



**GLOBAL ENVIRONMENT FACILITY**  
INVESTING IN OUR PLANET

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**ACHIEVING TRANSFORMATION THROUGH GEF INVESTMENTS**  
**INFORMATION BRIEF**  
**MAY 2022**

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



**UN**   
**environment  
programme**

## *Information brief:*

# Achieving transformation through GEF investments

### Summary

In the face of accelerating rates of global environmental change, the Global Environment Facility (GEF) seeks transformative investments to deliver systemic change and enduring global environmental benefits. What qualifies as a transformative goal should be clearly specified and plausible. The Scientific and Technical Advisory Panel (STAP) recommends that the GEF should require **a transformative investment to involve a pathway to enduring change at a sufficient scale to deliver a step improvement in one or more global environmental benefits.**

Most innovations require scaling to become transformative at the global level. Transformation can occur directly but usually scales from many well-coordinated smaller wins. **A good theory of change is essential** to help assess whether a set of interventions is *necessary and sufficient* to achieve transformational change. **A separate theory of change is needed for scaling** because scaling invariably involves different stakeholders in different contexts than the original initiative or pilot project that established the viability of the approach.

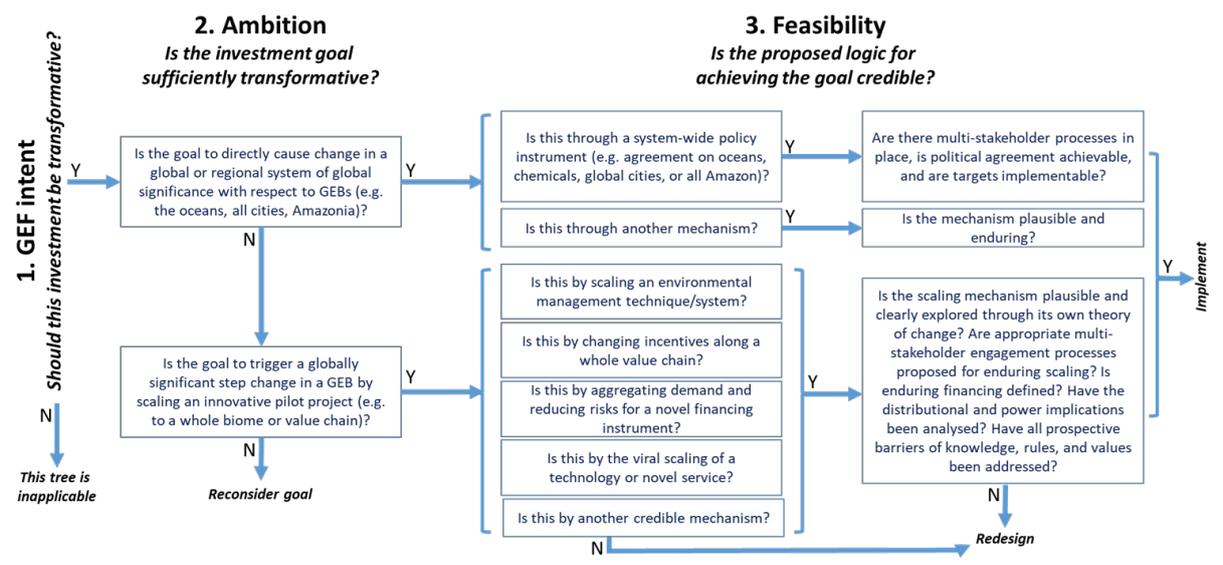
In this brief, STAP provides guidance for its recommendation that the GEF should:

- Be clear which investments in its portfolio are expected to be truly transformative and, for these, to:
- Test the goals of the investments to ensure they have sufficiently transformative ambition and, if so, then:
- Ensure that the design of the activities provides credible pathways to achieve this transformative ambition and that these pathways are monitored.

This recommendation, and its consequent questions, is shown as a logic tree in figure 1.

