

Delivering climate change adaptation benefits in GEF Trust Fund projects

A STAP Advisory Document

June 2024

STAP SCIENTIFIC AND TECHNICAL
ADVISORY PANEL
*An independent group of scientists that advises
the Global Environment Facility*



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Delivering climate change adaptation benefits in GEF Trust Fund projects: A STAP Advisory Document

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Summary

The Global Environment Facility (GEF) supports countries in adapting to climate change impacts through the Least Developed Countries Fund and the Special Climate Change Fund.

The GEF Trust Fund has a mandate to deliver global environmental benefits (GEBs): conserving and sustainably using biodiversity, reducing greenhouse gas emissions, strengthening transboundary water management, reducing chemicals and waste, and sustainably managing and restoring land. Many Trust Fund projects also provide socioeconomic co-benefits, including support for people and communities to adapt to the impacts of climate change. However, these climate adaptation benefits are often not adequately considered or captured in Trust Fund projects.

This STAP paper focuses on enhancing understanding of the climate adaptation benefits provided by GEF Trust Fund projects. It also offers advice on how projects could be better designed to achieve these benefits.

The Scientific and Technical Advisory Panel (STAP) analysed 37 Trust Fund projects from the GEF Eighth Replenishment Period (as of February 2024) in all GEF focal areas. The analysis used the Adaptation Rationales and Benefits Framework,¹ which classifies climate adaptation benefits into three categories: reduced exposure, reduced sensitivity, and enhanced adaptive capacity.²

¹ Carr and Nalau 2023.

² See Annex II for a full description of the methods used for this analysis, based on Carr and Nalau (2023).

The results indicate that 27% of Trust Fund projects can deliver climate adaptation benefits, though these benefits are not always clearly identified. Further, if changes are made in project design, there is significant potential for many Trust Fund projects to deliver additional climate adaptation benefits without affecting the delivery of the intended GEBs.

To increase the climate adaptation benefits from GEF Trust Fund projects, STAP recommends the following actions:

- **Identify the climate trends relevant to the project** using readily available data and incorporate this information into the project's underlying logic as part of the rationale and description, as recommended in STAP's guidance on climate risk screening and simple future narratives.³
- **Describe the pathways from the identified climate trends to impacts on the project's intended GEBs and beneficiaries** as part of the project's theory of change. STAP's Decision Tree for Adaptation Rationale⁴ provides a method for developing an effective impact pathway in project design.
- **Climate adaptation benefits should be accurately reflected in project taxonomy⁵ and Rio markers⁶** to ensure proper tracking and reporting of these benefits, for example, in the GEF Corporate Scorecard, which reports on the performance and progress made towards achieving GEB targets.

Introduction

Human-induced climate change is driving widespread and rapid changes in the atmosphere, ocean, cryosphere, and biosphere that affect people and nature globally. Mitigating greenhouse gas emissions is critical to addressing these challenges, and the impacts associated with them require adaptation, particularly for vulnerable people and communities disproportionately affected by climate change.⁷

Since 2001, the Global Environment Facility (GEF) has specifically supported climate adaptation through the [Least Developed Countries Fund](#) and the [Special Climate Change Fund](#). A series of core indicators and sub-indicators are used to measure the benefits to people of more resilient physical and natural assets and improved livelihoods.⁸

The bulk of the GEF investment to address environmental challenges is through the GEF Trust Fund.⁹ The Trust Fund supports projects intended to deliver global environmental benefits (GEBs). These GEBs include conserving and sustainably using biodiversity, reducing greenhouse gas emissions, strengthening transboundary water management, reducing chemicals and waste, and sustainably managing and restoring land.¹⁰ Trust Fund projects can also provide socioeconomic and climate adaptation co-benefits while delivering their targeted GEBs. However, these benefits are not usually considered in project design, as the project has been developed to tackle a different environmental challenge. The GEF is

³ STAP 2019. Stafford Smith, 2023.

⁴ Carr 2022.

⁵ The GEF project taxonomy provides the keywords, topics, and themes that best describe a project and the issues it addresses.

⁶ The GEF uses Rio marker information to report on how its investments contribute to biodiversity, climate change adaptation and mitigation, and land degradation.

⁷ IPCC 2023.

⁸ GEF 2024a.

⁹ The GEF Trust Fund is replenished every four years through financial contributions by donor countries. The Least Developed Countries Fund and the Special Climate Change Fund are funded separately and replenished on an ad hoc basis (see <https://www.thegef.org/who-we-are/funding>).

¹⁰ GEF investments are predicated on the delivery of global environmental benefits in biodiversity, climate change mitigation, international waters, land degradation, and chemicals and waste. <https://www.thegef.org/documents/global-environmental-benefits>

considering how to identify and track climate adaptation benefits, as well as socioeconomic benefits, in the design of its projects.¹¹

Many Trust Fund projects are affected by climate change. For example, climate change is cited as a key driver of biodiversity loss in many parts of the world.¹² The Scientific and Technical Advisory Panel (STAP) to the GEF has provided advice on improving the design and implementation of Least Developed Countries Fund and Special Climate Change Fund projects, including a decision tree for improving the adaptation rationales underlying proposed projects¹³ and a framework for organizing adaptation actions around a foundational typology of climate adaptation benefits.¹⁴ This advice will strengthen the connections between project priorities, actions, and outcomes, thereby improving project design and expected outcomes.

