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STUDY

Mobilising climate adaptation investments from the private sector in developing countries

Analysis of barriers for local private sector engagement in multilateral climate funds' adaptation projects

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1. Executive summary

The climate crisis' impacts are rapidly growing along with the concurrent need for adaptation investments. Those most vulnerable to climate change's impacts, however, lack the resources to adequately respond to adaptation needs. And while developed countries must provide adaptation finance for developing countries, adaptation investment needs will likely exceed adaptation finance provided, and the capacity of developing countries' public finance.

Directly and indirectly mobilised private adaptation finance will therefore be crucial for responding to climate change impacts. The private sector, however, has proven largely reluctant towards investing in adaptation finance. Moreover, so far the focus has been mainly on big international private actors co-financing adaptation projects and not on the potential of micro, small, and medium enterprises (MSMEs) in developing countries to indirectly mobilise further investments in adaptation. Thus, this study tries to identify ways to enhance indirectly mobilised adaptation investments from MSMEs in developing countries adopting a more comprehensive understanding of private sector engagement.

The study aims to close a research gap by examining international climate finance's capacity in mobilising adaptation finance from the private sector in developing countries. Given multilateral climate funds' readily accessible project information, the analysis herein focuses on Adaptation Fund (AF) projects and adaptation projects (including the adaptation component of cross-cutting projects) financed by the Green Climate Fund (GCF). This study reviewed 116 AF projects along with 74 adaptation and 45 cross-cutting projects in the GCF portfolio approved before 30th of September 2021. The analysis provides valuable insight, as the two funds address different project scales, apply different financing instruments, and work with a range of actors. It builds on Pauw et al. (2021), who suggested focusing on addressing three market imperfections that create barriers to private adaptation action: (1) positive externalities, (2) incomplete and/or asymmetric information, and (3) imperfect financial markets. The study provides respective recommendations for policymakers, decision-makers, investors, and civil society to take into consideration.

Results

- **No substantial difference** between projects implemented by **national accredited entities** and projects by multilateral entities in terms of private sector engagement frequency or the degree of addressing the three barriers identified for mobilising private sector engagement.
- A **mix of financial instruments** is not a precondition for projects to successfully engage the local private sector and to address existing barriers for private adaptation investments.
- Barriers related to **information asymmetry** have been **targeted most frequently** in both funds (50% of GCF projects and 37% of AF projects); followed by the barriers related to imperfect financial markets (32% of GCF projects and 25% of AF projects). In both funds barriers related to **positive externalities** were **least targeted** (12% of GCF projects and 16% of AF projects).
- About half of the **AF projects** did not address any of the three barriers for private sector engagement and those projects that do target one or more of the barriers do so only to a very limited extent.
- About one third of the **GCF projects** did not address any of the three barriers for private sector engagement. Especially those GCF projects that do address barriers related to imperfect financial markets scored high. While GCF projects targeting barriers related to information asymmetry or positive externalities do so only to a limited extent.
- About 25% of the projects **did not consider the private sector as a stakeholder** at all. More specifically, 45% of the projects did not identify the private sector as a target group and

about 50% did not identify the private sector as a potential project beneficiary. More than 60% of the projects did not consult private sector representatives during project preparation.

– **GCF Private Sector Facility projects** received significantly high scores for addressing barriers related to **imperfect financial markets.** Yet, with regard to the other barriers no substantial difference could be observed compared to the projects outside of the Facility

Analysis

– Both funds have the **potential to unlock** more indirectly mobilised private adaptation investments from MSMEs in developing countries.

– **Public grants** for adaptation activities remain an essential financial tool. The **public sector** will continue to bear the main responsibility for creating the conditions for effective, socially and environmentally sound private sector engagement.

– Quite a number of projects directly or indirectly benefit the local private sector, but do not address any of the three barriers identified to leverage further private investments in adaptation. Such **missed opportunities** for further private sector engagement have been identified especially for adaptation **infrastructure** projects and **livelihood diversification** projects that promote the establishment of new businesses.

– Due to their different mandates and roles in the international climate finance architecture, both, the AF and the GCF have the potential to **complement each other** and to cover their **own individual niches** of private sector engagement.

– The criteria for the GCF's binary categorisation of **private versus public** projects are too narrow.

Recommendations

– Best practice examples of projects addressing the three barriers related to further private sector engagement should be made **more tangible and visible** by the funds.

– Both funds could request in their **proposal templates** a detailed analysis of the project's response to the identified barriers for future private sector engagement in adaptation. Yet, the burden for national accredited/implementing entities should not be increased by that.

– The **GCF** should increase efforts towards finance measures that address barriers related to **positive externalities.**

– The focus of the **GCF MSME pilot programme** should go beyond pure investments in MSMEs and rather consider MSMEs more broadly as a target and beneficiary group of projects focussing on how to indirectly mobilise adaptation investments from them

– The **AF** should leverage its existing niche for smaller grant projects. Specifically, it could focus on **small-scale producers** and local MSMEs, especially in the **informal sector**, as these play a central role in developing countries' economies.

– The negotiations on the **Global Goal on Adaptation** should consider the engagement of private sectors actors from developing countries, especially MSMEs, when defining goal and its subsequent progress review

– The **new post 2025 climate finance goal** should include a **qualitative objective** for adaptation finance to address private sector engagement more systematically by specifically focusing on MSMEs in developing countries and **acknowledge the importance of public grant finance** for adaptation including for MSME engagement in developing countries to indirectly mobilise adaptation investments from local private actors.

