STAP's initial perspective on GEF-9

Advisory Document

November 2024

STAP SCIENTIFIC AND TECHNICAL ADVISORY PANEL

An independent group of scientists that advises the Global Environment Facility

gef

UN environment programme

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Executive summary

The ambition of the Global Environment Facility (GEF) for **transformational change** in interconnected global systems – for example, food, energy, and cities – is well established, and over the last three replenishment cycles the GEF has invested heavily in **integrated programming** in pursuit of this ambition.

To achieve transformative change, the GEF needs to put more emphasis on acting in concert with other actors, and increased effort into **partnerships, and being strategic in how it influences and reinforces action by others,** including governments, the private sector, and civil society.

The Scientific and Technical Advisory Panel makes **seven recommendations** for the GEF Ninth Replenishment Period (GEF-9), focused on what more the GEF needs to do to reach **a higher level of impact**.

1. Build an overarching GEF-9 **theory of change** to drive portfolio-wide investment. This theory of change should define a clear set of **ambitious but realistic targets** that show **how the GEF can contribute** to transforming a global system, including **identifying levers** and **trigger points** for transformation. Program design should **integrate mechanisms for strategic review and adaptive management** of programs under implementation and adopt the same approach for ongoing Integrated Programs.

2. **Invest in innovation and manage associated risk** at portfolio and program levels. The **GEF's role in innovation should be to identify problems that could be solved through innovation** and commission solutions from a wide variety of sources. **Innovation priorities** need to be **embedded in the design cycle** and higher-risk investments should be clearly aligned with transformation goals.

3. Support **policy coherence** at multiple levels. The GEF-9 strategy should **establish a clear definition** of policy coherence that places environmental outcomes front and center. **Policy coherence should be strengthened by** supporting **dialogue processes** to enable greater alignment in policy design and implementation and by incorporating transparency and civic engagement through **Country Engagement Strategies**. The strategy should also consider how project design and funding can contribute to policy coherence through **interministerial and intersectoral coordination** at country and subnational levels.

4. Enable civil society to **strengthen the social foundations for transformation**. The GEF should **strengthen the role of civil society within project design**. In addition to financial support for civil society action, the GEF should **prioritize capacity strengthening**. The **most effective strategies** for engagement are often strengthening, supporting, or addressing gaps in existing multi-stakeholder initiatives, including those advocating and mobilizing action for Indigenous land rights, women's empowerment in environmental governance, and youth employment in renewable energy and regenerative agriculture.

5. Work to influence market transformation in targeted sectors. The GEF-9 strategy should **strengthen the national policy and regulatory context** for private sector investment. **Blended finance** projects should ensure that **environmental outcomes and scaling have equal billing with financial logic**. The GEF's **effectiveness can be increased by working more closely with other financing agencies** with deep country knowledge and an economy-wide mandate, to influence private sector investment towards positive environmental outcomes and to reduce environmental harms.

6. Revisit the GEF **results framework**. **Indicators of transformational change** should be integrated into the results framework to measure the GEF's contribution to creating enabling conditions, such as influencing the adoption of innovations, policy and institutional changes, financial flows, and shifts in social norms and behaviours. The results framework should **highlight socioeconomic and adaptation co-benefits** and their links with global environmental benefits. The GEF should consider whether **current core indicators are sufficiently focused on environmental outcomes**.

7. Foster early and adaptive learning, and networked knowledge management. The GEF should make more use of midterm reviews and annual performance implementation reports to **generate early learning and knowledge** while projects and programs are under implementation and to support **adaptive management.** The GEF's **monitoring, evaluation, and learning system should be transparent, open access, and networked** with other actors to increase the GEF's effectiveness and expand its influence.

1. A rapidly changing global context for GEF investment

There is undeniable evidence that human activities are causing unprecedented and largely unabated changes in the global environment. The drivers of environmental degradation continue to accelerate, as evidenced by consumption, energy demand, land and water use, and resource extraction patterns,[1] exacerbating climate change, nature and biodiversity loss, and ecosystem pollution.[2]

Environmental changes are increasingly a factor in economic, social, and political instability, which in turn can cause further degradation of the environment. Deforestation, pollution, deterioration of water quality, land degradation, and depletion of marine resources contribute to livelihood disruption, migration, and conflicts.[3] Addressing these challenges, spurs new environmental challenges; for example, the increasing demand for critical minerals is adding new pressure on terrestrial and marine ecosystems.[4]

Technological change poses both risks and opportunity. Disruptive artificial intelligence (AI)-powered technologies have the potential to accelerate the pace of economic transformation in sectors such as energy, transportation, food production and distribution, manufacturing, waste management, environmental monitoring, and risk forecasting. But these technologies also bring new risks. These risks include (a) ecological risks, such as the proliferation of novel chemicals and biological agents with unknown impacts; (b) increased energy and resource use needed to fuel AI-powered technologies; (c) social risks related to the erosion of shared norms, trust, and social cohesion; (d) economic concerns due to possible job losses; and (e) institutional risks, such as those affecting processes of public deliberation over societal goals.[5] (See Box 1.)

Policy incoherence is undermining progress towards environmental sustainability. The misalignment in policies and investments with respect to environmental goals can drive massive inefficiencies and undermine environmental progress. Among the most prominent examples of policy incoherence are environmentally harmful subsidies. Recent estimates indicate that more than US$ 7 trillion is spent annually on direct and indirect subsidies for agricultural, fishing, and fossil fuel-related activities that are harming the world's foundational natural assets: clean air, land, and oceans.[6] While such spending can provide initial social and economic benefits, the long-term environmental costs erode these benefits. Overall, policy incoherence makes achieving environmental goals and the Sustainable Development Goals (SDGs) more challenging, impacting both higher- and lower-income countries.[7]

These policy coherence challenges combine with the stresses placed on institutions and can undermine environmental governance from global to local scales. Weakness and fragmentation across global and regional institutions and levels of government lead to inefficiencies and ineffective coordination.[8] So do frequent changes in political priorities, erosion of democratic norms in many regions, and conflicting interests among stakeholders (industries, local communities, Indigenous Peoples, etc.).[9] Rising inequalities within and between countries, combined with economic anxieties and

[1] UNEP (2024a); WEF (2024).
[2] UNEP (2021).
[3] Ahmadnia et al. (2022); Nguyen et al. (2023); UNEP (2023).
[4] EASAC (2023); IEA (2024); UNDP (2023); UNEP (2024b)
[5] UNEP (2024b).
[6] Damania et al. (2023); Koplow and Steenblik (2024).
[7] OECD (2023); OECD (2024).
[8] For example, see Biermann et al. (2020); UNDP (2024).
[9] For example, see Benson et al. (2023); Brousseau and Glachant (2021).

resource scarcity, contribute to populism, nationalist ideologies, and new barriers to trade, making it difficult to address global environmental challenges in a coordinated manner.[10] This trend is exacerbated by mounting government debt and financial crises in many countries, partly caused by environmental changes, further contributing to political instability. (See Box 2.)

