STAP information note on blended finance

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STAP SCIENTIFIC AND TECHNICAL ADVISORY PANEL

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STAP information note on blended finance

Executive summary

Global demand for sustainable development finance exceeds available public funding many times over, placing increasing expectations on the Global Environment Facility (GEF) to attract private capital for global environmental benefits (GEBs). Blended finance instruments come in many forms, but generally involve applying public, or philanthropic, funding to reduce perceived or actual risks to commercial return on private sector investments in GEBs that are slow to eventuate, unfamiliar, or carry high market uncertainty. Blended finance instruments can enable public funding of sustainable development to leverage substantial private sector finance. Such instruments have been explored for several decades but have only recently been applied to environmental outcomes such as reducing land degradation, enhancing biodiversity, and other GEBs at the core of the GEF mandate.

Observations of blended finance projects in the GEF portfolio, and reviews of relevant academic and practitioner literature, make clear that the pathways to impact in blended finance projects are generally more complex than in conventional Trust Fund projects and that entities outside the GEF partnership have greater responsibility for their execution. These characteristics enable the GEF to scale up its impact through the distributed actions of other entities, but also highlight the need for clear articulation of a project's environmental impact logic and for fast learning to ensure that intended GEBs are achieved in this area of rapid innovation. Literature reviews also show that blended finance for nature-positive outcomes is less mature than investments in energy technologies aimed at reducing greenhouse gas emissions.

This STAP information note provides a short literature review and several case studies of different blended finance logics. Together, these sources highlight the potential for a more systematic classification of types of interventions to create GEBs and the contexts in which they are applied to help identify those most amenable to different blended finance instruments (or to other approaches altogether).

This note identifies four issues to frame an agenda for further investigation:

(1) Improve guidance regarding which types of GEB interventions in which contexts are best served by particular blended finance instruments.
(2) Improve advice about the detailed design of a selected blended finance instrument to ensure that it fits the intended GEB interventions and their context.
(3) Develop advice on theories of change for GEB impacts in blended finance projects that identify underlying assumptions to be measured and tested.
(4) Expand the GEF blended finance to encourage learning and the use of existing lessons related to Issues 1-3.

Exploring these issues would help facilitate and speed the creation and implementation of effective and credible blended finance projects in the GEF.

1. Introduction

The GEF is increasingly expected by the countries that it serves to enable more use of private investment to deliver global environmental benefits (GEBs[1]). The GEF has been responding to these expectations for nearly a decade through its Non-Grant Instrument (NGI) program (GEF, 2020), which has successfully leveraged private investment at a much greater rate than conventional GEF Trust Fund projects. Expectations have further increased with the launch of the new Global Biodiversity Framework Fund in August 2023. **STAP strongly supports the GEF in taking calculated risks to innovate and learn how to enlist private investment in environmental outcomes.** However, it is important to ensure that these diverse forms of private sector engagement are effective and efficient in contributing to sustainable development.[2]

The GEF disburses most of its funds as grants for projects. By contrast, its non-grant instrument funding aims to reduce risks to the private sector which may be reluctant to invest in GEBs.[3] This 'de-risking' may occur, for example, through the GEF supporting banks to provide loans to small-holders at below-market rates, accepting greater risk of poor performance in a capital fund than other investors, or simply contributing 'catalytic capital' to a fund that invests in environmental outcomes to improve the fund's credibility with other investors.

These are all forms of blended finance, where public funds from the GEF and other donors combine with private capital to achieve greater environmental outcomes and financial returns than either funding source alone. The GEF has promoted innovation in these approaches since its beginning in 1992, initially focusing on clean energy and energy efficiency projects. As these projects have matured and started attracting their own finance, focus has moved to areas still perceived as too risky for commercial finance alone, such as biodiversity and land management.

Blended finance comes in many forms; the key types explored in various GEF projects are shown in table 1 and described in more detail in annex A. The types are classified from a financial perspective as *risk mitigation* products, which involve various types of guarantees and structured finance; *catalytic capital* approaches, which involve equity investments or debt instruments in the form of concessional loans[4]; and various *performance-based instruments*, such as contingent grants and loans, and convertible instruments. With minor variations, this categorisation is widely used.[5] The fourth category is *grants*, as opposed to non-grant financing, for technical assistance (TA) and capacity building associated with blended finance projects.

In this information note, STAP reviews some of the latest academic and practitioner literature (section 2) and provides some case studies of different blended finance logics (section 3), which together highlight the potential for a more systematic classification of approaches to blended finance. The note identifies four issues for potential development that could assist the timely and effective development of future GEF blended finance projects (section 4).

[1] See https://www.thegef.org/documents/global-environmental-benefits for a full list of GEBs.
[2] E.g. "Zero tolerance for greenwashing", UN Secretary General (2022); Financial Times: "Companies with good ESG scores pollute as much as low-rated rivals", July 30 2023; Kedward *et al.* (2023, in *Nature Ecology & Evolution*); Lamont *et al.* (2023, in *Science*).
[3] Summarised from much more detail in GEF (2019, 2020, 2022).
[4] Equity capital takes higher risk, higher return, and ownership; debt instruments take lower risk, lower return, and no ownership (Kwon *et al.* 2022a, p.24).
[5] See GEF (2022) and other sources noted in annex A.

Table 1: Key categories of blended finance instruments used in the GEF (GEF, 2022; see annex A for more detailed descriptions of each instrument.

Category	***Instrument***
Risk mitigation	*Guarantees and insurances*: GEF reimburses a lender or investor if losses occur ("first loss guarantees"). Guarantees may be partial and can include: credit guarantees where a borrower or bond issuer fails to repay; performance risk guarantees where technology or project performance fails to deliver; and political risk guarantees where political factors cause losses in projects.
	Structured finance: GEF funds are invested in a "junior" position or on concessional terms. If there is a partial default, senior investors are reimbursed first.
	Liquidity facilities: essentially loan options that act as credit insurance to reduce the chances of default on a project.
Catalytic capital	*Equity investments*: GEF invests in for-profit, non-bank financial vehicles which in turn finance projects to generate GEBs and financial returns.
	Debt instruments: GEF makes concessional loans at or below market interest rates for on-lending at lower rates or for longer terms than normal.
Performance-based	*Contingent grants*: held in reserve and paid only if certain outcomes are achieved by a certain date. *Contingent loans*: paid out and may be converted to a grant if certain outcomes are achieved.
	Convertible instruments (equity, loans, guarantees): may be converted to a grant if certain outcomes are achieved. *Convertible grants*: may convert to another instrument (e.g. equity, debt, guarantees, etc.) if certain environmental or financial triggers occur.
Grant-based support	*Investment facilitation*: complementary funding (i.e. grants) to any of the above instruments (e.g. for technical assistance (TA)).

2. Key findings from academic and practitioner literature

The academic literature on blended finance for sustainable development is growing but still quite limited.[6] It is mainly focused on development outcomes such as health or water security, as well as agriculture and emissions reduction, with less focus on direct environmental benefits and nature. **The lessons from academic literature, as well as from practitioner literature, are only beginning to be systematised**.

This STAP note distinguishes between non-financial sustainable development "*impacts*" in general, which may be social or infrastructure or environmentally oriented, and those more specific impacts that fall within the GEF's remit of GEBs (termed here as "*GEB impacts*"). Some GEB impacts are better understood, such as greenhouse gas emissions reductions. Others that are more directly oriented towards nature-related outcomes, such as biodiversity and land management, are less mature and are termed here as "*environmental GEB impacts*".

Blended finance applications for GEBs have been reported in many sectors, including water and sanitation, food systems, nature-based solutions for coral reefs, the blue economy, the circular economy, community-based natural resource management, reforestation, and renewable energy. Annex B provides a brief review of this literature. In summary, the pathways to impact from blended finance must be better conceptualized, particularly for environmental GEB impacts. The literature

[6] A Web of Science search (November 2023) for publication topics including "blended finance" produced only 46 hits for 2018-2023; research has grown slower than the scale of finance (Sánchez Torrente *et al.* 2020).

expresses optimism regarding the potential benefits of blended finance applications in appropriate contexts, but also identifies a need for more testing and analysis.

The literature also highlights some challenges the GEF has been addressing,[7] such as:

- Identifying alternative ways of mitigating risks for private investors, in combination with establishing multiple funding modalities that suit different circumstances.
- Needing robust legal and institutional frameworks that provide confidence in blended finance instruments applications.
- Avoiding bureaucratic inflexibility and unduly onerous monitoring that may deter private investors.
- Understanding how development banks (both international and national) participate in blended finance initiatives.

Additionally, the literature includes some focus on the nature of TA, the need for its alignment with blended finance instruments,[8] and when different forms may be appropriate. However, the vast majority of TA facilities reported in this literature focused on supporting finance or business development arrangements rather than delivering on-the-ground impact in the form of social and environmental benefits.

Another key challenge identified in the literature is the difference in culture between those who design the finance side of blended finance projects and those concerned with the impact side (particularly environmental GEB impacts). To address the interactions between finance and environment logics, these different cultures must be encouraged to converge and give each other equivalent balance.[9]

2.1 Interactions between finance and environment logics

Blended finance projects tend to be presented with separate finance and impact logics (see figure I), yet clear interactions exist between them. For example, different blended finance instruments may be needed depending on the level of maturity of interventions such as new technologies or novel institutional arrangements for particular impacts,[10] and this requires a more integrated design process.

Understanding the interactions between private finance and sustainable development impacts is particularly underdeveloped where enduring environmental GEB benefits are the primary impact objective. The nature of environmental goals may influence the effectiveness of different financial arrangements because some types of environmental outcomes take longer to achieve than others, and hence require more patient capital. For example, improved soil fertility on a smallholder farm may be achieved in 2 or 3 years, whereas nesting hollows for endangered birds in reforested areas may take many decades to develop.

[7] E,g. McHugh (2021); Purkayastha and Sarkar (2021); Havermann et al. (2020); Isah et al (2023); Choi and Seiger (2020); Sheriffdeen et al. (2022); Dey and Mishra (2022); Kim and Jun (2022; Moxey et al. (2021).
[8] DFI Working Group (2023); Finance in Motion (2020); Ivory (2023); Kwon et al. (2022a).
[9] E.g. Brathwaite et al. (2022b); Crona et al. (2021); Kedward et al. (2023); One Planet Lab (2021); Rode et al. (2019); Thompson (2022b).
[10] E.g. Kwon *et al.* (2022a).