2. Introduction

Developing countries' global adaptation costs are estimated to reach USD 250–300 billion per year by 2030 (UNEP, 2021)[1]. The public sector alone cannot pay this; thus, there is a push in international climate finance negotiations to increase focus on 'mobilising the private sector' (Stoll et al., 2021). This goal often appears synonymous with the effort to attract private 'co-financing' for adaptation projects, but our study took a broader approach. We mainly intended to look beyond private co-finance to gain a more comprehensive understanding of private sector engagement in adaptation. We addressed the question of how direct and indirect investments in adaptation can be mobilised by MSMEs and for adaptation in the private sector.

Climate change's impacts directly threaten the private sector in developing countries. Particularly, MSMEs provide critical goods and services and typically account for most of the national economy, employment, and income opportunities for local populations in such countries (Hussain, Farook & Akhtar, 2012). Adaptation action for the private sector is therefore essential, but it should not itself be primarily an end. Rather, it should also contribute to society's overall well-being, including that of its most vulnerable social groups and populations.

There is often a strong focus on engaging larger companies in adaptation efforts and potential measures that can be financed through loans, guarantees, or equity, in addition to grants, thus mobilising additional private finance (Schaer, 2018; Reyes & Schalatek, 2022). However, when aiming to meet local adaptation needs, particularly those of the most vulnerable populations, identifying business opportunities is not always possible, which complicates private sector involvement. For example, companies are hesitant because adaptation investments involve high risk and could further increase growing debts (Kuruppu, Bee & Schaer, 2018). Public grants for adaptation activities thus remain an essential financial tool.

Little attention has been paid to the extent to which climate finance generally, and grant-based adaptation finance more specifically, can promote increased local private sector engagement in adaptation, including mobilisation of adaptation investments from local MSMEs. This is not to say it is the public sector's responsibility to bear the full cost of private sector adaptation. Rather, the public sector must create conditions for mobilising private investment in adaptation.

The public sector, in its function as regulator and public financial actor, is vital in identifying and addressing market imperfections and catalysing private investment in adaptation. Recent research suggests focusing on addressing three market imperfections that create barriers to private adaptation action: (1) positive externalities, (2) incomplete and/or asymmetric information, and (3) imperfect financial markets (Pauw et al., 2021). To tackle these imperfections, the role of public climate finance, including grants, will be as essential as that of the private sector.

1 This estimate is highly indicative, extrapolating data on Nationally Determined Contributions and national adaptation plans from 58 developing countries and considering global warming scenarios of 2–4°C.

Three market imperfections that create barriers to private adaptation action (Pauw et al., 2021)

Positive externalities are public goods that benefit society and are generated by a private investment. They typically do not generate additional cash flows. Thus, when a private adaptation investment generates benefits beyond its investor, we refer to positive externalities. Failing to address them may deter investors from investing in measures that also contain adaptation benefits for the public, because this is not reflected in their return on investment. Considering positive externalities of adaptation measures are a precondition for identifying political and financial mechanisms that decrease this market imperfection. The private sector charging fees is one way of compensating for positive externalities. Governments can also provide grants or subsidised loans to increase the investors' expected return when positive externalities occur.

Incomplete and/or asymmetric information on climate change prevents private investors from making effective adaptation decisions and investments. Tackling the causes of unavailable, inaccessible, or unevenly distributed information of private actors can overcome this barrier. Knowledge- and awareness-raising activities for private actors are usually used to address this barrier, as well as public support for climate services.

Imperfect financial markets prevent adaptation investments from being directed to the areas of greatest need. Governments can remedy this by setting rules that make the market more attractive to financial actors. Imperfect financial markets are often characterised by a lack of sufficient supply of financial products in certain geographical regions or for certain target groups. This gap can be closed by offering the lacking financial product, such as insurance or loans, thus taking on a pioneering role.

This study analysed the different levels and degrees of local private sector involvement in the current project portfolio of multilateral climate funds – the GCF and AF. This analysis enabled identification of projects with a strong private sector focus, even when not labelled as such. In that way, we gained an overview of the settings in which grant-based projects already support the private sector in overcoming investment barriers for adaptation, and where gaps remain.

Both the GCF and AF already actively target private sector involvement and cooperation in their adaptation project portfolios. The type of involvement varies widely, ranging from the private sector being an active implementing partner to it being a target group for interventions, to it merely being consulted. Local MSMEs' roles can also widely vary. On the one hand, they provide adaptation solutions through products and services, while on the other hand they are the affected actor that should undertake adaptation investments itself (Stoll et al. 2021). In some cases they even engage in activities leading to maladaptation. Thus, this study's analysis categorised based on the three above-mentioned barriers, the private sector's type of involvement and role in the project, and the financing instrument. The classification results are reviewed in this paper's main section, including general observations and specific trends detected for each fund.

Based on the research results, we developed recommendations for climate experts, especially climate negotiators, to strengthen private sector engagement in adapting to the impacts of climate change and leveraging investments from local MSMEs. In this paper's last section, we propose specific recommendations on strengthening local private sector engagement in adaptation for the process of establishing the new collective quantified goal on climate for post-2025 under the UNFCCC, and assessing progress towards the Global Goal on Adaptation. Additionally, it proposes a course of action for multilateral climate funds to further promote future engagement of the local private sector in adaptation measures including mobilisation of private adaptation investments.