Box 1. Potential and risks of artificial intelligence

Exponential advances in digital technologies, particularly artificial intelligence (AI), offer significant potential to address issues of interest to the Global Environment Facility (GEF). These issues include biodiversity monitoring and conservation, land and watershed management, sustainable agriculture, smart grids and energy and water management systems, resource and value chain management, urban planning and infrastructure (e.g. transportation and waste management), and circular economy-oriented manufacturing to reduce waste, energy use, and emissions.[11] These technologies can also facilitate citizen science, community engagement, and education and can support collaboration among various stakeholders, including governments, the private sector, research institutions, civil society, and citizens.[12] Tools enabling data integration and analysis can support policy monitoring and evaluation across different policy areas and levels of government.[13]

GEF agencies have adopted a wide range of AI and related technology applications that could be leveraged in the GEF portfolio. The World Wildlife Fund's Forest Foresight, for example, piloted in Gabon and Indonesia, uses AI to predict forest loss up to six months in advance[14] and its Wildlife Insights and Wildlife Crime Technology projects support monitoring of the movements of at-risk species[15] and identification of potential poachers.[16] The UNIDO Global Alliance on Artificial Intelligence for Industry and Manufacturing promotes the responsible, sustainable, and inclusive deployment of AI and other frontier technologies in industry and manufacturing. [17] The Asian Development Bank is using AI combined with "digital twin" technology (digital replicas of a physical object, system, or process) to design sustainable, resilient, and cost-efficient transportation infrastructure that best fits the local context.[18]

However, in considering the application of AI in GEF-9 and beyond, it is essential to thoroughly assess risks, including known environmental impacts and possible unintended effects. Among the known risks is the energy-intensiveness of AI and the resultant greenhouse gas emissions.[19] Additional environmental concerns include increased resource extraction (especially mining of technology critical elements) with a consequential impact on habitats and biodiversity, excessive water consumption, and contribution to more e-waste generation with minimal recycling of trace elements.[20] Beyond the environmental concerns, the risks associated with AI include the perpetuation or even amplification of existing biases and inequality, threats to privacy and security, possible economic and social disruption due to job displacement, and the need for an appropriate governance and regulatory framework.[21]

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[10] Dorn et al. (2024); UNRISD (2022).
[11] Akhtar et al. (2024); Bibri et al. (2024); Foyet (2024); Johnson (2023); Konya and Nematzadeh (2024); Louta et al. (2024); Mana et al. (2024); Nti et al. (2022); Olawade et al. (2024); Patel et al. (2023); Ruiz et al. (2023); Sanchez-Garcia et al. (2024); Sarfraz et al. (2023).
[12] Ceccaroni et al. (2023); Hsu et al. (2022); Marmolejo-Ramos et al. (2022); Toukola and Ahola (2022); Yoon and Mormont (2023).
[13] Mikhaylov et al. (2018); Patel et al. (2021); Wirjo et al. (2022).
[14] WWF (2023).
[15] WWF (n.d.a).
[16] WWF (n.d.b).
[17] UNIDO (n.d.a); UNIDO (n.d.b).
[18] ADB (2024).
[19] Google (2024); Microsoft (2024).
[20] Blumenthal and Diamond (2022); Duporte et al. (2022); Gupta et al. (2024); Kidd (2023); Ren (2023).
[21] Marr (2024); NIST (n.d.); OECD (n.d.).

Box 2. Engaging the whole of society amid interlinked crises

Climate change, economic downturn and recession, pandemics, political instability, polarization, and regional conflicts with geopolitical implications all interlink in ways that produce cumulative harm for people, countries, and the environment, limiting humanity's prospects.[22] The ability of actors to address environmental challenges – from local biodiversity conservation to national climate action to transboundary water protection – is severely reduced as a result. Financial resources become increasingly scarce as multiple sectors and demands compete, with environmental priorities often displaced. Environmental and natural resource matters become increasingly perceived as national security issues that merit unilateral responses. Technical and human capacity at all governance levels weakens, depleting coordination.

Governments, in turn, tend to focus on short-term crisis response, in ways that undermine the ability of countries, regions, and global institutions to act preventively to address the roots and consequences of climate and environmental challenges[23] and advance the Sustainable Development Goals more broadly.[24] Persistent ineffectiveness in addressing environmental challenges contributes to the emergence of new crises and the intensification of existing ones. For example, a warming climate aids the spread of zoonotic diseases, spurred by habitat destruction, and global water and land crises under a changing climate aggravate food insecurity and local, national, and inter-state conflict, instability, and fragility.

All this creates a deeply challenging context in which the GEF must operate, especially in the countries most exposed to these interlinked risks. It means the GEF must support partnerships that engage governments at multiple levels, civil society, and the private sector equitably in decisions that impact environmental and human security.[25] Rather than promote environmental goals in isolation, GEF engagement needs to help policy actors build capacity to assess the role of environmental trends within these interconnected crises, take a longer-term perspective, and reform legal and regulatory frameworks and investment priorities in response.

Meanwhile, the financing gap continues to grow. For example, although more than US$ 1.7 trillion was invested in clean energy in 2023,[26] this investment fell significantly short of the estimated US$ 8 trillion annual need.[27] An additional US$ 700 billion is required annually to reverse the biodiversity crisis by 2030.[28] At the national level, governments often struggle to meet their commitments to environmental progress given immediate domestic demands to address social equity, jobs, economic growth, and livelihood security. Plus, in many sectors, there is a retrenchment of private sector commitment towards environmental, social, and governance standards.[29]

Yet the science of global change is becoming more definitive. Evidence is increasingly converging on the systemic risks and the tipping points beyond which change accelerates and becomes practically irreversible.[30] Importantly, alongside the Earth system tipping points to be avoided, there is emerging evidence of positive tipping points (see Box 3) that signal the potential for lasting social and economic

[22] Lawrence et al. (2024).
[23] Schapendonk et al. (2023).
[24] Yunita et al. (2021).
[25] STAP (2024a).
[26] Buchner et al. (2023).
[27] Songwe et al. (2022).
[28] Deutz et al. (2020); UNEP FI (2024); United Nations (2024).
[29] UNDP (2023).
[30] Anderies et al. (2023); McKay et al. (2022); Möller et al. (2024)

transformation[31] to deliver global environmental benefits (GEBs). Likewise, there is a better understanding of the factors that influence "lock-in"[32] of environmentally unsustainable economic systems and counter efforts towards positive transformative change. While recognizing the complexity of the societal change processes required,[33] there is a clear scientific consensus on the urgency and necessity of coordinated action that engages the underlying drivers of economic decision-making.[34]

Box 3. Working to achieve positive tipping points

"The current approach of linear incremental change favoured by many decision makers is no longer an option. Existing governance institutions and decision-making approaches need to adapt to facilitate transformational change. Crucial to achieving this transformational change are positive tipping point opportunities, where desirable changes in society become self-propelling. Concerted actions can create the enabling conditions for triggering rapid and large-scale transformation."

- *Global Tipping Points* report 2023[35]

Research on tipping points has advanced rapidly in recent years. As applied to Earth system functioning, a tipping point is the point at which a subsystem of the Earth system, such as ocean currents or atmospheric balance, "can be switched – under certain circumstances – into a qualitatively different state by small perturbations." [36] Early warning signals suggest that several of the Earth system's negative tipping points for climate are already being passed, with likely profound impacts on human well-being.[37]

A key message of the *Global Tipping Points* report 2023, however, is that **positive tipping points** "offer the prospect that coordinated, strategic interventions can lead to disproportionately large and rapid beneficial results that mitigate existential climate risk and help redirect humanity along more sustainable pathways." [38] One example is renewable power generation, which in many countries has reached cost parity with fossil fuel power generation, triggering exponential growth in new investment. Electrical vehicle adoption is approaching a tipping point in several major markets. In food systems, there are significant efforts under way to shift to regenerative production and sustainable consumption patterns, but "positive tipping points have yet to occur at scale." [39]

For example, a tipping point can be achieved in a commodity value chain when the majority of producers are meeting a new environmental standard, such as certified deforestation-free production. **Self-reinforcing feedback** occurs, for example, as more producers meet the standard, more consumers expect it, and selling products that do not meet the standard becomes increasingly impractical. **Enabling conditions** may be as simple as regulations on food labelling combined with inexpensive and reliable certification mechanisms, as well as growing consumer awareness. **Triggers** may be a deliberate public or philanthropic investment in subsidizing the initial marketing of the certified product, or a health scare caused by a substandard product that creates a window of opportunity for the certified commodity. However, positive tipping points need to be seen through a theory of change that identifies "winners" and "losers", with consideration of equity and promotion of a just transition to enable such transformative change.[40] Breaking down the challenge of tipping points for each system in which the GEF seeks to catalyse transformation can help sharpen priorities.