This paper aims to enhance understanding of the climate adaptation benefits from GEF Trust Fund projects and offers advice on how projects could be better designed to capture these benefits.

STAP reviewed 37 Project Identification Forms (PIFs) of GEF-8 projects to assess whether these projects could deliver climate adaptation benefits in addition to their intended GEBs. (See Annex I for a list of the reviewed projects and Annex II for the methodology.) STAP's Typology of Climate Change Adaptation Benefits identifies three types of adaptation benefit:¹⁵

- **Exposure benefits** – a reduction in the frequency and/or magnitude of one or more climate impacts on a person, population, activity, or resource targeted by the project. For example, moving a transportation corridor further from the coast to avoid existing or projected flooding or shading livestock from heat will deliver an exposure benefit.
- **Sensitivity benefits** – a reduction in the impact of a climate-related event on a person, population, or system. For example, introducing drought-tolerant vegetation to mitigate erosion and soil loss in an increasingly arid area will reduce the soil's sensitivity to climate change-induced drought.
- **Adaptive capacity benefits** – an increase in the ability of a person, population, or system to manage climate impacts or realize an opportunity emerging from climate change, including by transforming how they live. For example, offering training or extension services (e.g. on climate-smart practices) or local planning will potentially build the capacity of farmers to better plan and adapt to climate change impacts.

The analysis focused on the following questions:

- How is climate change adaptation characterized in the project?
- Does the project deliver climate adaptation benefits?
- Could the project deliver climate adaptation benefits without compromising the intended GEBs?

¹¹ GEF 2024a.

¹² IPCC 2022.

¹³ Carr 2022.

¹⁴ STAP 2022.

¹⁵ STAP 2022.

Analysis results

Climate adaptation benefits delivered by GEF Trust Fund projects

Finding: 27% of projects were likely to deliver climate adaptation benefits, but these benefits were not clearly identified or articulated.

Ten projects (27%) were likely to deliver adaptation benefits as designed, and half of these projects were likely to deliver more than one adaptation benefit. Figure 1 shows that projects in all GEF focal areas except Chemicals and Waste were likely to deliver climate adaptation benefits, with the largest number of such benefits arising in multi-focal-area projects.

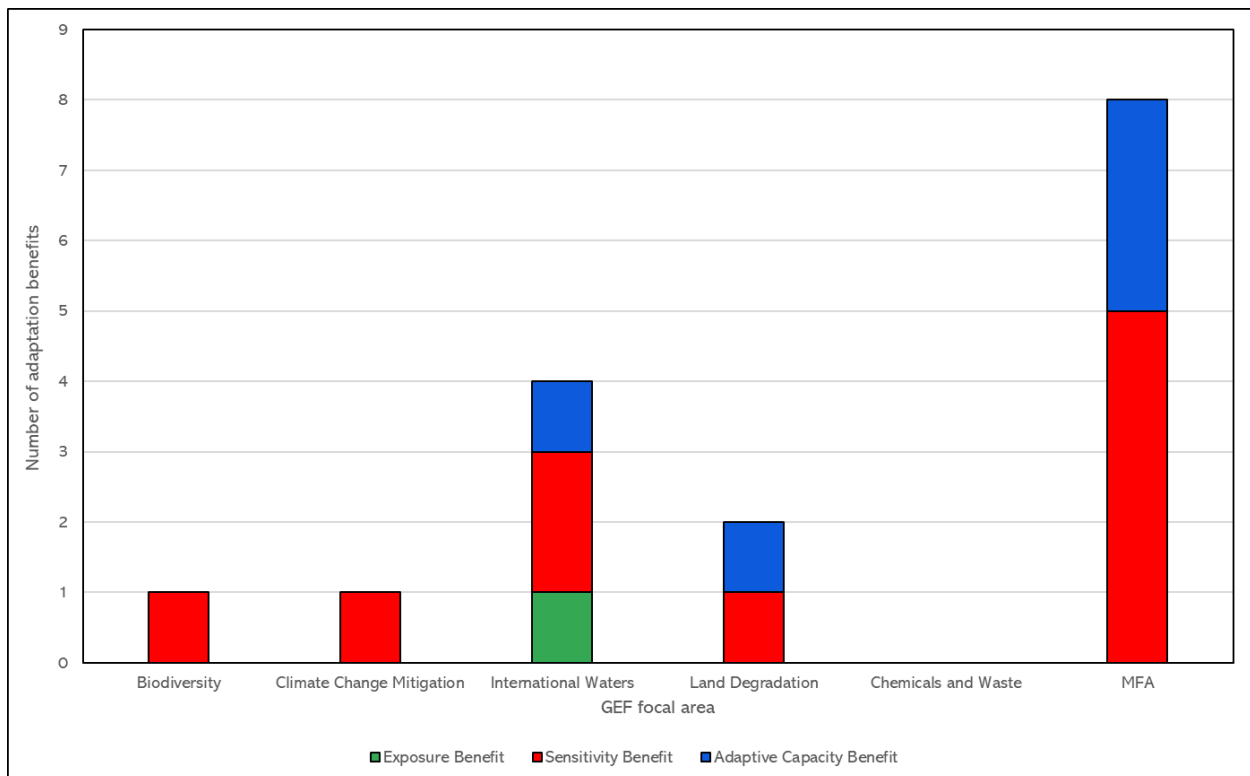


Figure 1: Climate adaptation benefits by GEF focal area. MFA = multi-focal-area.