3. Political background

At the 2009 United Nations Climate Change Conference in Copenhagen, developed countries made a joint commitment to mobilise USD 100 billion per year by 2020 (UNFCCC, 2009). This goal was reaffirmed in 2015. The Paris Agreement also stipulated that the climate finance provided should have a balanced ratio between mitigation and adaptation (UNFCCC, 2015). In 2021, developed countries had to admit that the USD 100 billion target had been missed and, realistically, could only be reached from 2023 onwards. The Climate Finance Delivery Plan presented at the 2021 United Nations Climate Change Conference (COP26) indicated that mobilising private sector finance was crucial for achieving the target. This, however, has proven challenging. In 2016, it was still assumed that one-third of the funds for the USD 100 billion target would come from the private sector. The actual private climate finance mobilised fell short of expectations (Flasbarth & Wilkinson, 2021).

Moreover, the ratio between mitigation and adaptation finance remains far from balanced. The latest calculations from the Organisation for Economic Co-operation and Development (OECD) indicate mitigation accounted for two-thirds of total climate finance provided and mobilised in 2019 (OECD, 2021). Failure to deliver on financial pledges is straining trust between developed and developing countries in the climate negotiations. Especially for climate-vulnerable countries that have contributed little to the climate crisis, provision of financial resources for adaptation and for loss and damage is a matter of justice.

The fact that private sector engagement in mitigation (e.g. renewable energy projects) is more advanced than in adaptation reinforces the imbalance between mitigation and adaptation (Pauw et al., 2016). Unlike mitigation activities, adaptation benefits are not always immediately apparent. Private sector actors often are not rewarded by a direct return on investment because adaptation benefits materialise over the long term. There are also further technical, institutional, and financial barriers, which are summarised under the market imperfections of asymmetric information, imperfect financial markets, and positive externalities (Stoll et al., 2021; Pauw et al., 2021).

Demands for more support for climate adaptation are nevertheless gaining political weight at the negotiations. In Article 7 of the Paris Agreement, the world community established *'the global goal on adaptation of enhancing adaptive capacity, strengthening resilience and reducing vulnerability to* *climate change […].'* (UNFCCC, 2015). At COP26 in Glasgow in 2021, the decision was made to launch a two-year work programme to further define this goal (UNFCCC, 2021). A review of overall progress will be part of the Global Stocktake[2]

At COP26, developed countries announced they would double adaptation finance until 2025. Negotiations for a renewed climate finance target to replace the 100 billion target from 2025 onwards were also launched. Discussions on the post-2025 target will be crucial for achieving the Paris Agreement objectives, given that the current climate finance target falls short of what is needed and has not been achieved in time. At COP27, the so-called African COP, in Sharm el-Sheikh, Egypt in 2022, pressure on the adaptation negotiation strands is expected to build, with developing countries demanding high-quality, predictable, and accessible finance (LDC 2050 Vision).

Multilateral climate funds are vital for delivering on these demands. Arguably, they channel only a small portion of overall international climate finance flows. However, the availability of funds tends to offer more predictable finance. To a certain extent, recipient countries can also voice their respective views and demands in the funds' governing bodies.

The AF is the smallest multilateral fund under the UNFCCC, yet with its distinct focus on the most vulnerable people and communities, it plays a unique role (Grimm et al., 1998). The AF finances comparatively small projects and programmes, of up to USD 10 million, with grants as the only financial instrument at its disposal. It has pioneered direct access to climate finance through national implementing entities that can obtain accreditation with the AF without the AF's resources being channelled through multilateral implementing entities (UNFCCC, 2008). Studies have shown that direct access strengthens national entities' capacities and improves access to finance (Adaptation Fund, 2022; Adaptation Fund, 2021). The AF has not yet explored in more depth the potential of how its grant-based and full-cost financed adaptation projects and programmes focusing on those most vulnerable to climate change can strengthen the engagement of local MSMEs and thus indirectly mobilise private adaptation investments. Yet, the AF's Medium Term Strategy 2018-2022 encouraged the fund's implementing entities to include non-governmental organisations (NGOs) and private sector entities in proposals to the fund's Innovation Facility. The AF's Innovation Facility also offers small grants for non-accredited implementing entities, that potentially enables access from MSMEs in developing countries (Adaptation Fund, 2019a).

The GCF is the largest and most prominent fund under the UNFCCC. Beside grants, it uses a mix of financial instruments, such as loans, equity, and guarantees, for its often-large-scale projects. Projects average a funding volume of USD 29 million (adaptation) and USD 53 million (mitigation) (GCF, 2020). The GCF has a clear mandate for encouraging private sector investments in both climate change mitigation and adaptation actions in developing countries. Specifically, donor countries perceive private sector engagement as a central element distinguishing the GCF from other climate funds (Reyes & Schalatek, 2021).

2 The Global Stocktake is the process of assessing implementation of the Paris Agreement with the objective of reviewing the collective progress of the global community towards achieving the Agreement's purpose and long-term goals.

4. Methodology

This study was based on a systematic analysis of the local private sector's role in the adaptation project portfolio of international climate funds – the AF and GCF. The analysis also categorised projects by the extent to which they addressed barriers related to the three main market imperfections that Pauw et al. (2021) identified. These barriers mainly hinder the local private sector's further investments in adaptation. The analysis presented in this paper overviews the GCF's and AF's existing efforts to mobilise investments in adaptation from the local private sector in developing countries, and enables areas for improvement to be identified.

