biomes through a landscape approach.

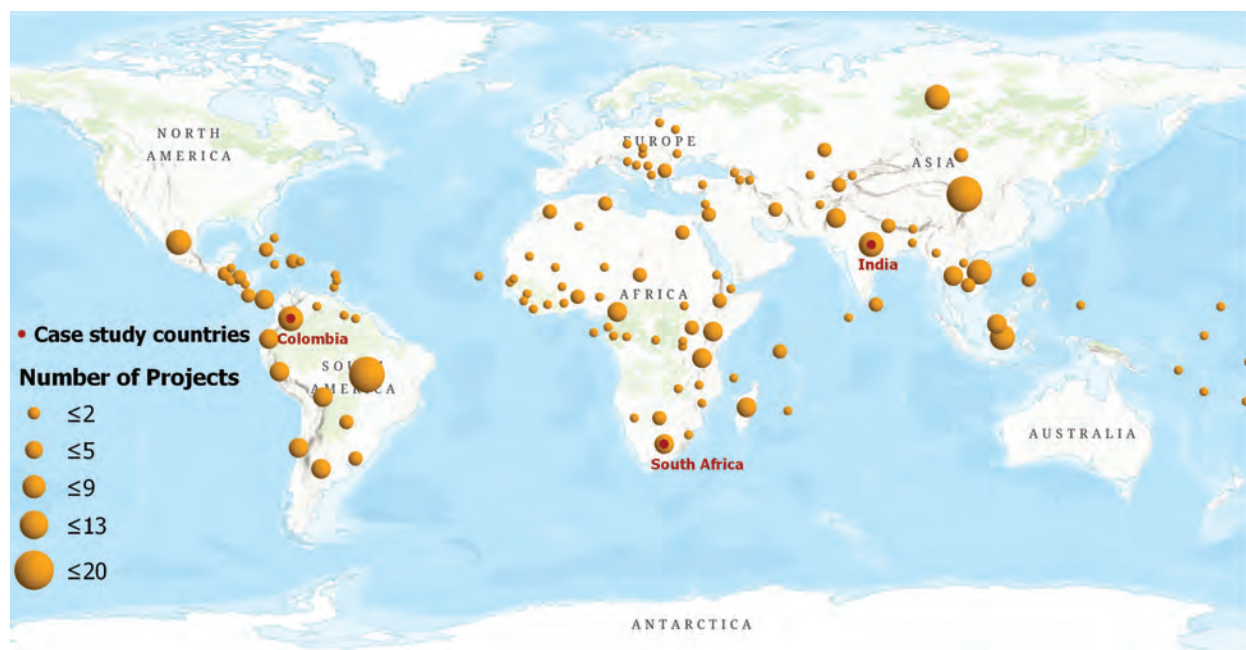
Overall, a growing number of projects with biodiversity mainstreaming components and increased grant allocations were funded between 2002 and 2018. GEF support to biodiversity mainstreaming is also evident in interventions in other focal areas such as international waters.

The regional distribution of GEF biodiversity mainstreaming support is generally consistent with that of the world's globally significant biodiversity. Throughout its successive funding cycles, GEF biodiversity mainstreaming support has been focused on Asia and the Pacific and Latin America and the Caribbean, followed by Africa (figure 1.1). As of June 2018, the largest number of GEF projects supporting biodiversity mainstreaming had been implemented in Latin America and the Caribbean (140, or 30 percent of all GEF projects), closely followed by Asia and the Pacific (129, or 27 percent of all GEF projects), and Africa (110, or 23 percent of all GEF projects); 46 GEF projects were based in Europe and Central Asia.

GEF biodiversity mainstreaming projects and work by the GEF Scientific and Technical Advisory Panel (STAP) have generated valuable insights into the dynamics of mainstreaming. The earliest substantive GEF guidance on mainstreaming appeared in a 2005 working paper built largely on case study evidence from diverse non-GEF sources (Petersen and Huntley 2005, section 14). At this time, there was no evidence base from the GEF's own portfolio from which to draw. The working paper identified a combination of factors and conditions necessary for effective mainstreaming.

¹ These are biodiversity mainstreaming in priority sectors, the Global Wildlife Program, natural capital assessment and accounting, sustainable use of plant and animal genetic resources, inclusive conservation, the three integrated pilot approach programs—the Food Systems, Land Use, and Restoration Impact Program; the Sustainable Cities Impact Program; and the Sustainable Forest Management Impact Program—and the international waters focal area/sustainable fisheries. Three biomes are identified as priorities in GEF-7: the Amazon, the Congo Basin, and drylands.

FIGURE 1.1 Global distribution of GEF biodiversity mainstreaming projects



SOURCES: Esri, USGS, NGA, NASA, CGAR, N. Robinson, NCEAS, NLS, OS, NMA, Geodatastyrelsen, Rijkswaterstaat, GSA, Geoland, FEMA, Intermap, and GIS user community (map base layers); GEF Project Management Information System (data).

The next major body of work relevant to GEF mainstreaming was a STAP advisory document, *Mainstreaming Biodiversity in Practice* (Huntley and Redford 2014), based on papers presented at a workshop in Cape Town in October 2013. The document provides a mix of GEF and non-GEF evidence, but with little apparent project-specific grounding. Nonetheless, the report served as an important knowledge base and set the stage for subsequent assessments. Its two key conclusions follow:

■ **Mainstreaming is not a controlled experiment.**

Rather, it is a social experiment in changing the value structures of institutions and individuals with vital consequences for the natural world and the humans who rely on it. Therefore, while mainstreaming may not prove amenable to rigorous testing, it does deserve more systematic inquiry.

■ **Good governance and strong institutions are key determinants of project success or failure.**

A balance needs to be struck between (1) working in countries and sectors where there is sufficiently strong governance capacity for mainstreaming outcomes to have a good chance of success and (2) tackling the most pressing mainstreaming challenges in situations where globally valuable biodiversity is threatened but capacity is often lacking.

In 2016, the GEF Secretariat released a review of mainstreaming in practice based on a sound platform of GEF-specific project evidence; the report also presented the GEF's first theory of change model on mainstreaming biodiversity (GEF Secretariat 2016).

The present evaluation is the first independent review of biodiversity mainstreaming in the GEF.

This evaluation aims to contribute to the knowledge base through an assessment of GEF-supported biodiversity mainstreaming processes and the

overall performance and effectiveness of mainstreaming projects. It draws on both the GEF portfolio as a whole and in-depth case studies conducted in Colombia, India, and South Africa. These three countries, which are among the top seven in terms of number of projects and value of GEF grants, have globally significant biodiversity resources that face intense pressure from anthropogenic activities. Their long history with the GEF, and respective series of complementary interlinked projects, makes their experiences instructive and representative.

1.2 The GEF theory of change for biodiversity mainstreaming

Drawing on the collective knowledge of the GEF, its partners, and independent experts, a theory of change on mainstreaming biodiversity was systematically articulated in GEF-6 to provide an overarching strategic framework for mainstreaming projects and to help guide the GEF's investment strategy at the portfolio level. Built on lessons gleaned from theoretical resources and practical experience with biodiversity mainstreaming in the GEF, the theory of change indicates high levels of correspondence and linkages between GEF inputs and outputs, and strategic outcomes.

The GEF theory of change illustrates the causal pathways linking the combined inputs of GEF program and project support outcomes that feed into national and global biodiversity conservation objectives. It acknowledges that biodiversity mainstreaming occurs within complex socio-economic and ecological systems. It then analyzes the sequence of desired changes (known as causal or impact pathways) to which programs and projects are expected to contribute. It shows the causal relationships between changes at different results levels, connecting outputs to outcomes and indicating the intermediate states that must be reached to achieve the intended impact.

Despite its linear, static presentation, the model's assumptions about change and results levels are understood as nonlinear and dynamic, with multiple complex feedback loops between stages, drivers, and externalities. The theory of change also identifies impact drivers that move implementation forward and external assumptions that influence design and performance, yet are outside the project's influence. The GEF theory of change offers a useful analytical tool both for project design and implementation and for evaluating the implementation approach utilized.

The following illustration of causal pathways, from the GEF Secretariat review of biodiversity mainstreaming in practice (figure 1.2), indicates high levels of correspondence and linkages between GEF inputs and outputs, and the strategic outcomes that feed into the overarching GEF objective of "conserving globally significant biodiversity and ensuring its sustainable use in production landscapes and seascapes." The pathways are driven by impact drivers or features of the project that are directly influenced by the project's design and approach and have direct effect on performance; these include flexible design, adequate financing, adaptive management practices and effective communications with stakeholders.

The theory of change identifies factors outside the project influence as important moderators of success. The pathways and linkages are influenced by external assumptions or "moderators of success" such as national capacity and commitment, enabling legal and policy frameworks—that are outside the project yet bear influence on the magnitude and quality of project outcomes, and therefore need to be realistically assessed at the design stage. Indeed, project performance and impact can be undermined when external assumptions are underestimated and not given due consideration in project design and implementation strategies.

FIGURE 1.2 Theory of change: mainstreaming biodiversity in sectors and production landscapes and seascapes



SOURCE: GEF Secretariat 2016.

1.3 Evaluation purpose

This evaluation aimed to assess the effectiveness of GEF contributions to biodiversity mainstreaming, and to identify good practices and challenges in biodiversity mainstreaming interventions. The audience for this report is the GEF Council, the GEF Secretariat, implementing partners, and the wider community of stakeholders active in support

of biodiversity. The study is based on evaluative evidence drawn a portfolio analysis of 471 biodiversity mainstreaming-related projects; and three country case studies looking at the experiences of Colombia, India, and South Africa from GEF-3 through GEF-6. Some projects that were initiated earlier—such as India Ecodevelopment (GEF ID 84)—are

mentioned given their value to the country's overall mainstreaming experience.²

The evaluation was guided by the following key questions:

- What is the current context within which the GEF is operating in mainstreaming biodiversity?
- Are the current theory of change and monitoring and evaluation (M&E) systems for mainstreaming biodiversity adequate?
- How have completed biodiversity mainstreaming projects performed?
- What have been the challenges in mainstreaming biodiversity through GEF support in Colombia, India and South Africa?
- What is the GEF's role in policy reforms in biodiversity mainstreaming, and what has been the GEF's experience in this area?

1.4 Methodological considerations

The evaluation drew on portfolio analysis of mainstreaming biodiversity-related projects and three country studies to provide an independent assessment of GEF support for biodiversity mainstreaming. The country studies are based on samples of biodiversity conservation projects implemented in Colombia, India, and South Africa over the past decade; in several cases, these projects are still under implementation. The project samples were selected by the GEF Independent Evaluation Office in consultation with national focal points and environmental authorities in each country. The results of the portfolio analysis and the main country findings were synthesized in order to identify common trends and challenges at different levels of mainstreaming and to articulate a set

of overarching lessons and recommendations for consideration.

The evaluation used a mixed-methods approach.

The assessment was conducted between December 2017 and September 2018. The methodology combined desk review of project documentation (project documents, project implementation reports and other progress reports, and midterm and terminal evaluations), key informant interviews (in-county interviews with national executing agencies and project stakeholders), and visits to selected project sites.

Because mainstreaming is very much conditioned by country context and external variables that are outside the influence of most projects, it is difficult to establish mainstreaming indicators that can be compared across countries. Nor is it advisable to do so given the ongoing dynamic of mainstreaming processes, which are in motion and continue to unfold beyond the project cycle.

Research on biodiversity mainstreaming is relatively recent and, for the most part, still in the learning phase. The analysis here focuses on practices at different levels—within sectors, at policy levels, in the field—that can be fed into the programming of GEF biodiversity conservation initiatives, and on identifying recurrent challenges that should be considered when designing implementation strategies.

The mainstreaming process goes through several phases and is nonlinear. Overall, this evaluation looked at biodiversity mainstreaming as a mosaic of processes that are in motion and continue to unfold. Mainstreaming can be seen as a journey that follows different streams, conceptualized into the following stages for the purpose of analysis:³

²Country projects are listed in the [annex](#).

³These stages are based on findings from the South Africa country study (Smith 2018).

- **Transformation**, where conservation moves from protected areas to the wider landscape, reflecting changes in the perception of biodiversity conservation as it applies to society
- **Elevation**, by which the conservation sector becomes more effective at working with economic sectors; and biodiversity is taken up by a broader range of sectors, institutions, and actors
- **Acceleration**, as increased adoption of biodiversity considerations and changing institutional and sector models start to have an effect at the systemic level; this stage is critical to containing threats to biodiversity and has a measurable impact on biodiversity indicators at the landscape scale
- **Normalization**, a posited subsequent stage where biodiversity becomes a recognized asset for the economy and is ingrained in the management of productive landscapes and seascapes, and in the various sectors

The evaluation's focus is on three countries that are representative of the opportunities and challenges in mainstreaming. Colombia, India, and South Africa are lower- to upper-middle-income countries that have established governance frameworks and national capacities for environmental management and conservation. In this respect, they may be more advanced than other countries in their regions. Nonetheless, the country case studies are representative of the opportunities and challenges faced by the GEF and its national and international partners in conserving biodiversity of global importance.

The country studies looked at biodiversity mainstreaming from different perspectives. These included policy levels, within productive economic sectors (mining, coffee, cattle ranching, grape cultivation, fisheries), and spatially as landscape management and sustainable resource

management practices are disseminated across territories.

The three countries are at different stages of the mainstreaming process in addressing the drivers of biodiversity loss. Most of the mainstreaming processes detected in the country project samples had completed, or were well advanced into, the transformational stage. Many have advanced to different stages of elevating biodiversity conservation—reaching target sectors, farmer associations, and local governments situated in biodiversity hotspots threatened by deforestation and incompatible land uses such as unlicensed mining, extensive ranching, illegal crops, and unauthorized road constructions. The country studies also yield examples of early mainstreaming acceleration, by which GEF projects and national partners are extending landscape management and sustainable production to farmers, mobilizing payment for ecosystem services (PES) mechanisms and cofinancing from a broad range of public and private partners.

1.5 Country selection

The three countries selected for in-depth review all have a long history with the GEF. As noted, they were in the top seven in terms of number of GEF projects and grant amounts. All have received considerable GEF support over the years for biodiversity conservation and mainstreaming, generating a body of experiences and lessons that offer insight into the dynamics of biodiversity mainstreaming processes—making them critically important to this evaluation.

- **Colombia** is the world's third-ranked country in terms of biodiversity (after Brazil and Indonesia), with close to 10 percent of the planet's biodiversity on 0.8 percent of its surface; it has the world's highest diversity of birds, with 1,800 of the more than 9,000 existing species.

- **India** is one of the world's 17 mega-biodiverse nations.
- **South Africa** is home to 10 percent of the world's plant species; 7 percent of its reptile, bird, and mammal species; and 15 percent of its marine species, with high endemism levels. The Cape Floristic Region is the richest of the world's six floral kingdoms and includes 3 of the globe's 34 biodiversity hotspots.

All three countries have established biodiversity policy frameworks which include national biodiversity strategic action plans (NBSAPs) with cross-sector objectives, protected area systems, and PES mechanisms. They face biodiversity

threats that affect diverse landscapes and ecosystems; the direct threats of deforestation and land and water degradation are aggravated by inconsistent capacities and commitment among productive sectors and government ministries. Each country also has recognized environmental institutions that have developed over the years (often with GEF support) into centers of expertise, and that play a lead role in the construction of biodiversity conservation awareness and policy.

2: The GEF biodiversity mainstreaming portfolio

The number of GEF biodiversity mainstreaming projects and level of grant funding were relatively consistent between GEF-3 and GEF-5, followed by a small increase in the number of projects and a slight decrease in total grant funding during GEF-6. Over time, there were steady increases in the cofinancing ratio achieved at the portfolio level, reaching 1:6 during GEF-6, in line with the target set by the GEF cofinancing policy.