The ten projects could deliver a total of 16 of the three types of adaptation benefits¹⁶ (Figure 1):

- **Sensitivity benefits** were found in all 10 projects. For example, the multi-focal-area [Resiland: Armenia Resilient Landscapes Project](#) (GEF ID 11046) supports integrated pasture management and restoration, including the creation of climate-resilient facilities such as shelters and shade. While the objective of the project is to deliver climate change mitigation, land restoration, and biodiversity conservation benefits, the shelters and shade will also help livestock cope with increased temperatures, thus providing sensitivity benefits. However, these adaptation benefits were not referred to in the PIF.
- **Adaptive capacity benefits** were identified in five projects. For example, the multi-focal-area project [Generating Opportunities for Livelihoods and Biodiversity through Participatory](#)

¹⁶ Some projects could deliver more than one type of adaptation benefit, e.g., a project could deliver both sensitivity and adaptive capacity benefits.

[Governance of Natural Resources and the Economic Diversification of the Communities of the Central Forest Corridor of Honduras](#) (GEF ID 11213) seeks to sequester and mitigate carbon, restore degraded lands, and support biodiversity conservation but also includes a component on climate-smart agricultural practices that could increase farmers’ capacity to adapt agricultural production to climate impacts.

- One project could deliver an **exposure benefit**. The International Waters focal area project [Strengthening Integrated Transboundary Management of the Incomati and Maputo River Basins](#) (GEF ID 11180) includes a component to minimize flood exposure through improved prediction and management capacity in the targeted river basins.

Potential for greater climate adaptation benefits in the GEF Trust Fund

Finding: More than half of projects [22 (approximately 60%)] had the potential to deliver new or additional climate adaptation benefits, if designed differently, without negatively affecting the delivery of targeted GEBs.

Multi-focal-area projects had the most scope to deliver new or additional climate adaptation benefits, followed by projects in the International Waters, Biodiversity, and Climate Change Mitigation focal areas (Figure 2).

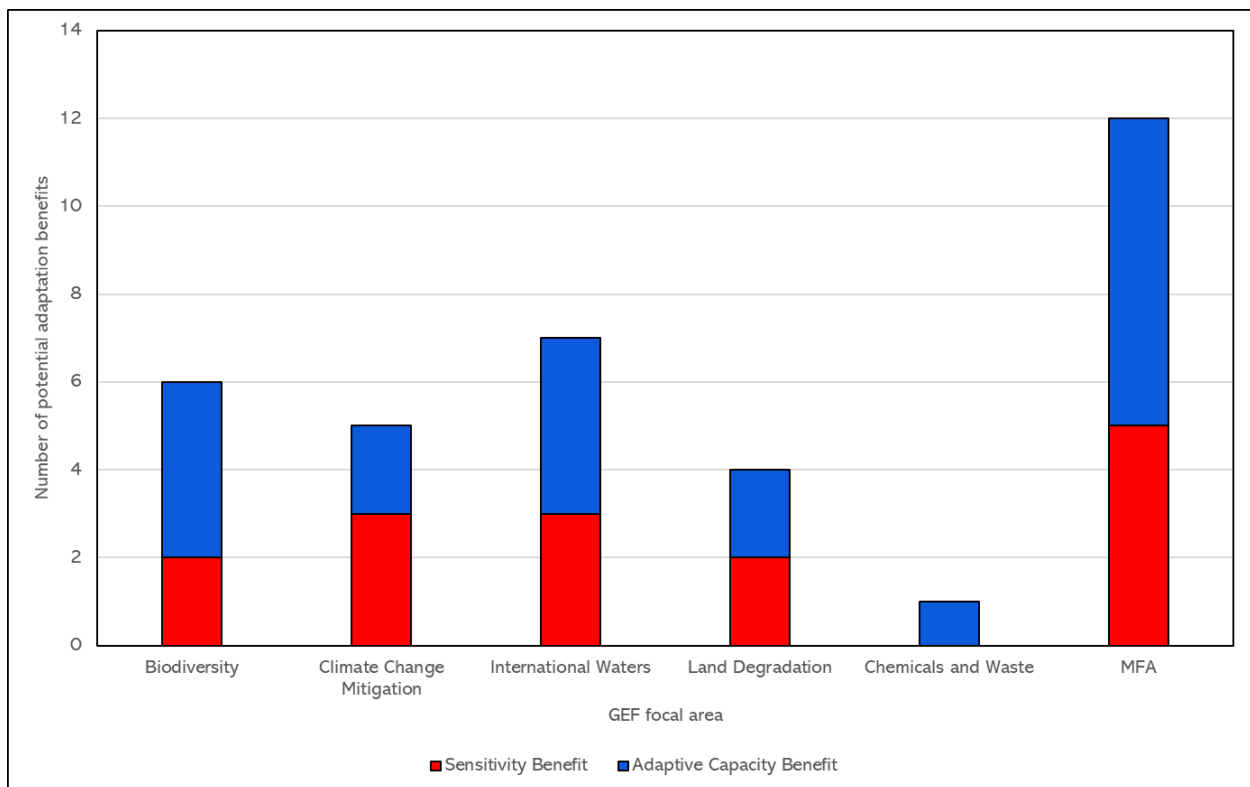


Figure 2: Potential adaptation benefits by focal area. MFA = multi-focal-area.