This brief discusses a variety of issues that should be considered in a theory of change for transformational pathways. Because significant transformational change usually takes time, **it is particularly important to monitor an array of indicators of progress on various processes of scaling** to enable an investment to be adaptive and to learn rapidly about the success of the scaling logic. The brief illustrates five categories of potential metrics for this purpose.

Figure 1: Simple logic tree for assessing the transformative potential of GEF investments



GEB: global environmental benefit.

## 1 What is meant by transformation?

The Strategic Positioning Framework<sup>1</sup> for GEF-8 articulates its goal as systems transformation to deliver global environmental benefits (GEBs) that ensure the GEF-8 vision of a *Healthy, productive, and resilient environment underpinning the well-being of human societies*. However, “transformation” means different things to different people,<sup>2</sup> and the term can be used to claim global impacts that are not really transformational. The GEF Independent Evaluation Office has defined transformation as “deep, systemic, and sustainable change with large-scale impact in an area of global environmental concern”.<sup>3</sup> There is still latitude for interpretation: What defines large-scale, systemic, or sustainable (enduring) change? And how can it be determined whether such change has been achieved?

## 2 Pathways to transformation

Much literature emphasizes the idea that transformation must result in significant change that is relatively *deep, fast, and large scale*; draws on innovation; and involves *reorientation* (values and goals) and *reorganization* (structures and institutions) of society in some way.<sup>4</sup> System transformation is very *scale-dependent*: individual farmers may transform their farms to a different cropping system to help regional agriculture stay viable without significant regional structural change; regional agriculture may transform from producing one commodity to another, or from smallholders to commercial agriculture, to help maintain the resilience of a national economy; and the energy systems of national economies may transform to deliver global benefits. STAP recommends that, to have sufficient ambition in the context of its mandate, **the GEF should require a transformative investment to involve a pathway to enduring change at a sufficient scale to deliver a step improvement in one or more global environmental benefits.**<sup>5</sup> This paper addresses how to make such ambition credible Pathways to transformation.

Effecting a step-change in one or more GEBs may occur **by directly causing a transformation that is globally significant** – such as a regional outcome with global significance (e.g. improving the functioning of the Amazon rainforest, known to be a global climate tipping point if lost) or a direct global outcome (e.g. a new global instrument on plastics).

Commonly, though, a step-change in GEBs will occur **via a clearly defined pathway to scale up a regional or sectoral outcome to a level that is globally significant.** This pathway might be spreading better dryland management through several countries within the same substantial biome (e.g. the Miombo in southern Africa) or adding up small changes in consumer demand to alter a whole value chain from multiple countries (e.g. coffee, cocoa) and deliver biodiversity benefits of global significance (other examples from the GEF portfolio are shown in Annex A). Site-specific experimentation in farming practices, or protected area management, or a chemical dump clean-up project may establish the value of a particular innovation (here termed a “pilot project”), but this is not enough: these pilot projects must be scaled to become transformative. If the goal is sufficiently

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<sup>1</sup> GEF, 2021.

<sup>2</sup> Various approaches and concepts of transformation at a global scale have been articulated, from universal paradigmatic transitions (e.g. Lodge, 2015; Raskin et al., 2002), to sectoral transformations to deliver the Sustainable Development Goals (e.g. Independent Group of Scientists, 2019; Sachs et al., 2019), to analyses of past major shifts in society (e.g. Geels, 2010). In general, the GEF’s transformational investments are individually more narrowly conceived than these examples, but the GEF’s overall portfolio both requires and can contribute to changes of these magnitudes.

<sup>3</sup> GEF IEO, 2018.

<sup>4</sup> See, for example, Atmadja et al., 2021; Colloff et al., 2021; Few et al., 2017; GIZ, 2020; Totin et al., 2018.

<sup>5</sup> See <https://www.thegef.org/documents/global-environmental-benefits> for a list of the GEF’s GEBs.

ambitious, then the question becomes whether the pathways to achieving transformation are credible, for example, whether they deploy plausible levers for change at a significant scale.