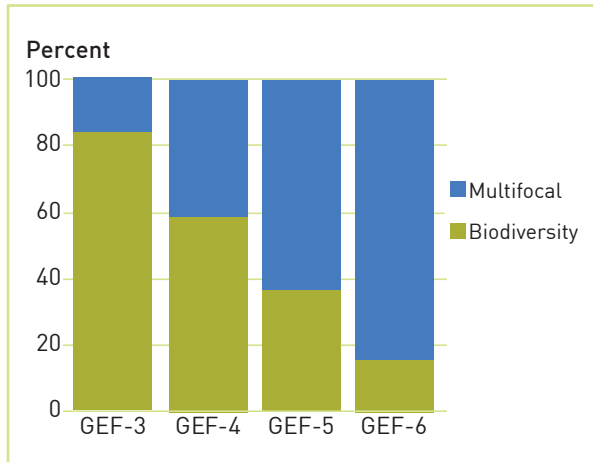
As of June 2018, the GEF biodiversity mainstreaming portfolio consisted of 471 projects, accounting for \$2.34 billion in grants and \$12.73 billion in cofinancing.¹ By region, the largest share of these projects is implemented in Latin America and the Caribbean (30 percent of projects, 35 percent of grant funding), Asia and the Pacific (27 percent of projects, 26 percent of funding), Africa (23 percent of projects, 20 percent of funding), and Europe and Central Asia (10 percent of projects, 6 percent of funding); the remaining projects are global initiatives. Most biodiversity mainstreaming projects are full-size, multifocal efforts designed around specific sectors and production landscapes/seascapes. The United Nations Development Programme (UNDP)

has implemented the largest number of biodiversity mainstreaming projects, followed by the World Bank and the United Nations Environment Programme (UNEP). The biodiversity mainstreaming portfolio was started during the GEF-3 replenishment period. Since then, approximately 25 percent of the projects in the biodiversity portfolio aim to mainstream biodiversity. The mainstreaming portfolio increased substantially in GEF-6; as of this writing, it comprises 51 percent of GEF biodiversity projects and 55 percent of the funding. It is the GEF's largest biodiversity portfolio, surpassing that of the protected area and protected area systems portfolio in GEF-6.

The mainstreaming biodiversity portfolio has seen a substantial increase in the number of multifocal area projects since GEF-3. As with the overall biodiversity portfolio, the mainstreaming biodiversity portfolio has seen a substantial increase in the number of multifocal area projects. By GEF-5, more than 50 percent of all projects in either the overall biodiversity portfolio or the mainstreaming biodiversity portfolio were multifocal area projects. Figure 2.1 compares grant funding for biodiversity mainstreaming through single and multifocal area projects between GEF-3 and GEF-6. This shift toward multifocal area projects may be attributed to the availability of the Sustainable Forest Management incentive associated with forest-focused eligible multifocal area projects.

¹As part of its 2016 review of biodiversity mainstreaming projects, the GEF Secretariat identified 357 mainstreaming projects since GEF-3 classified by type of intervention and sector. For the present evaluation, the GEF Independent Evaluation Office leveraged this database, updating it to include newer projects.

FIGURE 2.1 GEF funding for mainstreaming biodiversity through biodiversity focal area projects and multifocal area projects



SOURCE: GEF Project Management Information System.

2.1 Characteristics

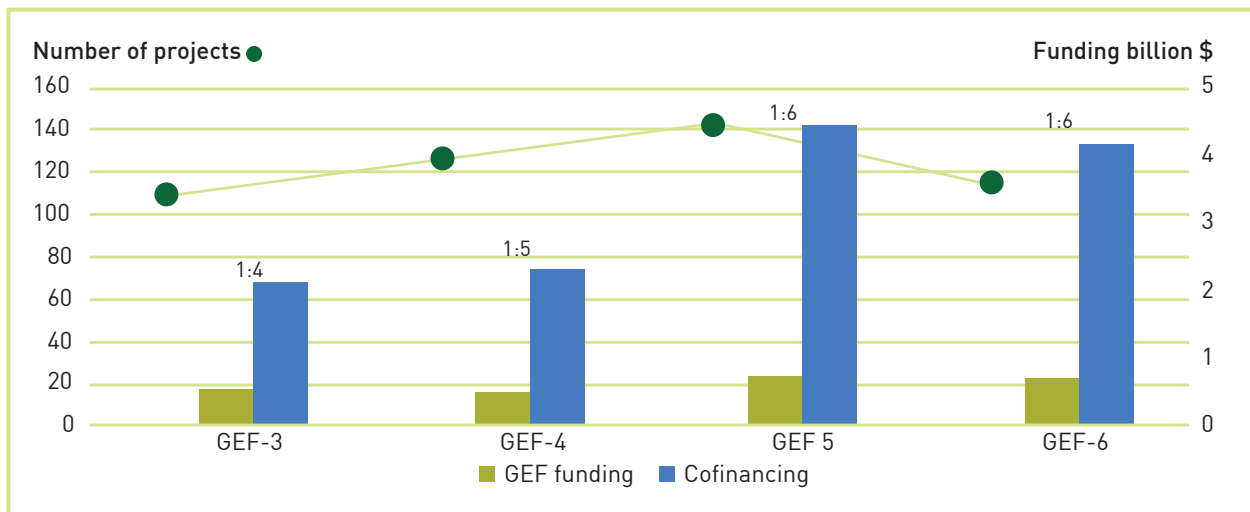
Cofinancing. From GEF-3 to GEF-6, there has been a steady increase in the cofinancing ratio for biodiversity mainstreaming projects at the portfolio level, as evidenced by an increase in the median ratio. The median cofinancing ratio

for biodiversity mainstreaming projects was 1:6 in GEF-5 and GEF-6, in line with the target set by the GEF cofinancing policy (figure 2.2). Overall, governments have been the main source of cofinancing, followed by GEF Agencies and multilateral institutions. The private sector contribution to mainstreaming cofinance has been very low. Cofinancing by governments has increased over the GEF replenishment periods, while contributions from GEF Agencies and multilateral intuitions have decreased (figure 2.3).

Project size. The majority of biodiversity mainstreaming projects are full size. The biodiversity mainstreaming portfolio has 373 full-size projects; this represents 79 percent of the portfolio and 95 percent (\$2.2 billion) of total GEF funding for the portfolio. The remaining 98 projects are medium size and account for 21 percent of the portfolio by number of projects and 5 percent (\$113.6 million) of the total GEF funding for the portfolio.

Geographic distribution. By region, 140 biodiversity mainstreaming projects totaling \$819.3 million were implemented in Latin America and the

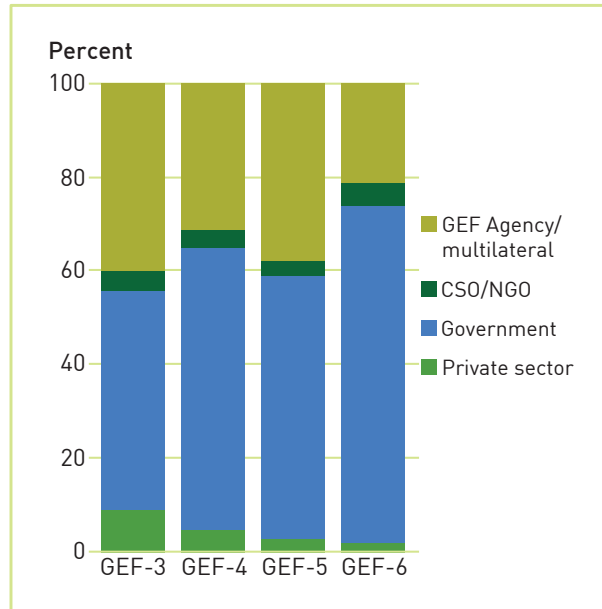
FIGURE 2.2 Approved GEF and cofinancing resources for the GEF biodiversity mainstreaming portfolio



SOURCE: GEF Project Management Information System.

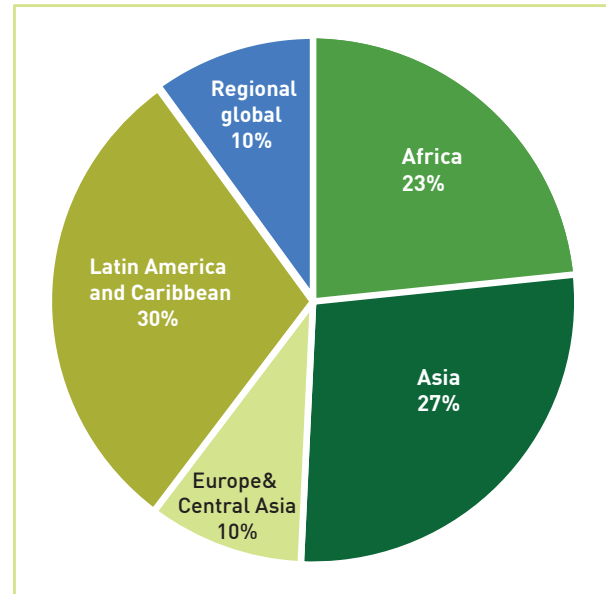
NOTE: GEF funding/cofinancing ratios are noted for each period.

FIGURE 2.3 Sources of cofinancing for GEF biodiversity mainstreaming projects



SOURCE: GEF Project Management Information System.

FIGURE 2.4 Regional distribution of the GEF biodiversity mainstreaming portfolio



SOURCE: GEF Project Management Information System.

Caribbean, accounting for 30 percent of the portfolio's total number of projects and 35 percent of total GEF portfolio grant allocations. This was followed by 129 projects and \$609.2 million in funding in Asia and the Pacific (27 percent of projects and 26 percent of funding); and 110 projects and \$475 million in funding (23 percent of projects and 20 percent of funding) in Africa (figure 2.4).

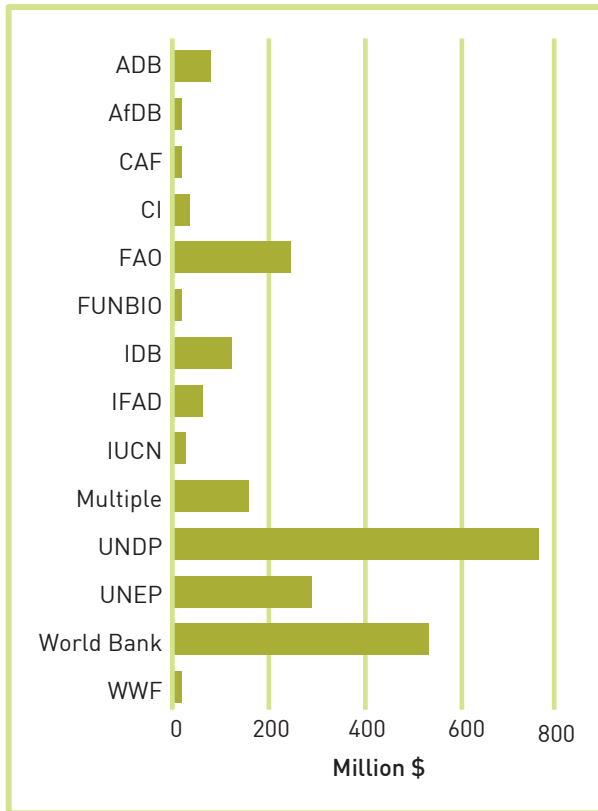
Agency. UNDP has implemented the most biodiversity mainstreaming projects: 180, accounting for \$758 million in GEF funding. The World Bank and UNEP each implemented 81 projects, accounting for \$529 million and \$285 million in GEF financing, respectively (figure 2.5).

Types of mainstreaming interventions. The GEF Secretariat (2016) classifies mainstreaming interventions as developing policy and regulatory frameworks, spatial and land use planning, encouraging biodiversity-friendly production practices, and piloting financial mechanisms to

incentivize the inclusion of biodiversity considerations. Since GEF-3, 73 percent of mainstreaming projects have included activities to mainstream biodiversity considerations in production sector practices, 60 percent have included planning activities, and 32 percent have incorporated policy processes. Less than 13 percent have had activities focusing on piloting financial mechanisms to mainstream biodiversity.

Project sectors. A majority (over half) of GEF projects with mainstreaming biodiversity objectives are implemented in the forestry and agriculture sectors, or in sectors that include mainstreaming biodiversity in forestry and agriculture sectors. At the regional level, projects in Africa target the agriculture sector, while a mix of agriculture and forestry projects dominate the Asia and Pacific and Latin America and the Caribbean portfolios.

FIGURE 2.5 GEF funding for mainstreaming biodiversity projects by implementing Agency



SOURCE: GEF Project Management Information System.

NOTE: Total GEF project funding includes and any project preparation grants awarded. ADB = Asian Development Bank; AfDB = African Development Bank; CAF = Development Bank of Latin America; CI = Conservation International; FAO = Food and Agriculture Organization of the United Nations; FUNBIO = Brazilian Biodiversity Fund; IDB = Inter-American Development Bank; IFAD = International Fund for Agricultural Development; IUCN = International Union for Conservation of Nature; UNEP = United Nations Environment Program; WWF = World Wildlife Fund.

2.2 Relevance

The GEF biodiversity mainstreaming portfolio is highly relevant to the CBD and its member countries and to the private sector. One key point of guidance to the GEF by the CBD Conference of the Parties is to promote synergies between the biodiversity-related conventions. The GEF is adhering to this guidance by shifting toward multiple focal area projects and adopting

integrated approaches in its programming. The CBD-mandated NBSAPs are an important national-level instrument used for biodiversity mainstreaming planning (CBD Secretariat 2011). GEF support has enabled 190 of 196 (96 percent) parties to the CBD to submit national reports to the CBD Secretariat; this is close to universal submission.

The GEF is supporting the CBD with respect to the 2030 Agenda for Sustainable Development and the Sustainable Development Goals through its investments in mainstreaming biodiversity projects. These investments are helping countries meet Sustainable Development Goal targets, particularly for Goal 14 (life below water) and Goal 15 (life on land).

GEF interventions in integrating natural capital in the value chain, product certification, sustainable management of landscapes and seascapes to ensure long-term availability of biodiversity-dependent raw material and ecosystem provisioning services are particularly crucial for the private sector.

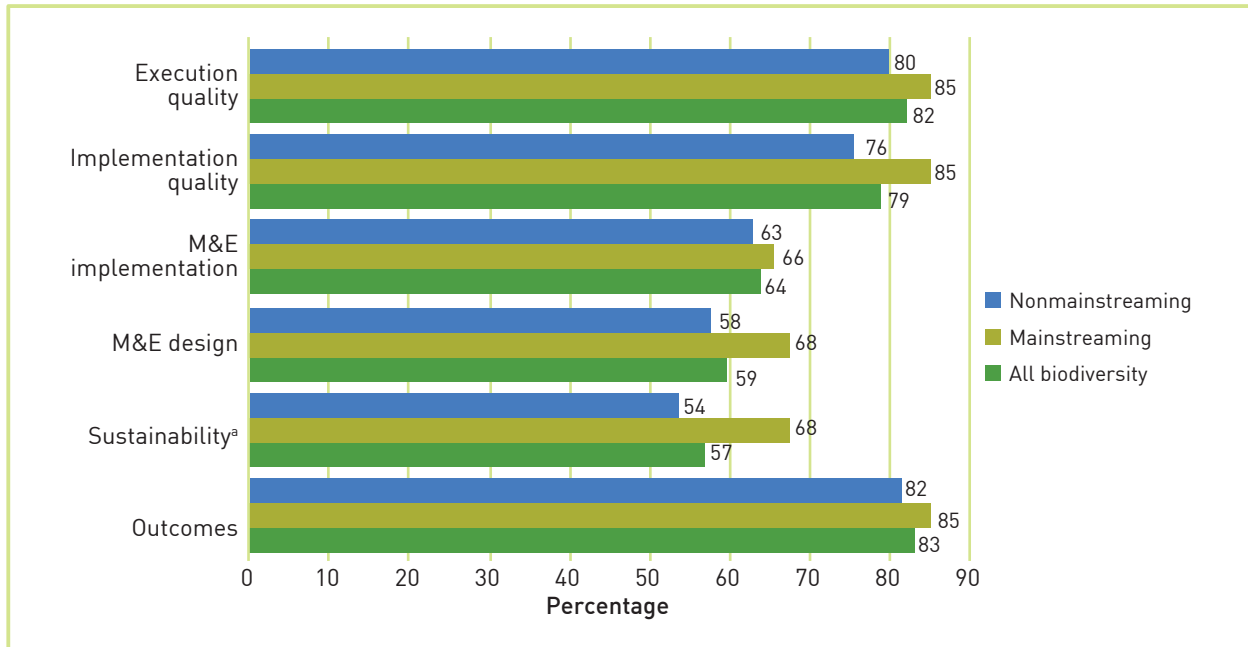
2.3 Performance

Eighty-five percent of biodiversity mainstreaming projects had outcome ratings in the satisfactory range. A large percentage of the portfolio received scores in the satisfactory range for project implementation and execution quality, with lower ratings for monitoring and evaluation and sustainability (figure 2.6).