The 22 projects could deliver a total of 35 of the three types of adaptation benefits¹⁷ (Figure 2). Nineteen projects had the potential to deliver climate adaptation benefits that would be unlikely to accrue from the existing project design; two projects could enhance climate adaptation benefits already included in their design; and one project had the potential to deliver both new and additional climate adaptation benefits. None of these projects adequately linked project activities to current or likely future climate impacts, making the outcome of project-level climate adaptation benefits uncertain.

For example:

- The project [Beyond 30x30: Securing Resilience in the Eastern Tropical Pacific through Enhanced Transboundary Cooperation](#) (GEF ID 11267) noted, in general, the impacts of climate change on ocean ecosystems due to changes in ocean temperature but did not articulate the magnitude of those changes in temperature or the specific impacts. More detailed information on observed and projected climate impacts would make the need for climate adaptation more apparent and prompt consideration of a design that was more robust to climate impacts, thus delivering adaptation benefits while still ensuring the delivery of the intended GEBs.
- The project [Strengthening Ecological Connectivity in Natural and Productive Landscapes between the Amistad and Darien Biomes](#) (GEF ID 11209) is intended to create an integrated conservation and sustainable management system for natural resources. The PIF noted that “the area is vulnerable to the impacts of climate change, including more frequent and severe droughts, floods, and wildfires”, but it did not include relevant data on the vulnerabilities. It was unclear, therefore, how the project would enhance the adaptive capacity of the local population. By clearly characterizing climate change and its impacts – for example, by linking climate change to biodiversity loss and local livelihoods – the project could be designed to deliver biodiversity benefits while enhancing the adaptive capacity and livelihoods of the local people.
- The [Guarantee Mechanism for Renewable Biogas in India](#) project (GEF ID 11068) seeks to reduce greenhouse gas emissions by encouraging the use of organic manure in agriculture and the production of biogas. The use of organic manure can improve soil carbon, retain water, and reduce erosion, making agricultural production less sensitive to climate impacts. However, to achieve this climate sensitivity benefit, the project’s design would need to consider how climate change trends will affect farmers and incorporate how farmers would use organic manure in its design.

Characterizing climate change impacts

Finding: The characterization of climate change impacts in most projects was insufficient, with only five projects (approximately 13%) clearly describing such impacts.

About 30% of the projects reviewed (11 projects) made no reference in the PIF to climate change impacts that might require adaptation (Figure 3). These projects were concentrated in the Climate Change Mitigation and Chemicals and Waste focal areas. Of the 26 PIFs that did refer to climate challenges, nine did not explain how these challenges related to the project, eight did not provide any supporting data, and four presented general, rather than context-specific, data. While lack of data at the

¹⁷ Some projects could potentially deliver more than one type of adaptation benefit, e.g., a project could deliver both sensitivity and adaptive capacity benefits.

appropriate scale can be a limiting factor in some cases, global and regional data sets coupled with a literature review are generally sufficient evidence of climate change impacts.

The five projects that clearly described climate impacts and provided supporting scientific data about local conditions were all judged likely to deliver climate adaptation benefits. For the other 21 projects, climate adaptation benefits were considered potential rather than likely.