We chose the adaptation project portfolios of the two funds for the analysis because these funds have progressive information policies enabling project documentation to be online in a clear and transparent manner (Transparency International, 2017). The multilateral climate funds channel only a small portion of international adaptation finance, but their strong focus on climate adaptation and implementation of tangible projects in this field make them particularly important. Effectively, much larger amounts of international adaptation finance are channelled through bilateral channels or other multilateral entities, such as multilateral development banks (MDBs) and UN agencies (OECD, 2018). Understanding how the private sector can be more strongly involved in the multilateral climate funds can also help in tackling the challenge of more strongly involving the private sector in bilateral climate finance or MDB projects.

We applied the following methodology to classify the projects reviewed:

Table 1: Classification system applied to Adaptation Fund and Green Climate Fund adaptation and cross-cutting projects

	Score 0	Score 1	Score 2	Score 3
Private sector as implementing/ accredited entity	no	yes		
Private sector as executing entity	no	yes		
Private sector as sub-executing entity	no	yes		
Private sector as target group	not targeted	only somewhat targeted	targeted	
Private sector as beneficiary	not targeted	somewhat benefitting	benefitting	
Private sector consulted	not consulted	only somewhat consulted	consulted	
Information asymmetry addressed	not adressed	part of a sub-component	main component/ several sub-components	main project objective
Imperfect financial markets addressed	not adressed	part of a sub-component	main component/ several sub-components	main project objective
Positive externalities addressed	not adressed	part of a sub-component	main component/ several sub-components	main project objective

Based on a keyword search applied to project proposals, we analysed each of the 235 projects and classified them into a scoring matrix (see Table 1). This matrix was applied for differentiation, not for project ranking. The classification system enabled the extent of each project's private sector focus to be identified. In this way, we assessed private sector actors' role and importance in project implementation (see Box 2). For differentiation, we applied an even more granular scoring system to examine whether and to what extent the market barriers were addressed (for more details see Annex 1); therein lies this study's added value. The analysis is based on the work of Pauw et al. (2021) and Stoll et al. (2021), who identified three market barriers to private sector adaptation and demonstrated the positive effects for private sector mobilisation when they are addressed. Building on this, we analysed to what extent market barriers are already considered in the project designs, and for which barriers improvements are still needed.

Identified roles for the private sector

- The accredited entity (in the Green Climate Fund) or implementing entity (in the Adaptation Fund) is accredited with the funds, responsible for project oversight, and directly receives resources from the funds. Organisations accredited to the funds are from here on only designated as implementing entities.
- The executing entity carries out the project activities on behalf of the implementing entity.
- The sub-executing entity is a subcontracted institution carrying out certain project components or subcomponents.
- The target group comprises stakeholders a project's activities directly target.
- The beneficiaries are stakeholders whose situation improves because of the implemented project and who directly benefit from the outcomes.
- The term consulted is used if private sector representatives are stakeholders consulted with during the project's planning.

Measures mentioned in proposals needed to have a clear focus on climate adaptation to be considered in the classification. Thus, though cross-cutting projects in the GCF project portfolio were included in the analysis, only the respective adaptation measures were considered for the classification. We did not classify measures aiming to overcome barriers related to information asymmetry, imperfect financial markets, or positive externalities associated with climate change mitigation measures. Public sector actions or state-owned companies were also not considered. Additionally, in the analysis we only included adaptation and cross-cutting projects that were approved before 30 September 2021. Overall, the analysis reviewed 116 AF projects, and 74 adaptation and 45 cross-cutting projects in the GCF portfolio.

We further refined the analysis by excluding subsistence smallholder farmers and fishermen from classification as private sector actors, though they play a crucial role in developing countries' local economies and feed most of the world's population (FAO, 2014). However, the funds' project proposals often do not clearly identify them as private sector businesses or enterprises but instead as 'individuals' or 'community members.' This complicates the distinction between private households and private businesses when looking at project proposals. It also contradicts the definition of a company, which is formed by individuals or groups to undertake a profit-oriented venture; the company thus becomes a distinct entity that is more than just the sum of the people working for it (Kenton, 2021). This definition does not necessarily fit smallholder or subsistence farmers. Additionally, subsistence agriculture mainly focuses on serving family needs rather than market demand and therefore does not necessarily generate monetary profits. And in most cases, smallholder farmers do not dispose of large financial resources, meaning that further investments in adaptation are not usually mobilised. This study, however, focused on hidden opportunities for mobilising private adaptation investments. As a result, we only considered clearly market-oriented production and farmer cooperatives for the classification.

4.1 Limitations

Despite the overall valid and useful results, the analysis did have some limitations. First, project proposals were screened using keyword searches to identify relevant sections that provide information on how the above-mentioned three barriers were addressed. Those targeted sections in the proposals were then read in more detail. We used the keywords, 'private sector/private actor,' 'business,' 'enterprise,' and 'company.' We also read the short summaries of each project's planned activities. In this way, relevant areas in the project proposals were usually quickly identified. Nonetheless some projects addressing market barriers may still have been missed and therefore not included. Additionally, project proposals may not comprehensively provide all project details. They may be limited, as actual project implementation may differ from the contents of a proposal's description.