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[31] Arora and Stirling (2023); Lenton et al. (2022); Lenton et al. (2023); Thornton et al. (2024).
[32] "Lock-in" refers to certain systems, practices, technologies, infrastructure, or policies becoming ingrained, making transitioning to more sustainable alternatives difficult. See, for example, Garrett et al. (2024); Pereira et al. (2024).
[33] Kobluk et al. (2024).
[34] Bai et al. (2024); Booth et al. (2024).
[35] Lenton et al. (2023).
[36] Lenton et al. (2008).
[37] McKay et al. (2022).
[38] Lenton et al. (2023).
[39] Lenton et al. (2023).
[40] Pereira et al. (2024).

2. Mobilizing transformational change

Within this challenging global context, what can the Global Environment Facility (GEF) do to increase its strategic influence? This section reviews the GEF's ambition to contribute to systems transformation and signals how the GEF can become more catalytic in contributing to this transformation by working in concert with others. Three requirements are then identified for the GEF Ninth Replenishment Period (GEF-9) strategy to deliver more effectively on that ambition, including evidence-based change pathways that leverage the GEF's commitments to innovation, policy coherence, civil society, and private sector engagement.

2.1. GEF ambition and the partnership imperative

The GEF has unique potential, grounded in the breadth of its mandate. The GEF is the principal global funding mechanism for a broad range of multilateral environmental agreements (MEAs).[41] This enables it to take an integrated approach that recognizes and capitalizes on the intersections between climate action, biodiversity conservation, land restoration, pollution prevention, and freshwater and marine health.

A distinguishing feature is the GEF's progress in integrated programming. Over the last three replenishment cycles, the GEF has substantially expanded its investment in integrated programming.[42] According to the most recent comprehensive evaluation from the Independent Evaluation Office (IEO) on this subject,[43] the GEF-7 Impact Programs were linked effectively to the priorities of MEAs and countries, were strongly focused on the drivers of environmental degradation, and provided improved theories of change connecting country projects to the overall program architecture. The IEO also noted improved attention to issues that underpin integration, such as gender equality, climate resilience, and leveraging knowledge and resources from the private sector. The 11 GEF-8 Integrated Programs were designed to build on this foundation and, in some cases, maintained a sectoral or regional priority from the prior cycle.

The GEF is committed to catalysing transformation in key interconnected global systems, including energy, food, cities, and the management of terrestrial, freshwater, and marine ecosystems.[44] These commitments align, in ambition and direction of desired change, with the priorities identified in global scientific analyses. The Scientific and Technical Advisory Panel (STAP) report to the Seventh GEF Assembly[45] drew on the United Nations Global Sustainable Development Report 2019[46] to identify six key areas for transformation at a global level to achieve "sustainable, just and productive societies and an economy underpinned by healthy and resilient ecosystems." Of these six areas, three are core business areas for the GEF: energy decarbonization and sustainable industries; sustainable urban and peri-urban development; and sustainable food systems and resource use, including land, water, and oceans. The remaining three areas are key preconditions for and potential co-benefits of the others:

[41] The MEAs for which the GEF serves as a funding mechanism are the Convention on Biological Diversity, the United Nations Framework Convention on Climate Change, the United Nations Convention to Combat Desertification, the Stockholm Convention on Persistent Organic Pollutants, the Minamata Convention on Mercury, and the Biodiversity Beyond National Jurisdiction Agreement. See https://www.thegef.org/newsroom/publications/gef-glance.

[42] The first batch of large-scale, integrated programming was implemented via three Integrated Approach Pilots in GEF-6. This was followed by five Impact Programs in GEF-7. Between GEF-6 and GEF-7, more than US$ 1 billion was allocated for integrated programming in 56 countries. These efforts were followed by 11 Integrated Programs, launched in GEF-8, totalling US$ 1.4 billion.

[43] IEO (2022).

[44] GEF (2022a).

[45] Stafford Smith et al. (2022a).

[46] Independent Group of Scientists (2019).

sustainable and just economies with new business models; human well-being, capacity and demography; and education, gender, youth and equity. The importance of this set of necessary transformations has been further reinforced by the most recent update to that United Nations report,[47] in 2023, as well as other recent analyses.[48]

The GEF needs to work with others to scale its contributions to achieve transformative change in these global systems.[49] GEF funding, even if doubled or tripled, would remain small compared with the needs and relative to the volume of public and private capital at play in the sectors it aims to influence. A recent estimate of total global finance flows for climate action alone, for example, was US$ 1.27 trillion per year,[50] or roughly 1,000 times the resources the GEF could deploy across all its priority areas. As the GEF evaluates its priorities for the upcoming replenishment cycle (GEF-9) and beyond, the key question is what partnerships are necessary to maximize its impact.

The GEF should be strategic in how it seeks to influence and reinforce action by other players – including governments, civil society, and the private sector – towards systems transformation goals. Rarely will an individual project achieve transformative impact, which STAP defines as "enduring change at a sufficient scale to deliver a step improvement in one or more GEBs."[51] However, the combination of multiple projects linked strategically across geographies and over time offers a greater likelihood of achieving transformative impact. This is especially true if the GEF can become significantly more systematic in prioritizing and pursuing external partnerships "that can have a catalytic effect in transforming global economic systems, improving policy coherence, reorienting financial flows, and facilitating learning."[52]

2.2. Strategy requirements to deepen contributions to system transformation

First, the GEF needs to define the specific contributions it can realistically make to achieve larger system transformation. Scientific understanding of how purposeful societal transformations are achieved has advanced significantly,[53] notably in the analysis of past transformations and positive tipping points (see Box 3). Research on social–ecological transitions and tipping points distinguishes two points of entry.[54] The first entry point is to focus on enabling conditions, essentially contextual factors that make the change more likely. Supporting enabling conditions could include, for example, providing relevant information, making the change more attractive by lowering its cost or accessibility, coordinating complementary solutions, and/or building new links among social networks to promote adoption. A second entry point is to focus on actions that help trigger the change directly or lead to changed behaviour. Such actions could include policy interventions; social, technological, and ecological innovations; public or private investment; social marketing; or other behavioural incentives.[55] Such efforts are most effective when actors can identify and pursue windows of opportunity for change, which often open in relation to external shocks and new evidence (including scientific evidence) that

[47] Independent Group of Scientists (2023).
[48] Bai et al. (2024); Lenton et al. (2023); Schlesier et al. (2024); Schlosser et al. (2023); UNEP (2024a); UNEP (2024b).
[49] See Stafford Smith et al. (2022a); Stafford Smith et al. (2022b).
[50] Buchner et al. (2023).
[51] Stafford Smith et al. (2022a) & Stafford Smith et al. (2022b).
[52] Stafford Smith et al. (2022a).
[53] This includes advances in understanding of tipping points (e.g. Eker et al. (2024); Lenton et al. (2022); Lenton et al. (2023)), advances in understanding of key leverage points (e.g. Allen et al. (2024); Lopes and Lima (2023); Thornton et al. (2024)), and increasing analysis of the barriers to change (e.g. Jørgensen et al. (2023)).
[54] Geels (2019); Lenton et al. (2022).
[55] Lenton et al. (2023).

heighten public awareness and urgency around the need to act. Section 3 suggests how to use an overall theory of change to deepen the GEF's approach to system transformation across its portfolio.