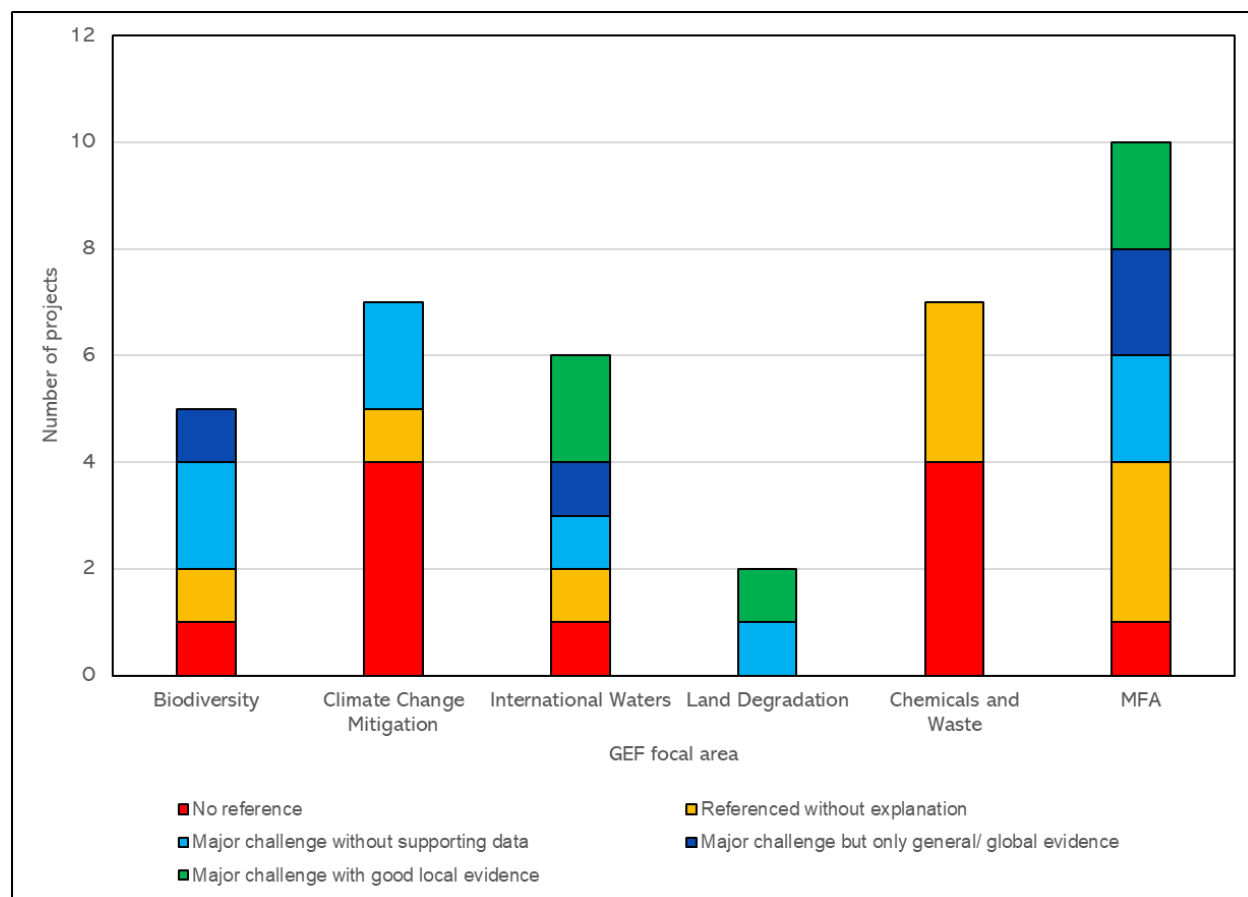


Figure 3: Representation of climate change challenge in PIFs by focal area. MFA = multi-focal-area.

Characterizing climate change adaptation

Finding: Project proposals were often inconsistent in how climate change adaptation was characterized in terms of the GEF project taxonomy and Rio markers

The GEF project taxonomy provides the keywords, topics, and themes that best describe a project and the issues it addresses. The GEF uses Rio marker¹⁸ information to report on how its investments contribute to biodiversity, climate change adaptation and mitigation, and land degradation against targets in the semi-annual Corporate Scorecard.¹⁹

¹⁸ The Organisation for Economic Co-operation and Development’s Development Assistance Committee introduced the [Rio markers](#) in 1998 to monitor development finance flows targeting the objectives of the Rio conventions on biodiversity, climate change and desertification. The GEF has adopted the Rio marker to monitor the share of its financing for each of these thematic areas (GEF 2022). Rio markers are self-reported by project teams rather than reviewed by a third party (GEF IEO 2022).

¹⁹ See, for example, GEF 2024b.

The PIFs of 16 projects showed alignment between the recorded Rio marker, the project taxonomy, and the potential climate adaptation benefits identified by the STAP analysis (Figure 4). The remaining 21 projects were inconsistent in their portrayal of climate change adaptation, as evidenced by the misalignment between the Rio marker, the project taxonomy, and the identified climate adaptation benefits.

For example, three biodiversity projects did not align with either the Rio marker, the project taxonomy, or the likelihood of delivering a benefit (Figure 4):

- One did not indicate any climate adaptation benefits in either the Rio marker or the taxonomy, but the STAP analysis showed that the project would deliver climate adaptation benefits.
- One did include a Rio marker for adaptation, but the STAP analysis suggests the project would not deliver climate adaptation benefits.
- One marked climate adaptation in the taxonomy but showed no evidence in the project design that the activities would deliver climate adaptation benefits.

This type of inconsistency or misalignment between Rio markers, project taxonomy, and climate change adaptation benefits could result in inaccurate reporting of GEF impacts, particularly at the aggregate level.