### 3 Leverage points and transformability

Leverage points for change vary in strength (see annex B<sup>6</sup>) and need to be analysed systematically. Ideally, activities will address strong leverage points, such as changes in governance structures or policy goals, but these can be hard to shift. Projects often claim transformative impact but are centred on weak leverage points that are unlikely to drive more than local or small changes, such as making a farming practice more efficient but not addressing damage caused by an underlying profit-maximizing intent.

However, well-designed **interventions that individually make little change can be implemented in a coordinated way to affect the whole system**; these interventions can make the system more transformable; that is, they enable it to be transformed more readily when the opportunity arises. For example, a series of actions (like taxing waste, creating new recycling technologies, banning plastic bags in key cities, and improving product labelling) may individually make only minor advances in reducing wasteful consumption. But together, they can adjust the regulatory environment and shift people's norms so that a dramatic shift to a comprehensive circular economy<sup>7</sup> is much easier to achieve at the right moment. To be plausible, such a strategy must **clearly articulate the strong leverage points that need to change and aim all the “weaker”, incremental, or “small win” interventions toward that end.**<sup>8</sup>

The key messages here are as follows: **it is possible to analyse prospective leverage points; transformation usually requires multiple interventions addressing different parts of the system; a set of well-aligned small changes can make a system more transformable.** It is important to recognize the limitations of planning in complex social–ecological systems;<sup>9</sup> these systems cannot be easily “engineered”. Implementation must be flexible as things evolve. However, a sound plan provides a crucial baseline against which to assess whether adjustments are needed. To that end, **a good theory of change<sup>10</sup> is essential to (i) help assess whether the interventions are *necessary and sufficient* to achieve the desired change and (ii) frame adaptive monitoring and implementation.** These messages are true at any level, but globally significant step changes usually require extra attention to scaling.

### 4 Scaling mechanisms and barriers in the theory of change

A recent review<sup>11</sup> of selected GEF Integrated Approach Pilots and Impact Programs found that the Integrated Approach Pilots paid limited attention to scaling, usually having an implied rather than a deliberate model of it. By comparison, the Impact Programs explicitly noted the need for scaling in their theories of change, but the *how* of scaling was still often weak. The review also looked at different types of scaling mechanisms and concluded that a typology based on scaling *out* (more of the same to affect greater numbers [e.g. replication]), *up* (changing rules and institutions [e.g. policy or legal changes]), and *deep* (changing norms, models, and cultures) was most useful.

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<sup>6</sup> For example, Abson et al., 2017; Birney, 2021; Independent Group of Scientists, 2019, ch. 2.

<sup>7</sup> See STAP's circular economy papers on [plastics](#) and [food](#) (Barra et al., 2018; Sims et al., 2018).

<sup>8</sup> See Folke et al., 2010; Termeer and Dewulf, 2019; Termeer and Metze, 2019.

<sup>9</sup> GIZ, 2020.

<sup>10</sup> See STAP's [Theory of Change Primer](#) (Stafford Smith, 2020) and STAP's foundational [enabling conditions](#), which include theory of change, [multi-stakeholder dialogue](#), [durability](#), and [innovation](#) (see Bierbaum, 2020).

<sup>11</sup> Salafsky et al., 2021. Their resulting typology of scaling out, up, and deep formalizes and extends the forms of scaling discussed in GEF IEO, 2018.

The theory of change for a transformative investment should identify key barriers, then specify credible causal pathways that address scaling mechanisms, which will often require multiple forms of innovation.<sup>12</sup> **Achieving change at scale requires alignment between *knowledge of potential solutions, institutional arrangements and rules, and societal values.***<sup>13</sup> Project and program designers should ask which of these three potential types of barriers – knowledge, rules, or values – require attention for scaling. In practice, **most transformational change involves more than one type of barrier, often requiring context-sensitive scaling up and deep, as well as out** (see examples in annexes A and D).<sup>14</sup>

**Relevant actors, likely winners and losers, and trade-offs between different interests all usually change with the scale of application.** For example, planting trees may stabilize sand dunes or sequester carbon successfully at a local pilot project level, but if applied regionally, may lower water tables and hence reduce farm production downstream or decrease urban water supplies. Similarly, biofuels may be successful at replacing fossil fuels at a local scale, without significant effects on agricultural land, but globally may compete with land used to produce food, if these effects are not thought through.