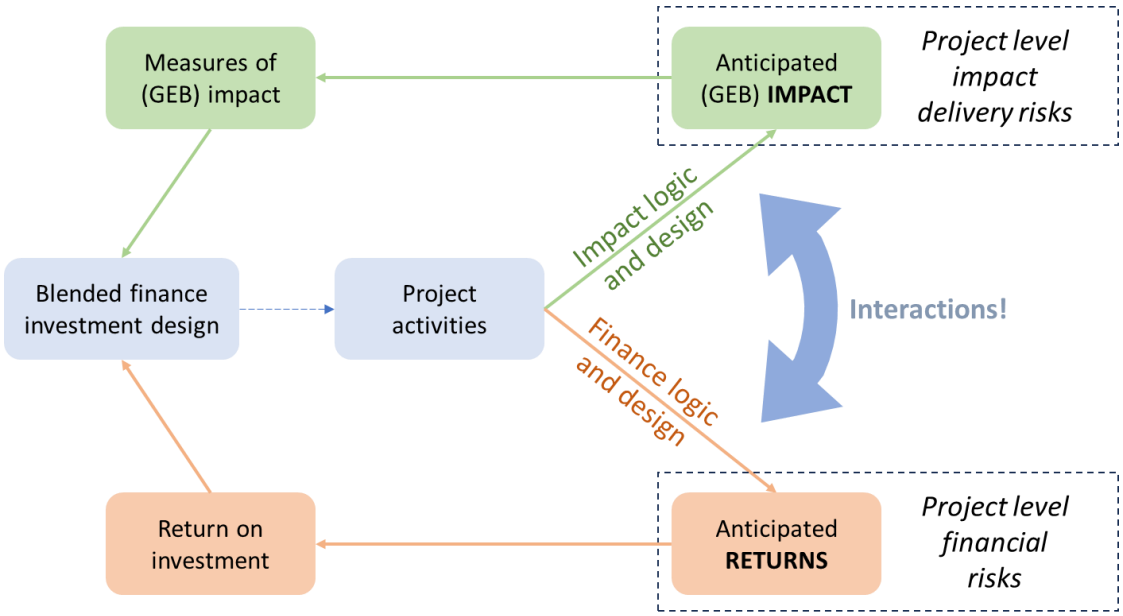


Figure I: A simplified schema shows how the impact logic (GEBs for the GEF) (green), and finance logic (orange), and their respective risk assessments tend to be developed and measured separately in impact investing. However, these logics often interact and some project activities will contribute to both. (Source: elaborated from Thompson, 2022b)

Conversely, the form of financial flows used in a project may affect which environmental interventions are likely to be effective and enduring. For example, loans may work well where an intervention provides improved livelihoods quickly, even if the GEBs take longer to emerge (e.g. a newly co-managed protected area may provide local livelihoods quickly while conservation benefits accrue over time). However, loans may work poorly where, despite significant environmental benefits, livelihood improvements develop too slowly for the borrower to repay the loan on a commercial time frame (e.g. smallholders borrow to buy tree seedlings like teak that quickly provide protection from soil erosion but take >20 years to harvest).

Similarly, relatively small differences in governance structures matter. For example, a GEF agency with decision-making power versus only advisory power in an investment fund board, may affect the influence of the GEF partnership over the choice of fund investees, and hence affect how effectively the investments achieve environmental benefits.[11]

Many questions may arise about the interactions between the financial and impact logics during project planning, such as:

- How mature or proven, as opposed to experimental, are the proposed environmental interventions and how will this affect the risks they pose to the finance logic?
- Will targeted environmental GEB impacts emerge within the term of the blended finance instrument?
- Will targeted environmental improvements deliver a sufficient financial return in time to repay a loan or equity investment?
- Will targeted environmental GEB impacts endure after private finance ceases?
- Can the environmental GEB benefits be measured sufficiently reliably to satisfy accounting standards?

[11] E.g. Kedward et al. (2023).

These concerns are better understood in the context of mature blended finance interventions, such as those related to greenhouse gas emissions where the intended emissions reductions are more easily measured and often more quickly achieved than in the context of biodiversity or land management benefits. Measurement difficulties also create barriers to learning about the appropriate form of blended finance model for different contexts. The literature discussed in this STAP note, especially the practitioner documents,[12] shows emerging systematic approaches to matching blended finance instruments to context. However, there is limited discussion of such approaches for GEB-relevant sectors (see examples in annex B.3).

2.2 Choosing and designing blended finance instruments that are context-appropriate

In deciding which type of blended finance instrument to select, the literature highlights two stages: first, matching the instrument type to the context and second, designing the instrument to deliver both finance and environmental outcomes.

Increasing evidence is emerging about the contexts in which specific blended finance instruments may or may not work. For example, the literature contrasts the use of blended finance or payments for ecosystem services for coral reefs and tourism, bonds for biodiversity, and multiple funding modalities for sustainable agriculture, infrastructure, and renewable energy.[13] However, academic analyses have not generally focused on synthesising how blended finance may differ across different sectors.

In contrast, practitioners have begun articulating decision criteria for the four categories of blended instruments listed in table 1. These criteria include: the type of project initiator and their financial expectations, the purpose of the transaction, the maturity of the target market, and the maturity of the proposed intervention (e.g. pilot, demonstration, or scaling stage). For example, Kwon et al. (2022a) suggest guiding instrument selection using questions about organisational context, transaction purpose, investee context, cost and resources, and risk and return.[14]

Once a type of blended finance instrument has been chosen, it must then be designed in detail to fit the specific context in which it will be deployed, for example considering issues such as governance, transparency, and measuring impact. Practitioners have much tacit knowledge about these design issues, but it has not yet been well-systematised as advice. Also, again, limited focus has been placed on ensuring that enduring (and additional) environmental benefits such as GEB impacts are actually delivered. For example, many projects use some form of TA for advisory or training purposes, usually to improve the capacity and operations of the finance logic,[15] but little formalised guidance has been developed regarding how to deploy TA to specifically support delivery of different environmental benefits.

Indeed, the financial classification of blended finance instruments in table 1 includes nothing about the type of impact being sought, the different ways of overseeing the impact pathway from GEF funding through to the creation of GEB impacts, or the steps involved in this impact pathway involves. This leads to some key challenges described next.

[12] E.g. Finance in Motion (2020); One Planet Lab (2021); Chemonics (2021b); USAID INVEST (2020, 2023); Convergence (2023b); Kwon et al. (2022a).

[13] Specifically, nature-based solutions in coral reefs and tourism (Brathwaite et al., 2022a; Brathwaite et al., 2022b); bonds for biodiversity (Thompson, 2022b); sustainable agriculture (Dey and Mishra, 2022; Havemann et al., 2020); for least developed countries in general (OECD and United Nations Capital Development Fund, 2020); infrastructure (Taguchi and Yasumura, 2021) and renewable energy (Isah et al., 2023) in countries with different governance capacity.

[14] See also: Norwegian Refugee Council (2022); USDA Forest Service (2022).

[15] Ivory (2023) reports an analysis of 270 blended finance transactions using technical assistance in Convergence's database; these most often support fund development and operations.

2.3 Key challenges to successful blended finance models for GEB impacts

Developing a more systematic approach to blended finance models for GEB-relevant sectors will require theories of change where the environmental impact logic is well articulated and where measurement, evaluation of additionality, and learning about environmental outcomes is better developed. Five topics are particularly relevant to the GEF:

(1) Clearer *logic* for delivery of GEB impacts.

Many sources note insufficiently *clear logic or theories of change.* These may be expressed clearly enough to the point of achieving financial outputs, but rarely explain the delivery of GEB impacts. Even the well-articulated principles for blended finance issued by the OECD (2021) and DFI Working Group (2023) focus more strongly in practice on the effective functioning of the financial instruments than on the ultimate areas of intended impact, that is, GEBs for the GEF.

(2) Better *measurement* of environment impacts.

Lack of clarity in logic can lead to inadequate *measurement* of ultimate impacts. Sources note the tendency to target easy-to-measure outputs (e.g. area conserved, or farmers engaged) rather than outcomes and ultimate impacts (e.g. species diversity and population or soil carbon levels).[16]

(3) Demonstrated *environmental additionality*.

A lack of real impact measurements, in turn, makes it harder to ensure real *additionality* in both finance and environment outcomes (i.e. GEF additionality[17]). This is important for demonstrating that the GEBs achieved are truly additional and not just 'greenwashing', and for learning which instruments work and where. Several sources note that high financial leverage ratios alone are not good indicators of high impact.[18]

(4) An enabling *institutional* context.

Effective implementation requires an *enabling institutional context* with conducive governance and institutional arrangements for both the proposed project and for the selected finance instrument itself. The GEF (2023) emphasises how the "enabling environment is essential for consistent and durable impact, including adequate legal, policy, and institutional frameworks". These are examples of many design details that are important in the implementation of blended finance instruments.

(5) *Learning* and a learning culture.

Sources almost universally agree that much remains to be learned about the fast-developing field of blended finance and that learning requires levels of transparency and a consistent public reporting framework. These requirements must be embedded in contractual arrangements and fostered as a learning culture in the blended finance community.[19] However, guides on deciding which blended finance instruments to use generally do not cover monitoring and learning. Long-term data beyond the contract period may be needed to support learning and create an evidence base.

3. Blended finance models in the GEF

In recent years, many blended finance models have been planned and implemented under the GEF's NGI program, now called Blended Finance. The evolution of these models confirms that learning has occurred around some of the issues discussed in previous sections, such as how to ensure delivery of

[16] E.g. Habbel et al. (2021); Lamont et al. (2023); Thompson (2022a).
[17] Here, GEF additionality is "the extent to which innovation, enabling conditions (such as legal, institutional and financial), and environmental and social impacts may not have occurred without the support of the GEF". (GEF IEO, 2021). This is different (and has different preconditions) than financial additionality alone.
[18] E.g. Pegon (2023); USAID INVEST (2020, 2023).
[19] See Pegon (2023). GEF (2023) notes similar concerns in private sector investment for biodiversity impacts.

GEBs by ensuring that GEF agencies play an influential role in fund governance and by providing the right form of aligned TA packages.

However, it is also clear that **most blended finance project logics are more complicated than conventional GEF Trust Fund projects**.[20] Because these projects involve transfer of responsibility to entities beyond the GEF partnership, they have longer logic pathways – from the GEF committing finance at the start to the eventual delivery of GEBs. This is important for achieving greater impact, but issues about clarity of governance, incentives for transparency, and demonstrating additionality become more acute and require extra attention in these longer pathways.