The GEF Independent Evaluation Office's 2017 Annual Performance Report (APR) database was used to review the performance trends of 161 completed projects with biodiversity mainstreaming objectives:

- 106 full- and 55 medium-size projects

FIGURE 2.6 Percentage of biodiversity projects with performance ratings in the satisfactory/likely range



SOURCE: GEF IEO terminal evaluation review data set.

NOTE: GEF project performance is rated on a six-point scale from highly unsatisfactory to highly satisfactory on quality of outcomes and on a six-point scale from highly unlikely to highly likely on the sustainability of project outcomes.

- 130 biodiversity stand-alone projects and 31 multifocal area projects with a biodiversity component
- 95 projects from GEF-3, 65 from GEF-4, and 1 from GEF-5

The data set included ratings on outcomes; sustainability; and quality of implementation, execution, and M&E design and implementation. Reporting in the APR is primarily based on the evidence provided in the terminal evaluation reports of completed projects.²

The performance ratings for GEF mainstreaming biodiversity projects are comparable to those

for the GEF overall portfolio. The outcomes of 85 percent of biodiversity mainstreaming projects are rated in the satisfactory range. This performance is comparable to the nonmainstreaming biodiversity portfolio (82 percent of projects with outcomes in the satisfactory range) and all biodiversity projects (83 percent). Eighty-five percent of the mainstreaming biodiversity projects received scores in the satisfactory range for both execution quality and implementation quality; this is slightly higher than for the biodiversity portfolio as whole. Smaller percentages of these projects score lower on M&E design, M&E implementation and sustainability ratings. More biodiversity mainstreaming projects (greater than 10 percent) were rated as having outcomes likely to be sustained compared to nonmainstreaming and overall biodiversity projects.

²All terminal evaluations and ratings are reviewed and validated by the GEF Independent Evaluation Office and/or the evaluation office of the respective GEF partner Agency.

Performance ratings for the biodiversity mainstreaming portfolio vary by region. Larger percentages of the projects implemented in Europe and Central Asia received satisfactory performance ratings than those implemented in other regions (table 2.1). Specifically, 93 percent and 90 percent of European and Central Asian projects were rated in the satisfactory range for, respectively, implementation quality and outcomes. In contrast, only 53 percent of the mainstreaming projects in Africa were rated as having outcomes likely to be sustained, and only 52 percent of African biodiversity mainstreaming projects received satisfactory ratings for M&E implementation. Overall, sustainability ratings for mainstreaming projects in Asia and the Pacific, Europe and Central Asia, and Latin America and the Caribbean are comparable, with about 70 percent of the projects in each region's portfolio rated as having outcomes likely to be sustained. Global projects tended to perform better, with larger percentages receiving ratings in the satisfactory/likely range for outcomes (93 percent), sustainability (91 percent), and execution quality (92 percent). However, the percentage receiving satisfactory ratings for M&E design was lower than for the regions.

By focus of intervention, those planning for biodiversity mainstreaming accounted for the

largest percentage of projects (93 percent) receiving outcome ratings in the satisfactory range.

Interventions focusing on policy, planning, and production accounted for the largest percentage (89 percent) of projects whose M&E design and implementation were rated in the satisfactory range and whose outcomes were rated likely to be sustained (figure 2.7). Across all areas of focus, similar percentages of projects received low to moderate ratings for sustainability, M&E design, and M&E implementation.

2.4 Broader adoption

Of the 69 mainstreaming biodiversity projects for which adoption ratings are available, 64 percent showed broader adoption. Broader adoption of approaches and/or technologies promoted through GEF projects typically takes place through mainstreaming, replication, scaling-up, and/or market change.³ Broader adoption of initiatives

³ *Mainstreaming*: information, lessons, or specific results of GEF projects are incorporated into broader stakeholder mandates and initiatives such as laws, policies, regulations, and programs. This may occur through governments and/or development organizations and other sectors. *Replication*: GEF-supported initiatives are reproduced or adopted at a comparable administrative or ecological scale, often in another geographical area or

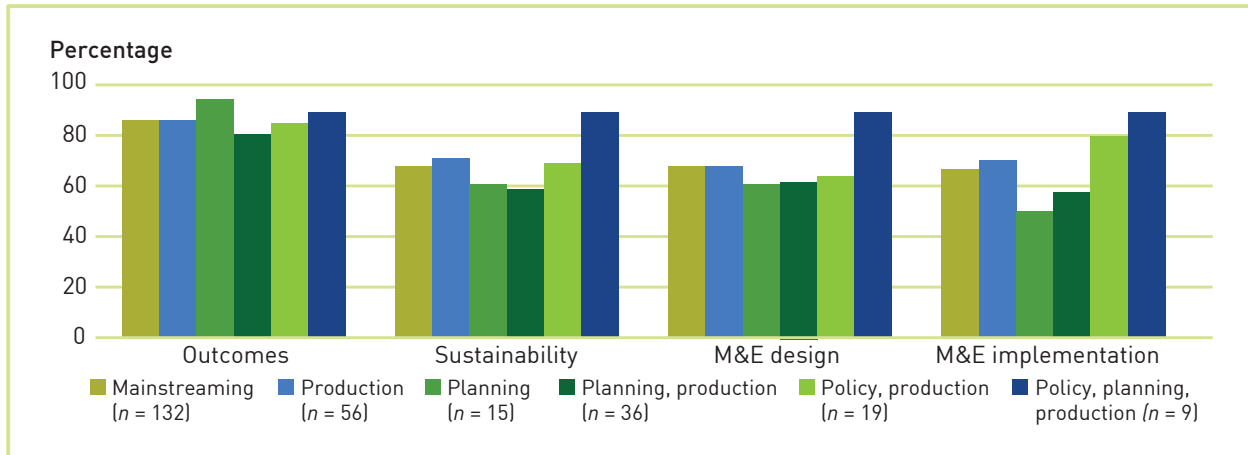
TABLE 2.1 Percentage of biodiversity mainstreaming projects with performance ratings in the satisfactory/likely range, by region

| Region | Outcomes | Sustainability | M&E design | M&E implementation | Implementation quality | Execution quality |
|--------------------------------------|----------|----------------|------------|--------------------|------------------------|-------------------|
| Africa (n = 36) | 81 | 53 | 64 | 52 | 77 | 77 |
| Asia and the Pacific (n = 40) | 85 | 72 | 68 | 56 | 85 | 88 |
| Europe and Central Asia (n = 30) | 90 | 70 | 70 | 87 | 93 | 87 |
| Latin America and Caribbean (n = 40) | 83 | 68 | 75 | 69 | 87 | 87 |
| Global (n = 15) | 93 | 91 | 53 | 69 | 85 | 92 |

SOURCE: GEF IEO terminal evaluation review data set.

NOTE: GEF project performance is rated on a six-point scale from highly unsatisfactory to highly satisfactory on quality of outcomes and on a six-point scale from highly unlikely to highly likely on the sustainability of project outcomes.

FIGURE 2.7 Percentage of biodiversity projects with performance ratings in the satisfactory/likely range, by focus of intervention



SOURCE: GEF IEO terminal evaluation review data set.

NOTE: GEF project performance is rated on a six-point scale from highly unsatisfactory to highly satisfactory on quality of outcomes and on a six-point scale from highly unlikely to highly likely on the sustainability of project outcomes. Interventions can have multiple focuses.

with biodiversity mainstreaming components takes place at the local scale. A majority (41 percent) of the broader adoption of GEF-supported initiatives in biodiversity mainstreaming are taking place at low scales (i.e., within local administrative units or markets); for only 3 percent (two projects) is broader adoption occurring at a large scale. For example, the terminal evaluation of one of the two GEF biodiversity mainstreaming projects that achieved broader adoption at a large scale, Mexico's Environmental Services Project (GEF ID 2443) found strong national strategies on the environment, and institutionalization of these strategies and programs across public and private sectors

contributed to the project's success, sustainability, and broader uptake.

Factors that were cited for biodiversity mainstreaming projects as contributing to broader adoption are stakeholder ownership (community, local governments, and high-level government actors at the national scale); incorporating lessons from both historical and other parallel initiatives; technical and institutional capacity development; interagency and institutional collaboration and partnerships; and provisions in the project framework for potential replication, long-term engagement, and sustainability.

region. *Scaling-up:* GEF-supported initiatives are implemented at larger geographical scale, often expanded to include new aspects or concerns that may be political, administrative or ecological in nature. *Market change:* GEF-supported initiatives help catalyze market transformation by influencing the supply of and/or demand for goods and services that contribute to global environmental benefits. This may encompass technological changes, policy and regulatory reforms, and financial instruments.

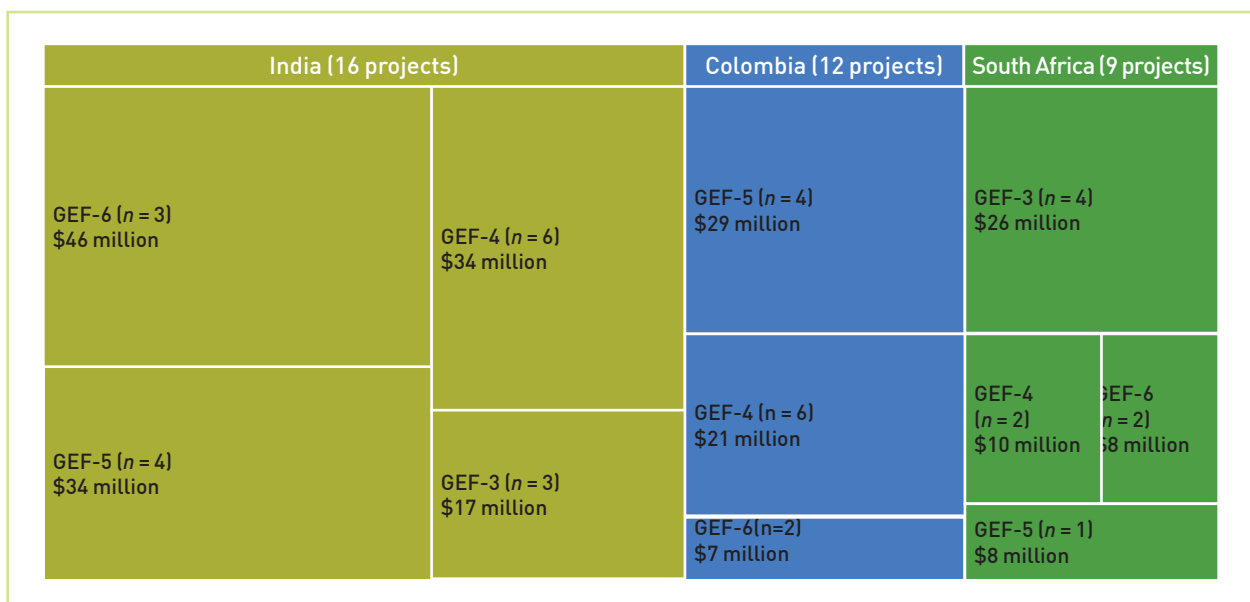
3: Country case study findings

The three case study countries have had a long-term engagement with GEF mainstreaming projects. In total, they have 37 such projects: 12 in Colombia, 16 in India, and 9 in South Africa. Most of these are national projects, with the exception of two global projects in South Africa (figure 3.1).

Terminal evaluation data are available for four completed projects in Colombia, six in India, and five in South Africa. All the projects in Colombia and India were rated as having outcomes in the

satisfactory range, as were four of the five projects in South Africa. Colombia's projects received satisfactory ratings on all parameters except likelihood of outcome sustainability; ratings on this parameter were also low for the projects in the other two countries as well. The South Africa projects' terminal evaluation report data highlighted the importance of M&E design and implementation, as only 60 percent of the projects had satisfactory ratings.

FIGURE 3.1 Treemap: grant amounts in each case study country across the GEF replenishment periods



SOURCE: GEF Project Management Information System.

3.1 Transformation by raising awareness and informing policy

The country studies demonstrate how GEF projects have assisted transformational processes by supporting applied research and the dissemination of findings. Simultaneously, they have enhanced the technical capacities and strategic positioning of institutional partners, which have become influential in shaping national biodiversity policies and programs. Almost all of the GEF biodiversity mainstreaming projects in the country samples have successfully advanced transforming practices within targeted sectors, institutions, and production landscapes toward biodiversity-friendly models.¹ Many project case studies indicate that biodiversity-friendly production models and ecosystem-based landscape management practices have been adopted and mainstreamed within key sectors—including the coffee sector in Colombia, and fisheries in India—and among communities situated in landscapes with biodiversity of global importance.

GEF support to national biodiversity research institutions has had an important catalytic effect.

This support has strengthened their capacity and positioned them to inform government policy levels, the conservation community, and the public at large. In all three countries, the sharing and dissemination of updated biodiversity research findings by recognized national research institutes has played a decisive role in shaping national biodiversity conservation policies and advocacy platforms.

Biodiversity research and awareness raising by recognized national institutes play a fundamental role in shaping policies supporting

biodiversity conservation. Institutions such as the Alexander von Humboldt Biological Resources Research Institute (IAHV), the John von Neumann Environmental Research Institute of the Pacific (IIAP), and the Amazon Institute of Scientific Research have received technical and institutional support from the GEF over the years, and have served as national executing partners in various country projects. In India, the field learning centers that were established under the World Bank-implemented Biodiversity Conservation and Rural Livelihoods Improvement project (GEF ID 2444) and scientific institutions such as the Wildlife Institute of India are designated knowledge partners that provide updated spatial biodiversity data, which inform policy briefs for decision makers. South Africa is considered a regional and global hub of biodiversity expertise and has had an important role in articulating global mainstreaming lessons by hosting international events including STAP workshops. The South African National Biodiversity Institute (SANBI) is a recognized authority on mainstreaming; it publishes periodic assessments of the state of national biodiversity that are based on the best available science. In all cases, these institutions have played a fundamental role in transforming public sector attitudes and shaping overarching environmental policies that support biodiversity conservation.

COLOMBIA

Colombia's Humboldt Institute has played a lead role in raising national biodiversity awareness and articulating national policy.