5. Results

5.1 General results

Most frequently, both funds' projects targeted information asymmetry as a private sector barrier. About one-third of all projects mentioned plans to overcome asymmetric information at least to some extent within a project subcomponent (score: 1). Of the projects, 10% had a component that mainly focused on overcoming barriers to information asymmetry for the private sector (score: 2). These high-ranked projects' most common objective regarding information asymmetry was to supply and improve climate and weather information for different economic sectors. The **second most addressed barrier was imperfect financial markets.** In particular, projects that planned to establish a revolving fund or create risk-mitigating financial products scored high in this category. **The barrier of positive externalities was least addressed.** Only about 13% of the projects in any way targeted imperfect markets due to positive externalities (score: 1, 2, or 3).

Figure 1: Share of all 235 analysed adaptation and cross-cutting projects of both funds addressing barriers related to information asymmetry, imperfect financial markets, and/or positive externalities.

Regarding the actor role of the private sector, notably, **about one-quarter of the projects did not consider the private sector as a stakeholder** (scored 0 across all categories). Looked at separately, about half of all projects did not consider the private sector to be a beneficiary or target group of the planned actions. Only 5% of the project proposals gave detailed descriptions of consultations held with specifically named private companies (score: 2). About one-third of all projects only named the 'private sector' as one of many stakeholders consulted (score: 1). Merely 2% of all projects are implemented or executed by a private sector institution.

Figure 2: Share of projects addressing the private sector in one or more stakeholder categories. Total projects analysed: 235.

There was generally **no substantial difference between projects from national entities directly accessing funding and projects of multilateral implementing/accredited entities** in terms of private sector engagement frequency.

5.2 General trends in the Adaptation Fund project portfolio

The results showed that **about half (54) of the 116 AF projects addressed none of the barriers related to the three market imperfections** identified (score: 0). Most projects targeting the market imperfections did so to a very limited extent, with only some measures addressing the market imperfection in a subcomponent (42 projects scored 1 in at least one category). Only 17 projects addressed the barriers specifically in a subcomponent (score: 2) in one or more categories. For each barrier, there was only one project that mainly focused on overcoming it; thus, only three projects scored 3.

The results in Figure 3 also show that about 37% of all AF projects somewhat or more specifically (score: 1, 2, or 3) addressed barriers related to information asymmetry, making this the most targeted measure in all AF projects. This was followed by measures targeting imperfect financial markets (with about one-quarter of AF projects scoring 1, 2, or 3), while barriers related to positive externalities were the least targeted.

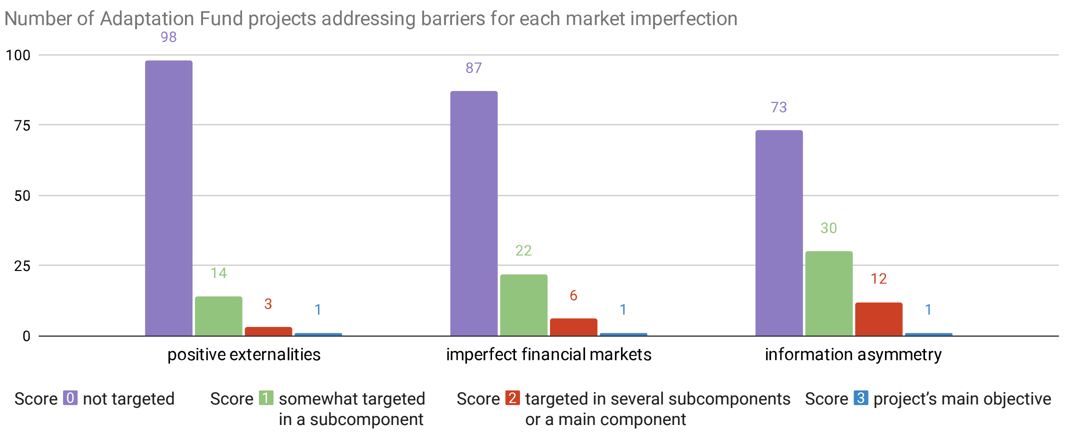

Figure 3: Number of Adaptation Fund projects addressing barriers related to information asymmetry, imperfect financial markets, and positive externalities. Total Adaptation Fund projects analysed: 116.

About 58% of all AF projects did not consider the private sector as a target group. 60% all AF projects did not consider the private sector as beneficiary and about 64% of all AF projects did not consult the private sector during the project development. While theoretically also private entities could implement or execute AF projects, no such cases have been identified.

Generally, no substantial difference could be observed regarding addressing barriers related to the three market imperfections between direct and multilateral access entities.

5.3 General trends in the Green Climate Fund adaptation and cross-cutting project portfolio

One-third (40 of 119) of the analysed GCF projects targeted none of the market imperfections (score: 0). Thus, compared to the analysed AF projects, a greater focus on the private sector has been observed for GCF adaptation and cross-cutting projects.

The GCF projects least addressed barriers related to positive externalities; this applied equally to adaptation and cross-cutting projects. Nearly half did address barriers related to information asymmetry, though only to a limited extent (score: 1). While almost all GCF Private Sector Facility projects specifically targeted barriers related to imperfect financial markets (see Figure 4 below), overall, only about one-third of GCF adaptation and cross-cutting projects targeted this barrier to some extent.