Second, GEF strategy requires evidence-based change pathways, grounded in strategic partnerships. The GEF needs to orient its efforts more squarely towards addressing the powerful and persistent barriers to transformation, incorporating recent advances in the science of system transformation. Projects may fail to scale for predictable reasons; for example, the financial or social costs of achieving a successful pilot cannot be replicated at scale, or a pilot works because of the mindset of one community that is not replicated elsewhere.[56] Projects should be designed to tackle these barriers, STAP argues, in order to achieve impact at scale "even if this is expected to take more than one GEF funding cycle."[57]

Four priorities are particularly important to respond to the risks and opportunities in the global context outlined in Section 1. Each is introduced here, with corresponding recommendations on change pathways and partnerships following in Section 3:

- **Embracing innovation and risk in pursuit of system transformation is essential to addressing rapidly shifting global trends.** These trends include the increasingly complex ways in which environmental change can accelerate economic, social, and political instability or, conversely, contribute to environmental and human security.[58] This context demands careful assessment, with partners, and the leveraging of appropriate technological advances, as well as innovation in policy, financing, business models, and institutions (including social and cultural norms). Embracing innovation and using foresight to identify and manage the risks that come with it is necessary to accelerate progress towards system transformation.[59]

- **Advancing policy coherence can help unravel costly misalignment in public decision-making and resource allocation.** Policy coherence, in STAP's framing, includes alignment of national and subnational decision-making with regional and global environmental commitments, as well as alignment with those environmental commitments across government ministries. And, critically, policy coherence means addressing the perverse subsidies that signal fundamental incoherencies in public investment. For these reasons, advancing policy coherence requires building the foundations of effective environmental governance at multiple scales.[60]

- **Emphasizing civil society, equity, and the social foundations of environmental progress can deepen impact and expand the constituency for change.** Stresses on environmental governance institutions stem in part from rising inequalities and fragmentation among societal actors at multiple scales. Enhanced mechanisms to effectively engage and support solutions centring on women, youth, Indigenous Peoples and local communities are vital because these groups are so often marginalized in environmental decision-making. It is also essential because civil society voices are too often blocked or sidelined in policy debates; by contrast, supporting civil society mobilization can be a critical pathway to overcome policy inertia.[61] (See Box 4.)

[56] Salafsky et al. (2021).
[57] STAP guidance on evidence-based change pathways is summarized as a set of "enabling elements" that together increase the likelihood that GEF investments will deliver durable outcomes that contribute to transformational change. These enabling elements are applying systems thinking and theory of change; engaging the right stakeholders, including through effective multistakeholder dialogue processes; pursuing integrated outcomes; fostering intentional behavioural change; investing in purposeful innovation; ensuring robustness to future change by incorporating foresight and scenario planning; and supporting learning with knowledge management. All these elements aim to support scaling of successful innovations for regional or global impact. See Stafford Smith et al. (2021).
[58] Ratner (2018); STAP (2024a).
[59] Donaldson and Ratner (2023); STAP (2022).
[60] Stafford Smith et al. (2023).
[61] Ardoin et al. (2023); Klinsky and Sagar (2023).

Box 4. Investing in Indigenous Peoples

The lands that Indigenous Peoples manage or over which they have tenure rights represent over a quarter of the world's land surface, covering at least 37% of all remaining natural lands, including about 40% of all terrestrial protected areas and ecologically intact landscapes.[62] Indigenous Peoples have made major contributions to conserving biodiversity[63] and in impeding deforestation, forest degradation, fragmentation, and associated greenhouse gas emissions. Empowering Indigenous Peoples to defend their territorial rights and manage biodiversity can result in more sustained and cost-effective protection[64] and make an important economic contribution to food security in surrounding ecoregions. Yet direct financing is rare: of the US$ 1.7 billion philanthropic entities and governments have pledged to support Indigenous and community forest tenure over a five-year period, only 2.1% in 2022 went directly to Indigenous and local community organizations.[65]

At the 2023 GEF Assembly in Vancouver, Canada, STAP organized, as part of Science Day, a panel discussion on Indigenous learning and knowledge, which concluded that effectively investing in solutions led by Indigenous Peoples and local communities requires:

- **Involvement, engagement**, **and participation**, with Indigenous and local voices respected, heard, and included in decision-making at all levels – not in token roles.
- Recognition of the **rights of Indigenous Peoples and local communities to lands, water, and other natural resources**, and understanding that these rights are frequently under threat, and need reinforcement.
- Provision of socioeconomic benefits to improve the **well-being** of Indigenous Peoples and local communities, and their cultures, including health and livelihoods, as well as deliver GEBs.
- **Knowledge co-production**, grounded in an understanding of the role of Indigenous and local knowledge, culture, and context in addressing environmental challenges, and the ways western science can complement this.
- **Direct access to funding**, with responsibility to implement projects of their own design, and provision of support to enhance their administrative and financial management capacity, and with bureaucracy minimized through simplified and adapted procedures.
- **Economic returns.** Funding projects focused on "sustainable livelihoods" with low economic returns is insufficient to deliver GEBs and cover the costs of monitoring, managing, restoring, and governing landscapes.

Investing in Indigenous Peoples should go well beyond the model of small grants to very local, community-led initiatives. Funders need to build trust and be ready to shift relations of power, with all the risk and opportunity that entails. Funders also need to consider the potential of social movements, the power of social media and large networks to catalyse action and change across different groups, and the governance mechanisms needed to secure Indigenous rights over the long term.[66]

- **Influencing private financial flows is essential to accelerating positive environmental outcomes and reducing environmental harm.** Because the GEF's own financial resources are limited in relation to the transformations it aims to accelerate, the GEF's influence on public and private financial flows needs greater attention as a measure of progress. National policy plays a key role, as do the rules and incentives governing international private capital flows, which often

[62] Garnett et al. (2018).
[63] Fa et al. (2020); IPBES (2019); Sze et al. (2023).
[64] Dawson et al. (2021); FAO (2021); IEO (2018a); Rainforest Foundation (2021).
[65] Forest Tenure Funders Group (2023).
[66] Munck (2020).

do not strongly reflect environmental and social imperatives.[67] Partnerships that focus on steps towards transforming markets can integrate key players in both public and private finance to strengthen enabling conditions – such as industry norms, national regulations, financial transparency, and accountability – in target sectors.[68]

Finally, the overall GEF-9 strategy requires a set of ambitious but realistic targets that show how the GEF can contribute to system transformation in concert with partners. IEO analysis has demonstrated that GEF investments can indeed deliver transformational change when there is clear ambition to address systemic market or institutional barriers, enable policy reform, and incorporate mechanisms for financial sustainability.[69] However, the GEF does not yet have an integrated framework at the overall portfolio level to track progress in how creating enabling conditions for transformation contributes to measurable environmental outcomes over time. There is, therefore, a need to be clear in adopting system transformation goals and more precise in articulating the contributions that the GEF can plausibly make to each. To do so, the results framework should distinguish targeted environmental outcomes (GEBs) from lead indicators of transformational change, such as the adoption of technological or business innovations, advances in policy coherence, shifts in social norms, or progress in private investment flows. Clarity about lead indicators of transformational change can also enable better comparison across contexts, aiding learning and adaptation.[70]

3. Translating strategic priorities into practice: STAP recommendations for GEF-9

This section details STAP recommendations to achieve the cross-cutting strategy requirements outlined in Section 2.2. In Figure 1, the left side of the diagram summarizes the strategy requirements from Section 2: a more rigorous focus on *delivering* targeted transformations at scale; evidence-based change pathways, grounded in strategic partnerships; and ambitious but achievable targets to capture the GEF's contributions towards transformation goals.

STAP's recommendations are interconnected and mutually reinforcing, responding directly to each of the listed strategy requirements. A coherent theory of change for GEF-9 (recommendation 1) can target the most promising opportunities to accelerate positive tipping points of change to, and address the systemic risks identified in Section 1. This recommendation is followed by those to articulate and pursue evidence-based change pathways aligned with the theory of change: investing in innovation and managing associated risk to catalyse these change pathways (recommendation 2); building support for policy coherence towards environmental outcomes (recommendation 3); strengthening the social foundations for transformation (recommendation 4); and working to influence the private sector and market transformation in targeted sectors (recommendation 5). A results framework that integrates lead indicators of transformation (recommendation 6) will help track and communicate progress more convincingly. Finally, more dynamic and networked systems of monitoring, knowledge management, learning, and evaluation (recommendation 7) can help adapt the theory of change at strategy and program levels and improve project outcomes.

[67] For example, see Penna et al. (2023).
[68] UNEP (2024b).
[69] IEO (2018b).
[70] The IEO has found that, at the project level, "a willingness on all sides to learn, adjust, and adapt the design, scope, and management of the intervention" is key to achieving transformation (IEO 2018b) and that "learning from systematic feedback and adaptation to changing contexts play a key role in sustaining the scaling process" (IEO 2022).