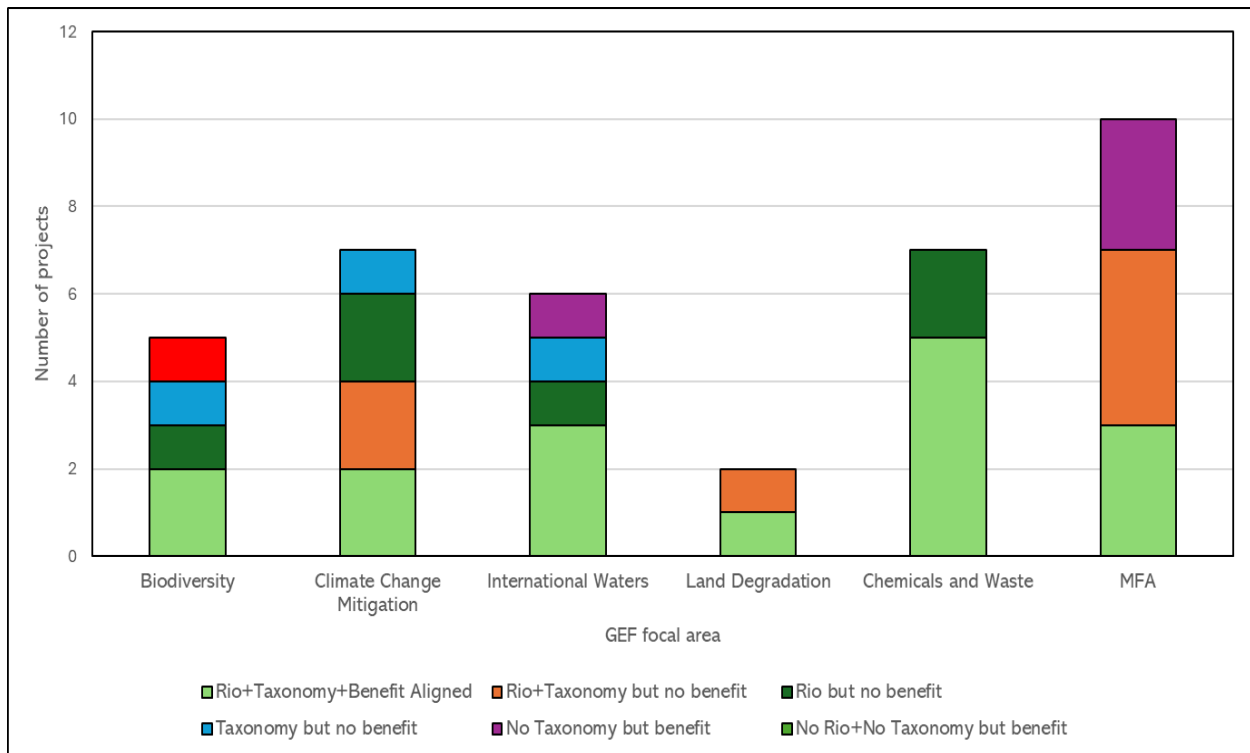


Figure 4: Alignment and misalignment between recorded Rio marker, project taxonomy, and identified climate adaptation benefits by focal area. MFA = multi-focal-area.

Conclusions and recommendations

The results from STAP's analysis indicate that many GEF Trust Fund projects are already designed such that they are likely to deliver climate adaptation benefits along with their intended GEBs; many others would have the potential to deliver climate adaptation benefits with an amended project design while still delivering GEBs.

To deliver greater adaptation benefits, STAP recommends the following:

- **Clearly identify climate trends relevant to project activities and goals as part of the project rationale.**

Section A of the [GEF-8 PIF template](#) requests baseline information and simple narratives of how an uncertain future could unfold based on an understanding of trends and interactions between the system's key elements and its drivers.²⁰ As part of this process, and using the same or similar data used to assess climate risk (see Annex III and STAP's guidance on climate risk screening²¹), project proponents should identify and incorporate relevant climate trends and impacts in the project rationale.

- **Describe the pathways that will enable taking account of these climate trends and any impacts on the project's intended GEBs and beneficiaries as part of the project's theory of change.**

Section B of the GEF-8 PIF template requires a concise account of a project's theory of change that describes the logic for addressing the issues highlighted in Section A.²² In projects where the analysis of climate trends indicates climate impacts that might affect GEBs or project beneficiaries, the project design should make clear the connection between the climate trend, a specific climate impact, and the achievement or durability of GEBs or the detriment to the well-being of project beneficiaries as part of the project's theory of change. This creates a clear impact pathway that can be addressed in the project design. STAP's Decision Tree for Adaptation Rationale²³ provides a detailed method for developing an effective impact pathway for climate adaptation in project design.

- **Climate adaptation benefits should be accurately reflected in taxonomy and Rio markers of projects to ensure that these benefits are properly tracked and reported.**

A clear and consistent articulation and tracking of climate change impacts and adaptation in GEF Trust Fund projects, including in the project taxonomy and the Rio markers, can improve their design and implementation and support efforts to better communicate the benefits of GEF investments, for example, in the GEF Corporate Scorecard, which reports on the performance and progress made towards achieving GEB targets.

²⁰ See STAP 2023.

²¹ STAP 2019.

²² See Stafford Smith 2020.

²³ Carr 2022.

Annex I: Summary of GEF Trust Fund projects reviewed

The STAP analysis focused on the GEF-8 project cycle. It included all 37 Project Identification Forms (PIFs) approved by the GEF Council up to the February 2024 GEF work program. The analysis excluded Program Framework Documents (PFDs) for Integrated Programs and other programs in GEF-8, as the overarching program documents do not contain the specificity necessary to identify adaptation benefits, and the child project documents are much shorter and less detailed than standard PIFs.