Thus, **scaling for transformation must consider new effects that may not occur in pilot projects, ensure that the changes are wanted, and be clear about who wants them**, so the changes do not just entrench undesirable power imbalances.<sup>15</sup> Scaling thus needs to be addressed in a **separate theory of change that takes account of these effects and allows for the invariable need to engage different actors** than were involved in the original pilot project.

## 5 Transformation strategies and multi-stakeholder processes

**Real transformation is a process that challenges established norms and institutions, so it does not happen easily**, even if the system has been made more transformable through incremental actions with lower leverage. There are, therefore, often many different roles in driving transformation, including making change happen, advocating change, directing change top-down, and collaborating to create change.<sup>16</sup> Though the GEF may be most active in the last category, it is **important to recognize actors playing other roles** and, where necessary, engage with them.

At the global scale, **transformation invariably requires well-designed partnerships among diverse stakeholders, often from the local to global levels, and in private, community, and public sectors.** These multi-stakeholder processes may be formal, informal, hierarchical, or networked, but their design requires special attention.<sup>17</sup>

Scaling is very likely to require different stakeholders from those involved in the initial pilot project; these “scaling stakeholders” may need to be engaged early on to ensure their subsequent ownership of the scaling process. Indeed, **if multiple scaling mechanisms are pursued, different stakeholders may need to be engaged for each mechanism.** For example, institutional change may depend on government involvement, whereas challenging social norms may require engagement with community or religious organizations. Changing fishing rules may require the involvement of regulatory ministries and fisher organizations, as well as international bodies if the river system is

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<sup>12</sup> STAP’s paper [Innovation and the GEF](#) identified five forms of innovation to underpin transformation: policy, technological, financial, business model, and institutional innovation (including cultural norms) (Toth, 2018).

<sup>13</sup> See Gorddard et al., 2016; Moore et al., 2015.

<sup>14</sup> The Food and Agriculture Organization of the United Nations argues that, to be enduring, changes in behaviour, cultures, beliefs, and power relations must be institutionalized (Atmadja et al., 2021).

<sup>15</sup> See Metternicht et al., 2020; O’Donnell and Laubenstein, 2021.

<sup>16</sup> See Waddell, 2018.

<sup>17</sup> See STAP’s paper on [multi-stakeholder dialogue](#) (Ratner and Stafford Smith, 2020).

transnational. To ensure that transformational changes in GEBs endure in the face of disruptions, **well-designed multi-stakeholder processes will be required** to ensure that relevant stakeholders support and own the scaling and the durability of those GEBs and that these stakeholders receive incentives in the form of **local-to-national socioeconomic benefits**.<sup>18</sup>

## 6 Metrics for monitoring and learning about transformation

As with other investments, transformative investments can be monitored through *lead* and *lag* indicators suited to the causal pathways and impacts being pursued. 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. Because outcomes in these systems are usually complex, are often slow to materialize, and require a high degree of adaptive implementation in the face of uncertainty, lead indicators are particularly important to help predict the performance of transformative investments. Some commitment to monitoring lag indicators (including the GEF core indicators) remains essential to determine what has been achieved and to continually test the causal logic linking impacts to investment outputs.

A clear theory of change enables relevant topics for monitoring to be identified, based on the nature of the transformation being sought and the particular causal pathways for scaling expected to deliver it in a particular context (see Annex A). A recent set of publications by GIZ<sup>19</sup> expound the state of the art for considering indicators (Annex C), albeit lengthily, identifying various design diagnostics as well as many possible lead indicators, both general and sector-specific. The GEF-8 Strategic Positioning Framework also identifies four levers to assist transformation – governance and policies, multi-stakeholder dialogue, innovation and learning, and financial leverage. GIZ additionally emphasizes the foundational importance of various aspects of capacity for change. Hence, STAP suggests that those designing **GEF investments should look for lead indicators that consider at a minimum:**