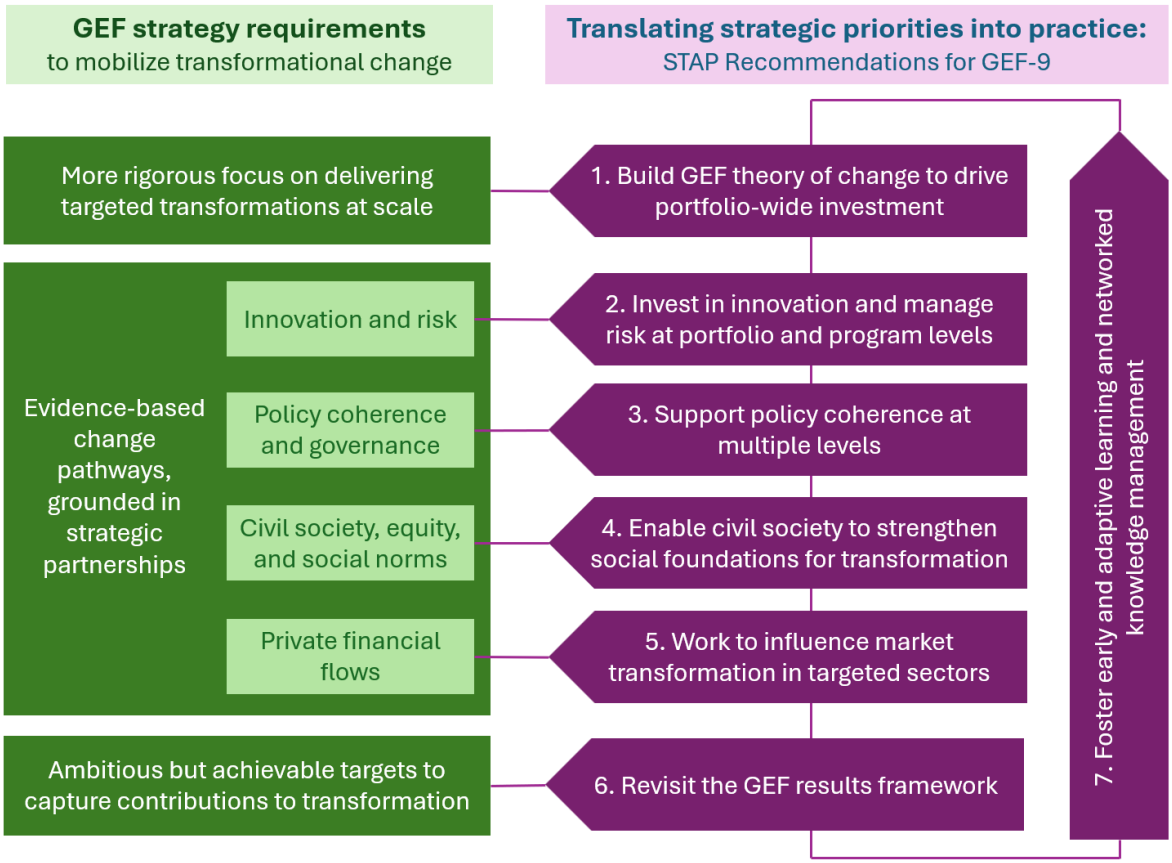

***Figure 1**. A visual summary of STAP analysis of GEF-9 strategy requirements with corresponding recommendations. The left side represents the strategy requirements discussed in Section 2. The right side presents STAP's recommendations mapped against the strategy requirements. Early and adaptive learning and a networked knowledge management system (recommendation 7) are needed to capture lessons, enable rapid exchange, and implement adaptive management as the six other recommendations are executed.*

3.1. Build an overarching GEF-9 theory of change to drive portfolio-wide investment

The GEF-9 theory of change should enable more focus and coordination across all levels of GEF operations.[71] An overarching theory of change should fulfil three characteristics. First, it should focus on triggering or accelerating positive transformation in a few priority systems to avoid the GEF spreading its efforts too thinly and diluting its impact. (For example, these priority systems might be food systems, cities, forest biomes, or coastal and marine ecosystems.) Second, it should identify which transformation goals to prioritize within these systems and provide an initial framing of the logic to reach those desired transformations. This includes the mutually reinforcing contributions expected from Integrated Programs and focal areas. Third, the theory of change should explain how investing in cross-cutting capabilities (such as knowledge management and learning, communications, and external partnerships) can help create the enabling conditions and action towards positive tipping points (Section 2.2) and enable progress on its goals for transformational change. (See Figure 2.)

[71] In Stafford Smith et al. (2022a), STAP argues that coordination is needed at four levels: at the project level, within programs linking multiple projects, across the full investment portfolio, and across GEF efforts to achieve global and regional influence through external partnerships that extend beyond its investment portfolio.

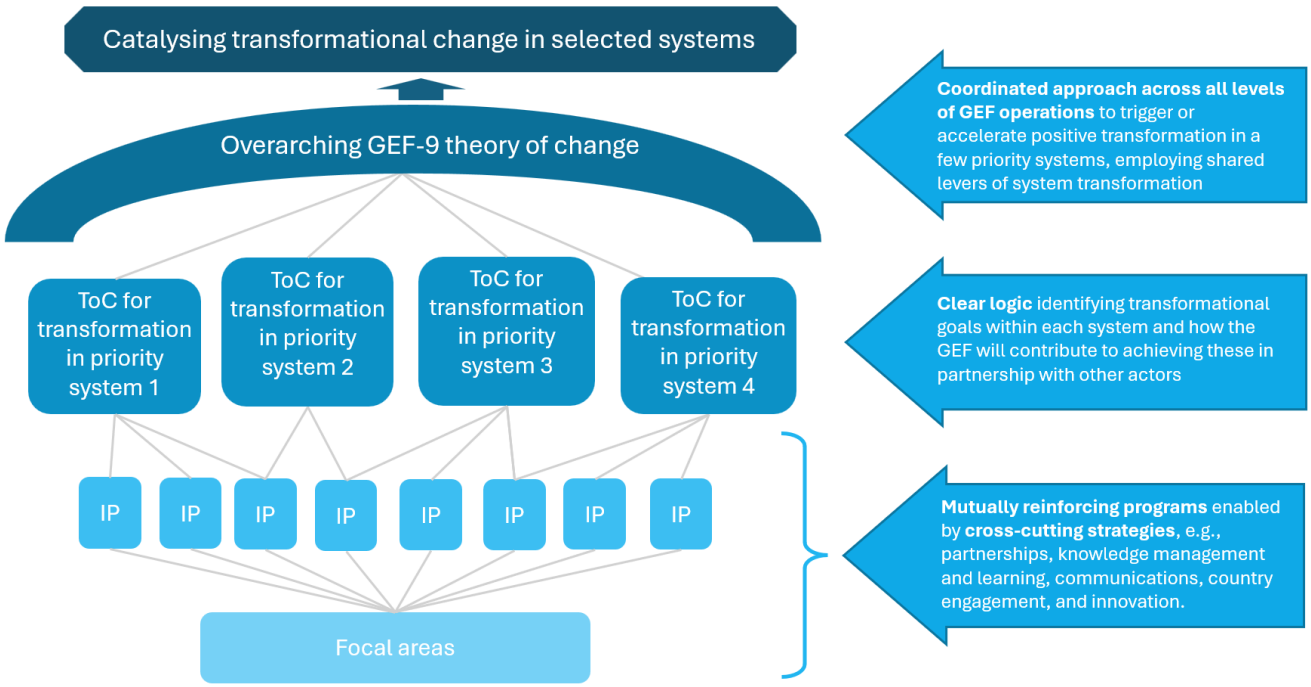

Figure 2. *A schematic of how the GEF-9 theory of change (ToC) could integrate the theories of change for each targeted system transformation, the role of cross-cutting strategies, and contributions of Integrated Programs (IPs) and focal areas.*
An overarching GEF-9 theory of change should focus on a few priority systems where the GEF has a comparative advantage (top arrow), identify strategic partnerships to achieve transformation in those systems (middle arrow), and articulate how IPs and focal areas contribute to these in conjunction with crosscutting strategies (bottom arrow).