No.	GEF ID	Project title	Focal area	GEF agency
1	11056	Managing Biodiversity and Environmental Risks Associated with the Safer Salvage Operation in the Red Sea	Biodiversity	UNDP
2	11115	Strengthening Management to Combat Threats from Aquatic Invasive Alien Species in Venezuela	Biodiversity	FAO
3	11208	Strengthening Inter-Institutional Coordination for the Mainstreaming of Biodiversity Conservation in National, Regional and Local Public Policies in Chile	Biodiversity	FAO
4	11268	Biodiversity Wildlife Territories	Biodiversity	FUNBIO
5	11269	Empowering Indigenous Peoples and Local Communities (IPLCs) to Manage Biodiversity Data and Information as a Strategy to Conserve Their Territories, Safeguard Traditional Knowledge, and Promote Integrated Biodiversity Management	Biodiversity	UNEP
6	11047	Accelerate Minamata Convention Compliance through Improved Understanding and Control of Mercury Trade in Latin America	Chemicals and Waste	UNEP
7	11048	Global Opportunities for Long-Term Development of the Artisanal and Small-Scale Gold Mining Sector in Zimbabwe – GEF planetGOLD Zimbabwe	Chemicals and Waste	UNEP
8	11049	Circular and POPs-Free Plastics in Africa	Chemicals and Waste	UNEP
9	11110	Fortifying Infrastructure for Responsible Extinguishments (FIRE)	Chemicals and Waste	UNEP
10	11112	Global Opportunities for the Long-Term Development of the Artisanal and Small-Scale Gold Mining Sector in Paraguay – planetGOLD Paraguay	Chemicals and Waste	UNEP
11	11211	Shifting to Zero Waste Against Pollution (SWAP) Initiative	Chemicals and Waste	UNDP
12	11272	Reduced Risks on Human Health & the Environment through Reduction of POPs & U-POPs in Eswatini	Chemicals and Waste	UNDP
13	11068	Guarantee Mechanism for Renewable Biogas in India	Climate Change Mitigation	The World Bank
14	11071	Supporting the Shift to a Low-Emission, Circular Construction in Chile	Climate Change Mitigation	UNEP
15	11072	Promoting Zero-Emission Buildings in Brazil through Climate Technologies and Policies (EDinova)	Climate Change Mitigation	UNEP
16	11073	Accelerating Low-Emission and Resilient Community Energy in Argentina	Climate Change Mitigation	UNEP
17	11271	Green Hydrogen Energy Integrated Demonstration Application Project in China	Climate Change Mitigation	UNIDO

No.	GEF ID	Project title	Focal area	GEF agency
18	11306	CBIT 2 - Building Institutional and Technical Capacities to meet the Commitments under the Paris Agreement's Enhanced Transparency Framework	Climate Change Mitigation	UNDP
19	11308	Building Global Capacity to Increase Transparency in the Forest Sector (CBIT-Forest): Accelerating Capacity-Building, Knowledge-Sharing and Awareness Raising	Climate Change Mitigation	FAO
20	11050	An Inclusive Approach for Harnessing Marine Ecosystem Services and Transforming to Sustainable Blue Economy in the Red Sea and Gulf of Aden (HESBERSGA)	International Waters	UNEP
21	11108	Towards a Better Understanding of the Amazon Aquifer Systems for its Protection and Sustainable Management	International Waters	UNEP, IADB
22	11113	Promoting Sustainable Fisheries Management in the Red Sea Large Marine Ecosystem (RedSeaFish Project)	International Waters	FAO
23	11166	Plastic Reduction in the Oceans: Sustaining and Enhancing Actions on Sea-based Sources (PRO-SEAS)	International Waters	FAO
24	11180	Strengthening Integrated Transboundary Management of the Incomati and Maputo River Basins	International Waters	UNDP
25	11267	Beyond 30x30: Securing Resilience in the Eastern Tropical Pacific through Enhanced Transboundary Cooperation	International Waters	CI
26	11238	Land Degradation Neutrality Initiative in Southern Haiti	Land Degradation	FAO
27	11101	Eastern Province Jurisdictional Sustainable Landscape Program	Land Degradation	The World Bank
28	11046	RESILAND: Armenia Integrated Resilient Landscape Improvement Project	Multiple	The World Bank
29	11052	Conservation of the Atlantic Forest through the Sustainable Management of Cocoa Agroforestry Landscapes	Multiple	FAO
30	11062	Natural Capital Fund (NCF): Investing in Nature-Positive Agri-Food Enterprises in Asia and the Pacific	Multiple	ADB
31	11066	Yield Lab Opportunity Fund I: Accelerating Technology and Local Innovation for Sustainable and Decarbonized Food Systems in Latin America and the Caribbean	Multiple	IADB
32	11117	Community-based Wildfire Risk Management in Lebanon's Vulnerable Landscapes	Multiple	The World Bank
33	11141	Transforming Policy and Investment through Improving Ecosystem Management and Restoration of Degraded Drylands of Dedoplistskaro Biosphere Reserve in Georgia to Generate Multiple Environmental and Socio-Economic Benefits	Multiple	UNEP
34	11209	Strengthening Ecological Connectivity in Natural and Productive Landscapes between the Amistad and Darien Biomes	Multiple	UNDP
35	11213	Generating Opportunities for Livelihoods and Biodiversity through Participatory Governance of Natural Resources and The Economic Diversification of the Communities of the Central Forest Corridor of Honduras	Multiple	FAO