If not managed, this complexity could result in greater total transaction costs, poorer coherence among goals and activities, as well as less flexibility for adaptive management. These issues are illustrated by the case studies below, but it remains uncertain whether learning about such issues is systematised or readily accessible. Indeed, the Independent Evaluation Office of the GEF reported in 2022 that the NGI program needs to use monitoring and learning to demonstrate scaling and durability.[21]

3.1 Case studies of GEF blended finance instruments

Figure II illustrates three GEF blended finance instruments in contexts where interventions have different levels of maturity – a catalytic capital equity investment fund for agricultural technologies, a risk mitigation credit guarantee for small-holder loans for improved land management, and a technology investment fund for green hydrogen that can replace greenhouse gas emissions – in comparison to a conventional GEF Trust Fund project. These are described in more detail in Box 1.

In a typical GEF Trust Fund project (figure II-a), the GEF grant (often combined with other grant funding from donors or actors in the recipient countries) is managed by a GEF agency in conjunction with the recipient country, with project activities implemented by various executing entities. These implementors may themselves carry out activities that create GEBs (e.g., a conservation agency establishing protected areas), or work with farmers, or waste managers, or solar farms to do so. In addition to the GEBs, co-benefits should be created that help the buy-in and commitment of participants, thereby ensuring the benefits will endure or continue to accrue long after the GEF investment is complete. In this case the implementation is still very much within the sphere of influence of the GEF Partnership.[22]

By contrast (figure II-b), AgVentures II is an example of a typical equity fund instrument, here providing capital to selected agricultural technology start-up companies in GEF recipient countries. The funds from GEF and its agency, the Inter-American Development Bank (IDB) help attract other private capital. Although the fund is managed independently of the GEF, IDB is represented on the fund's investment committee which makes decisions about which companies will be supported. These companies produce goods and services to be sold to farmers and other actors in the system, including precision agriculture and digital farm tools, financial services and insurance, and agrochemical replacements. These products and services have the potential to create GEB impacts through improved land management as well as improved livelihoods. In this particular model, IDB has some input regarding the companies chosen for investment, but whether the start-ups successfully sell their goods and services, and whether the purchasing farmers actually use them to

[20] In line with the observations of USAID (Chemonics, 2021b, figure 4) and Chou and Seiger (2020).
[21] GEF IEO (2022, p.153).
[22] See Fig.1 in Stafford Smith (2020). *Theory of Change Primer, A STAP Advisory Document.*

produce GEBs is largely outside the GEF's sphere of influence. Letting go of control is necessary for scaling up but places a powerful onus to set up the right terms for the fund at the point of sign-off.

The other two examples (figure II-c, d, and Box 1) illustrate other types of instruments. Support for the mobilisation of green bonds that will ultimately enable concessional loans to smallholder farmers for improved land management in the Dryland Forest Loans example (figure II-c) is even further beyond the GEF's sphere of control or influence; however, this lack of control is mitigated by TA that ensures farmers apply their funds to recognised better management practices. By contrast the Green Hydrogen Facility (GHF) example (figure II-d) is complex but delivers GEBs (i.e. emissions reductions) that are much easier to measure and quicker to realise than the previous examples. This allows some responsibility to be passed down the chain of logic with clear monitoring and reporting requirements.

3.2 Features of blended finance instruments

Most blended finance projects examined by STAP include at least the level of complexity shown in these examples. Only a few forms of blended finance are less complex, notably performance-based instruments such as the "Rhino Bonds" project (GEF project 10330[23]). The GEF partnership generally has less direct influence over whether GEB-creating activities are actually implemented and endure than in Trust Fund projects. This direct influence ceases earlier where the market in which the instrument operates is more mature, as is usually the case for risk mitigation instruments (see annex B.3). Even for equity instruments, the governance role of the GEF Partnership in any investment committee (e.g. as observer or member, with or without veto rights) affects its level of influence. A related factor is whether the fund possesses an empowered advisory committee with environmental skills.

Because the GEF (rightly) hands off responsibility for investment management at an early stage in most of these models, it is **essential that sound design principles and necessary safeguards be embedded in governance agreements**, especially where the pathway to GEB impacts is lengthy. This in turn requires targeted monitoring and learning about which detailed impact pathways to GEBs work well and which do not. Most projects do not articulate such logic or learning processes.

As illustrated by the blended finance examples (figure II), the risks to achieving GEBs can be reduced in various ways. Grant-based TA facilities, increasingly common and recommended in blended finance projects within the GEF[24] and outside (e.g. DFI Working Group, 2023), can support the target market directly. Often, this assistance focuses more on business management than producing GEBs. However, the Dryland Forest Loans project, for example, also targets the farmers who will eventually receive the loans and who should produce the GEBs. The intent is that loans will only occur where a community conservation agreement has been reached to guide the appropriate management. In contrast, AgVentures II states that it collaborates with local rural extension personnel to recruit technical expertise, so it will be important to ensure GEB-delivery remains a focus.

[23] "Rhino Bonds" (officially named The Wildlife Conservation Bond) is a South African outcome-based instrument, supported by performance payments from the GEF that are dependent on rhino population levels. https://www.worldbank.org/en/news/press-release/2022/03/23/wildlife-conservation-bond-boosts-south-africa-s-efforts-to-protect-black-rhinos-and-support-local-communities.

[24] E.g. GEF project 4918 through the World Bank: "Partial risk sharing facility in energy efficiency" in India.

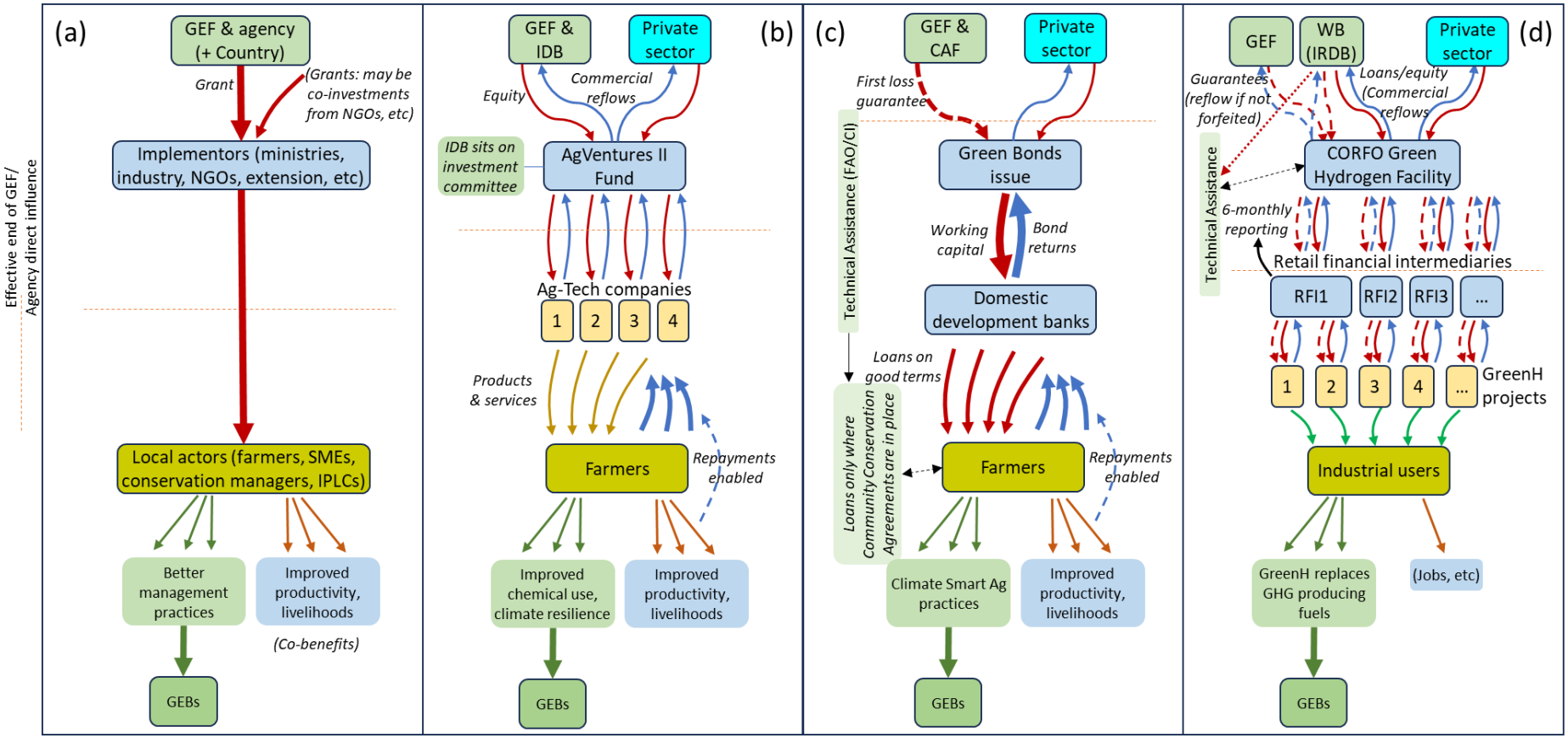


Figure II: Simplified schematics of the elements of (a) a conventional GEF Trust Fund grant project compared to (b) a blended finance equity vehicle such as AgVentures II (GEF project 10336), which provides equity to agricultural technology start-up companies with products and services that should lead to farmer end-users creating GEBs; (c) a partial credit guarantee involving green bonds, modelled on the Dryland Forest Loans proposal (GEF project 10852), which provides loans to smallholder farmers to implement improved practices; and (d) the mixed guarantees and liquidity instruments planned to support loans through the Green Hydrogen Facility in Chile (GEF project 11065), which aims to replace the use of greenhouse gas emitting fuels. These examples are described in more detail in Box 1. *(Solid red and blue arrows indicate capital flows and payments, respectively; dashed red and blue lines indicate risk mitigation products and reflows; black lines indicate presence of technical assistance; other colours show flows of outputs/outcomes. Fine dotted red lines indicate where the GEF Partnership's direct influence over GEB delivery ceases.) [Source: STAP interpretation of project descriptions.]*

Box 1: A brief description of the three blended finance instruments schematised in figure II-b,c and d.