The theory of change should identify levers of system transformation to be applied across the GEF portfolio. The GEF introduced a theory of change in its GEF-8 Strategic Positioning Framework, which identified four primary "levers" for system transformation, described as governance and policies, financial leverage, multi-stakeholder dialogue, and innovation and learning.[72] GEF-9 could refine these levers, based on research evidence and a review of past successes (and failures), including from IEO evaluations, and foresight analyses.[73] It could identify additional levers needed to catalyse systems transformation (e.g. capacity strengthening, communications and information dissemination, and behavioural change), as noted in the scientific literature on positive tipping points (see Section 2.2) and past STAP publications.[74] The GEF-9 strategy should explain what each lever entails and its role at different levels of GEF investments and actions (project, program, portfolio, and broader partnerships). This information would provide a common design framework for applying these levers in theories of change for each Integrated Program and focal area and would identify the roles of different actors in the GEF partnership.

Program design should provide for a strategic review of progress during implementation for adaptive management and learning. Programming decisions should reflect a clear and critical analysis of how current Integrated Programs and other parts of the GEF-8 portfolio are progressing. In areas where there has already been investment over multiple cycles (e.g. Amazon forest biome, food systems, cities,

[72] GEF (2022a).
[73] For example, foresight and horizon scanning exercises focusing on issues relevant to the GEF mandate, such as the UNEP's *Navigating New Horizons* (UNEP (2024b)) and UNDP Signals Spotlight (UNDP (2023); UNDP (2024)).
[74] Stafford Smith et al. (2022a); Stafford Smith et al. (2022b).

wildlife conservation), the analysis should present evidence from past performance (including IEO evidence) and from key lessons and should show how strategy is evolving as a result. This analysis should also look beyond GEF-9, with an expectation that GEF-10 programming directions will include a robust process to assess progress towards the identified transformation goals, recalibrate, and introduce measures to fill gaps that emerge, based on emerging lessons (see Sections 3.2 and 3.7). In addition to STAP's own guidance,[75] there are excellent external resources that can help structure program-level design focused on transformation goals (see Box 5).

Box 5. Sample guidance questions for transformational change

The Transformational Change Learning Partnership,[76] convened by the Climate Investment Funds, supports knowledge-sharing and consultations with policymakers, evaluators, civil society representatives, and other experts in climate action to develop concepts, methods, and metrics for transformational change.

The Partnership builds on the collective experience of participants to advance the understanding of transformational change (concepts, theories, examples, and lessons); support improvements in program and project design and implementation; and deepen monitoring, evaluation, and learning approaches to enhance transformational outcomes.

The Partnership identified five dimensions for climate action to be transformational: **relevance**, **systemic change**, **speed**, **scale**, and **adaptive sustainability** (which STAP terms "durability"). It also developed a set of guidance questions to put each dimension into practice. The "what" questions in the following table pertain to what the change needs to be, while the "how" questions pertain to how the change can be brought about.

[75] Stafford Smith et al. (2021).
[76] See: https://www.cif.org/tclp

Dimension	What	How
Relevance	What fundamental changes and large-scale impacts are needed in a specific context?	**Context:** How is the intervention relevant to the context, including existing opportunities, assets, barriers to change, and complementary existing efforts? **Alignment:** How does the intervention align with and integrate relevant social, economic, and environmental goals and impacts such as equity and inclusion, just transitions, and sustainable development? **Proposed action:** How is the intervention logic relevant to the transformational impacts planned for? What is the theory of change?
Systemic change	In which systems is change needed and what change is required?	**Systems:** How has the system, including system boundaries, been identified, including the potential for rebound effects? **Barriers and pathways:** How does the intervention remove entrenched barriers and open new pathways for systemic change? **Power:** How does the intervention elevate the influence of marginalized and vulnerable groups?
Speed	How can change aligned with the urgency and complexity of the crisis be achieved?	**Acceleration:** How does the intervention accelerate progress towards transformational change? **Complexity and inclusivity:** How does the intervention use socially inclusive processes to ensure adequate engagement with complex and contested issues?
Scale	What large changes need to be scaled within and beyond the intervention?	**Vertical scaling:** How does the intervention support scaling pathways within and across policy and implementation processes? **Horizontal scaling:** How does the intervention expand the number of people or geographic areas engaged in or benefiting from it? **Depth scaling:** How does the intervention deepen understanding of and support for transformational change?
Durability and resilience	What relevant changes are sustained and advanced beyond the intervention?	**Capacity:** How does the intervention build the capacity of stakeholders and institutions to advance and sustain change? **Flexibility:** How does the intervention enable experimentation and flexibility, including the ability to learn and course correct? **Resilience:** How does the intervention insulate change from backsliding and enable recovery when required?

Source: Adapted from: Climate Investment Funds. https://www.cif.org/sites/cif_enc/files/knowledge-documents/tclp_webinar_guidance_questions.pdf

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3.2. Invest in innovation and manage associated risk at portfolio and program levels

The GEF-9 strategy should clearly define the GEF's role in innovation for addressing complex environmental challenges. The recently adopted GEF Risk Appetite, which differentiates between "context", "innovation", and "execution" risks, shows that the GEF Council has a high appetite for innovation risks taken in pursuit of transformational change, and signals a critical shift in expectations.[77]

[77] Includes mechanisms for regular monitoring and reporting on the profile of risk (including innovation risk) within the project portfolio, and deliberation by the GEF Council. See GEF (2022b).

The GEF-9 strategy should, therefore, define the GEF's role in delivering and adopting innovative solutions that address complex environmental challenges identified within the portfolio- and program-level theories of change. This includes being explicit about the problems needing innovation in different segments of the investment portfolio, the process for bringing in innovative ideas, and how the uptake and scaling of proven solutions will be encouraged. The strategy should pay attention to innovations that contribute to the enabling conditions needed to move towards positive tipping points (as described in Section 2.2) at regional and global scales. Together, these increase the chances of achieving the leading indicators of transformation signalled in a revised results framework (see Section 3.6).

The GEF-9 strategy should outline an approach to embed innovation priorities in the program design cycle and build continuity. A fundamental challenge in the longer cycle of innovation and scaling is linking individual projects into an ecosystem of innovation and learning. In such an approach, piloting, testing, and then scaling solutions may involve sequential projects, often transitioning to new sources of long-term financing, including from external partners. This could include portfolios of projects testing innovative solutions with modalities for facilitating rapid exchange, cross-learning, and scaling among them. Program-level planning in Integrated Programs and focal areas (as well as the windows for innovation, policy coherence, blended finance, as well as the Small Grants Program) could also be used strategically to identify and test promising innovations. Where past performance is strong, the aim should be to build continuity of effort – notably in Integrated Programs – to increase the chances of reaching positive tipping points of system transformation, as outlined in Section 2.

The GEF-9 strategy should also indicate how to coordinate funding modalities to enable greater innovation and how to manage innovation risks. The GEF-9 strategy should articulate how different GEF funding programs and windows will support higher-risk investments that directly align with the quantified transformation goals of the Integrated Programs. The GEF should also help align and network relevant stand-alone national projects to set the enabling conditions for scaling. New funding modalities may be needed, for example to mobilize joint action in support of knowledge management and learning; to experiment with different approaches to country engagement, including deeper engagement with Indigenous Peoples, local communities, and civil society; to leverage new technologies; and to enable rapid feedback to accelerate adaptive management. Lastly, in accordance with the GEF Risk Appetite, the GEF-9 strategy needs to account for the varied risk management approaches among GEF implementing agencies and for the expected impacts from different funding windows.

3.3. Support policy coherence at multiple levels

The GEF should aim to strengthen policy coherence through support of policy dialogue, design, and alignment, while incorporating transparency and civic engagement in those processes. As outlined in Section 2, policy coherence can bolster the links between environmental progress, economic development, and social stability. Yet the GEF's direct influence on such policy processes is limited. The GEF depends on partnerships with international agencies, such as the World Bank and regional development banks, to engage multiple sectors. This interdependency underscores the need for a multipronged approach.