1. **Capacity for change:** the extent to which the organizations or other actors that need to make changes have the capacity to think about and deliver them (see GIZ’s “essential characteristics” in annex C)
2. **Governance and policies:** whether the changes in values and in policy, legal, and institutional arrangements that are needed for scaling are starting to happen, and whether measures of the status quo are decreasing
3. **Multi-stakeholder dialogues:** whether the appropriate form of support by important stakeholders is being maintained or increased, including levels of engagement, influence, and learning, while considering vested interests and power dynamics
4. **Innovation and learning:** whether relevant novel technologies, business models, and processes are emerging, and whether appropriate levels of knowledge exchange and learning are occurring among the actors who need to deploy them
5. **Financial leverage:** whether there is evidence of appropriate financial resources increasingly flowing in the directions needed, particularly from mainstream public and private sources

As mentioned above, GIZ provides examples of lead indicators to monitor change (annex C). Annex D details four GEF projects with transformative aspirations along different scaling pathways, with some examples (where already identified) or suggestions from STAP (where not yet identified) of possible lead indicators for each, in all five of the categories above. STAP suggests that these inputs could form the basis for discussions at a workshop aimed at developing more detailed guidance for GEF-8.

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<sup>18</sup> For example, improvements in local air and water quality and in jobs, livelihoods, and health.

<sup>19</sup> See GIZ, 2020, and associated Excel file.

## 7 Implications for program and project design

STAP recommends that the designers and assessors of GEF investments should be challenged with three questions (see figure 1). The GIZ tables (see annex C) provide examples of more specific design criteria that address these questions, which STAP could develop into a shortlist of screening diagnostics.

### 7.1 Should this investment be transformative?

Many, but not all, GEF investments are intended to be transformational, including the integrated programs (Integrated Approach Pilots, Impact Programs, and their successors). Other coordinating activities across country-oriented projects could aim for transformation of global significance, and some individual country projects may be of a magnitude to justify being transformative, either alone or in concert with other investments and change processes. It is important to be clear about which parts of the GEF's portfolio are designed to be transformational at the global level of significance proposed here; this should be a strategic decision related to the overall ambition and risk appetite of GEF-8.<sup>20</sup> Transformative change requires greater innovation to explore new ways of achieving more impact, which often entails higher risk as well as higher rewards.

### 7.2 If so, is the investment goal sufficiently transformative?

If an investment (at the project or program level) is intended to be transformational, there should be a clear-eyed appraisal of whether its stated goal is truly for **enduring change at a sufficient scale to deliver a step improvement in one or more GEBs**. The judgment will be context-specific, but the targeted outcomes should aim either directly at a transformation that is globally significant or at scaling a regional or sectoral outcome. The step-change may be in the quantity, durability, resilience, efficiency, or even volume of co-benefits from innovations, but it needs to be relevant to the GEF's global mission (see figure 1).

### 7.3 If so, is the proposed logic for achieving the goal credible?

If the goal is plausibly transformational, the proposed investments should be appraised critically (see figure 1) in an appropriate theory of change.<sup>21</sup> Where the intention is to scale eventually, the intended mechanism for scaling should be articulated at the outset and should be focused on the system as a whole and not just on the innovation pilot. Transformation invariably involves social and institutional issues, as well as economic and political dimensions; the implications for partnerships and engagement should be analysed with these in mind.<sup>22</sup> Metrics of lead indicators that help determine whether transformation is being, or is likely to be, achieved should be identified and tracked to enable adaptive implementation; these metrics should encompass GEF's levers for transformational change as well as the capacity of relevant actors to employ them.

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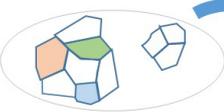
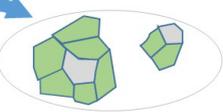
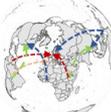
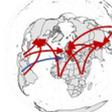
<sup>20</sup> Ratner et al., 2022.

<sup>21</sup> See STAP's [Theory of Change Primer](#) (Stafford Smith, 2020). Additional guidance aimed specifically at transformational theories of change can be found in GIZ, 2020, pp. 41–42, and Lawrence et al., 2020.