(b) **Agventures II** – an example of an equity/investment fund instrument where the GEF invests into a fund that attracts private sector capital and is managed by a fund manager (SP Ventures in this case). This fund then provides capital to a variety of AgTech companies that are generally at an early stage of start-up, and which in turn eventually provide products and services at scale to small and medium-sized farms, where these plausibly help the farms to deliver GEBs as well as improved livelihoods (that enable them to pay for the products and services). Here, the main de-risking role of the GEF (and its agency IDB) investment is catalytic credibility for other investors. Key assumptions in this logic chain are (i) the investee companies are developing products and services that *can* deliver GEBs, and (ii) they sell these to farms who actually *do* use them for this (without leakage). IDB's observer on the fund investment committee is responsible for ensuring investees are evaluated against GEF (and IDB) policies, including the potential to deliver GEBs; and IDB is responsible for monitoring. However, companies are selling products such as precision agriculture and digital farm tools, financial services and insurance, and agrochemical replacements to farmers, so it is these 'end-users' who must apply the products in the right way to generate enduring GEBs and avoid leakage.

(c) **Dryland Forest Loans** – an example of a partial credit guarantee/risk mitigation instrument is the Dryland Forests of Peru and Ecuador project, where the GEF (and its agency, the Development Bank of Latin America (CAF)) contribute to a green bonds issue, which also attracts private capital, and the GEF funds provide a first loss guarantee. The bond capital is vested in the two countries' domestic development banks (e.g. Ban Ecuador), which then use the funds to provide loans to small and medium-sized farms with longer terms and lower interest rates than are commercially possible. These banks target poorer farms by domestic policy design. The loans are intended to support implementation of climate-smart agricultural (CSA) practices, guided by TA provided by Conservation International (for negotiating community conservation agreements to ensure specific conservation actions), FAO (for the CSA practices) and the Global Green Growth Initiative (for green bond establishment); in sum, these practices are also expected to achieve improved livelihoods and enable loan repayment. In this case, once the funding is vested in the domestic banks, those banks are guided by domestic policy, which could prioritize social development over GEBs. It is unclear how GEB achievement and durability are monitored and fed back to the GEF, though this partly occurs through the community conservation agreements. A STAP review pointed out that some CSA practices may not be compatible with time-limited financing[25], which highlights the need to learn rapidly which practices should be promoted for this design.

(d) **Green Hydrogen Facility** (GHF) – an example in the greenhouse gas mitigation sector is the development of the GHF in Chile, into which the World Bank provides equity for loans to various green hydrogen projects. The GHF then attracts additional de-risked private finance due to a mixture of guarantees and liquidity instruments partly backed by the GEF. The GHF makes loans via retail financial intermediaries to companies operating in various parts of the green hydrogen value chain. These companies sell the green hydrogen to industrial users as energy, ammonia, or green methanol. A parallel grant component funded by the World Bank provides capacity building, aimed mainly at project management and financing in the new sector. Though figure II-d looks complex, the actual delivery of GEBs is far more readily assured than in the previous examples because the green hydrogen directly replaces processes that release greenhouse gases (accepting that there is always the potential for leakage, such as from a rebound effect that could increase energy use due to its cheaper availability). The GHF arrangement also places strong reporting requirements on the financial intermediaries (6-monthly to the World Bank), made feasible by relatively immediate and easily measured outcomes.

[25] An explicit example was adding nitrogen to pastures to increase productivity; this can be effective but may increase susceptibility to weed invasion and land degradation if the funding support for fertilizer is interrupted.

A key issue is **who funds and controls the TA, and what its focus is, ensuring that it includes environmental as well as financial expertise**. For example, TA around the GHF project is mainly aimed at financial capacities, but this is a case where the technological side may be quite mature and understood. Monitoring could be aligned with the TA in all these cases.

Table 1 provided a finance logic categorisation of different blended finance instruments. However, **it would also be possible to classify blended finance projects according to other factors**, such as:

- Type of impact being sought. For example, this could be characteristics of the various GEF GEBs, such as the rate at which different GEBs manifest (e.g. rapidly for greenhouse gas emissions reductions from renewables but more slowly from forests).
- Key governance characteristics important to the impact logic. This could be the point at which the GEF Partnership ceases to influence investment consequences or the level of incentives for intermediaries to monitor and report on success.
- Form of information flows. This could be in relation to monitoring GEB impact delivery or finance logic success.

Exploring which factors provide valuable insights in choosing and implementing the details of a blended finance instrument, in different contexts, could provide information to assist project designers.

4. Emerging ideas for supporting GEF blended finance investments

STAP has reviewed over 40 project information forms for projects in the GEF NGI and Blended Finance program since GEF-5. From these reviews, STAP finds a need to **ensure a strong element of learning about which structures and investment types deliver durable GEBs in which contexts**. This requires the GEF to obtain, collate, and disseminate rapid learning from innovations in blended finance instruments. A widespread concern in the academic and practitioner literature is ensuring that impact logic is clarified and monitored to enable systematic learning (see annex B). For example, USAID INVEST (2023) remarks that, "Building an evidence base is greatly needed. While reporting requirements will need to be tailored to context, using a harmonized set of measures across projects will allow for the development of a baseline set of transparent and comparable outcomes and impacts that can allow USAID to better assess approaches and further refine its strategy for catalytic funding."

In the latest GEF-8 call for blended finance proposals,[26] generating GEBs is only one of eight selection criteria, and another criterion on additionality is explicitly linked to addressing financial barriers. Delivery of GEBs and GEF additionality is expected for all GEF projects. However, to avoid perpetuating the cultural disjunction noted in the literature (see section 2), it would help to highlight the need to address interactions between finance and impact logics (see figure I and annex B).

The question remains **how these interactions can be addressed in ways that are not onerous and that make it easier to design effective blended finance instruments for GEBs** where they are likely to work. Several framing issues arise from this question (as follows), which STAP recommends as an agenda for further pursuit to facilitate and speed the creation of effective and credible blended finance projects in the GEF.

[26] See https://www.thegef.org/documents/second-call-proposals-gef-8-blended-finance-global-program.

Issue 1: Improve guidance regarding which types of GEB interventions in which contexts are best served by particular blended finance instruments.

Decision support tools such as those presented by Kwon at al. (2022a, 2022b), as well as less structured insights from practitioner sources (see annex B.3, B.4, figure IV), provide a framework for matching the type of blended finance instrument to many contextual factors, including market maturity, intervention maturity, and host country capacity. However, guides are not currently available that explicitly address the features and delivery contexts of different GEBs that may affect the suitability of different blended finance structures and their detailed implementation in terms of governance and TA. A classification of GEBs and their contexts that is related to the impact characteristics discussed above (e.g. type of impact, rate of achieving benefits, key governance characteristics, nature of information flows about impacts) would help projects quickly assess the likely appropriateness of different blended finance arrangements, including whether they will work at all. A combination of literature and tacit knowledge from practitioners would already be sufficient to hypothesize such a classification so that it could be adaptively tested and improved.

Issue 2: Improve advice about the detailed design of a selected blended finance instrument to ensure that it fits the intended GEB interventions and their context.

Once a blended finance instrument is chosen, many details regarding its implementation still need to be considered. Kwon et al. (2022b), as well as many practitioner documents, address some of these issues (e.g. using TA facilities in conjunction with the blended finance structure), but not for GEB impacts (especially environmental GEBs). In fact, most practitioner literature focuses on implementing blended finance from the finance logic perspective rather than the perspective of GEB impacts (i.e. addressing finance risks but not impact delivery risks or their interactions; see figure I). Conversely, some academic literature addresses specific aspects of implementation in environmental sectors (see annex B), but in a fragmented way. The GEF also needs to know how to deliver particular types of GEBs and demonstrate GEF additionality with regard to issues such as incentives, governance, required technical skills, and how TA facilities and monitoring and learning may be implemented. Workshops and case studies reveal much more tacit knowledge in individuals' minds about these issues than has been formalised. Guidance could be provided and tested by drawing out these lessons from practitioner experience more systematically.

Issue 3: Develop advice on theories of change for GEB impacts in blended finance projects that identify underlying assumptions to be measured and tested.

The literature clearly indicates that enabling learning and validating additionality requires that the theory of change logic in blended finance projects be made more explicit for both finance outcomes and (especially) GEB impacts, due to their potential complexity. This applies to the whole project level and to the more detailed impact pathways leading to different GEBs, given that most blended finance projects aggregate many of these impact pathways through different investee companies or loan targets (see figure II). STAP has reviewed a few GEF blended finance projects that articulate an implicit theory of change for environmental GEB impacts by defining how they are likely to deliver GEBs, but these did not describe a systematic mechanism for learning about these. Such learning requires a clearer framing of finance and impact logics and how they interact in the context of different GEBs, while acknowledging a persistent need for further context specificity. STAP has provided advice on theories of change in general,[27] but this could be better tailored to the particular challenges of different blended finance instruments. This would, in turn, help identify the best ways

[27] See Stafford Smith (2020).

to focus monitoring efforts for learning. The aim should be to improve the practice of each type of project over time.

Issue 4: Expand the GEF blended finance guidance to encourage learning and the use of existing lessons related to Issues 1-3.

Finally, GEF guidelines encourage proponents of blended finance projects to be aware of evolving standards for blended finance articulated in various sets of principles.[28] These include issues such as ensuring additionality, minimising concessionality, supporting commercial viability, reinforcing markets, partnering effectively, ensuring transparency, and delivering sustainable development benefits. Recognising the challenges of delivering specifically environmental benefits, GEB-delivery-oriented principles could be developed from issues such as paying attention to interactions between financial and GEB impact logics of investments; supporting aligned TA to ensure investees implement nature-positive actions; being explicit about assumptions involved in achieving GEBs and ensuring that they are tested; ensuring that learning about which financial models deliver enduring GEBs is consolidated by the GEF; and, establishing governance processes about the delivery of environmental benefits before blended finance arrangements are finalised. Such principles, aimed at ensuring delivery of enduring GEBs and addressing interactions between finance and GEB impact logics, could be embedded in the GEF blended finance guidance documentation. Further development of these preliminary ideas could be achieved through a co-design process involving GEF agencies, and perhaps some external experts.

Mobilising private finance where it can deliver GEBs effectively is an important goal for the GEF. Kedward *et al*. (2023) argue that there are particular challenges in mobilising private finance for biodiversity goals under the Global Biodiversity Framework, but emphasise, as does STAP, that this is not to dismiss blended finance but rather to pursue "the right balance of public and private financing solutions" for different circumstances. To that end, STAP is keen to work on these issues to **make the GEF's innovative approaches to blended finance as effective and as well-targeted as possible, while contributing to a learning culture about blended finance within and outside the GEF**.