The GEF-9 strategy should consider how GEF project design and funding can contribute to policy coherence through interministerial and intersectoral coordination at country and subnational levels.[78] For example, interministerial committees have been deployed by countries to address cross-cutting priorities such as investment in the blue economy in a more integrated way.[79] Such an intersectoral approach could also accelerate place-based policy coherence,[80] for example in river basins, coastal zones, or urban corridors, in collaboration with local scientific networks and citizen constituencies, where appropriate.[81] Country Engagement Strategies and national dialogues can also support countries in developing policy coherence both vertically (from local to national and regional scales) and horizontally (across sectors) in relation to GEBs, including support for knowledge, capacity, and learning systems that can aid meaningful collaboration with diverse policy stakeholders.[82]

There are also significant opportunities to deepen coordination and learning on policy coherence within and across programs. GEF-8 Integrated Programs include a significant emphasis on policy coherence.[83] In GEF-9, mechanisms should be introduced to share experience on pitfalls and progress and to advance policy coherence priorities at the regional scale. And policy coherence should be defined in relation to GEBs. Such a definition can help build a common understanding and align action across the GEF Partnership and can provide a basis for efficient monitoring systems to assess the impacts of policy coherence – and incoherence – on the durability of GEBs.[84]

3.4. Enable civil society to strengthen the social foundations for transformation

GEF support to civil society engagement should aim to catalyse transformational change pathways. The GEF has begun to use a "whole of society" framing,[85] which includes a greater commitment to civil society. Such activities could include support to civil society roles in demonstrating institutional innovation (such as community-based marine protection networks or citizen accountability mechanisms to track climate adaptation investment outcomes); advancing new social and cultural norms (such as dietary shifts to reduce environmental impact); and deepening societal demand for policy reform (such as building urban support for mechanisms to pay for upstream ecosystem services). Furthermore, enhanced engagement of civil society can bring in diverse knowledge and perspectives that can improve the legitimacy and durability of GEF investments.

Often the most effective strategies for engagement entail strengthening, supporting, or addressing gaps in existing multi-stakeholder initiatives.[86] Many such partnerships should continue to be prioritized and supported within the context of Integrated Programs, which engage civil society networks and producer associations focused on a global value chain or regional challenge. Empowering

[78] At country level, it is worth considering a "mission" focused approach. "Instead of focusing on sectors, technologies, or firms (the 'old' industrial policy), a mission-oriented approach begins by identifying the most pressing societal challenges that require system-wide transformation before breaking them down into manageable policy pathways." See Mazzucato (2021); Mazzucato (2023).
[79] Ratner et al. (2022).
[80] Kobluk et al. (2024).
[81] STAP (2024b).
[82] Stafford Smith et al. (2023).
[83] Examples include promoting production systems that enhance climate, biodiversity, and land restoration action (Food Systems); efforts to eliminate harmful subsidies in the agriculture and forest sectors (Ecosystem Restoration, Critical Forest Biomes); policy coherence for net-zero emissions (Sustainable Cities); analysis of fiscal spending and subsidies (Net-Zero Accelerator); inter-agency coordination to reduce plastic pollution (Circular Solutions); integrated land use and coastal zone planning from local to regional scales (Blue and Green Islands); business partnerships and financial incentives (Elimination of Hazardous Chemicals from Supply Chains); and multisectoral upstream planning of infrastructure networks (Greening Transportation).
[84] Stafford Smith et al. (2023).
[85] GEF (n.d.).
[86] Ratner and Stafford Smith (2020).

Indigenous Peoples to defend their territorial rights and manage biodiversity, for example, can result in more sustained and cost-effective protection and help maintain the ecosystem services that underpin food security.[87]

It is also important to strengthen the role of civil society in project design, including to increase representation of Indigenous Peoples, local communities, and marginalized social groups. The IEO concluded that the GEF project cycle presented some challenges in terms of involving local stakeholders in project design, for example, the amount of time and resources for project preparation limited the ability to conduct the outreach, engagement, and analysis that would allow projects to reflect the needs of communities as identified by the communities themselves.[88] Enhancements that go beyond the minimum GEF requirements[89] could include mechanisms to seek early input from civil society on priorities prior to project identification, to gauge civil society preferences among a menu of project options, to incorporate civil society networks into project design and implementation processes, to integrate the perspectives of directly affected groups in midterm reviews, and to tap local expert advisory groups to assess and address risks and opportunities. Supporting locally grounded civil society initiatives and incorporating elements of participatory citizen science into program design and delivery can yield more context-appropriate innovations as well as more equitable and enduring outcomes.[90]

In addition to supporting civil society action, there is a need to prioritize capacity strengthening. Many impediments to higher program performance are rooted in capacity gaps – within civil society and government alike – which, if filled, would enable more inclusive governance or catalyse broad-scale behavioural change. Achieving such outcomes requires support for inclusive national planning and investment frameworks to manage near- and long-term environmental security risks, strategies for inclusive dialogue to deliberate on policy trade-offs and synergies, and capacity to launch and scale environmentally positive social enterprises. While most of this capacity support should be embedded within projects and programs, there will also be synergies across programs. Attention to these synergies could help expand engagement with networks that are already effectively advocating and mobilizing for change, such as in recognition of Indigenous land rights, women's empowerment in environmental governance, and youth employment in renewable energy and regenerative agriculture.[91]

3.5. Work to influence market transformation in targeted sectors

GEF strategy should aim to influence the incentives for the private sector to contribute to positive environmental outcomes and reduce environmental harm. Given the massive gap in international public sector financing for societal transitions to sustainability in low- and medium-income countries, private sector decision-making is pivotal – particularly in the finance industry and among large

[87] The Convention on Biological Diversity, for example, recently established a permanent Subsidiary Body covering the full and effective participation of Indigenous Peoples and local communities (IPLCs) (see https://www.cbd.int/article/agreement-reached-cop-16). The Global Biodiversity Framework Fund (GBFF) has set an aspirational target that "projects to support actions by IPLCs for the conservation, restoration, sustainable use and management of biodiversity by IPLCs will be encouraged, on a country-driven basis, with a view to collectively achieving an aspirational programming share of 20% at the portfolio level by 2030 from the total amount of resources allocated under the GBFF" (GEF (2023)).
[88] IEO (2024).
[89] GEF (2017).
[90] Child and Cooney (2019); STAP (2024b).
[91] At the GEF Assembly in Vancouver, Canada, in August 2023, STAP organized, at the request of the Canadian government, a Youth Leaders Learning Exchange. The key takeaways were as follows: listen actively to youth to understand their priorities; communicate through media preferred by youth; connect to existing youth networks; ensure that youth are part of sustainability solutions and decision-making processes; support youth to identify career paths in a sustainable economy; continue to invest in youth training, such as the Gustavo Fonseca Youth Conservation Leadership Program; and help prepare youth leaders to advise the multilateral environmental conventions the GEF serves.

enterprises (international and domestic). The GEF's private sector engagement strategy distinguishes between two pillars: expanding the use of blended finance (non-grant instruments) and "mobilizing the private sector as an agent for market transformation."[92]

For GEF blended finance investments, it is necessary that the logic for delivering GEBs and scaling are given equal importance as the financial logic. The GEF's blended finance instruments should not only innovate but should also articulate, in partnership with multilateral development banks and other actors, how these opportunities will be taken up by other investors at scale.[93] There needs to be a clear, integrated logic by which blended finance investments will deliver GEBs at the same time as generating financial returns.[94] Mechanisms need to be put in place to enable more rapid learning across blended finance investments, including systematizing this learning and making it available to other financial actors.[95]

Influencing market transformation is a far greater challenge, which requires strengthening the national policy and regulatory context for private investment. Many countries need capacity support to attract more private finance and to negotiate terms of investment that are better aligned with social and environmental goals.[96] Increasing the GEF's effectiveness in this domain requires tapping the expertise of financing agencies with deep country knowledge and an economy-wide mandate. These include GEF agencies, such as the World Bank and regional development banks, whose expertise can help identify what investments and expenditures are being planned by the private sector, for example in agriculture, water, mining, and infrastructure, and how these investments can be influenced by public policy, regulatory decisions, and GEF investment. Such efforts can complement GEF support for "pre-competitive collaboration"[97] with industry associations on policy frameworks, voluntary norms, and sustainability certification schemes. However, partnerships with industry need to be mindful of the risks of "regulatory capture,"[98] including by corporate interests that may work against environmental protection.