The institute is an influential driver of biodiversity research, policy analysis, and advocacy. It updates knowledge of biodiversity trends and threats through a variety of publications; reviews trends in biodiversity policy and expenditure; and communicates findings to a broad audience that includes government decision makers, nongovernmental organizations, rural

¹ In the context of mainstreaming, *transformation* is the stage at which biodiversity conservation moves out of protected areas and toward the wider landscape.

associations and community organizations in biodiversity hotspots, the media, and the general public. It has participated in the design of the country's Integrated Strategy for Forest Management and Control of Deforestation, the 2016–2030 National Biodiversity Strategy and Action Plan designed to implement the National Policy for the Integral Management of Biodiversity and Its Ecosystem Services (PNGIBSE). The Humboldt Institute designed and manages Colombia's Environmental Information System, the country's principal environmental database used by the National Council for Economic and Social Planning. It also helped the council in formulating the Long-Term Green Growth Policy which Colombia adopted in 2018 and which incorporates environmental criteria for the allocation of public resources.

GEF support for on-site research was instrumental in convincing the National Federation of Coffee Growers of Colombia (FNC) to change its production and extension models. Demonstrating the link between landscape management and higher-quality, more sustainable coffee production meant changing the FNC extension model. The federation, which reaches an estimated 560,000 farmers in 602 municipalities, had long promoted a monocrop, input-intensive, treeless model of coffee cultivation—which had been taught to and practiced by generations of coffee farmers. GEF support has led to the inclusion of shade-grown coffee (under certain conditions) and landscape management practices into traditional models of cultivation. These practices include reforesting native tree species, re-establishing biological connectivity between forested areas, protecting watersheds, lowering agrochemical applications, and recycling wastes from initial coffee processing.

INDIA

The GEF's World Bank–implemented India Ecodevelopment project has played an important

transformational role in India's mainstreaming journey. Specifically, it has demonstrated the significance of community and local government participation in managing protected areas and conserving biodiversity. Biodiversity conservation was in turn supported by the development of environmentally friendly opportunities for income generation. This eight-year project is considered to have set the stage for an integrated conservation and development approach in the country. One of its positive outcomes has been the establishment of a government-owned trust to sustain park management and foster ecodevelopment initiatives. Another significant outcome was the creation of the Periyar Tiger Conservation Foundation to sustain management of the Periyar tiger reserve. The foundation's establishment has had a transformational effect; in its wake, similar foundations have been established in India's other tiger reserves. This arrangement provides a framework for collaboration between civil society organizations and government authorities in managing the reserves.

A recent GEF project aimed to achieve long-term conservation and sustainable use of India's medicinal plant diversity—particularly its globally significant species. The Mainstreaming Conservation and Sustainable Use of Medicinal Plant Diversity in Three Indian States project (GEF ID 1156) did so by mainstreaming these objectives into forest management policy and practice at the national, state, and local levels. The project was implemented in the Indian states of Arunachal Pradesh, Chhattisgarh, and Uttarakhand, which are home to more than 30 globally significant medicinal plants and encompass a broad range of ecological conditions and biological diversity. The project has had a transformational effect on the management and conservation of medicinal plants in India, which traditionally was fragmented across different ministries and organizations with overlapping responsibilities. The project supported

the design of a National Inter-Sector Strategy on Conservation and Sustainable Use of Medicinal Plants, which promotes biodiversity mainstreaming through an integrated institutional/sectoral framework. The strategy has been adopted and is likely to be sustained through the medicinal plant boards of several Indian states. The project also led to the first registration of a medicinal plant (*Cinnamomum tamala*) under India's Geographical Indications of Goods (Registration and Protection) Act, setting a precedent that can be further upscaled.

SOUTH AFRICA

South Africa's first NBSAP (2005) was based on consultative processes that balanced conservation and development concerns. The plan called for mainstreaming within productive landscapes and sectors, and effectively conveys the results of scientific research to policy and legislative levels. The second NBSAP (2015) was even stronger, building on lessons learned and including indicators of mainstreaming at multiple levels. Its spatial prioritization of NBSAP priorities is internationally recognized, with interviewees and the literature (e.g., OECD 2018; SANBI and UNEP-WCMC 2016) considering it to be at the forefront of international practice, based on its periodic national biodiversity assessments.

The Cape Action for People and Environment (CAPE) Program supports conservation of South Africa's Cape Floristic Region, which includes 3 of the world's 34 biodiversity hotspots. The program was initially supported by the CAPE Biodiversity Conservation and Sustainable Development Project (GEF ID 1516). As part of its implementation strategy, the project created the CAPE learning network, which has been operational for 10 years, showcasing conservation achievements, disseminating lessons, and promoting landscape management practices. The CAPE program is part

of a longer-term strategy that seeks to mainstream conservation on a broader scale.

3.2 Elevating biodiversity conservation and landscape management to a broader range of sectors and institutions

A majority of the country projects and national partners are in the process of elevating biodiversity conservation considerations to other sectors and institutions to address threats and mainstream environmentally friendly practices.² Their implementation strategies combine the upstreaming of landscape management and biodiversity-friendly production models to a wider range of non-environmental institutions and sectors—from open-pit mining and coffee farming in Colombia to the cultivation of grapes for wine-making in South Africa and artisanal fishing in India—through capacity development, advocacy, and dissemination. Policy and legal-regulatory reform are often needed to elevate biodiversity concerns transversally, reaching a broader range of sectors and influential actors. GEF support in the elaboration of NBSAPs has contributed to this endeavor at a macro-policy level. However, project experiences suggest that legislative and regulatory reform often involve extended processes that are incremental, influenced by political externalities, and difficult to consolidate within the standard four- to five-year project cycle.

The next stage of the mainstreaming journey elevates biodiversity considerations across sectors, institutions, and production landscapes and seascapes, leading to their adoption on a broader scale. As this process unfolds, the conservation

²Elevation is the mainstreaming stage at which the conservation sector becomes more effective at working with economic sectors, and biodiversity issues are taken up by a broader range of sectors, institutions and actors.

sector becomes more effective in working with economic sectors and convincing a broader range of stakeholders to buy into biodiversity conservation—often in combination with PES, carbon funds, and other market-based mechanisms.

A large share of the project sample applied landscape management and conservation practices in geographic areas with globally significant biodiversity outside the protected area system. In such cases, mainstreaming efforts were directed at target populations and productive sectors that are associated with threats to biodiversity, yet offer opportunities to demonstrate biodiversity-friendly production models that are based on an ecosystem vision.

COLOMBIA

Mainstreaming Biodiversity in the Coffee Sector in Colombia (GEF ID 3590) has successfully elevated landscape management and biodiversity conservation within the FNC. It has had particular success with the FNC rural extension network represented across the national coffee landscape. This process started with an initial demonstration of associated biodiversity-friendly farming practices in 13 municipalities that combine agroforestry and shaded cultivation, watershed management, re-establishment of biological connectivity between forested areas, and waste recycling. These practices are now incorporated within the FNC's core extension package, and are in process of being extended to a broader range of stations across the national coffee landscape.

Practices promoted by the Mainstreaming Biodiversity in Sustainable Cattle Ranching (GEF ID 3574) project are being significantly upscaled. The project was originally implemented in Colombia's eastern savannas and southern mountain valleys through the National Cattle Ranching Association, in collaboration with the Nature

Conservancy Trust and other executing partners. Upscaling of project practices is being led by the Grasslands Alliance in collaboration with the Visión de la Amazonía and the REDD+ Early Movers programs;³ these efforts are expanding the scale of intervention from 325 families and 9,500 ha to 1,400 families on 50,000 ha. Another initiative funded by the U.K. Business, Energy and Industrial Strategy has built on the GEF project by channeling carbon sequestration payments to approximately 3,000 ranchers covering an area of 116,000 ha. A field visit and remote sensing analysis at one project site has shown an increase in tree cover and tree fence after completion of the GEF project (figure 3.2).

An ambitious project aims to elevate biological connectivity and biodiversity conservation within the planning and budgeting frameworks of departmental and municipal governments.

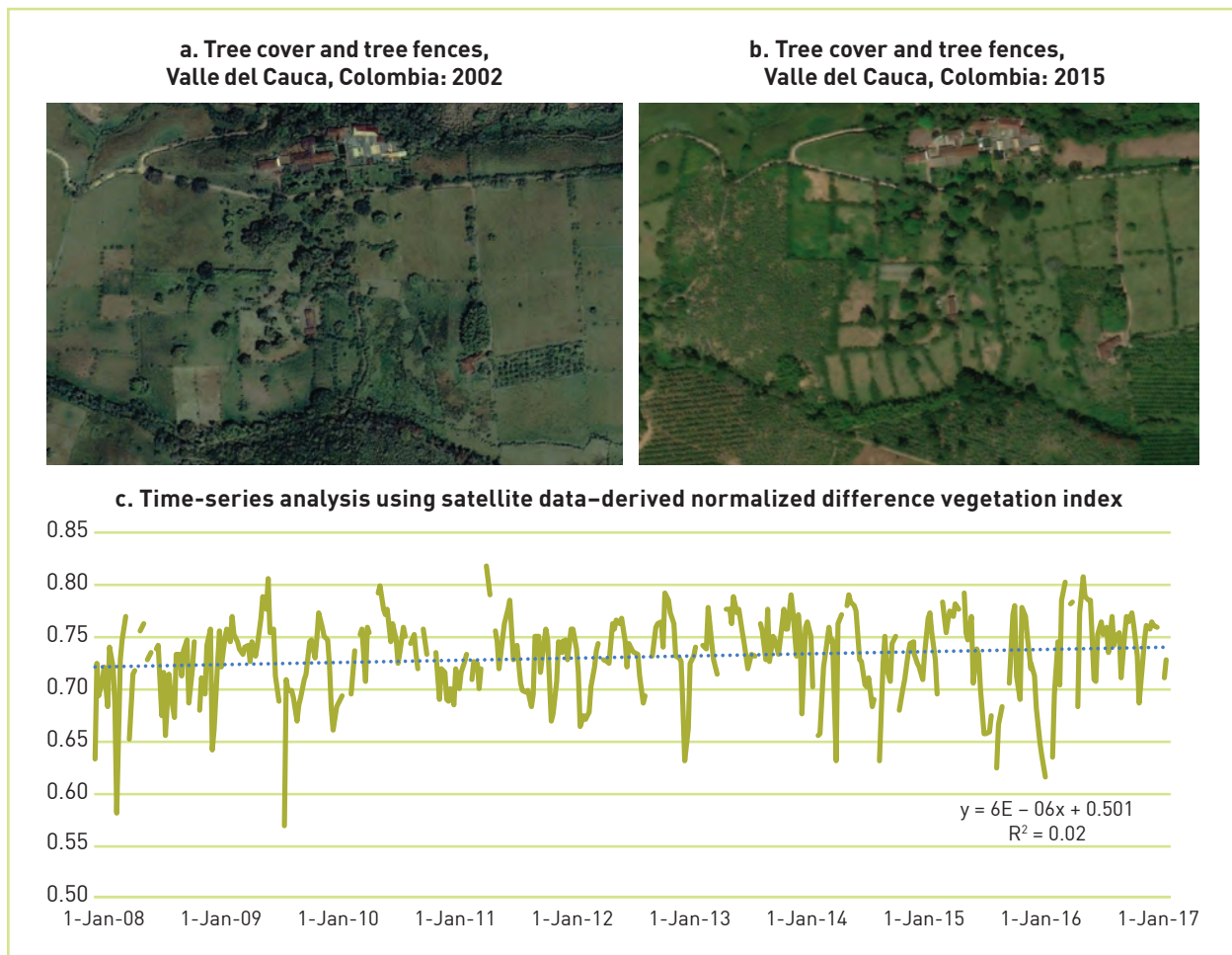
Implementing the Socio-Ecosystem Connectivity Approach to Conserve and Sustainable Use Biodiversity in the Caribbean Region of Colombia (GEF ID 5288) is using ongoing integrated planning processes to design new ethnic and territorial development plan programs for postconflict areas following the peace agreement. This framework is being used as an entry point to articulate biodiversity conservation activities at the municipal, regional, and sectoral levels; and to build support for the development of biological corridors linking forests with protected areas.

INDIA

A recently approved initiative aims to transform the management of agricultural landscapes containing globally significant wild animal species.

³ REDD+ refers to reducing emissions from deforestation and forest degradation, conserving forest carbon stocks, sustainably managing forests, and enhancing forest carbon stocks.

FIGURE 3.2 Vegetation productivity at a GEF silvo-pastoral project site, 2002–15



SOURCE: Satellite image from Digital Earth.

Green-Ag: Transforming Indian Agriculture for Global Environmental Benefits and the Conservation of Critical Biodiversity and Forest Landscapes (GEF ID 9243) plans to elevate these practices in the states of Rajasthan, Madhya Pradesh, Uttarakhand, Odisha, and Mizoram. It seeks to mainstream ecologically sustainable agricultural approaches at policy levels, addressing all aspects of production by promoting cooperative management between protected areas, local resource users, and agricultural agencies through innovative operations.

The India Ecosystems Service Improvement Project (GEF ID 4942) is another ongoing project that aims to build capacities in relevant government agencies at the central and state levels to elevate biodiversity conservation within development plans and policies. It plans to demonstrate strategies to improve the conservation status of forest ecosystems, with consideration of development models to measure carbon stocks and carbon sequestration in forests, in conjunction with sustainable livelihoods models to improve incomes and employment.

Another relevant effort is the **Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the Malvan Coast, Maharashtra State (GEF ID 3941) project**. Implemented by UNDP, its project strategy included the implementation of two child projects to generate a broader set of experiences for further replication by the government. One child project focused on private industries (energy and agriculture-related); the other targeted agriculture, fisheries, and tourism. The project contributed significantly to positive regulatory measures related to aspects of the fishery sector (i.e., fishing net dimensions; it had less success in adjusting the regulatory framework for the tourism sector. The project also led to the establishment of district cross-sectoral committees to facilitate coordination. The lead role assumed by district administration in the project's implementation appears to have helped encourage mainstreaming within productive sectors.

SOUTH AFRICA

A GEF-supported initiative led by the World Wildlife Fund (WWF) is working with South Africa's wine sector to incorporate biodiversity indicators as part of industrywide sustainability standards. The effort has evolved into a "conservation champions" initiative, focusing on endangered ecosystems of the Cape Floral Kingdom; while not large, these areas are uniquely important to South Africa's threatened biodiversity. The initiative is also proposing mainstreaming biodiversity and ecosystem considerations in other forms of voluntary standards such as water management in agriculture. The WWF's work in the wine sector is considered a landmark initiative in terms of promoting integrated landscape management approaches that combine livelihood improvement and food security with the conservation of endangered species.

Ongoing GEF projects such as Mainstreaming Biodiversity into Land Use Regulation and

Management at the Municipal Scale (BLU; GEF ID 5058) continue to support voluntary mainstreaming in relevant sectors. Besides the wine sector, these include fruit, forestry, and sugar. These projects have evolved approaches from pilot and voluntary initiatives to better focus on the legal and regulatory aspects of protecting strategic water basins. Demonstrations of the ecological infrastructure concept are cross-cutting different industries and emphasize water security, a key political and development priority.

3.3 Elevating biodiversity considerations in production landscapes and seascapes

GEF projects in the three countries were key in bringing biodiversity considerations to larger landscapes and seascapes, and populations. However, the scarcity of data regarding benefits and trade-offs and systematization of results associated with biodiversity mainstreaming practices is an ongoing constraint. Possibly the greatest mainstreaming challenge lies in elevating biodiversity conservation in productive landscapes and seascapes where local populations rely on the exploitation of natural resources for their livelihood. The elevation of ecosystem-based landscape management and conservation to a critical mass of communities, local governments, and productive sectors is essential to establish conditions for accelerated mainstreaming on the ground—and have measurable effects on biodiversity and/or threats to it. However, limited access to conservation financing incentives such as carbon markets and PES mechanisms and time constraints make mainstreaming difficult to achieve within the project cycle.