[28] E.g. OECD (2021), DFI Working Group (2023).

Annex A. Key categories of blended finance used in the GEF (for example projects see also figure II and section 3)

Category[a]	Instrument	Description	GEF examples
Risk mitigation	Guarantees and insurances	GEF commits to reimburse a lender or investor if losses occur (i.e. "first loss guarantees"). GEF distinguishes between *credit guarantees* (where a borrower or bond issuer fails to repay), *performance risk guarantees* (where technology or project performance fails to deliver) and *political risk guarantees* (where political factors cause losses in projects). Guarantees may be partial. GEF funds are not invested but are held in reserve in case the risk materialises. Reflows to the GEF are a remuneration premium for any funds used, plus unused funds.	Agri3, Dryland Forests (Ecuador/ Peru), Green Hydrogen Facility
	Structured finance	GEF funds are invested in a "junior" position, or at concessional terms into an investment package, so that senior investors receive returns first in the event of a partial default. GEF accepts greater risk, enabling more predictable returns for these investors. The GEF funds are invested and reflows usually include principal repayment and some financial return.	(CRAFT - discontinued)
	Liquidity facilities	These are essentially loan options that act as credit insurance to reduce the chances of default on a project. The GEF funds are held in reserve. Reflows are eventual repayment and a fee for making funding available.	Green Hydrogen Facility
Catalytic capital	Equity investments	GEF funds are invested in for-profit, non-bank financial vehicles that re-deploy financing in projects or businesses that expect to generate GEBs and a financial return. The GEF commitment (often with other public funders) helps establish the fund's credibility to attract a larger pool of private capital than it would otherwise. The GEF funds are invested and reflows are at the general commercial rate. The GEF assumes the same risks as other investors.	Agventures II, LCF3, CPIC, Meloy, Moringa
	Debt instruments	GEF funds are made available as a concessional loan with below-market interest rates and is often junior to funds from other financiers to permit on-lending at lower interest rates or with longer terms than would otherwise be feasible. GEF funds are handed over, and reflows are repayments with relevant interest, subject to no default.	CERI, SWIOFish3
Performance-based	Contingent instruments	*Contingent grants* are funds held in reserve and are only paid if certain outcomes are achieved by a certain date. Reflow is only any unused grant. *Contingent loans* are disbursed and will be repaid with similar timing and interest to other loans, but the loan may be converted to a grant if certain outcomes are achieved. Loans are repaid with interest unless conversion occurs.	Rhino Bonds
	Convertible instruments	*Convertible instruments* (equity, loans, guarantees) operate as that instrument but may convert into a grant if specific outcomes are achieved. Reflows may occur if the conversion does not happen. *Convertible grants* may convert into another instrument (equity, debt, guarantees, etc.) if certain environmental or financial triggers occur, usually with favourable terms on the new instrument. Reflows may occur if conversion happens.	Fund for Energy Inclusion
Grant-based support	Investment facilitation	These grants are potentially key complementary funding to any of the foregoing, particularly technical assistance (TA) funding.	

[a] These categories consolidate GEF's policy annex (which separates debt and equity) with those used in other sources (e.g. Chemonics, 2021b; Kwon et al., 2022a; USAID and CAPx, 2020). Also see vehicle types in Convergence (2023, p.27) and Habbel et al. (2021). "Instruments" are approximately as listed in the annex to GEF (2022).

Annex B: A brief literature review

Uses of blended finance have evolved rapidly in recent years (e.g. Convergence, 2022b, 2023). The academic literature supporting this evolution is still immature, building out of the literature on impact investing in sustainable development but with only modest forays into impacts like the global environmental benefits (GEBs) that are central to the GEF mandate. The overall impression from this literature[29] is that blended finance remains under-theorised, with optimism about its potential in targeted circumstances, but also caution due to limited testing and analysis. Global attention is on "greenwashing", or indeed "impact washing", in the absence of sufficient impact measurement (e.g. Finance in Motion, 2020; Lamont et al., 2023).

B.1 Key findings

Notwithstanding, proposed or actual blended finance applications have been reported and reviewed from many sectors relevant to GEBs, such as water and sanitation (Pories et al., 2019); food systems (Convergence and Joint SDG Fund, 2022; Lipper et al., 2021); nature-based solutions for coral reefs (Brathwaite et al., 2022a; Brathwaite et al., 2022b) and the blue economy (Convergence, 2022a); circular economy project needs (De La Cuesta-González and Morales-García, 2022); community-based natural resource management in South Africa (Smith et al., 2022); reforestation opportunities in REDD+ (Jang et al., 2023); renewable energy (Isah et al., 2023); and many others.

This literature also explores various (albeit often disjointed) issues that provide a wider framing on how and in which circumstances blended finance should be deployed. For example, from governance theory, Bracking and Leffel (2021) highlight the need for strong public governance to avoid concentrating too much decision-making power among a few fund managers, while Dey and Mishra (2022) note the need for close attention to incentive structures, and role complementarities and proximity among actors. A review of blended finance projects in 157 countries by Kim and Jun (2022) supports a theoretical prediction that net capital flows do not end up being from rich to poor nations, but shows that this effect can be mitigated somewhat by institutional quality, human capital and reduced information or power asymmetries. Indeed, least developed nations see the lowest flows of blended finance (OECD and United Nations Capital Development Fund, 2020). Introducing ethics into the analysis of impact investing more generally, Schmidt (2022) suggests that public subsidies can be deployed more effectively in blended finance vehicles by driving positive externalities. Other underlying issues to watch for include the potential for private sector finance to drive "financialisation" of developing economies; rising financial instability and undermining democracy (Karwowski, 2022); risk mitigation finance becoming a development rent that is captured by the private sector (Christiansen, 2021); and continued challenges in delivering finance to the communities that might implement action, such as local communities involved in community-based natural resource management in South Africa (Smith et al., 2022).[30]

One persistent issue is the difference in culture between those designing the finance side of blended finance and those concerned with the impact side, and the need to converge these cultures (Brathwaite et al., 2022b; Crona et al., 2021; Kedward et al., 2023; One Planet Lab, 2021; Rode et al., 2019). Indeed, Cosma et al. (2023) review of 106 papers on conservation finance (of which blended

[29] A Web of Science search (8 November 2023) for "blended finance" produced only 46 results in 2018-2023. Only a handful of these related to GEB issues. The search term "impact financ*" produced 176 results for 2012-2023 and 74 for 2022-2023, but only two of these addressed GEB-related topics (both were on greenhouse gas emissions). The search term "impact invest*" produced 217 results for 2022-2023 but nearly all focused on development impacts. Grey/practitioner literature was also explored by searching for "blended finance" on Google, as well as snowballing links until this became mostly self-referential; however, this is a fast-evolving area that needs continual exploration.

[30] Concerns echoed articulately in the Capital Monitor blog "Why blended finance risks being bad for SDGs." (Crabbe, 20 April 2022). Available from: https://capitalmonitor.ai/strategy/impact/why-blended-finance-risks-being-bad-for-sdgs/ [accessed 16 January 2024].

finance is only one part) suggests such finance is primarily addressed by environmental scientists, highlighting the need for attention from finance scholars. As a result, Thompson (2022b) distinguishes impact and finance logics in any impact investing and urges giving them equivalent balance. STAP has observed interactions between these logics that also need addressing, so they cannot be addressed separately.

Positively, the literature has more-or-less settled on four key categories of blended finance-related instruments: risk mitigation, catalytic capital, performance-based, and grant-based, elaborated in annex A. It also highlights issues that the GEF has been addressing, such as identifying appropriate risk mitigation strategies (McHugh, 2021; Purkayastha and Sarkar, 2021) and establishing multiple funding modalities (Havemann et al., 2020; Isah et al., 2023). It also identifies other success factors such as the need for robust legal and institutional frameworks (Choi and Seiger, 2020; Isah et al., 2023; Sheriffdeen et al., 2022), avoiding bureaucratic inflexibility and onerous monitoring (Dey and Mishra, 2022; Kim and Jun, 2022; Moxey et al., 2021), and the importance of how both international and national development banks participate (Isah et al., 2023; McHugh, 2021). The literature also focuses on the need for and nature of technical assistance (TA) aligned with blended finance instruments (DFI Working Group, 2023; Finance in Motion, 2020; Ivory, 2023; Kwon et al., 2022a) and when different forms of this may be appropriate. However, the vast majority of TA facilities reported in this literature focused on supporting finance or business development arrangements rather than delivering on-the-ground impact.

B.2 Key challenges

The recent literature expresses cautious enthusiasm but also raises some key challenges in blended finance. The extensive review by Choi and Seiger (2020) identifies various trends also observed by STAP, including a shift from direct investment to longer and more complex impact pathways; issues of governance, transparency and additionality; and precise definitions of “transformative impact”.

Many sources lament insufficiently clear logic or theories of change. These may be expressed reasonably to the point of achieving financial outputs but rarely extend to the delivery of impact outcomes (Caio, 2019; Habbel et al., 2021; Spratt et al., 2021; Thompson, 2022a; Winckler Andersen et al., 2021). This is true for sustainable development impacts in general, but more so for environmental benefits. Indeed, despite providing the clearest steps found in this literature search for designing a blended finance intervention, Kwon et al. (2022a) conclude by observing “an absence of focus on the end beneficiary or entrepreneur, who are the recipients of such blended capital”. This is equally true of environmental impact outcomes. In practice, even well-articulated blended finance principles outlined by proponents, such as OECD (2021) and DFI Working Group (2023, annex A), focus more strongly on the effective functioning of financial instruments than on the ultimate areas of intended impact – GEBs for the GEF.

One consequence of unclear impact logic is a failure to adequately measure ultimate impacts (Habbel et al., 2021; Lamont et al., 2023; Thompson, 2022a). This in turn makes it difficult to ensure real additionality results on both the finance and impact sides (GEF IEO, 2021; OECD, 2020; USAID INVEST, 2023; Winckler Andersen et al., 2021). Effective measurement is thus a key issue, both to defend against greenwashing and to learn what works more generally. With regard to blue bonds, for example, Thompson (2022a) remarks that, “greater explanation of the logic through which project activities are expected to deliver impact and returns is warranted. Equally, impact measurement is often under-whelming, with many bonds targeting easy-to-measure outputs (e.g. area conserved) rather than outcomes and impacts (e.g. increases in fish abundance)”. Winckler Andersen et al. (2021) make two strong points: that the theory of change should address both

financial and impact additionality and that assessing impact additionality is worthwhile even in the absence of financial additionality. Several sources note that high financial leverage ratios are not good indicators of high impact (Pegon, 2023; USAID INVEST, 2020, 2023) and that in fact the reverse may occur above modest levels.