<sup>22</sup> See STAP's [Enabling Elements of Good Project Design](#) (STAP, 2021).

## Annex A: Exemplar models of scaling for transformation

Exemplar models of scaling to achieve transformation, working through different forms of innovation and scaling, with examples that can lead to transformational metrics<sup>23</sup>

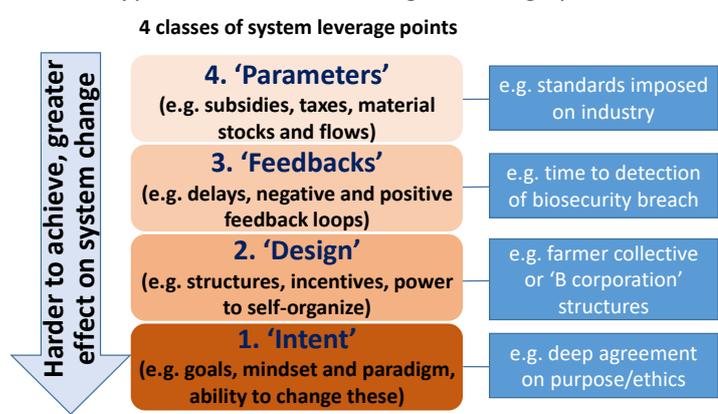
Model	Piloting innovations	Scaled to transform	Key causal pathways	Examples
Production system			Scaling <i>out</i> knowledge of new resource <b>management practices</b> from pilot project landscapes or seascapes to all of a biome, with necessary institutional changes such as tenure security or use rights.	Better land management practices extended across borders to entire Miombo dryland biome, or all of Amazon, anchored by new South-South exchange processes at the regional scale.
Value chain			Aggregating through coordinated <b>supply chains</b> , so novel demand incentives alter production methods, requiring <i>scaling up</i> through institutional changes, and possible <i>scaling deep</i> to consumer choices.	Coffee or cocoa supply chain consolidation supported by market demand for sustainability, requiring novel instruments to track sources and ensure pricing supports the livelihoods of complying producers.
Financing system			Aggregating demand for, and returns to, finance up to a scale that justifies <b>large investment vehicles</b> to fund new interventions that <i>scale out</i> sustainable production or adaptation, with bankable returns.	Green bonds or novel investment funds for adaptation or land restoration, supported by scalable innovations in incentives to ensure enduring improvement in management.
Service provision			Recipients of services (e.g. transport, waste, energy) responding positively to <b>disruptive innovations</b> , one or more of which <i>scale out</i> to dominate the market; may require <i>scaling up</i> to address the regulatory environment.	Expansion of microgrid energy services, overcoming regulatory and technical issues with impact on wider grid, with uptake observed in contexts other than where originally installed.

<sup>23</sup> Amended from [Ratner and Stafford Smith, 2020](#), fig. 1.

## Annex B: Leverage points: Where to intervene to transform a system?

Systems, especially complex systems that link social and ecological aspects (like those of most contexts the GEF works in), are characterized by links, flows, and feedback. In her classic text, systems researcher Donna Meadows identified 12 types of weaker to stronger leverage points and provided many real-world examples; these have been helpfully summarized

into four categories (see figure).<sup>24</sup> Key here is that the weaker leverage points, like changing the price of fertilizer inputs or income tax rates, which are simple “parameter” changes, are relatively easy to change but have little effect on the whole system. Some of these leverage points can still be quite powerful; adjusting the behaviour of feedback loops by installing early



warning biosecurity systems, for example, would catch a breach within days rather than allowing invasive pests to become well established by the time their presence is registered. By contrast, reshaping the structure or goals of a system (“design” and “intent”), or changing the social norms from which the system arises (“intent”), can have transformative impact, but such changes are (usually) much harder to enact. For example, creating farmer collectives can dramatically change the power dynamics in a value chain (and may be resisted by vested interests), and B corporations are able to articulate goals other than profit maximization for their shareholders, thus opening the door to adjusting the priorities of capitalism. **Classifying proposed intervention points provides a reality check on how much impact a project is likely to have.** If a project claiming transformative potential is mainly focused on weaker leverage points, then a clear case needs to be made to show how these “small wins” will add together to make the system more transformable.<sup>25</sup>