Several GEF projects and national executing partners are successfully accelerating biodiversity mainstreaming at the landscape scale. This is being accomplished through the extension of

biodiversity-friendly coffee farming systems that meet international certification requirements and bring higher prices, the demonstration of sustainable cattle ranching, sustainable livelihood alternatives to sea coral mining, and the negotiation of conservation agreements with farmers in biodiversity hotspots where government agencies have limited presence.

COLOMBIA

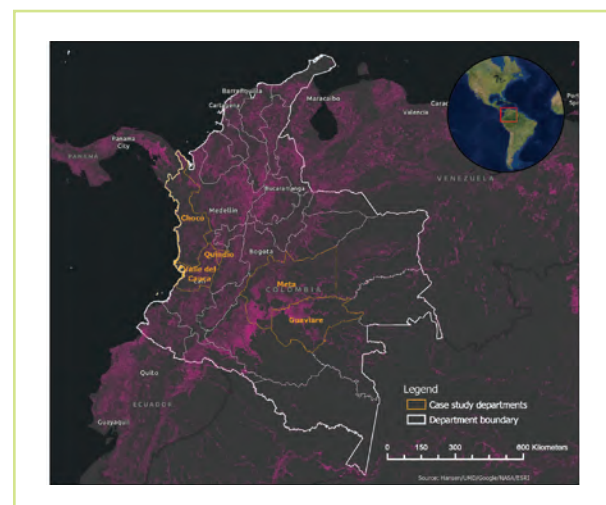
The elevation of landscape management and biodiversity-friendly farming practices within the FNC extension network has triggered their adoption on a broader geographic scale.

Mainstreaming Biodiversity in the Coffee Sector in Colombia's initial project strategy foresaw the demonstration and extension of biodiversity-friendly coffee cultivation in 13 municipalities of 3 departments with varying altitudes, climate, and average farm size. By the project's end in 2014, more than 31,000 ha of certified coffee on 10,524 farms met international biodiversity certification standards; 1,022 ha were under landscape management, contributing to the connectivity of 10,340 ha of forest. Almost 400,000 trees were planted from 264 native species, and 9,475 tons of carbon dioxide were captured and sold in 2014 on the PES market. However, transitional costs and short-term socioeconomic trade-offs cannot be overlooked. For example, farmers in Guaviare Department participating in the Forest Conservation and Sustainability in the Heart of the Colombian Amazon (GEF ID 5560) project are losing half the income they would have made had they continued to plant coca leaves, which is an illicit crop and considered a threat to biodiversity.

The Amazon Institute of Scientific Research is working to raise the environmental awareness and commitment of farming communities to landscape management and environmentally friendly production in high-biodiversity areas.

This initiative is being conducted through the Heart of the Colombian Amazon project and is aimed at areas emerging from extended periods of armed conflict. The project strategy seeks to contain encroachment threats to biodiversity—population migration, deforestation, extensive cattle ranching—by strengthening the sustainable livelihoods of communities neighboring the Chiribiquete National Park and the Guaviare Department's forest landscape. Figure 3.3 shows the extent of deforestation in Colombia over the period 2001–17, including in Guaviare. The project approach combines participatory biodiversity assessments drawing on local knowledge and socializing findings, and negotiation of three-year conservation agreements with individual farmers in exchange for agricultural inputs and technical assistance. These agreements are aggregated into area management plans for sustainable production that pave the way for agroforestry associations and the commercialization of nontimber products. The project also works at upstream levels by seeking to elevate biodiversity conservation within local and regional development plans and budgets in coordination

FIGURE 3.3 The extent of deforestation in Colombia



SOURCE: Satellite data from Hansen/UMD/Google/NASA/ESRI.

with municipal governments and other public sector agencies.

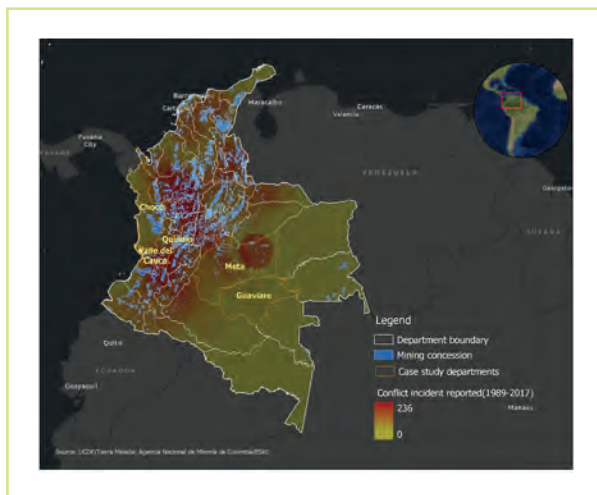
A mining project aims to transform productive landscapes by containing threats of land degradation and water contamination caused by unlicensed gold mining and their effects on public health and social stability. Conservation of Biodiversity in Landscapes Impacted by Mining in the Chocó Biogeographic Region (GEF ID 4916) is based in a postconflict region. Figure 3.4 shows the mining concession areas and how they overlap with areas of conflict where the GEF project was implemented. Project activities on the ground have focused on landscape management, monitoring biodiversity vulnerability, raising awareness of illegal mining, and creation of municipal forest reserves and protected areas. It works with communal organizations such as the community committees and the Chief Community Council (Consejo Comunitario Mayor de la Asociación Campesina Integral del Atrato—COCOMACIA) and is an active partner with the GEF Small Grants Programme. This last has led to funding

start-up enterprises to harvest hearts of palm and the acai fruit of the *Euterpe oleracea* tree, and to produce natural cosmetics. The project implementation strategy combines mutually supportive interventions and partnerships at various levels. The resulting synergies are elevating mining issues and their impact on biodiversity—both horizontally among municipal governments, community councils, and territorial organizations; and vertically to the IIAP and Colombia’s National Congress—with the aim of revising the current mining code with stronger environmental safeguards and sanctions for unlicensed mining. However, these efforts have had limited impact to date on the dispersed, small-scale, unlicensed operations that constitute over 95 percent of the region’s mining activity.

INDIA

An early GEF project supporting India’s mainstreaming journey addressed habitat destruction, the overharvesting of marine resources, and land-based marine pollution. The Conservation and Sustainable Use of the Gulf of Mannar Biosphere Reserve’s Coastal Biodiversity project (GEF ID 634) was able to elevate biodiversity conservation considerations through the establishment of the Gulf of Mannar Biosphere Reserve Trust, a cross-sectoral coordination body devoted to integrated management, and awareness raising and livelihoods development in fishing communities. Project activities have led to the complete cessation of coral mining along the coast and on 21 islands, increased live coral cover and total fish landings, the sustainable use of marine resources with the adoption of eco-friendly fishing gear, the banning of destructive fishing practices, and improved access to low-interest microcredit. Village marine conservation and ecodevelopment councils were established in 248 villages, and local conservation measures were adopted.

FIGURE 3.4 Mining concessions and conflict areas in Colombia



SOURCE: Satellite data from UCDP/Tierra Minada; National Mining Agency of Colombia/ESRI.

Another pioneering GEF initiative in India promoted new models of conservation at the landscape scale through capacity development and institution building to mainstream conservation outcomes. The Biodiversity Conservation and Rural Livelihoods Improvement project supported the demonstration and scale-up of landscape management and conservation approaches, and the development of multistakeholder partnerships for their dissemination and mainstreaming. Through the adoption of a protected area management plan for the Wild Ass Sanctuary in the Little Rann of Kutch landscape (a UNESCO World Heritage site), the project brought at least 600,000 ha under more effective management for conservation. Approximately 500,000 ha within the sanctuary is under effective conservation management; an additional 100,000 ha across other project landscapes is being managed for conservation outcomes, combining work on improving habitats with sustainable resource use, wildlife rescue/rehabilitation, and reduced dependency on protected area resources. The project has led to broader adoption of landscape management approaches. For example, the state government of Gujarat has funded two new landscape management plans based on project experience. The Forest Department of Kerala State used its own funds to implement the approach in the Agasthyamalai landscape. The national government has included the project as a central sector scheme under the Ministry of Environment, Forest and Climate Change, and has allocated budgetary resources for its continued implementation.

SOUTH AFRICA

The GEF-supported South African Mining and Biodiversity Guideline focuses on large multinational corporations with significant footprints in the grasslands biome, but is applicable more broadly as well. The guideline (DEA et al. 2013) has been recognized for its success (Roe and Tayleur 2016),

and, at the regional level, has influenced Southern African Development Community guidelines. Voluntary initiatives have been successful in this sphere, but a growing number of small and illegal mining endeavors in the grasslands threaten to undermine intended outcomes. Current GEF projects (e.g., BLU) are focusing more on the legal and regulatory aspects of mining, and are including strategic water areas.

3.4 Accelerating biodiversity mainstreaming⁴

Few GEF projects have reached the stage of accelerating biodiversity mainstreaming processes, which is necessary to contain threats to biodiversity and to have a measurable conservation impact. These goals are difficult to achieve during a project lifetime. Biodiversity mainstreaming processes tend to require gestation periods extending beyond demonstration and dissemination before conservation practices are adopted systemically. Accelerated mainstreaming processes often follow the actual project and rely more on the sustained engagement of national partners after implementation. As such, accelerated mainstreaming is conditioned by national stakeholder capacities and commitment, governance cycles, and other factors external to the project. GEF biodiversity projects in the three case study countries that have triggered accelerated mainstreaming have tended to be longer term than average, with extensions or project phases continuing over successive GEF replenishment periods. The GEF Secretariat 2016 review of mainstreaming biodiversity projects similarly concluded that mainstreaming is

⁴ Acceleration is the mainstreaming stage at which the adoption of biodiversity considerations and changing institutional/sector models start to have effect at the systemic level. This stage is critical to contain the threats to biodiversity and have tangible impact on production landscapes and seascapes.

time-intensive. The GEF-7 biodiversity strategy recognizes the importance of this finding and mentions that investments in mainstreaming will be over multiple phases.

Acceleration is the stage at which the elevation of biodiversity considerations and transformation of institutional or sector paradigms begins to have an effect at a systemic level. Reaching this stage is necessary to contain threats to biodiversity and have a measurable impact on biodiversity conservation at a landscape scale. However, the acceleration of mainstreaming is difficult to achieve during the project cycle due to time and budget limitations. Most projects last four to five years and do not monitor progress beyond their final evaluation. Acceleration is also conditioned by institutional capacity and commitment, governance cycles, and other externalities. Mainstreaming processes are likely to require gestation periods following their demonstration and dissemination before improvements are adopted on a broader scale. Most of the projects in the sample are still in the process of elevating biodiversity considerations within targeted sectors, territories, and communities. Several ongoing projects are likely to require continuity into the GEF-7 cycle (or parallel development cooperation support) in order to sustain and accelerate mainstreaming processes over time.

COLOMBIA

Three years after the project's end, the FNC continues to provide farmer extension services that combine landscape management and environmentally sustainable cultivation practices. As of mid-2018, these practices had been extended to over 60,000 farmers in 32 municipalities, covering a total area of almost 165,000 ha. An average 6,000 tons/year of carbon dioxide are expected to be captured as a result of these practices over the next 20 years. Mainstreaming is also being accelerated through agreements with public and private

partners that have directly contracted for FNC extension services or cofinanced the environmental services being provided. In the Valle Department alone, the FNC has agreements with the regional water authority to help farmers plant trees for the protection of water sources, the national sugar cane association for reforestation of upper water basins to reduce sedimentation, and the department's regional autonomous development corporation for more than \$2 million of landscape conservation services. Four municipalities have approved ordinances that give property tax discounts to coffee farmers who apply landscape management practices.

The conservation approach implemented by the Amazon Institute for Scientific Research is of potential strategic importance as a model for application in postconflict areas across the Amazon region. The project has improved conditions for accelerated transformation, and various aspects of its methodology are being used by the larger Visión de la Amazonía program, a highly visible national initiative linked to the regional REDD+ Early Movers program funded by the governments of Germany, Northern Ireland, Norway, and the United Kingdom for conservation and sustainable development in the Amazon region. Visión de la Amazonía is extending landscape management practices and conservation agreements on a larger scale in Caquetá and Guaviare Departments, with a target of approving 1,400 agreements for the conservation of 53,500 ha of forest; this will indirectly benefit a considerably larger area as well.

INDIA

As noted, the government of India is continuing the Biodiversity Conservation and Rural Livelihoods Improvement Project as a central sector scheme. It is being operated under the Ministry of Environment, Forest and Climate Change, and budgetary resources have been allocated for its

continued implementation. Similarly, through the Sustainable Land Management in Shifting Cultivation Areas of Nagaland for Ecological and Livelihood Security project (GEF ID 3469), the sustainability of the *jhum* system has been supported through policy reforms and participatory land use planning.⁵ The government of Nagaland has invested an additional \$1 million in scale-up activities, and efforts are under way to replicate the lessons learned across the state through an ongoing project begun in 2017 and supported by the International Fund for Agricultural Development. A recently approved \$43 million Green Climate Fund project, Enhancing Climate Resilience of India's Coastal Communities, builds on the GEF's biodiversity conservation project to influence systemic changes in coastal zone adaptation using ecosystem-based approaches.

SOUTH AFRICA

South Africa continues to innovate in its application of spatial data in planning and management.

For example, the country has adopted a comprehensive spatial planning screening tool supported by the BLU project. Availability of spatial biodiversity data varies considerably across the country, meaning that confidence levels vary as well. There are numerous challenges of scale, which strain the ability to have data appropriately nested and correctly interpreted. Efforts are ongoing to improve data sets, and to better ensure responsiveness to policy questions. For example, following the 2011 national biodiversity assessment which revealed wetlands as being highly threatened yet poorly represented with data, South Africa undertook an Inventory of inland aquatic ecosystems, thereby

⁵Shifting cultivation or *jhum* is the preferred agricultural practice in the hilly parts of northeast India including Nagaland; it is often considered the most suitable form of agriculture for the agro-climatic conditions and steep terrain.

creating its first national freshwater inventory. This work has been supported by the ongoing GEF-5 Biodiversity and Land Use project.

SANBI and the National Statistics Office are designing a natural capital accounting framework that will incorporate biodiversity indicators into the system of national accounts.

This work is being accomplished via a GEF-6 project—Unlocking Biodiversity Benefits through Development Finance in Critical Catchments (GEF ID 9073)—and illustrates the transition from accelerated mainstreaming toward normalization. Once operational, this effort is expected to improve the integration of biodiversity considerations in public investment and development policy decisions. In GEF-7, the Natural Capital Assessment and Accounting entry point is based on a similar rationale.

3.5 Normalization in biodiversity mainstreaming

There is little evidence that biodiversity conservation mainstreaming in the three case study countries has advanced to the normalization stage, although some processes appear to be headed in that direction.⁶ Full internalization of biodiversity mainstreaming is affected by a number of variables outside any project's scope. Moreover, mainstreaming processes are likely to require longer gestation periods to change institutional and personal behavior or have measurable effects on biodiversity.

⁶A subsequent stage of normalization is posited where biodiversity becomes a recognized asset for the economy and is ingrained in the management of productive landscapes and seascapes, and the various sectors.

4: Conclusions and recommendations

4.1 Findings and conclusions

The following summarizes the key findings and conclusions of this evaluation, drawing on the analysis of the portfolio and the three country case studies.