3.6. Revisit the GEF results framework

The GEF results framework should capture progress towards the GEF's system transformation goals. GEF-7 introduced a consolidated set of core indicators, replacing a much longer list of indicators by focal area. GEF-8 introduced additional measures of operational performance captured in the Portfolio Scorecard.[99] Yet more is needed to keep pace with the cutting-edge global practice in this field, which recognizes the need to separate signals of intended outcomes from progress along pathways of change.[100] STAP suggests a revised results framework that distinguishes targeted outcomes, socioeconomic and adaptation co-benefits, and lead indicators of transformational change.

[92] GEF (2020).
[93] Promising recent examples include the initiatives launched by the World Bank, IMF, GEF, development banks, international financial institutions, the private sector and other development partners to catalyze climate finance in Madagascar, Benin, and Côte d'Ivoire, all of which were announced at the UNFCCC COP 29 in Baku, Azerbaijan in November 2024.
[94] STAP (2024c).
[95] STAP (2024d).
[96] Penna et al. (2023).
[97] Kennedy et al. (2022).
[98] Saltelli et al. (2021); Schäffer et al. (2023).
[99] GEF (2022c).
[100] The Transformational Change Learning Partnership, for example, focuses on "disaggregating outcome signals (the points we want to reach) and process signals (what is needed to achieve the outcomes). Both process and outcome signals may be evident at emerging or advanced stages." See CIF (2024).

Some current core indicators need review to ensure that they target the intended environmental outcomes. The core indicators must both align with the goals of the MEAs and offer meaningful measures of GEBs. Some current indicators do that effectively, such as greenhouse gas emissions reduced or avoided, or persistent organic pollutants removed, disposed of, or destroyed. Others – such as the area of land under restoration or the marine/terrestrial protected areas created or achieving improved management effectiveness – suggest an important trajectory of change but fall short of a quantified environmental benefit. In the case of transboundary water management (where there is no MEA), the core indicator of shared water ecosystems under cooperative management is particularly unrevealing. Subindicators track factors such as the level of strategic action plan formulation and implementation or the level of engagement in learning networks. While these may be reasonable signs of progress, they are far removed from eventual environmental outcomes, such as water quality or ocean health.[101]

The results framework should highlight socioeconomic and adaptation co-benefits and their interlinkages with environmental goals. As STAP has argued, many of what the GEF considers to be co-benefits are not simply "bonus" or incidental outcomes but are instead prerequisites to achieving environmental progress.[102] These include livelihood benefits that engage locals in conservation or that offer alternative income to avoid strain on the resource base, or advances in social equity, tenure rights, transparency, and accountability that underpin effective environmental governance and ecological stewardship. Tracking such benefits in a separate category could not only provide a more integrated picture of GEF outcomes, it could also help broaden the constituency for investment in GEBs.

Integrating lead indicators of transformational change would provide a signal of progress towards transformation goals.[103] Such indicators would help determine how far society has progressed along the pathways of change deemed essential to tilt the whole system towards lasting transformation, as outlined in the portfolio-level theory of change (recommendation 1). These indicators would focus on influencing the key enabling factors that research has established as critical for transformation (as defined in Section 2).[104] For example, in reference to the four evidence-based change pathways signalled in Section 2.2, the GEF could measure the extent to which its investments and partnerships influence (a) enabling factors that help different types of *innovation* to scale, including knowledge exchange networks and capacity; (b) policy commitments that advance *policy coherence* around selected environmental goals or reduce perverse subsidies that undermine environmental progress; (c) shifts in *social norms and behaviours*, such as reducing overconsumption, or the reach of social movements or media promoting economic transitions to sustainability, or the depth of public support for such transitions; and (d) *investment flows* advancing nature-positive solutions, and private sector norms, such as aggregate capital represented in corporate commitments to verifiable nature-positive practices or technologies.

[101] Some current core indicators are process rather than outcome signals, so would be better considered as candidates for lead indicators of transformation. For example, when regional bodies are strengthened to promote cooperative management of shared water ecosystems, or when protected areas are approved on paper but not yet in practice, these might be better considered as potential lead indicators related to policy or governance.

[102] Stafford Smith and Metternicht (2022); Metternicht et al. (2023).

[103] "Lead indicators track whether the processes that are expected to result in scaling and transformation are being achieved, and lag indicators track whether the intended impacts have actually been achieved, particularly in terms of GEBs but possibly in terms of other co-benefits, such as livelihoods or youth employment." See Stafford Smith et al. (2022b) for additional examples, including applications at the project or program level (annex C of that publication). See also Mazucatto (2023) for a discussion of target setting in the plastics sector.

[104] See also Stafford Smith et al. (2022b), section 6.

3.7. Foster early and adaptive learning, and networked knowledge management

Identifying early lessons, enabling rapid exchange, and supporting adaptive program management are essential to growing the GEF's contribution to systems transformation. Yet the GEF has significantly underinvested in mechanisms to enable knowledge management and learning.[105] To improve the performance of its own investments and to contribute more to learning among partners in the field, the GEF needs to know what works and what doesn't, why, how, and in what context. Significant knowledge capture and learning is happening within projects and programs and across implementing agencies, but it is not adequately linked together and accessible. In 2023, the GEF adopted a knowledge management and learning strategy[106] anchored in people, processes, and systems; it aims to increase knowledge flows through platforms and communities of practice on priority themes (especially within Integrated Programs) and to create an enabling environment for learning and exchange across the GEF Partnership. STAP supports this intent, including recent efforts to promote learning across Integrated Programs.

To become an outward-looking global learning organization, the GEF needs to shift towards a more dynamic system of monitoring, evaluation, and learning. Effective monitoring, evaluation, and learning systems capture and share lessons learned for continuous improvement and use project life cycle monitoring to answer specific questions based on a robust theory of change that links actions to outcomes. These systems enable adaptive management and continuing adjustments based on lessons learned from monitoring and evaluation and can foster more responsive community and stakeholder engagement. Achieving such progress depends on establishing the right institutional practices and norms within the GEF overall and especially among implementing agencies, which should retain primary responsibility for knowledge management and learning. More use should be made of midterm reviews to generate learning and support adaptive management. For legacy projects, there may be opportunities to apply new machine learning technologies to harvest and share prior evidence more effectively.

Finally, knowledge management and learning systems should be open and networked. The GEF's opportunity to accelerate transformational change lies in part in its ability to share knowledge and learning beyond its investment portfolio with others pursuing similar change pathways. In many thematic domains, there is an opportunity to integrate with existing knowledge platforms that already have a broad user base, such as the World Overview of Conservation Approaches and Technologies (WOCAT) or the Conservation Measures Partnership.[107] The GEF should also be contributing to learning networks, including those sponsored by philanthropic foundations focusing on innovation and systems change.[108] Bringing GEF agencies and country partners into more frequent and focused conversations with innovators in philanthropy, government, civil society, and the private sector – combined with structured practices to deliberate on progress – could help accelerate learning, adaptation, and exchange of experience in ways that are relatively low cost yet high impact.

[105] Over the last 30 years, the GEF has invested US$ 25 billion, leveraging a further US$ 145 billion in co-financing, in more than 5,000 projects, 1,600 of which are under implementation in 186 countries. Currently, there is no system or platform to access data, information, and knowledge generated across this portfolio of GEF projects. Much of the data are fragmented and held by implementing agencies, and access to some is restricted. The GEF Portal is used mainly for project management and reporting, and there is not yet a mechanism to integrate data across the GEF Partnership.

[106] GEF (2024).

[107] Metternicht and Stafford Smith (2022).

[108] For example, the Taking Conservation to Scale learning network: https://fosonline.org/our-work/scaling-conservation/background.

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