<sup>24</sup> Her book (Meadows and Wright, 2009) contains many real-world examples (for a shorter public summary: Meadows, 2010). Abson et al., 2017, and Birney, 2021, provide useful recent updates and discuss the four categories of leverage point mentioned here. Levers are also discussed in Independent Group of Scientists, 2019, ch. 2, and in CBD Secretariat, 2020, tables 22.1–2).  
<sup>25</sup> See Termeer and Dewulf, 2019.

## Annex C: GIZ transformative project design and guidance

GIZ's two documents on transformation<sup>26</sup> provide a thorough elaboration of the scholarship on the topic, as summarized briefly here, as well as a comprehensive approach to selecting appropriate indicators. GIZ argues that the *overt intent to transform*, an *explicit approach to scaling*, and a *focus on the durability of the new system* (as well as declining resilience in the old system) are mandatory criteria for an investment claiming to be transformative;<sup>27</sup> these criteria may be seen mainly as design diagnostics and align with STAP's recommendations in section 7. GIZ also argues that these and four other essential characteristics (social change, complexity and adaptability, reciprocity and relationships, and the ability to consider multiple dimensions of an issue) are needed in some combination.<sup>28</sup> These characteristics map closely to concepts used by the GEF and STAP (such as integration, systems thinking, multi-stakeholder partnerships, learning, and the application of social sciences) and lead to generic indicators (mostly related to the detection of changing values and rules in a just and engaged way and to the handling of the complexity of transformation), as well as many others that are specific to distinct domains of intervention.<sup>29</sup> The table gives examples of the generic indicators drawn from the GIZ spreadsheet: **the key point is that transformative projects should identify lead indicators of this nature suited to their specific scaling pathways and sector.**

<b>Criterion</b>	<b>Examples of generic lead indicators to monitor change over time</b>
Scaling	Degree of dissemination of social norms, memes, narratives, behaviours, etc., up to a global level
Scaling	Multiplier effect: Number of followers, levels of favourable feedback or reactions from stakeholders
Durability	Level of economic incentives (taxes, subsidies, etc.) favouring the new system versus the old, or new jobs in the new system versus jobs lost in the old
Handling of complexity	Extent to which the transformation process is capable of proceeding iteratively and adaptively
Capacity to facilitate	Level of professionalism, continuity, and resourcing in facilitation of the transformation
Management of multiple dimensions	Degree of institutionalization of transformation across different social spheres (e.g. through boundary organizations or recognized change agents)
Management of multiple dimensions	Degree of integration of different forms of knowledge (e.g. scientific, local, traditional, implicit, regulatory, target, system, or transformation knowledge)
Social change	Number of target groups or actors that have been reached, and level of acceptance of the need for the change
Social change	Level of concrete changes apparent in values, social norms, attitudes, behaviours, practices, etc. (e.g. market share of community-based financing mechanisms)
Reciprocity	Extent to which different actors can participate in developing interventions, from information, to consultation, to co-production, to joint decision-making
Reciprocity	Extent of balance of accountability for the interventions required from different actors, particularly with extant power structures and hierarchies
Reciprocity	Extent of learning with and from one another among actors (co-production of knowledge transfer)
Social justice	Level of relevant discourse on the forms of justice to be addressed, and extent to which these forms are reconciled with one another (e.g. between social levels, scales, intergenerational, historical justice, distributive)
Social justice	Pervasiveness of the "leave no one behind" principle and of the disadvantaged being considered and directly involved in decision-making and implementation

<sup>26</sup> GIZ, 2020, and associated Excel file.

<sup>27</sup> GIZ, 2020, pp. 46, 47.

<sup>28</sup> GIZ, 2020, pp. 48–50.

<sup>29</sup> See list in GIZ, 2020, pp. 50-53 and associated Excel file.