RELEVANCE

The GEF's biodiversity mainstreaming portfolio has played a significant role in implementing the CBD. To date, 471 biodiversity mainstreaming projects have been approved—most of them full size—with cumulative funding of \$2.34 billion in grants and \$12.73 billion in cofinancing. The GEF has promoted biodiversity mainstreaming across its replenishment periods, incorporating it as an objective under GEF-4 and GEF-5 with the aim of extending conservation practices to productive landscapes and seascapes across economic sectors. Support for biodiversity mainstreaming grew during the GEF-3 to GEF-5 cycles with increases both in the number of projects and total grant funding. In GEF-6, fewer mainstreaming projects were approved, but larger project grants were allocated to improve the likelihood of impact at the landscape scale. Most biodiversity mainstreaming projects have focused on productive sectors associated with threats to biodiversity, followed by projects supporting planning and policy. Although a reliable assessment of biodiversity mainstreaming support under GEF-7 is premature at present, mainstreaming is one of the main objectives of the biodiversity

focal area, and mainstreaming entry points are highlighted in the GEF-7 strategy document.

The GEF has been instrumental in supporting national policy reform and planning frameworks that promote biodiversity considerations across sectors and territories. In particular, support provided to strategically positioned national institutions for capacity development, biodiversity research, and knowledge management has enabled the dissemination of reliable information on the state of biodiversity and emergent threats, informing policy makers and driving the formulation of NBSAPs and other policy instruments. Some of this research has fed into the design of national programs and GEF country projects. This has in turn encouraged the engagement of different sectors and actors, public and private (often for the first time), that have influence on globally significant biodiversity at the country level.

PROJECT DESIGN

GEF mainstreaming projects are explicitly designed to address recognized threats to biodiversity. In most cases, the reviewed projects had components and activities addressing recognized threats to biodiversity—incompatible land uses and economic activities (usually extractive) such as unlicensed mining, extensive cattle ranching, overfishing, extraction of coral, and monocrop agriculture—with the aim of mitigating their effects on globally significant biodiversity. Projects use

diverse approaches to this end, including the extension of landscape management practices, agroforestry and sustainable production systems, and biological connectivity linking vulnerable forests to protected areas. Implementation strategies are integrative and multitiered. Several projects have transferred the findings of applied research, field demonstrations, and extension to senior sector and government decision makers so as to transform productive models and inform policy decisions. These approaches have encouraged synergies and learning—both horizontally among local governments, producer associations, and territorial organizations, as well as vertically with sector and government policy leaders—expanding the scale and momentum of biodiversity mainstreaming processes.

PERFORMANCE

Most of the GEF projects that were studied in the three countries have successfully elevated (or are in process of elevating) biodiversity conservation to targeted sectors, institutions, policies, and territories with globally significant biodiversity. All projects support biodiversity mainstreaming to the extent that they have implemented (or are implementing) conservation activities in productive landscapes and seascapes, and sectors outside protected area systems. Country findings indicate that many of these projects have advanced, often significantly, in elevating biodiversity conservation to target sectors, policies, and territories.

A smaller number of projects and national partners are successfully accelerating biodiversity mainstreaming across sectors, institutions, and territories. There are fewer cases of accelerated mainstreaming, by which mainstreaming processes gain in scale and momentum and begin to have a systemic effect. The acceleration of mainstreaming to a broader range and scale of actors appears to be essential in containing biodiversity

threats and achieving measurable conservation impacts over time. However, such acceleration involves incremental processes that build over time and exceed the lifespan of (most) projects, which are based on four- to five-year horizons. Acceleration is also influenced by external factors—such as the capacity and commitment of national partners, governance cycles and political conditions, resource availability, competing sector priorities—that fall outside the influence of most projects. As a result, many ongoing projects may need to be continued into GEF-7 to accelerate mainstreaming processes that enable the achievement of expected outcomes.

Mainstreaming efforts are more successful when there are strong government champions who cut across organizational silos. The development of institutions as members of networks in support of biodiversity mainstreaming is complex and is hindered when governments operate through ministerial silos. Mainstreaming needs strong champions to cut across these silos. South Africa and Costa Rica are both frequently cited as good examples in this regard (box 4.1); but they cannot be treated as templates for other countries to follow, as they have specific advantages in terms of how they have been able to apply mainstreaming. For example, in South Africa, conservation science is well established and there is a conservation policy body of excellence. The governance framework, upon which coherent and coordinated implementation of mainstreaming depends, is relatively strong and there is a functioning infrastructure. There are relatively few other countries in Africa where all of these conditions currently prevail. Buy-in from government partners and building stakeholder management capacity could help break silos. Based on the types of experience and challenges presented above, funding for mainstreaming programs, according to experts, should have preconditions, as noted below:

BOX 4.1 Mainstreaming takes time and requires an enabling policy environment

Successful mainstreaming needs time and depends on preconditions such as an enabling policy environment and policy coherence. Costa Rica and South Africa have specific advantages in terms of how they have been able to apply mainstreaming.

Costa Rica's mainstreaming approaches have focused on creating a conducive policy environment for biodiversity conservation. Through multistakeholder consultations and a commitment to biodiversity mainstreaming, the country has worked to establish and transform key institutions—for example, by merging the Ministry for Energy and the Ministry of Environment to ensure policy coherence. It has created positive incentives for biodiversity conservation through PES; and eliminated perverse incentives, such as subsidies for the cattle industry, that have depleted natural resources; improved coordination across government ministries and agencies; and improved land rights and access.

Endowed with rich biodiversity assets, South Africa has a long history of conservation. Its conservation efforts are driven by science, and there is a strong policy environment. The governance framework, upon which coherent and coordinated implementation of mainstreaming depends, is relatively strong, with well-established institutions; there is also a free press and a functioning infrastructure. There are relatively few other countries in Africa where all of these conditions currently prevail favoring mainstreaming biodiversity.

SOURCES: Cavelier and Gray 2014; Huntley and Redford 2014; Redford et al. 2015.

- Buy-in from government, established by budget allocations and functioning networks of government (and perhaps nongovernment) bodies active in biodiversity mainstreaming

- Stakeholder management capacity (but this cannot be realistically assessed in advance by the GEF because it may entail political sensibilities)

Engaging the private sector remains a challenge for the GEF. According to documentary analysis and stakeholder interviews, the GEF and its partners have found it difficult to engage with large-scale commercial enterprises in biodiversity mainstreaming projects. A challenge in such industries as commercial agriculture, forestry, and mines is that they are large and deal in major investments. Other constraints to engaging the private sector in mainstreaming projects is the lack of expertise within the conservation community, lack of incentive, and lack of knowledge and guidance. Experts noted that the GEF could leverage its relationship with government to engage the private sector but if government is not prepared to engage with these large-scale operators, the GEF has neither the mandate nor the capacity to do so alone. Recently, the GEF has launched innovative financing approaches such as nongrant instruments, and created spaces through the Natural Capital Coalition to leverage private sector capital and ensure that projects are well-resourced for the longer term.

Longer project time frames, through extension of project timelines, enabled initiatives to achieve strategies and outcomes. As found in the South Africa country study, proponents of the Unlocking Biodiversity Benefits through Development Finance in Critical Catchments project (GEF ID 9073) consider that the transformative changes envisioned by the project are likely to take 10 years—and not the four years that were formally approved and budgeted. The CAPE learning network has been operational for more than 10 years, showcasing achievements and disseminating lessons through a dynamic M&E system; the project used the 10-year milestone to revise and update its strategy, which is

based on a far-sighted approach to sustainability. Projects supporting the mainstreaming of medicinal plants and the promotion of green agriculture in India were approved for seven-year periods in order to accompany implementation processes on the ground in a more consistent manner. Projects such as the Heart of the Colombian Amazon initiative have been able to overcome the constraints of working within restrictive timelines by programming successive project phases across GEF funding cycles.

Similar positive influences and challenges affect outcomes in biodiversity conservation and mainstreaming projects across the three countries.

While the challenges are largely determined by specific national or landscape contexts, successful mainstreaming is ultimately influenced by the interaction of economic and environmental interests, institutional monitoring and enforcement capacities, communication and outreach capabilities, and the existence of enabling policy and legal/regulatory frameworks. In Colombia's Chocó Biogeographic region, enforcement of licensing or environmental requirements on broadly dispersed illegal mining operations has not been possible. Vast areas of high-biodiversity forest within the Colombian Amazon are increasingly vulnerable to encroaching threats (deforestation and extensive ranching in particular), following the peace agreement that put an end to armed conflict and opened the territory to immigration.

Other challenges include a lack of environmental safeguards under current legislation.

In Colombia, the national mining code and a lack of approval for legal provisions permitting the participation of afro-Colombian communities in natural resource management—a situation that has pertained for over 20 years—weakens the country's ability to apply biodiversity mainstreaming to productive landscapes and seascapes. The challenges facing South Africa are driven by high levels of poverty and

inequality; low levels of education and employment; and a need for rapid, broad-based economic growth and delivery of services including water, electricity, and safety. The India country study refers to challenges from species loss and ecosystem degradation due to land use changes, natural resource extraction, and development pressures; much of these are reflected in the Colombian context as well. Despite the commonalities in mainstreaming experiences, there are also country specific challenges that need to be highlighted. Examples of these which impose major constraints to mainstreaming biodiversity include rapid economic growth, infrastructure development and agricultural expansion in India; commodity driven land use change, land tenure insecurity, a history of conflict and the ongoing peace process in Colombia, and; economic challenges and emigration in South Africa.

There are also positive common features that facilitate mainstreaming.

These include having well-developed policy and regulatory frameworks for biodiversity conservation, recognized and capable scientific research institutions and expertise, and favorable political conditions. This last is reflected in the shift to majority rule in South Africa, and the two-term presidential administration (and peace agreement) in Colombia, which have enabled more sustained conservation efforts leading to significant expansions of the protected area network and facilitating consistent implementation of GEF projects.

The potential for biodiversity mainstreaming is conditioned to a large extent by intervening factors.

These encompass project effectiveness and efficiency, the commitment of national partners, and externalities outside the project's control. The progress achieved in mainstreaming biodiversity is directly influenced by intervening factors that are both directly related to the project's implementation performance—efficiency, timely output

delivery, monitoring, and adaptive management—as well as external to the immediate project context—national capacities and institutional commitment, governance cycles, and political and policy conditions. Successful cases of postproject mainstreaming, i.e., coffee in Colombia, were able to make use of (or surmount) such factors, through effective implementation strategies and partnering with established national institutions or organizations of recognized capacity that were strategically positioned. Conversely, implementation of several projects in the country samples was affected detrimentally by late approvals and startup, recruitment delays, and/or low partner capabilities and responsiveness.

Integration of mainstreaming biodiversity into national financial planning with government ownership is crucial. Stakeholders have observed that while the GEF's support to NBSAPs is useful and necessary, there is often not enough buy-in from those parts of the government that need to promote mainstreaming implementation and achievement. To ensure that biodiversity considerations are factored into economic development and financial planning would require long-term support to national-level processes in order to influence key national decisions. An important area underpinning effective mainstreaming is natural capital accounting. The GEF has supported several national-level initiatives aimed at providing economic estimates of a country's biodiversity and ecosystem services values. Beginning in GEF-6 through its Program 10, national-level interventions to integrate biodiversity and ecosystem services into development and finance planning have been piloted. This is based on lessons from GEF experience, which suggest that one of the ways to ensure that biodiversity is prioritized is to accurately account for and incorporate the values of natural capital and ecosystem services in economic development and poverty reduction strategies that drive decisions about

human welfare and development. In GEF-7, natural capital assessment and accounting is one of the entry points for biodiversity focal area investment.

Catalytic support and facilitation can be more effective than direct implementation in supporting biodiversity mainstreaming processes.

Mainstreaming processes are incremental and conditioned by institutional and systemic variables that are often outside the influence of GEF projects. The mainstreaming process is neither linear nor rapid, and often requires nurturing beyond the project cycle in order to have tangible effects. In this respect, government ownership is essential to sustain transformational processes which are gradual and require longer-term relationships in order to balance competing priorities, manage transitions, and—if necessary—persevere through unfavorable political contexts. GEF assistance has played a catalytic role by supporting the initiatives of diverse partners that include government ministries, congressional committees, regional and municipal environmental authorities, and territorial-based organizations. This has strengthened domestic capabilities for research, advocacy, and knowledge dissemination, improving conditions for continued mainstreaming beyond the project cycle. However, facilitation-based approaches such as these have tended to require timelines and adaptive management provisions that are difficult to compress within conventional project modalities that seek to maximize expenditure delivery within prescribed time frames.

A combination of factors contributed to scale-up of mainstreaming interventions from a pilot-ing and demonstration stage at a smaller spatial unit, or lower governance and jurisdictional level, to a larger spatial unit and higher level of governance, policy, and practice. These factors include alignment with national priorities, financial sustainability, establishing long-term strategic partnerships with credible and nationally

recognized knowledge institutions with proven expertise in biodiversity conservation, engaging key stakeholder groups across sectors and leveraging their networks, utilizing the availability of demonstrated good practices/pilots and champions to guide interventions, and strategically linking and involving relevant policy and planning bodies at the central/federal level with project execution.

ADDITIONALITY

The GEF biodiversity mainstreaming portfolio has contributed to legal and regulatory, institutional and governance, financial, socioeconomic, innovation, and environmental additionalities extending beyond incremental cost benefits. These include innovative approaches based on multistakeholder partnerships that link grassroots organizations to regional research institutions, advocacy platforms, and national environmental authorities. Landscape management practices have been validated on the ground and elevated to influence national policy and legislative/regulatory reform. Several projects have contributed to landmark biodiversity legislation; transformed core institutional/sector practices; and led to measurable conservation impacts in forest cover, pasture, or other biodiversity indicators. Examples of additionalities generated directly or indirectly in the three case study countries are provided in tables 4.1, 4.2, and 4.3.

Capturing other additionalities is a challenge.

The economic and social impacts deriving from GEF support for biodiversity mainstreaming in productive landscapes and seascapes have not been quantified. A systematic assessment of benefits and trade-offs associated with biodiversity mainstreaming interventions remains a pending priority for designing better projects and evaluating impact. In Colombia, coffee producers are receiving a better price for the smaller-yet-denser bean that is produced with shade cultivation and

agroforestry; quantified data are lacking, however. Also in Colombia, the GEF has financed enterprises engaged in hearts of palm and acai fruit harvesting and in natural cosmetics, but these are just starting up, and it is premature to determine their delivery of economic and social benefits. There is limited quantitative evidence on social and economic impacts at the time of project completion.

4.2 Theory of change and monitoring and evaluation

The GEF's theory of change for mainstreaming biodiversity is validated by the empirical experience of projects and provides a sound conceptual basis for their design and evaluation. The underlying problems that were identified by the GEF Secretariat in collaboration with GEF partners and internal and external experts—loss of habitat in productive landscapes and seascapes and decline of globally significant biodiversity outside protected areas—have been addressed with greater attention being given to (and resources invested in) biodiversity conservation in production landscapes and seascapes. Practically all of the country project samples consist of initiatives that address threats to biodiversity outside the protected area systems, with most addressing specific sectors—unregulated mining, cattle ranching, coffee cultivation, fisheries, wine production—and associated land uses in targeted regions that contain globally significant biodiversity. This is consistent with the GEF's increased tendency to design biodiversity mainstreaming projects around sectors (to a greater extent than planning or policy), as observed during the more than 15-year period spanned by GEF-3 to GEF-6.