Looking at the financial instruments showed that grants were the single most important financial instrument for realisation of GCF adaptation projects. Of the 119 GCF projects analysed, 97 exclusively used grants. Generally, cross-cutting projects in the GCF portfolio had a much higher share of mixed financial instruments than pure adaptation projects. This pattern is not new. It basically reflects obstacles for private sector investment in adaptation being more pronounced than for mitigation projects (Grüning et al., 2021). However, our analysis showed that **a mix of financial instruments is not a precondition for projects to successfully engage the local private sector** and to address existing barriers for private adaptation investments. There are GCF projects that only use grants and still score high with regard to their private sector engagement and addressing related barriers (e.g. the GCF projects in Rwanda FP167, Grenada FP59, and Antigua and Barbuda FP133). Yet we also observed that GCF projects that make use of a mix of financial instruments such as grants, loans, equities or guarantees, did overall tend to receive higher scores (e.g. the GCF projects in Mexico/Guatemala FP48 or in Kenya/Rwanda FP05).

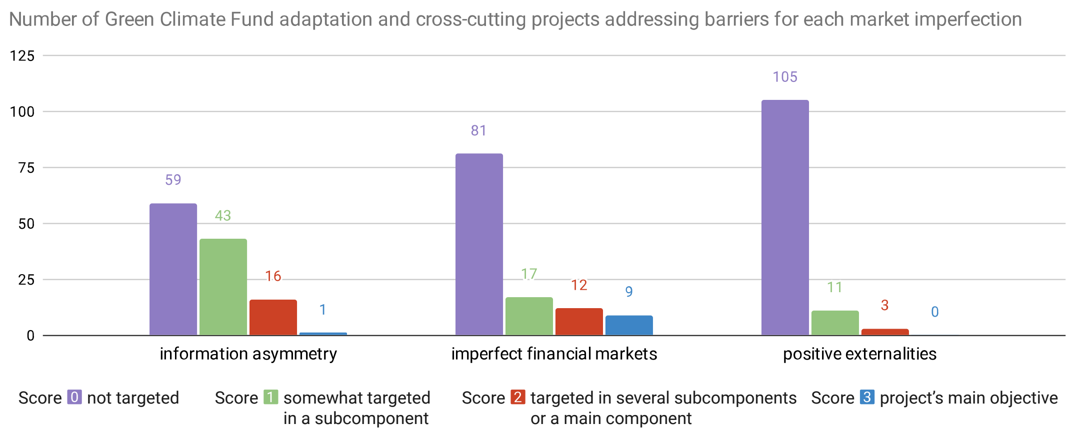

Figure 4: Number of Green Climate Fund adaption and cross-cutting projects addressing barriers related to information asymmetry, imperfect financial markets, and positive externalities. Total Green Climate Fund projects analysed: 119 (74 adaptation, 45 cross-cutting).

About 67% of all analysed GCF projects did at least somehow target the private sector in their proposals. 59% of all analysed GCF projects did identify the private sector as beneficiary. However, only about 42% of all GCF projects did consult the private sector during the project development.

While theoretically also private entities could implement or execute AF projects, no such cases have been identified. 4 out of the total 119 GCF projects analysed were implemented by a private sector organisation.

Also for the GCF no substantial difference between direct and multilateral access entities could be observed with regard to the results.

5.3. a) Trends in the Private Sector Facility

The GCF's Private Sector Facility was introduced as a specialised division with in the Fund's Secretariat. The Governing Instrument stipulated that this Facility should be consistent with a country-driven approach and must promote participation of local private actors in developing countries, including SMEs and local financial intermediaries (Green Climate Fund, 2011).

However, to date, most of the Facility's projects address climate change mitigation measures, and cross-cutting initiatives that address both mitigation and adaptation measures. Until recently, only two of the Facility's 35 projects were adaptation projects, with smaller than average project volumes.

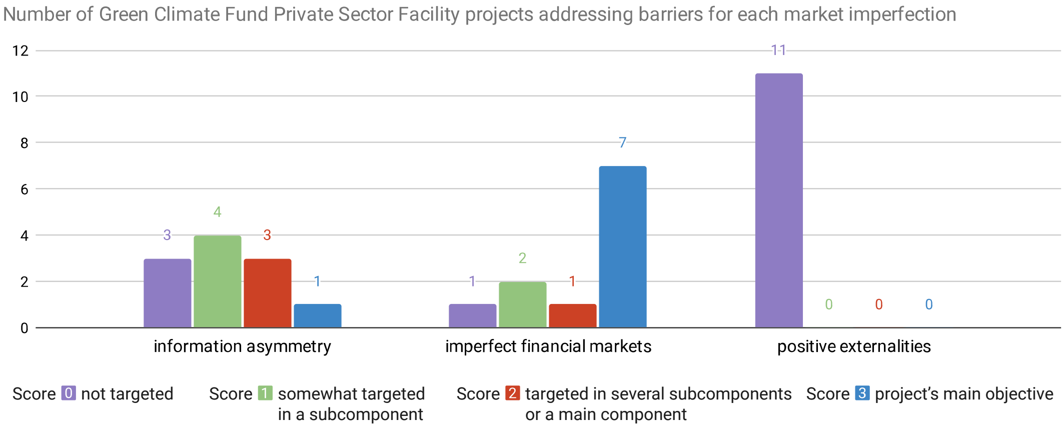

Figure 5: Number of Green Climate Fund Private Sector Facility projects addressing barriers related to information asymmetry, imperfect financial markets, and positive externalities. Total Private Sector Facility projects analysed: 11.