Flowing from clear logic and well-targeted measurement is the issue of learning. Sources nearly universally agree that much needs to be learned about this fast-developing field (Bilal and Paterson, 2020; Convergence, 2022b; Finance in Motion, 2020; Ivory, 2023; Pegon, 2023; USAID INVEST, 2023; Zheng et al., 2020). Learning requires levels of transparency and consistent public reporting frameworks embedded in contractual arrangements (Lamont et al., 2023; OECD, 2021; Winckler Andersen et al., 2021). However, the guides that provide steps to deciding which blended finance instruments to use (Chemonics, 2021b; Kwon et al., 2022a) generally do not extend to steps about monitoring and learning. USAID INVEST (2023) importantly observes that longer-term data, beyond the contract period, may be needed to assist with learning and to create the needed evidence base; this may be achieved through, for example, ancillary memoranda of understanding. Pegon (2023) highlights the need to foster "a genuine learning culture within the blended finance community, and not a set of institutions falling over each other to report the highest financial ratios". Although not focused on blended finance *per se*, GEF (2023) also highlights parallel concerns for measurement, learning and partnerships around private sector investment for biodiversity impacts, as well as the potential for a GEF platform to assist with this.

Lastly, enabling policy, governance and institutional issues, both in the context of a proposed project and within an instrument itself, are crucial for effective implementation. GEF (2023) emphasises how the "enabling environment is essential for consistent and durable impact, including adequate legal, policy, and institutional frameworks". This point is also highlighted by Zheng et al. (2020) and adopted as an input to selecting appropriate blended finance instruments in section B.3. However, governance of the instruments themselves is also crucial, as noted by Sheriffdeen et al. (2022), who found that the Indonesia Climate Change Trust Fund struggled to mobilise funds, particularly due to technical ambiguities in its legal and institutional frameworks.

In summary, five topics from the literature are particularly noteworthy regarding blended finance projects aimed at environmental impacts, such as the GEBs of concern to the GEF:

(1) Clearer *logic* for impact delivery
(2) Better *measurement* of impacts (especially GEBs)
(3) Demonstration of *impact* (especially GEB) additionality
(4) An enabling *institutional* context
(5) *Learning* and a learning culture

B.3 Selecting the right blended finance instrument

In a broad sense, the literature highlights two stages in choosing which blended finance approach, if any, to take in different contexts. The first is to match the type of blended finance instrument to the context and the second is to design the details of that instrument to deliver both finance and (GEB) impact outcomes.

A growing number of sources provide evidence for contexts where specific blended finance instruments may or may not work. Some examples include: nature-based solutions in coral reefs where different levels of private sector involvement exist in the tourism industry (Brathwaite et al., 2022a; Brathwaite et al., 2022b); bonds for biodiversity (Thompson, 2022b); sustainable agriculture (Dey and Mishra, 2022; Havemann et al., 2020); general use in least developed countries (OECD and United Nations Capital Development Fund, 2020); infrastructure (Taguchi and Yasumura, 2021) and

renewable energy (Isah et al., 2023) in countries with different governance capacity. These analyses do not generally focus on how blended finance may differ across impact sectors, though Kedward et al. (2023) address a set of issues relevant to the conservation sector, and Tobin-de la Puente and Mitchell (2021) explore all types of investment in nature.

Practitioners, however, have begun to articulate a set of decision criteria for the four main classes of instruments, as well as their more specific types, that are related to the nature of the project initiator and their financial expectations, the purpose of the transaction, the maturity of the target market, and the maturity level of the proposed intervention. These issues are highlighted in grey literature by organisations such as Finance in Motion (2020), Convergence (2023), Chemonics (2021b) and USAID INVEST (2020, 2023). In addition, One Planet Lab (2021) and USAID INVEST (2020, p.11) illustrate the sort of guidance tips that emerge (see figure III). Although not in the environmental domain, Norwegian Refugee Council (2022) illustrates, using the case of clean energy projects in humanitarian and displacement settings, how general blended finance principles need nuancing for specific impact areas. Similarly, the USDA Forest Service (2022) conservation finance toolkit compiles a set of excellent case studies, including many in forest conservation, and some lessons from these. For example, they identify the impracticality of developing blended finance solutions for projects worth less than $3 million USD or where projects require more than 2 years spin up time (USDA, 2022, p.9). So far in the public domain, these types of lessons have been best systematised by Kwon et al. (2022a) under five sets of questions related to (i) organisational context, (ii) purpose of the transaction, (iii) investee context, (iv) cost and resources, and (v) risk and return. Some key issues drawn from their list of questions are summarised in table 2, and their approach to structuring these is illustrated in figure IV. STAP notes there that, despite the widespread concern expressed for learning, their schema omits a discussion of this; Kwon et al. (2022a) also highlight that their schema so far deals inadequately with the end recipient of the blended finance.

Table 4.1 Frontier and mobilisation strategies

	Main focus	Climate and nature opportunity	Challenges for blended finance	Key needs	Principal objective	Examples
'Frontier strategies': Enabling risky or pioneering projects	Frontier countries, sectors and business models	Sustainable infrastructure in low-income countries; many adaptation, resilience and biodiversity projects	Project development and related financing risks; mobilising DFIs, impact investors and specialist funds	Early-stage risk capital and project technical assistance	Impact	IDA PSW SREF ElectriFi AgriFi Mirova & Green
'Mobilisation strategies': Enabling large amounts of finance	'Centre ground': moderate country risk, proven technologies and business models	Sustainable infrastructure in middle-income countries; some adaptation and resilience projects (water, agriculture)	De-risking local and global asset owners and managers; unlocking whole sectors and large projects for private finance	Blended finance cushions for risk-averse investors	Scale	Green bond funds BlackRock CFP FAST-Infra

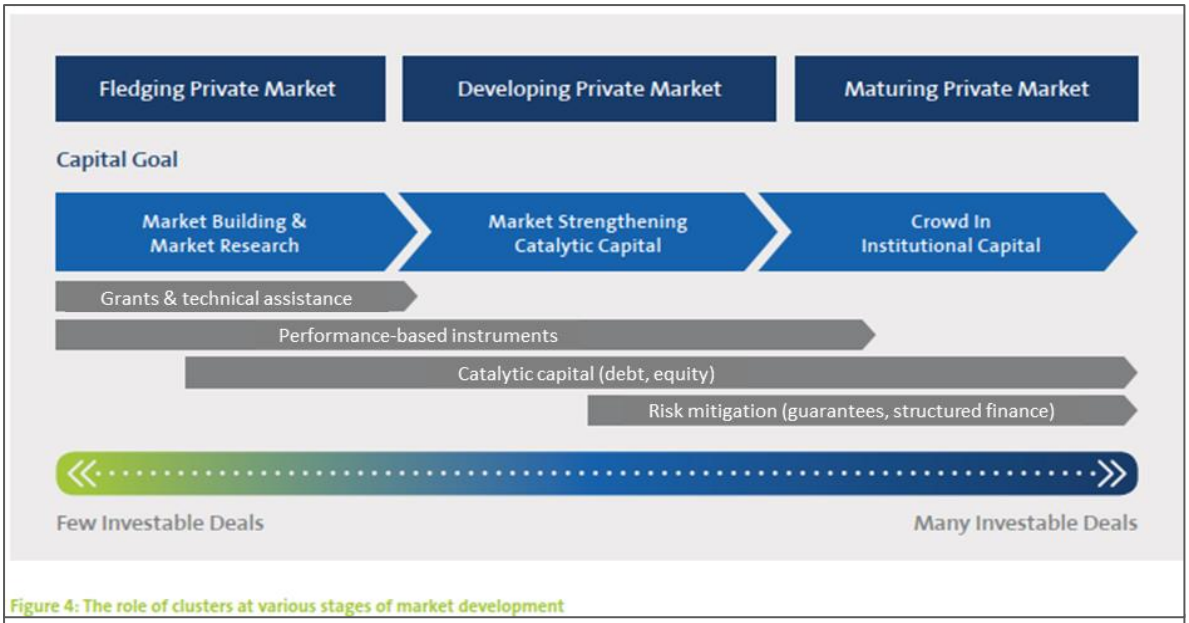
Figure III: Guidance for when to apply different forms of blended finance with regard to intervention maturity (i.e. "frontier" or "mobilisation"). Figure reproduced from One Planet Lab (2021, p.26, Table 4.1).

Table 2: Issues of learning and some concerns for the GEF's global environmental benefits (GEBs).

Issue	**Rationale**	**Some issues related to delivering GEB impact**
Organizational context	The organizational context of project initiators bounds their preferences for approaches. [tables 4; 5; 6][a]	Where initiators of blended finance projects for GEBs come from a financing perspective, engaging early with investee needs and impact expertise is essential.
Transaction purpose	The strengths and weaknesses of the blended finance instrument types mean each is best associated with specific project purposes (e.g. sector development vs. addressing a narrowly specified development issue or for a demonstration). [p.36-7; figure 3]	Scaling renewable energy or tackling a target pollutant or reforestation may have a well-defined technical solution; aggregating enough demand in land management and conservation activities to be amenable to private finance investment often means covering a more diffuse suite of interventions, with differentiated times to impact.
Investee context	*Sector maturity* (e.g. macroeconomic conditions, legal and regulatory context, the general strength/maturity/profitability of its enterprises) affects options. For example, lower maturity/profitability potential suggests more need for concessionality. *Intervention maturity* (from ideation, pilot, demonstration, to scaling) affects the role of blended finance, generally moving from grants to performance-based finance to concessional capital and de-risking. Conservation, education, water, and sanitation sectors may need more patient capital than renewables or health. [figure 4; figure 5; figure 6]	Valuation of some environmental benefits, especially biodiversity, remains in its infancy and is often hard to capture. Some GEB areas take a long time to deliver impact, requiring patient capital and making truly impact-related performance hard to establish. Where diverse on-ground environmental interventions are aggregated (e.g. various climate-resilient land management practices), intervention maturity may be very mixed.
Costs and resources	The resource intensity and cost-effectiveness of different instruments (including personnel, pipeline development and professional services, dependent on actor types and organizational context): stakeholder-intensive/structurally complex instruments increase development times and implementation resources. [figure 7]	For GEBs, complex stakeholder (e.g. IPLC) negotiations may be common. Impact measurement may be costly and require an extended timeframe, though some performance measures may be simple (e.g. rhino populations for "rhino bonds"). Aligned funding for technical assistance (TA) may be essential to ensure the targeting of GEB impact.
Risk and return	Financial return and impact expectations of potential capital sources must match the chosen instrument; identifying potential financial, operational, pipeline and impact risks through the life of a blended finance transaction helps identify whether this choice will amplify or mitigate these. [figure 2; p.39; figure 8]	Risks to achieving enduring environmental impacts (GEBs) may require specific approaches to TA and to monitoring impact to provide feedback.
Learning (not an explicit issue in Kwon et al)	Blended finance is still in its infancy in many sectors, so structured, transparent and ultimately publicly available learning is vital for rapid improvements.	This is particularly true in relation to finance for enduring environmental impacts (i.e. for many of the GEF's GEBs).