## Annex D: Some GEF examples of models in annex A, with potential approaches to metrics

Transformation pathway [with example]	Example key issues in scaling	Types of metrics of transformative scaling to consider ( <i>illustrating various of the five 5 categories of lead indicators identified in section 6</i> )
Mainstreaming management practices [e.g. Amazon Sustainable Landscape Program (ASL, 2020)]	Spreading practice improvements into similar contexts across national boundaries [here, the countries of the Amazon], with cultural, legal, and institutional differences, through awareness-raising of benefits, knowledge exchange, and new institutions	The Amazon Sustainable Landscape Program has four key pathways: (i) more area conserved, (ii) sustainable management and restoration, (iii) support for national policies, and (iv) regional capacity and cooperation. Potential lead indicators of transformative scaling linked to these pathways include: (i) Area designated as protected and under improved management [increasing]* <sup>30</sup> (ii) Number of people benefiting from innovation in practices or technologies [increasing non-linearly]* (iii) Investment in policies (a) supporting sustainability [increasing] and (b) encouraging degradation [decreasing] (iv) Level of learning/exchange between countries (number of events, attendee satisfaction) [increasing]*
Greening a whole value chain [e.g. planetGOLD program (PlanetGOLD, 2021; PlanetGOLD, 2022)]	Changing practices of producers [here, small-scale/artisanal gold mining], contributing to the same supply chain across diverse geographies that may be politically unlinked, through regulatory standards and market access or premiums as incentives	The planetGOLD program has four key pathways: (i) awareness-raising, (ii) access to finance, (iii) formalization, and (iv) technical solutions. Potential lead indicators of transformative scaling linked to these pathways include: (i) Public perceptions of formalized artisanal gold mining [more supportive, less divided] (ii) Private finance for sustainable artisanal and small-scale gold mining [increasing, non-linearly]* (iii) Policy barriers to formalization [decreasing] (iv) Awareness of innovative technical options and best practices in (non-)partner countries [increasing]
Leveraging green finance [e.g. AGRI3 Fund (GEF, 2020a)]	Aggregating demand for green loans [here, enhancing credit availability for more sustainable practices in agricultural value chains that avert deforestation] to a scale that draws on private finance, while ensuring new finance successfully delivers enduring GEBs and financial returns, by demonstrating increased private financing of sustainable practices	AGRI3 identifies two key outcomes or pathways: (i) forested lands are protected and sustainably managed and (ii) agricultural areas implement sustainable or climate-smart agriculture practices. AGRI3 intends to scale by triggering increased market transparency about business models, reducing the need for public funding, as well as expanding the banks involved with the fund. Potential lead indicators include: (i) Awareness of funding model success among surveyed investors [increasing] (ii) Number of banks other than Rabobank engaged with AGRI3 [increasing] (iii) Proportion of loan-takers maintaining good practices five years after loan [increasing]
Uptake of technological services innovations [e.g. Global Electric Mobility Programme (GEF, 2020b)]	Supporting a technology-based service [here, transport by electric vehicles in 50 low- to middle-income countries] to move from use by niche enthusiasts to widespread viral uptake by removing regulatory and cultural barriers	The Global Electric Mobility Programme works through three outcomes: (i) knowledge products support policy and investment decisions to accelerate e-mobility, (ii) investment is expanded in e-mobility through regional platforms, and (iii) lessons are tracked/shared to promote wider uptake of e-mobility beyond target areas. The program addresses monitoring for scaling-nationally and globally. Potential lead indicators include: (i) Level of demand for knowledge products outside program participants [increasing]* (ii) Level of funding leveraged to scale up e-mobility through the platforms [increasing, non-linearly]* (iii) Number of non-program countries committed to e-mobility due to South-South exchanges [increasing]* Other metrics might include the proportion of regulatory barriers that are cleared and level of cultural acceptance of the new technology.

<sup>30</sup> \* Indicates that, for these metrics, STAP's understanding from the documents cited is that something similar is being monitored by the project, or program; for other proposed metrics, STAP has suggested a potential approach based on reading the documents, but there could be alternatives.

## References

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