The 11 analysed adaptation and cross-cutting projects in the Facility often involve private actors as key actors for project implementation and as the target and beneficiary group. About one-third of all analysed Facility projects designated private entities as the accredited or executing entity. Compared to the overall adaptation and cross-cutting GCF project portfolio, **the 11 analysed Private Sector Facility projects scored particularly high in addressing barriers related to imperfect financial markets;** seven of 11 obtained the highest score in addressing this barrier (see Figure 5). However, with regard to addressing barriers related to information asymmetry, no significant difference could be observed compared to the overall GCF projects analysed. What sticks out is that all the analysed Private Sector Facility Projects do not target barriers related to positive externalities (all projects scored 0 in this category) and thus address this barrier even less than the overall GCF adaptation and cross-cutting projects. Ten out of the 11 analysed projects in the Facility do make use of a mix of financial instruments and count with significant private co-finance.

At the GCF's 30th board meeting in October 2021, four additional project proposals for the Facility were approved, of which three were adaptation projects. This study did not include these three new projects because computations for the analysis were already completed. A brief review, however, found that all three do specifically target barriers related to imperfect financial markets and, to some extent, barriers related to information asymmetry. The three proposals also covered project measures targeting barriers related to positive externalities. Thus, overall results for the GCF Private Sector Facility remain valid.

Project example 1: Improving climate resilience of agricultural systems on the Saïss Plain in Morocco

The GCF-financed Saïss Water Conservation Project, implemented by the European Bank for Reconstruction and Development (EBRD) in conjunction with the Moroccan Ministry of Agriculture and Maritime Fisheries, is an example of an adaptation project engaging the local private sector in Morocco. The project directly benefits 2,849 commercial and subsistence farmers and 350,000 people on the Saïss Plain.

Declining and unpredictable rainfall due to changing climate patterns, combined with unsustainable groundwater use, severely threaten the Saïss Plain's resilience. There is already chronic water scarcity on the Plain, and climate change threatening agricultural production and rural livelihoods will soon aggravate the condition. This project aims to help individuals and commercial and subsistence farmers on the Plain switch from using highly unsustainable groundwater to using sustainable surface water. A bulk water transfer scheme from the M'Dez Dam to the Saïss Plain will be created with the Green Climate Fund (GCF) grant's support, and a public–private partnership will be used to implement new irrigation networks. The GCF grant directly impacts the scope of the private sector investment and, consequently, the final tariff, which must be affordable for local commercial and subsistence farmers while allowing for profits in the private sector. It also directly helps avoid negative externalities related to the Saïss aquifer's depletion.

The Saïss Water Conservation Project specifically addresses the barrier of positive externalities by implementing a new water law and improving tariff collection rates by the authorities, which will monetarily incentivise adopting sustainable practices.

This project also addresses the asymmetric information barrier by informing project beneficiaries, including commercial farmers, of the risks from changing climate patterns and the importance of preventive adaptation measures.

Interestingly, the GCF does not classify this as a private sector project because the criteria for the GCF's binary categorisation of private versus public are too narrow.

For more information on this project see: EBRD (2017): Improving the climate resilience of agricultural systems in the Saïss Plain.

6. Analysis

6.1 Projects benefit the private sector but do not address barriers for further private sector involvement

Independent of the fund, about one-fifth of the projects that directly or indirectly benefit local private actors address none of the three barriers identified to leverage further private investments in adaptation. These are projects that, for instance, benefit farmers and small agribusinesses by supplying adaptation equipment such as new and more efficient irrigation systems. Such interventions help farmers in increasingly water-scarce regions. However, without addressing the three market barriers, opportunities that would allow these farmers to use their improved situation and freed-up resources to further invest in climate adaptation may be left out. Such missed opportunities of indirectly mobilising further investments from local private actors by addressing the three investment barriers have been specifically observed for two types of projects. (1) Adaptation infrastructure projects and (2) and livelihood diversification projects that establish new businesses.

6.1.1 Missed opportunities to involve the private sector in infrastructure projects

Adaptation projects focused on infrastructure improvements often directly or indirectly benefit the local private sector. However, the extent of this is continually unclear because many project proposals, especially within the AF, insufficiently cover this information. Projects targeting urban development, coastal management, and water management usually focus on hardware improvements and infrastructure investments. The adaptation outcomes tend to benefit private businesses and private households, owing to higher water availability or better protection from extreme weather events. In these cases, proposals' naming of project beneficiaries mainly refers to 'communities,' This vague description prohibits exploration of measures on how the private sector could contribute to infrastructure investments.

Nonetheless, some projects describe the beneficiaries in detail. For instance, the AF's Adaptation to Coastal Erosion in Vulnerable Areas project in Senegal specifically names the businesses and commercial areas that will benefit from the coastal protection measures. Based on this detailed analysis of beneficiaries – including the private sector – the project may have the potential to design additional measures leading to further adaptation investments by local private actors.

Several GCF projects explain in their project proposals how private sector actors could benefit from infrastructure investments in adaptation. Yet there are also GCF portfolio projects that plan infrastructure measures without involving the private sector, though the private sector is most likely one of these interventions' beneficiaries. Also most AF projects with infrastructure investment components do not identify the private sector as a direct beneficiary and thus also do not promote further private sector engagement.