Source: Summarised from table 9, p.55, in: Kwon et al. (2022a).

[a] *Note*: Table, figure, page numbers refer to those in Kwon et al. (2022a).



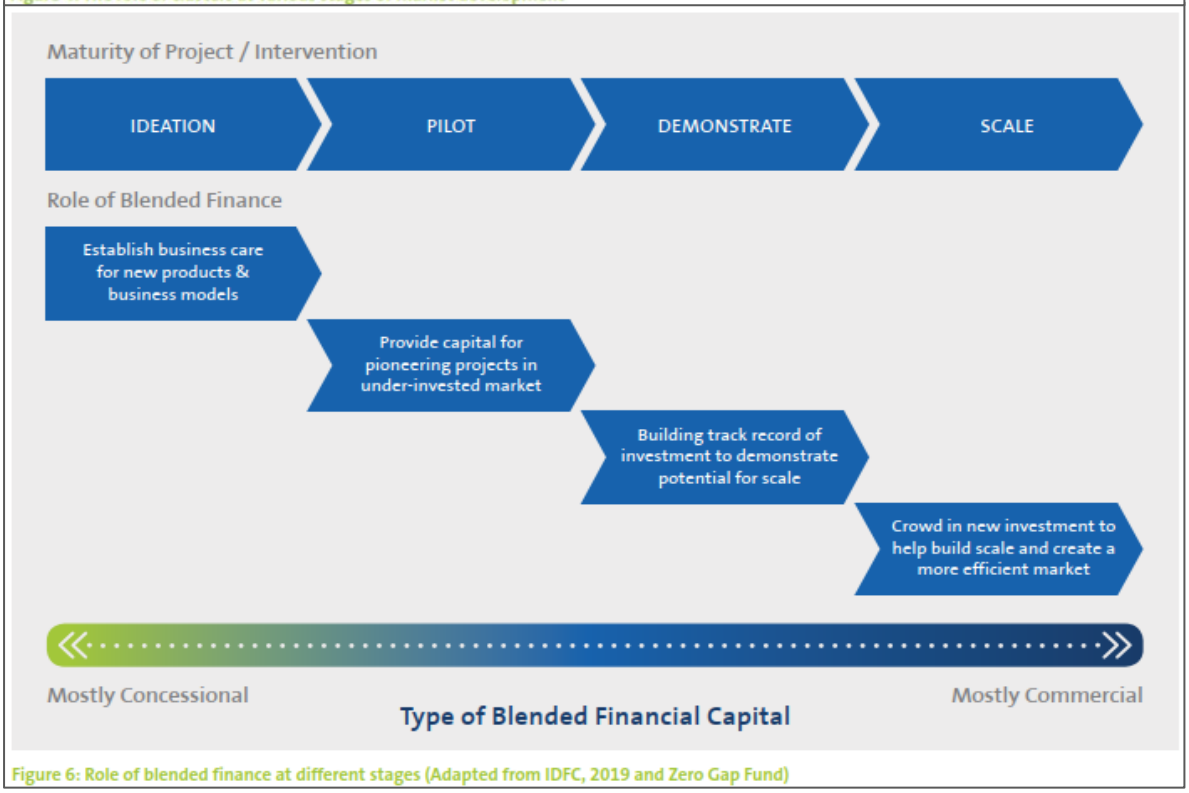


Figure IV: Examples of structuring diagrams in relation to market maturity (top) and the maturity of proposed interventions (bottom), amended to align terminology from figures 4 and 6 in Kwon et al. (2022a). These patterns are visible in GEF projects (e.g. more mature interventions can move from risk mitigation instruments to catalytic capital approaches).

Once again, although organisations have seen projects in many sectors (see figure V), most do not focus on GEBs. An exception is found in Convergence (2022a), which deals with blue economy investments related to Sustainable Development Goal 14. Kwon et al. (2022a, figure 5) map instrument purpose against sector from a smaller sample, finding that conservation projects had a good track record but were mostly concessional finance and sampled mainly agriculture and forestry projects. Tobin-de la Puente and Mitchell (2021) provide a structured approach to nature financing with many more case studies that include insights on blended finance instruments, which could be

synthesised into decision criteria for these specific GEBs. Similarly, Chemonics (2021a, figure 3) provides a good survey of nine forestry-related project types with differentiated suitability for blended finance. This note lists a few of the issues that arise for GEBs against the topics of Kwon et al. (2022a) in table 2, but these would benefit from a more systematic elaboration.

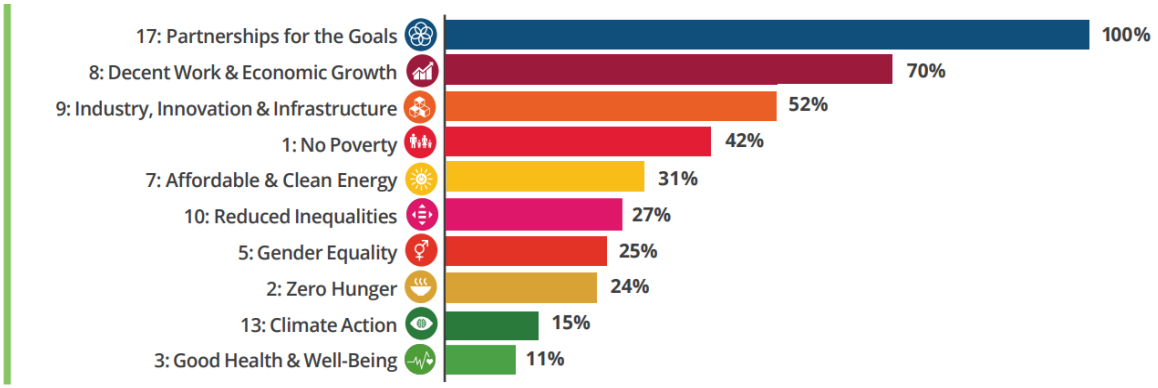


Figure V: Alignment between sustainable development goals and blended finance transactions as tracked by Convergence (2023, figure 2, p.16). This highlights that very few deals relate to environmental Sustainable Development Goals 14 (oceans), 15 (land), or even 6 (water) or 11 (cities) or 12 (circular economy), rendering them absent from the chart.

B.4 How to implement a given instrument

Finally, having chosen a blended finance instrument, many details remain for its implementation. Practitioners clearly possess much tacit knowledge, as well as good but mostly unsystematised advice. In a notable exception, Kwon et al. (2022b) systematise instrument choice in relation to the nature of investees and beneficiaries in four steps and note some implementation advice and decisions. Caio (2019) asks valuable questions that could also be translated into issues here, particularly regarding governance, transparency and measuring impact (e.g. "Who will benefit from the investment? How/what is the intended impact on access, inclusiveness, and affordability? When and over what timeframe will such impact be achieved?"). Again, these sources place limited focus on environmental benefits such as GEBs, though some raise specific examples of what works in nature-based solutions or other environmentally related impacts. For example, Brathwaite et al. (2022b) note for coral reef restoration that “blended finance solutions…are especially suited to restoration that incorporates substrate addition, while payments for ecosystem services are more suited to coral gardening”.

Ivory (2023) reports an analysis of 270 blended finance transactions that use some form of technical assistance (TA) component in the Convergence database. About a quarter of these transactions are in the financial services, energy, and agricultural sectors, with most (64%) commonly associated with concessional capital transactions. The TA may be deployed for advisory, assistance, or training purposes, before or after the related blended finance investment has been made, but most often supports fund development and operations. Even in the agricultural sector, the TA in this database was primarily deployed to improve finance logic capacity and operations rather than to support impact delivery. As noted in section 3, however, GEF projects do exist wherein the TA directly supports impact delivery. Reflecting on the use of TA, Ivory (2023) highlights opportunities to share TA lessons more widely, create more flexible TA approaches, and drive TA system change; this is an area that deserves more attention and innovation.

In general, guides found in the literature do not elaborate steps to explore the logic of impacts and additionality or measurement and learning (e.g. final impacts and monitoring and learning are omitted from the steps to setting up a blended finance project in Chemonics, 2021b, figure 6). Most guides also do not focus on how the attributes of different GEBs may interact with implementation. The exception to the latter may be the recognition that carbon markets and decarbonisation investments are quite mature and relatively measurable compared to investments in nature (e.g. biodiversity).

References

Bilal, S., and Paterson, D. (2020). *Strengthening the Local Dimension of Blended Finance: A review of the local approaches and instruments employed by Development Finance Organizations (DFOs). Knowledge Brief*. African Center for Economic Transformation: Accra, Ghana.

Bracking, S., and Leffel, B. (2021). Climate finance governance: Fit for purpose? *Wiley Interdisciplinary Reviews-Climate Change,* 12.

Brathwaite, A., Clua, E., Roach, R. and Pascal, N. (2022a). Coral reef restoration for coastal protection: Crafting technical and financial solutions. *Journal of Environmental Management,* 310.

Brathwaite, A., Pascal, N. and Clua, E. (2022b). Private capital to improve nature-based solutions for coastal protection: Time for a boost. *Oceans-Switzerland,* 3, pp.60-71.

Caio, C. (2019). *How blended finance reaches the poorest people: theory and practice (discussion paper)*. Development Initiatives: Bristol, UK.

Chemonics. (2021a). *Blended finance for sustainable landscapes: Technical brief*. Chemonics Centre for Private Sector Engagement: Washington, D.C.

Chemonics. (2021b). *Blended finance technical briefs primer: Technical brief*. Chemonics Centre for Private Sector Engagement: Washington, D.C.