The theory of change is further supported by the correspondence of its expected outcomes with those of the projects that were reviewed. Most of the project outcomes are based on the transformation of productive practices to biodiversity-friendly

TABLE 4.1 Additionalities generated by GEF biodiversity mainstreaming projects in Colombia

| Additionality | Description |
|------------------------------|--|
| Legal and regulatory | <ul style="list-style-type: none"> ▪ National legislation for regulated land use and biodiversity conservation (Law 106) in Colombia's highland moor ecosystems approved in 2018 with technical and advocacy support from the Conservation of Biodiversity in Landscapes Impacted by Mining in the Chocó Biogeographic Region project; the project also seeks to modify the national mining code under Law 685 in order to strengthen environmental safeguards and promote community participation through environmental impact assessments and public hearings ▪ GEF-supported Humboldt Institute has driven formulation of cross-sectoral national biodiversity policies ▪ Major reduction of mercury use in mining, with GEF facilitation, following Colombia's prohibition of mercury importation in compliance with the international 2013 Minamata Convention |
| Institutional and governance | <ul style="list-style-type: none"> ▪ GEF projects have been instrumental in developing capacity, knowledge development, and strategic positioning of national research institutions (Humboldt, Amazon Institute for Scientific Research, IIAP) to influence national policy and public opinion ▪ Projects have helped build cooperation and linkages between local government, community organizations, and regional/national authorities (e.g., COCOMACIA, Guaviare farmers' organizations) ▪ Projects in the Chocó and Amazon regions involve local government and community organizations in landscape/natural resource management in postconflict areas ▪ FNC has comprehensively revised the production model used by its national extension network to incorporate landscape management, soil conservation, and agroforestry practices that were introduced by the GEF's Mainstreaming Biodiversity in the Coffee Sector in Colombia project |
| Financial | <ul style="list-style-type: none"> ▪ Coffee growers that apply shade cultivation and landscape management practices introduced by GEF project are receiving a better price for their product and exceeding the biodiversity standards required for international certification ▪ The GEF Small Grants Programme has funded community enterprises for processing and commercializing nontimber products in partnership with the GEF's Chocó Biogeographic Region mining project; this is generating sustainable sources of income and employment in a postconflict region with high biodiversity ▪ Coffee farmers that apply landscape management practices are accessing PES and (in some municipalities) property tax deductions |
| Socioeconomic | <ul style="list-style-type: none"> ▪ GEF projects have strengthened horizontal/vertical organizational linkages for national cattle and coffee federations to mainstream biodiversity considerations; this has broadened their range of partnership and cooperation ▪ Territorially based community organizations and producer associations (Chocó, Guaviare, and coffee producers) have developed stronger relations with local and regional government authorities, the Ministry of Environment and Sustainable Development, and national research institutes |
| Innovation | <p>Innovative productive practices for coffee farming, oil palm cultivation, and processing of nontimber products disseminated through several GEF biodiversity mainstreaming projects</p> |
| Environmental | <ul style="list-style-type: none"> ▪ 1,022 ha of coffee farms under landscape management, contributing to the connectivity of 10,340 ha of forest ▪ 387,395 trees planted on coffee parcels from 264 native species ▪ Increases in forest and pasture cover on cattle ranches that apply live fences, forest connectivity, pasture rotations, and other biodiversity-friendly practices ▪ 9,475 tons of carbon dioxide captured in 2014 and sold on the PES market by coffee farmers ▪ 17,900 ha Alto Atrato Protected Area created in Chocó Biogeographic Region ▪ Over 26,000 ha of production landscape under land use management plans and 4,825 ha of forest under conservation agreements with farming communities in Guaviare Department ▪ Upscaling of GEF initiatives for sustainable cattle ranching and sustainable rural development through larger programs and donors (REDD+ Early Movers, Heart of the Colombian Amazon) |

TABLE 4.2 Additionalities generated by GEF biodiversity mainstreaming projects in India

| Additionality | Description |
|------------------------------|---|
| Legal and regulatory | <ul style="list-style-type: none"> ▪ Mainstreaming project enabled revision of India's National Forest Working Plan Code to include provisions related to resource inventory and participatory and sustainable management medicinal and aromatic plants ▪ First medicinal plant species in India registered under the Geographic Indications of Goods Act ▪ First-time inclusion of a new chapter on conservation of coastal and marine ecosystems in India's National Wildlife Action Plan (2017–2031). ▪ Project recommendations incorporated in the Andhra Pradesh State Forest Action Plan and the Smart City proposal of Kakinada and the Andhra Pradesh State Fisheries Action Plan ▪ Biodiversity-inclusive fisheries plan for Sindhudurg Coast was prepared and is under implementation; square mesh net at the cod end of trawl nets adopted by all (317) trawlers in Sindhudurg District ▪ Inclusion of enabling provisions in the National Forest Working Plan Code for participatory and sustainable management of medicinal plant resources ▪ Application of Geographic Indicators of Goods Act 1999 for community benefits ▪ Establishment of trust funds and foundations (Periyar Tiger Conservation Foundation, Gulf of Mannar Biosphere Reserve Trust, EGREE, MMGF) ▪ A uniform state Land Use Policy was developed in Nagaland, with considerations for sustainable <i>jhum</i> practices, associated with the principles of participatory land use planning |
| Institutional and governance | <ul style="list-style-type: none"> ▪ Joint patrolling, an activity in the Fisheries Plan for the Sindhudurg Coast, was initiated by the Fisheries and Forest Departments ▪ Establishment of trust funds and foundations (Periyar Tiger Conservation Foundation, Gulf of Mannar Biosphere Reserve Trust, EGREE, MMGF) ▪ Establishment of Tiger Conservation Foundation for 50 tiger reserves through inclusion of Section 38V in the Indian Wildlife Act 1972 ▪ Micro-plans for 41 villages in the EGREE Region completed and implemented for strengthening self-help groups/community-based organizations in natural resource use and sustainable livelihoods. |
| Financial | <ul style="list-style-type: none"> ▪ The state government of Gujarat allocated financial resources for better management of ~500,000 ha area in the Little Rann of Kutch landscape ▪ Scope of the Mangrove and Marine Biodiversity Foundation was expanded to the entire state of Maharashtra; one district, Sindhudurg, enabling generation of a large corpus of funds ▪ The government of Nagaland invested \$1 million in scaling up sustainable <i>jhum</i> cultivation activities, and plans are in place to replicate lessons learned across the state through an upcoming project supported by the International Fund for Agricultural Development |
| Socioeconomic | <ul style="list-style-type: none"> ▪ 78% of surveyed farmers in Nagaland felt income from agriculture had increased during the GEF project period ▪ More than 3,000 women beneficiaries in Nagaland benefited from selling produce from <i>jhum</i>, and women's income increased by 25% during the GEF project period ▪ Mainstreaming of gender considerations and enhanced women's empowerment ▪ Ecotourism support to Coringa Tourism Point helped bring a 16-fold increase in sanctuary revenue; this was utilized for management of the sanctuary and to support the community ▪ Crab farming initiated with 28.5 acres of land in 15 villages and 149 beneficiaries trained in mangrove crab farming in Sindhudurg |
| Innovation | <ul style="list-style-type: none"> ▪ The Indian government continued biodiversity conservation and rural livelihoods improvement as a central sector scheme under the Ministry of Environment, Forest and Climate Change with allocation of additional budgetary resources |
| Environmental | <ul style="list-style-type: none"> ▪ As per the India State of Forest Report 2017, the Coringa Wildlife Sanctuary had an increase of 4 km² of mangroves between 2015 and 2017 ▪ In Sindhudurg, 100,000 mangrove saplings were planted to rehabilitate 20 ha of degraded mangrove area; in 2015, the Maharashtra Remote Sensing Application Centre reported 3,300 ha of mangrove in Sindhudurg as against 2,000 ha recorded in 2005 ▪ Sustainable <i>jhum</i> cultivation improved vegetation cover by over 2,000 ha of land in project areas and brought improvements in land productivity (5% over baseline) according to the terminal evaluation ▪ Nesting habitats of the Olive Ridley turtle have been protected; data show an increase in nesting/hatching ratio ▪ Three new species of bird and one snake have been recorded in the EGREE region, which also recorded the highest concentration of fishing cats in India |

TABLE 4.3 Additionalities generated by GEF biodiversity mainstreaming projects in South Africa

| Additionality | Description |
|------------------------------|--|
| Legal and regulatory | <ul style="list-style-type: none"> ▪ South Africa's first NBSAP (2005) was already oriented towards mainstreaming, and its update (2015) was accompanied by costing (conducted with BIOFIN support) and the finding that mainstreaming is a cost-effective means to protect biodiversity in the country. ▪ The GEF Critical Ecosystems Partnership Fund provided much of the funding that made biodiversity mainstreaming possible in South Africa. Without this funding, the country would not have been able to develop its biodiversity mainstreaming practice to the successful level it has reached today (Manuel et al. 2016). ▪ Other examples include the Agulhas Biodiversity Initiative (ABI; GEF ID 1055), which influenced the Department of Environmental Affairs and Tourism's Policy on Buffer Zones for National Parks (2009), the draft South African National Parks' buffer zone policy (Bioregional Landscape Linkage Program), the Department of Agriculture's farm planning policy, and the Western Cape Spatial Development Framework (Child 2010). |
| Institutional and governance | <ul style="list-style-type: none"> ▪ SANBI has evolved along with the GEF projects it has executed. Key developments include broadening its legal mandate from plants/botany to cover all biodiversity, and incorporation of a National Biodiversity Framework. ▪ CAPE and ABI's social movement was initiated as a result of GEF projects; this is still active to 2020 and beyond. ▪ Due to successes of the CAPE program, the South African biodiversity mainstreaming approach was broadened to include policy reform and the integration of biodiversity considerations along entire supply chains within relevant production sectors (OECD 2016). |
| Financial | <ul style="list-style-type: none"> ▪ Through relevant projects, at least \$70 million has been leveraged from private sector partners, and many times more than that which has not been counted—e.g., by individual landowners participating in various initiatives and private sector cofinance. ▪ Private sector funding for mainstreaming comes notably via cofinancing in the mining, agriculture/wine, and tourism sectors. ▪ Where GEF projects have ended, efforts have been sustained through core resourcing and ad hoc or highly specific support from domestic and international grantmakers including the Department of Environmental Affairs' Green Fund, the WWF Nedbank Green Fund, the Leslie Hill Succulent Trust, the European Union, and the Table Mountain Fund. |
| Socioeconomic | <p>External financing encouraged a development and equity focus to conservation interventions, according to interviewees. In the post-Apartheid period, international engagement has supported an outward-looking conservation sector in its transformational phase.</p> |
| Innovation | <ul style="list-style-type: none"> ▪ Practical, valuable, and widely used spatial tools such as critical biodiversity area maps and strategic water source area mapping have been developed, and biodiversity layers integrated into strategic development frameworks. South Africa's biodiversity stewardship approach has proven success in the agriculture sector within the CAPE and Grasslands programs (SANBI 2014). ▪ In the ABI case, a strategy came directly from the GEF terminal evaluation (Child 2010), in which Brian Child is credited with helping the team brainstorm the "5 Cs" which have provided an organizing framework for efforts to continue: convening, communication, conceptualizing new ways of doing things, collating data and sharing information, and cash for obtaining resources to do programs. ▪ The BLU project initiated an Ecological Infrastructure Challenge Fund which provides financial support for tangible demonstrations of the ecological infrastructure concept that also support job creation. |
| Environmental | <ul style="list-style-type: none"> ▪ Increased protection and better management on private and communal land—the massive footprint of stewardship which covers an area three times the size of Kruger National Park—have been developed in just 15 years. Stewardship success also helps make the case for core investments in the protected area estate. ▪ Some GEF projects have contributed to conservation of lowland fynbos and have raised awareness of the thicket biome's globally important status as a biodiversity hotspot. |

modalities, mainstreaming the sustainable use of terrestrial and marine resources, and enhanced policy and regulatory frameworks.

Intervention sustainability is not prioritized as a mainstreaming project outcome. There is a disconnect between prioritizing the sustainability of the project with concomitant financing as a GEF biodiversity mainstreaming outcome, and the limited attention this aspect has received in the project portfolio examined. In this respect, ensuring access to PES and other financial or fiscal mechanisms—although not the key factor—plays an important role in encouraging changes in land use and in production systems, particularly among rural communities in and around biodiversity hotspots that rely on natural resources for their livelihood.

The theory of change has not been systematically applied in project implementation. The GEF's theory of change model for biodiversity mainstreaming is validated by project experiences in diverse contexts and reflected in programming trends over successive cycles. However, at the project level, there are operational questions regarding the compatibility of implementing projects according to causal pathways that involve a more incremental dynamic—with successive outputs feeding into higher levels of the pathway—in relation to established project time frames and expenditure/delivery pressures. The external assumptions (or “moderators of success”) that are outside the project's influence, have direct effect on performance and impact, yet are often assumed in project design without a realistic assessment of existence of enabling preconditions, baseline capacity, governance cycles, or the actual time that needed to shape policy and regulatory frameworks or have a measurable impact on biodiversity conservation. Flexible project design and adaptive management, which are recognized as project drivers or features in the GEF's theory of change, become essential in implementation

of projects based on their causal pathways and output-outcome linkages. Using the GEF theory of change as a reference, complex contextual conditions and dynamic feedback loops can be better teased for project specific theory of change design, and during implementation.

The current M&E framework for GEF biodiversity projects does not appear to focus sufficiently on quantitative measures and on outcomes and impacts. Conventional project monitoring practices are generally limited in scope to measure changes in habitat quality, forest cover, vegetation productivity, land use, species richness and evenness, or other indicators that offer insight on the state of biodiversity. Longer-term effects are more difficult to track, unless capacities exist at the country level, once technical activities are finished and the budget is closed (usually up to one year after technical closure to capture late expenditures). Final project evaluations are scheduled in advance of technical closure in order to have access to the executing team. As a result, mechanisms for tracking impact—and mainstreaming—of biodiversity conservation efforts over time and space are lacking. Although considerable effort has been invested in the design of M&E frameworks and specific, measurable, attributable, relevant, and timely (SMART) indicators, project indicators tend to be qualitative rather than quantitative, with inconsistent baselines that often rely on secondary data or are drawn from sources that apply different criteria and timelines—undermining reliable tracking of changes over time.

The GEF-7 core indicators (GEF Secretariat 2018) and subindicators are a move in the right direction, but are not adequate. While these hierarchical indicators are more efficient and relevant in line with pervasive Independent Evaluation Office recommendations (GEF IEO 2016, 2018a, 2018b), they are not adequate to capture the socioeconomic benefits, financial flow, and policy and regulatory reforms

influenced by GEF interventions. The GEF-7 results framework does not include indicators on financial resources mobilized for biodiversity management, the degree to which sector policies and regulatory frameworks incorporate biodiversity considerations and implement regulations, and the degree to which biodiversity values and ecosystem service values are internalized in development, fiscal policy, land use planning, and decision making. The biodiversity mainstreaming indicators rely heavily on qualitative measurements and area estimates. There is also ambiguity about the requirement to collect spatially explicit boundary information. In addition, since the success of mainstreaming projects depends on balancing the trade-offs between their socioeconomic benefits and environmental impacts, indicators are needed so these benefits and impacts can be measured.

4.3 Recommendations

Recommendation 1: Design mainstreaming interventions with a longer-term perspective and a resource envelope to ensure sustainability. Sustainability of biodiversity mainstreaming depends on programming for multiple phases and accompanying financing, as standard project durations are often insufficient to enable ecological change, build baseline capacity, influence institutional mind sets, and change behavior. Mainstreaming interventions—including the most straightforward activities such as spatial and land use planning—depend on suitable preconditions and involve iterative processes. While the GEF theory of change and the GEF-7 biodiversity strategy reflect this understanding, GEF Agencies should design projects with a longer-term perspective and systematically apply the theory of change. Countries should explore sources of innovative financing, including private and public sector contributions to support the long-term transformation processes biodiversity mainstreaming interventions require.

Recommendation 2: Improve and strengthen M&E design and implementation. Indicators at the project and portfolio levels should capture environmental, socioeconomic, financial, and policy and regulatory outcomes to assess performance, benefits, and trade-offs; and for adaptive management. Quantitative measurements of biophysical and socioeconomic impacts are needed to complement existing qualitative assessments. Measuring changes in biophysical attributes requires knowledge of spatially explicit delineated boundaries. Information technology-based solutions can be used to accomplish this, based on GEF experience in supporting similar initiatives. Biodiversity mainstreaming projects are time-intensive; assessing their outcomes and contributions in terms of incremental transformations presents a major challenge during a project's lifetime. To some extent, this can be overcome by in-depth assessments postcompletion for groups of projects that address common issues and apply comparable approaches, or in countries that have a sequence of mainstreaming interventions over time.