No.	GEF ID	Project title	Focal area	GEF agency
36	11249	Ecosystem Restoration and Sustainable Livelihoods in the Biocultural Corridor of the Central West of Mexico (COBIOCOM)	Multiple	FAO
37	11282	Mainstreaming Climate-Resilient Blue Economy in the BCLME Region (BCLME IV Project)	Multiple	UNDP

Annex II: Methodology

Adaptation benefits were identified using STAP's Typology of Climate Change Adaptation Benefits. GEF-8 PIFs for focal area and multi-focal-area projects²⁴ were reviewed for their climate adaptation content. This content included whether a Rio marker for climate adaptation had been selected, whether climate adaptation was included in the project typology, whether any climate adaptation benefits were being delivered by the project as designed, and whether there was potential to increase those benefits or add additional adaptation benefits through small adjustments to project design.

Any project where there is an expected climate impact can become a climate adaptation project with enough redesign, but the goal of this analysis was to identify climate adaptation services that are either *being* delivered by a project or that *could be* delivered with minor adjustments (i.e. adjustments that would not change the overall focus of the project).

The PIF review focused on ascertaining whether key aspects of climate change adaptation were present in the project. These key aspects were:

- The identification of a clear climate impact in the PIF. A clear climate impact is an issue or challenge with a causal link to climate change, either in the present or the future. The analysis looked at whether the PIF made an evidence-based connection (i.e. referencing the literature) between an impact and an aspect of the changing climate in the project area.
- The inclusion of climate change as an underlying risk or driver of the environmental challenge the project sought to address. Projects fell into three categories:
 - Made very general references to climate change as a stressor on a project or place without establishing a clear connection between an aspect of climate change and the environmental challenge underlying the project.
 - Asserted connections between climate change and the environmental challenge underlying the project but did not provide supporting references or evidence to show how climate change contributed to that environmental challenge.
 - Made clear connections between climate change and the environmental challenge underlying the project and supported that connection with evidence. This set of projects clearly defined the aspect of climate change for which adaptation was required.

For the third category of projects (a well-defined climate impact and evidence connecting the impact to the environmental challenge underlying the project), the analysis turned to the adaptation services – or potential services – delivered by the project. For a project to be determined to be delivering a climate adaptation service, it had to include an activity that directly addressed an aspect of vulnerability created by the defined climate impact by lowering exposure, lowering sensitivity, and/or increasing adaptive capacity.

Some of the projects in the first two categories proposed activities that might have delivered an adaptation benefit, but the projects either did not define a specific climate impact or asserted a climate impact unsupported by evidence. Such projects were examples of how potential climate adaptation benefits could be realized by either clearly including climate change drivers in the PIF or by adjusting existing project activities.

²⁴ The analysis excluded Integrated Programs and other GEF-8 programs, as their project documents do not contain the specificity needed to identify adaptation benefits, and the child project documents are much shorter and less detailed than PIFs.

Annex III: Examples of useful sources of climate information

Examples of sources/databases of climate change data/information for use when assessing climate change impacts during project design.

- [WMO Climate Data Catalogue](#) (World Meteorological Organization)
Provides access to several excellent data sets. They are relatively easy to manipulate for specific points on the globe and produce immediate visualizations or allow for the download of time series data. This catalogue offers a good balance between ease of use and spatial resolution of data, making it very useful for project designers.
- [IRI/LDEO Climate Data Library](#) (International Research Institute for Climate and Society/Lamont-Doherty Earth Observatory)
Over 400 climate-related data sets. The data can be analysed online and used to make graphics; it is easy to refer back to the data through the URLs. The data can be saved in different formats, including spatially for use in a GIS, and read directly into software such as MATLAB. There is a learning curve to using the data, but numerous tutorials are available on the website. This site has the most (and probably the best) data, but it can be somewhat difficult to navigate.
- [Copernicus Climate Data Store](#)
A wealth of searchable data sets, applications, and tools showcasing data on the Earth's past, present, and future climate. The site is constantly improving services and adding new data sets. All information is easily searchable and free to access.
- [World Bank Climate Change Knowledge Portal](#)
An easy-to-use site, but with limited variables and data manipulation capability. The data are organized at the country and regional scale, which should be considered carefully when looking at a country with significant differences in regional climate, as these differences will be lost in national averages.
- [The Senses Toolkit](#) (European Research Area for Climate Services)
A great resource for how to think about and build climate scenarios that is aligned with the thinking project designers need to do. More of a how-to than a data source, *per se*.
- [Shared Socioeconomic Pathways Database](#) (International Institute for Applied Systems Analysis)
Useful for basic modelling of likely futures and their impacts on factors such as emissions and agricultural output. The data are also key components of the modelling used by the Intergovernmental Panel on Climate Change. Use of the database requires the user to have some understanding of shared socioeconomic pathways.

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