Choi, E. and Seiger, A. (2020). Catalyzing capital for the transition toward decarbonization: Blended finance and its way forward (June 15, 2020). *SSRN eLibrary* (on-line), 1-42.

Christiansen, J. (2021). Fixing fictions through blended finance: The entrepreneurial ensemble and risk interpretation in the Blue Economy. *Geoforum,* 120, pp.93-102.

Convergence. (2022a). *Blended finance and the Blue Economy: data brief*. Joint SDG Fund and Convergence Blended Finance.

Convergence. (2022b). *The state of blended finance 2022: Climate edition*. Convergence Blended Finance.

Convergence. (2023). *The State of Blended Finance 2023: Climate Edition*. Convergence Blended Finance.

Convergence and Joint SDG Fund. (2022). *Blended finance for food systems: data brief*. Joint SDG Fund and Convergence Blended Finance.

Cosma, S., Rimo, G. and Cosma, S. (2023). Conservation finance: What are we not doing? A review and research agenda. *Journal of Environmental Management,* 336, p.117649.

Crona, B., Folke, C. and Galaz, V. (2021). The Anthropocene reality of financial risk. *One Earth,* 4, pp.618-628.

De La Cuesta-González, M. and Morales-García, M. (2022). Does finance as usual work for circular economy transition? A financiers and SMEs qualitative approach. *Journal of Environmental Planning and Management,* 65, pp.2468-2489.

Dey, K. and Mishra, P.K. (2022). Mainstreaming blended finance in climate-smart agriculture: Complementarity, modality, and proximity. *Journal of Rural Studies,* 92, pp.342-353.

DFI Working Group. (2023). *DFI Working group on blended concessional finance for private sector projects JOINT REPORT, MARCH 2023 UPDATE*. ADB.

Finance in Motion. (2020). *Advancing development through blended finance*. Finance in Motion: GmbH, Frankfurt.

GEF. (2019). *Advances in blended finance: GEF's solutions to protect the global environment*. The Global Environment Facility: Washington, D.C.

GEF. (2020). *Guide for understanding and accessing blended finance at the global environment facility*. The Global Environment Facility: Washington, D.C.

GEF. (2022). *GEF blended finance global program and non-grant instruments policy update (Doc GEF/C.63/12)*. Global Environment Facility: Washington, D.C.

GEF. (2023). *Innovative finance for nature and people: opportunities and challenges for biodiversity-positive carbon credits and nature certificates (Report from a high level working group and expert panel convened by the GEF)*. The Global Environment Facility: Washington, D.C.

GEF IEO. (2021). *GEF additionality: Broadening the definition*. Independent Evaluation Office of the GEF: Washington, DC. Available from: https://www.gefieo.org/sites/default/files/documents/learnings/additionality-framework-learnings.pdf.

GEF IEO. (2022). *Seventh comprehensive evaluation of the GEF: Working toward a greener global recovery (OPS7)*. Global Environment Facility Independent Evaluation Office: Washington, D.C.

Habbel, V., Jackson, E.T., Orth, M., Richter, J. and Harten, S. (2021). *Evaluating blended finance instruments and mechanisms. Approaches and methods (OECD Development Co-operation Working Papers, No 101)*. OECD Publishing: Paris.

Havemann, T., Negra, C. and Werneck, F. (2020). Blended finance for agriculture: exploring the constraints and possibilities of combining financial instruments for sustainable transitions. *Agriculture and Human Values,* 37, pp.1281-1292.

Isah, A., Dioha, M.O., Debnath, R., Abraham-Dukuma, M.C. and Butu, H.M. (2023). Financing renewable energy: policy insights from Brazil and Nigeria. *Energy Sustainability and Society,* 13.

Ivory, R. (2023). *Blending with technical assistance: Data brief*. Convergence.

Jang, E.K., Kwak, D., Choi, G. and Moon, J. (2023). Opportunities and challenges of converging technology and blended finance for REDD plus implementation. *Frontiers in Forests and Global Change,* 6.

Karwowski, E. (2022). Commercial finance for development: a back door for financialisation. *Review of African Political Economy,* 49, pp.161-172.

Kedward, K., zu Ermgassen, S., Ryan-Collins, J. and Wunder, S. (2023). Heavy reliance on private finance alone will not deliver conservation goals. *Nature Ecology and Evolution*, 7, pp.1339–1342.

Kim, H. and Jun, H. (2022). Can blended finance be a game changer in sustainable development? An empirical investigation of the "Lucas Paradox". *Sustainability,* 14.

Kwon, T., Panulo, B., McCallum, S., Ivankovic, K. and Essa, Z. (2022a). *Blended finance: When to use which instrument?* Initiative for Blended Finance: University of Zurich, Zurich.

Kwon, T., Panulo, B., Van Staden, J. and Spazzoli, R. (2022b). *Blended finance: When to use which approach. Decision-making tool and framework*. Initiative for Blended Finance: University of Zurich, Zurich.

Lamont, T.A.C., Barlow, J., Bebbington, J., Cuckston, T., Djohani, R., Garrett, R., Jones, H.P., Razak, T.B. and Graham, N.A.J. (2023). Hold big business to task on ecosystem restoration. *Science,* 381, pp.1053-1055.

Lipper, L., Cavatassi, R., Symons, R., Gordes, A. and Page, O. (2021). Financing adaptation for resilient livelihoods under food system transformation: the role of Multilateral Development Banks. *Food Security,* 13, pp.1525-1540.

McHugh, C.A. (2021). Mobilising private funding of development finance. *Journal of Development Studies,* 57, pp.1979-2001.

Moxey, A., Smyth, M.A., Taylor, E. and Williams, A.P. (2021). Barriers and opportunities facing the UK Peatland Code: A case-study of blended green finance. *Land Use Policy,* 108.

Norwegian Refugee Council. (2022). B*lended finance toolkit for clean energy solutions in humanitarian and displacement settings*. NRC.

OECD. (2020). *A comprehensive overview of global biodiversity finance*. OECD: Paris.

OECD. (2021). *OECD DAC Blended finance principles for unlocking commercial finance for the sustainable development goals*. OECD Publishing: Paris.

OECD and United Nations Capital Development Fund. (2020). *Blended finance in the least developed countries 2020*. OECD Publishing Paris.

One Planet Lab. (2021). *Blended finance for scaling up climate and nature investments*. One Planet Lab and Grantham Research Institute.

Pegon, M. (2023). Opinion: Blended finance is about leveraging impact–relying on financial ratios as efficiency proxy in blended finance can lead to bad investment decisions. *Devex News.* Available from: https://www.devex.com/news/opinion-blended-finance-is-about-leveraging-impact-105665.

Pories, L., Fonseca, C. and Delmon, V. (2019). Mobilising finance for WASH: Getting the foundations right. *Water,* 11.

Purkayastha, D. and Sarkar, R. (2021). Getting financial markets to work for climate finance. *Journal of Structured Finance,* 27, pp.27-41.

Rode, J., Pinzon, A., Stabile, M.C.C., Pirker, J., Bauch, S., Iribarrem, A., Sammon, P., Llerena, C.A., Alves, L.M., Orihuela, C.E. and Wittmer, H. (2019). Why "blended finance" could help transitions to sustainable landscapes: Lessons from the Unlocking Forest Finance project. *Ecosystem Services,* 37.

Sánchez Torrente, L., Habbel, V., Rocío Pérez, J.J., Doswald, N., Bertzky, M., Gotz, G., Orth, M., Richter, J., Fernández de Velasco, G. and Harten, S. (2020). *The state of the evidence on blended finance for sustainable development. An evidence gap map (DEval discussion paper 3/2020)*. German Institute for Development Evaluation: Bonn.

Schmidt, R. (2022). Are business ethics effective? A market failures approach to impact investing. *Journal of Business Ethics*, 184(2), pp.505-524.

Sheriffdeen, M., Nurrochmat, D.R., Perdinan and Abubakar, H.K.A. (2022). Effectiveness of emerging mechanisms for financing national climate actions: Example of the Indonesia Climate Change Trust Fund. *Climate and Development*, 15(1), pp.1-12.

Smith, J., Samuelson, M., Libanda, B.M., Roe, D. and Alhassan, L. (2022). Getting blended finance to where it's needed: The case of CBNRM enterprises in Southern Africa. *Land,* 11.

Spratt, S., Lawlor, E. and Coppens, V. (2021). *Core concepts in blended finance: Assessment of uses and implications for evaluation (OECD Development Co-operation Working Papers, No 90)*. OECD Publishing: Paris.

Stafford Smith, M. (2020). *Theory of change primer*. Scientific and Technical Advisory Panel of the Global Environment Facility: Washington, D.C.

Taguchi, H. and Yasumura, K. (2021). Financial additionality of multilateral development banks in private participation in infrastructure projects. *Sustainability,* 13.

Thompson, B.S. (2022a). Blue bonds for marine conservation and a sustainable ocean economy: Status, trends, and insights from green bonds. *Marine Policy,* 144.

Thompson, B.S. (2022b). Impact investing in biodiversity conservation with bonds: An analysis of financial and environmental risk. *Business Strategy and the Environment,* 32, pp.353-368.

Tobin-de la Puente, J. and Mitchell, A.W. (2021). *The little book of investing in nature: A simple guide to financing life on Earth.* Global Canopy: Oxford.

United Nations Secretary General. (2022). Zero tolerance for greenwashing (10th November 2022). Available from: https://www.un.org/sites/un2.un.org/files/high-level_expert_group_n7b.pdf [accessed 15 January 2024].

USAID and CAPx. (2020). *Blended Finance Landscape Review*. USAID: Washington, D.C.

USAID INVEST. (2020). *USAID INVEST blended finance starter kit: 10 questions about mobilizing private capital for better development results*. USAID: Washington, D.C.

USAID INVEST. (2023). *Mobilizing investment for development with catalytic funding: Learning brief*. USAID: Washington, D.C.

USDA Forest Service. (2022). *U.S. Department of Agriculture Forest Service Conservation Finance Toolkit: A compilation of definitions, guidelines, and case studies*. USDA/National Forest Foundation.

Winckler Andersen, O., Hansen, H. and Rand, J. (2021). *Evaluating financial and development additionality in blended finance operations (OECD Development Co-operation Working Papers, No 91)*. OECD Publishing: Paris.

Zheng, J.I., Battiston, S. and Nuttall, C. (2020). Blended finance solutions for scaling up sustainability investments: Opportunities and challenges (White Paper). Available from: https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3973012.