Recommendation 3: The GEF should continue to leverage its convening power to improve policy design and processes and to strengthen inter-ministerial and intersectoral collaboration. In the context of countries allocating more resources to biodiversity mainstreaming and their evolving priorities, the GEF should continue to leverage its convening power to bring together different actors within governments, council members, funders, policy leaders, and partners to strengthen the policy process and build capacity. The GEF should work with countries and implementing partners to actively strengthen collaboration across relevant ministries and sectors. While such collaborations enable engagement with a broad range of stakeholders, these partnerships also help address externalities such as market shocks, land tenure

insecurity, political discontinuity, conflict, natural disasters, and climate change risks.

Recommendation 4: Include systematic analysis of associated benefits and trade-offs in project design. Project designs should include provisions for systematic analysis of benefits and trade-offs

of socioeconomic and ecological outcomes, both ex ante and ex post, associated with biodiversity mainstreaming interventions. Due consideration should be given to transitional costs and short-term socioeconomic trade-offs that may precede benefits.

Annex A: Country projects

TABLE A.1 Colombia

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|--|---|--------------------------|---|----------------------------|
| 3532 | Protecting Biodiversity in the Southwestern Caribbean Sea | Conservation and sustainable use of important marine and coastal ecosystems and biodiversity in the Caribbean Sea, through implementation of Integrated Management Plan for the Seaflower Marine Protected Area (San Andrés Archipelago) | FAO | MADS | 6.05 |
| 3574 | Mainstreaming Biodiversity in Sustainable Cattle Ranching | Promote environment-friendly silvo-pastoral production systems in cattle ranching in project areas with improved natural resource arrangement, enhanced provision of environmental services, and increased productivity in participating farms | World Bank | Colombian Cattle Ranching Association | 7.94 |
| 3590 | Mainstreaming Biodiversity in the Coffee Sector in Colombia | Conserve biodiversity in Colombian coffee landscapes; create an environment for the conservation and sustainable use of biodiversity in coffee productive landscapes that contribute to the livelihoods of local populations and global environmental benefits | UNDP | FNC | 2.00 |
| 3604 | Mainstreaming Traditional Knowledge Associated with Agrobiodiversity in Colombian Agroecosystems | Conserve sustainable agro-ecosystems in Colombia through the protection and management of agrobiodiversity and associated traditional knowledge | UNDP | MADS | 2.50 |
| 4111 | Institutional and Policy Strengthening to Increase Biodiversity Conservation on Production Lands | Promote practices of voluntary conservation of biodiversity on forestry and livestock private land by adjusting the political-legal framework and institutional strengthening, and with the implementation of a pilot program in the eastern savannas of Colombia | Nature Conservancy, UNDP | MADS | 0.96 |
| 4113 | Mainstreaming Biodiversity in Palm Cropping in Colombia with an Ecosystem Approach | Contribute to biodiversity mainstreaming and conservation in oil palm agro-ecosystems through better planning and adoption of agro-ecological practices in areas of future palm oil expansion | IDB | National Federation of African Palm Growers | 4.25 |

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|---|--|------------------|--|----------------------------|
| 4849 | Sustainable Management and Conservation of Biodiversity in the Magdalena River Basin | Contribute to the conservation and sustainable use of biodiversity in the Magdalena River landscape through the protection of priority freshwater habitats, improved ecosystem health, governance, and strengthened local capacity | IDB | MADS; Fundación Natura | 10.40 |
| 4916 | Conservation of Biodiversity in Landscapes Impacted by Mining in the Chocó Biogeographic Region | Improve governance and promote sustainable land use activities to reduce deforestation and conserve biodiversity in the project area | WWF | MADS, Ministry of Energy and Mines | 5.85 |
| 5560 | Forest Conservation and Sustainability in the Heart of the Colombian Amazon | Improve governance and promote sustainable land use activities to reduce deforestation and conserve biodiversity in the project area | World Bank | FPN, SINCHI | 10.40 |
| 5288 | Implementing the Socio-Ecosystem Connectivity Approach to Conserve and Sustainable Use Biodiversity in the Caribbean Region of Colombia | Implement a strategy of socio-ecosystem connectivity that includes inter-institutional articulation, territorial planning, social participation with an intercultural vision, effective management of existing protected areas (PAs), creation of new PAs and the promotion of sustainable production models | FAO | MADS | 6.05 |
| 9441 | Contributing to the Integrated Management of Biodiversity of the Pacific Region of Colombia to Build Peace | Mainstream the sustainable use and conservation of biodiversity and provision of ecosystem services in vulnerable landscapes of the Pacific region to generate environmental and peace benefits | FAO, UNIDO | MADS, Parques Nacionales Naturales de Colombia | 7.56 |
| 9578 | Sustainable Low Carbon Development in Colombia's Orinoquia Region Biodiversity | Strengthen public and private entities and support the definition of tools and methodologies that will then be scaled up in the context of the overall Orinoquia Program | World Bank | MADS | 5.90 |
| 9663 | Colombia: Connectivity and Biodiversity Conservation in the Colombian Amazon | Improve connectivity and conserve biodiversity through strengthening institutions and local organizations to ensure integral low-carbon emission management and peacebuilding | UNDP, World Bank | FPN, MADS, SINCHI | 9.00 |

SOURCE: GEF Project Management Information System.

NOTE: FAO = Food and Agriculture Organization of the United Nations; FPN = Natural Heritage Fund for Biodiversity and Protected Areas; IDB = Inter-American Development Bank; MADS = Ministry of Environment and Sustainable Development; UNIDO = United Nations Industrial Development Organization.

TABLE A.2 India

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|---|--|------------|---|----------------------------|
| 1143 | Andaman and Nicobar Islands: Ecologically-Sustainable Island Development | Mainstream environmental sustainability into the governance systems and key productive sectors of the Islands | UNDP | Ministry of Environment & Forests | 3.40 |
| 1156 | Mainstreaming Conservation and Sustainable Use of Medicinal Plant Diversity in Three Indian States | Mainstream the conservation and sustainable use of medicinal plants into the productive forest sector of three Indian states, with particular reference to globally significant medicinal plants | UNDP | Ministry of Environment & Forests | 4.90 |
| 2444 | Biodiversity Conservation and Rural Livelihoods Improvement | Develop and promote news models of conservation at the landscape scale through enhanced capacity and institution building for mainstreaming biodiversity conservation outcomes | World Bank | Ministry of Environment & Forests, Wildlife Institute of India | 8.14 |
| 3468 | SLEM/CPP: Institutional Coordination, Policy Outreach and M&E Project under Sustainable Land and Ecosystem Management Partnership Program | Support the institutional reform framework for facilitating the assessment of and harmonizing, coordinating, and extending outreach and monitoring activities in agricultural and natural resource management strategies and policies that enhance agricultural productivity while minimizing environmental impacts | World Bank | Ministry of Environment & Forests, Government of India | 1.10 |
| 3469 | Sustainable Land Management in Shifting Cultivation Areas of Nagaland for Ecological and Livelihood Security | Develop, demonstrate, and upscale sustainable land management practices for the conservation of <i>jhum</i> (shifting cultivation) lands in Nagaland through an ecosystem approach | UNDP | State Government of Nagaland, Department of Soil and Water Conservation | 3.60 |
| 3470 | SLEM/CPP: Sustainable Rural Livelihood Security through Innovations in Land and Ecosystem Management | Strengthen institutional and community capacity for sustainable land and ecosystem management through approaches and techniques that combine innovative and indigenous techniques for restoring and sustaining the natural resource base, including its biodiversity, while taking account of climate variability and change | World Bank | Department of Agriculture, Union Ministry of Agriculture, Union Ministry of Environment and Forests | 7.00 |
| 3471 | SLEM/CPP: Sustainable Land Water and Biodiversity Conservation and Management for Improved Livelihoods in Uttarakhand Watershed Sector | Restore and sustain ecosystem functions and biodiversity while simultaneously enhancing income and livelihood functions, and generating lessons learned in these respects that can be upscaled and mainstreamed at state and national levels | World Bank | State of Uttarakhand, Watershed Management Directorate | 8.20 |

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|---|--|------------|---|----------------------------|
| 3472 | SLEM/CPP: Integrated Land Use Management to Combat Land Degradation in Madhya Pradesh | Promote community-driven sustainable land and ecosystem management at the landscape level through integration of watershed management, joint forest management, and sustainable livelihoods development so as to balance ecological and livelihood needs | UNDP | Ministry of Environment and Forests, State Government of Madhya Pradesh | 5.70 |
| 3936 | Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the Godavari River Estuary in Andhra Pradesh State | Mainstream coastal and marine biodiversity conservation into production sectors in the East Godavari River Estuarine Ecosystem | UNDP | Ministry of Environment & Forests, Government of India/ Wildlife Wing, Environment, Forests, Science & Technology Department, State Government of Andhra Pradesh | 6.60 |
| 3941 | Mainstreaming Coastal and Marine Biodiversity Conservation into Production Sectors in the Malvan Coast, Maharashtra State | Mainstream biodiversity conservation considerations into those production sectors that affect coastal and marine ecosystems of the Sindhudurg Coastal and Marine Ecosystem | UNDP | Government of Maharashtra; Ministry of Environment & Forests, Government of India/Wildlife Wing, Revenue and Forest Department | 3.44 |
| 4743 | Developing an Effective Multiple Use Management Framework for Conserving Biodiversity in the Mountain Landscape of the High Ranges, Western Ghats | Protect biodiversity of the high range mountain landscape of the southern Western Ghats in peninsular India from existing and emergent threats through building an effective collaborative governance framework for multiple use management | UNDP | Ministry of Environment & Forests, Government of India | 6.30 |
| 4942 | India Ecosystems Service Improvement Project | Enhance forest ecosystem services and improve livelihoods of forest-dependent communities in the Central Indian Highlands | World Bank | Ministry of Environment & Forests, Government of India | 20.50 |
| 5132 | Integrated Management of Wetland Biodiversity and Ecosystems Services | Improve the management effectiveness of nationally and internationally important wetlands in India and secure socioeconomic and environmental benefits through wise use of wetlands | UNEP | MoEFCC, Government of India | 4.20 |
| 5137 | Mainstreaming Agrobiodiversity Conservation and Utilization in Agricultural Sector to Ensure Ecosystem Services and Reduce Vulnerability | Mainstream the conservation and use of agricultural biodiversity for resilient agriculture and sustainable production to improve livelihoods and access and benefit sharing | UNEP | Indian Council of Agricultural Research, Biodiversity International | 3.10 |

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|---|--|------------|--|----------------------------|
| 9148 | Securing Livelihoods, Conservation, Sustainable Use and Restoration of High Range Himalayan Ecosystems (SECURE) Himalayas | Promote the sustainable management of alpine pastures and forests in the high range Himalayan ecosystems that secures conservation of globally significant wildlife, including endangered snow leopard and their habitats; ensure sustainable livelihoods and community socioeconomic benefits | UNDP | MoEFCC, Government of India | 11.60 |
| 9243 | Green-Ag: Transforming Indian Agriculture for Global Environmental Benefits and the Conservation of Critical Biodiversity and Forest Landscapes | Catalyze transformative change for India's agricultural sector to support achievement of national and global environmental benefits and conserve critical biodiversity and forest landscapes | FAO | Ministry of Agriculture & Farmers' Welfare, MoEFCC | 33.55 |

SOURCE: GEF Project Management Information System.

NOTE: FAO = Food and Agriculture Organization of the United Nations; MoEFCC = Ministry of Environment, Forest and Climate Change.

TABLE A.3 South Africa

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|--------|---|---|------------|---|----------------------------|
| 1055 | Agulhas Biodiversity Initiative (ABI) | Protect and, where appropriate, restore a representative sample of the biodiversity of the Cape Floristic Region to optimize global and domestic environmental benefits | UNDP | SANParks, CapeNature and Flower Valley Conservation Trust | 3.15 |
| 1516 | CAPE Biodiversity Conservation and Sustainable Development Project | Support the conservation of the Cape Floristic Region and adjacent marine environment by laying a sound foundation for scaling up and replicating successful project outcomes | UNDP | SANBI | 11.00 |
| 1782 | Richtersveld Community Biodiversity Conservation Project | Put in place a strong system of community-based biodiversity conservation in partnership with key stakeholders to protect globally significant biodiversity | World Bank | Richtersveld Sustainable Development Company | 0.88 |
| 2615 | National Grasslands Biodiversity Program | Major production sectors are directly contributing to the achievement of biodiversity conservation priorities within the Grassland Biome | UNDP | SANBI | 8.30 |
| 5058 | Mainstreaming Biodiversity into Land Use Regulation and Management at the Municipal Scale (BLU) | Mitigate multiple threats to biodiversity by increasing the capabilities of authorities and landowners to regulate land use and manage priority biodiversity at the municipal scale | UNDP | SANBI | 8.18 |

| GEF ID | Title | Objective | GEF Agency | National executing agency | GEF contribution (mil. \$) |
|---|--|--|------------|---|----------------------------|
| 9073 | Unlocking Biodiversity Benefits through Development Finance in Critical Catchments | Develop policy and capacity incentives for mainstreaming biodiversity and ecosystem values into national, regional, and local development policy and finance in the water sector, with application demonstrated in two catchments | DBSA | SANBI | 7.20 |
| 9382 | Shepherding Biodiversity Back into South Africa's Productive Landscapes | Foster biodiversity conservation on livestock farms through a return to human shepherding and the development of a wildlife-friendly produce branding scheme, leading to payment for ecosystem services as a tool in conservation and local economic development | UNEP | Landmark Foundation Trust | 1.02 |
| Regional/global projects with significant South African activities^a | | | | | |
| 2949 | Critical Ecosystems Partnership Fund (CEPF), Phase 2 | Conserve and manage globally important biodiversity by strengthening the involvement and effectiveness of nongovernmental organizations and other sectors of civil society in biodiversity conservation | World Bank | Conservation International | 6.00 |
| 9526 | Project for Ecosystem Services (ProEcoServ) | Reduce threats to globally important biodiversity through integrating the findings and tools of ecosystem service assessments in policy and decision making | UNEP | Council of Scientific and Industrial Research | 1.26 |

SOURCE: GEF Project Management Information System.

NOTE: DBSA = Development Bank of Southern Africa.

a. The amounts presented for regional projects are indicative, as the GEF budgets were not disaggregated by country. For the CEPF project, the amount is a rough proportion of the overall \$25 million grant which went to South Africa. For ProEcoServ, the sum is one-fifth of the project total, as the project operated in five countries. Neither project's terminal evaluation provides a final amount by country.

Annex B: Interviewees

B.1 Colombia

Angelica Mayolo, Head of Office of International Affairs and External Relations, Ministry of Environment and Sustainable Development (MADS)

Laura Bermúdez, Office of International Affairs and External Relations, MADS

Diana Quimbay, Head of International Cooperation, Institute of Hydrology, Meteorology and Environmental Studies, MADS

Andrea Ramirez, Director of Marine and Coastal Affairs, MADS

Mario Lopez, Directorate of Sector and Urban Environmental Affairs, MADS

Natalia Ramirez Emilce Mora, Director of Forests, Biodiversity and Ecosystems Services, MADS

Ruben Darío Guerrero, Coordinator, Integrated Forest and Forest Resources Management Group, MADS

Diana Castellanos Méndez, Territorial Director for the Amazon Region, Parques Nacionales Naturales de Colombia (PNN)

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