Small Island Developing States (SIDS) are an interesting case in this regard. Many SIDS projects are infrastructure-focused without involving the private sector. A potential explanation warranting further research is that it may be especially challenging for SIDS to build a business case for private sector involvement in adaptation. This condition may owe to the already high costs of adaptation and the challenge of not being able to benefit from economies of scale, and that hampers the general development of businesses in SIDS. Many services, because of the small size and geographically dispersed population, appear too expensive for a for-profit company to provide. Hence, provision of climate-resilient infrastructure and services often remains a public obligation. This explanation was also given in a project proposal for climate-resilient water management in the Maldives:

> *The dispersed nature of a small population (around 400,000 people) on 193 islands does not lend itself to generating the kind of economies of scale required for the private sector to provide water and sanitation services, including making investments in the requisite capital-intensive infrastructure. (UNDP, 2015, p. 25)*

Consequently, there may be cases in which adapting infrastructure to climate change remains a purely public obligation. There generally is, however, further room for improvement to involve the private sector in infrastructure projects. We might speculate, based on the observations made in the analysis, that the private sector remains a passive bystander for infrastructure projects that do not address the three investment barriers. The likelihood of additional investment being mobilised from the private sector is thus low in these cases.

6.1.2 Missed opportunities when promoting establishment of new businesses to diversify livelihoods

Our analysis shows that a substantial number of projects focused on promoting establishment of new businesses, to divert people from income-generating activities that reinforce climate change-related impacts towards more sustainable revenue-generating activities. Usually, this directly relates to project measures aimed at setting up or strengthening alternative businesses. Those alternative business models do not reinforce negative climate impacts and can be considered more sustainable.

Those projects often had a high number of keyword hits (such as for 'private sector'). Yet, it was not always possible to position these 'income diversification projects' in relation to the three market barriers. During the analysis, it seemed the projects aiming at diversifying livelihoods only carried out limited analysis of existing businesses. Potentially existing MSMEs were, rather, named 'households' in their initial stage, and then transformed to profitable and sustainable small enterprises. One example is the creation of women-owned cooperatives. These projects do not focus on transforming the existing private sector but rather on setting up new businesses from scratch. Though the private sector directly benefits from those project interventions, no further private investments in adaptation by local MSMEs are likely to be mobilised.

Projects establishing new businesses or strengthening existing business to diversify livelihoods, and thus make vulnerable communities change towards more sustainable and revenue-generating activities, should also better reflect opportunities to reduce information asymmetry and address imperfect financial markets and positive externalities. This would be essential for ensuring there are no missed opportunities to promote further adaptation investments of those newly created or strengthened businesses that the projects targeted.

Project example 2: Climate Change Adaptation Programme in the Coastal Zone of Mauritius

Rising sea levels and increasing frequency and intensity of tropical cyclones make Mauritius' coastline particularly vulnerable to climate change-related adverse effects. The AF-financed Climate Change Adaptation Programme in the Coastal Zone of Mauritius implemented by the United Nations Development Programme focuses on tackling beach erosion and flood risk.

The programme established a priority ranking of vulnerable coastal sites for the purpose of guiding future private sector investments. Consultative workshops and training promoting compliance with climate-proofed planning and design also specifically targeted the private sector, aiming to build hotel and tourism businesses' capacities to replicate effective coastal adaptation measures the project identified. Thus, the AF programme in Mauritius specifically targets barriers regarding information asymmetry in tackling obstacles preventing further private investments in adaptation.

The programme also focuses on developing new economic instruments to increase private sector actors' compliance with the new policies and guidelines intended to improve coastal zone climate resilience, and that are due to be developed in the project. The project specifically targets barriers related to positive externalities and thus indirectly mobilises further adaptation investments from the private sector, specifically from the hotel and tourism industry.

For more information on this project see: UNDP (2011). Climate Change Adaptation Programme in the Coastal Zone of Mauritius

6.2 Implications of the funds' governance structure for private sector engagement

6.2.1 The Adaptation Fund

Even though the AF does not have an explicit private sector focus, it does count with a limited number of projects that concretely address barriers for private sector engagement in adaptation and might potentially indirectly leverage further private investments in adaptation. Yet the analysis identified several cases of missed opportunities for private sector engagement in AF projects. However, the AF, with its specific focus on the most vulnerable people and communities, is also covering an important niche of projects for which private sector engagement might not always be feasible due to the absence of private actors or access to markets.

As referred to in the AF's Operational Policies and Guidelines, the AF covers the full cost of adaptation and projects, and its projects and programmes '*should be able to deliver its outcomes and outputs regardless of the success of the other project(s)*' if including co-financing (Adaptation Fund Board, 2021). In some cases, projects' co-financed components were interpreted as being part of other referred to projects. Therefore, while the AF's policies do not explicitly exclude the option of co-financing, the AF Board has thus far not allowed approval of projects with co-financed components. This might imply an obstacle for projects that address barriers related to imperfect financial markets that are often co-financed through loans, as one example of a rejected AF project shows. In 2018, the AF Board did not approve a proposal involving the private sector and that was to be co-financed by one of its implementing entities, the Central American Bank for Economic Integration (CABEI). The Board argued that the suggested activities the AF would finance would have been highly dependent on CABEI's co-financed activities and thus conflicting with the AF's Operational Policies and Guidelines (Grimm et al., 2018). The project aimed to enhance MSMEs' adaptive capacity through provision of financial and non-financial services, and its main objective was to overcome barriers related to imperfect financial markets and information asymmetry. CABEI then submitted the proposal in an adapted version to the GCF, which approved the project.

The analysis also showed that positive externalities were very rarely the subject of AF projects. The AF could, however, indeed finance activities that enhance national policies and regulations, (including introduction of fees, tolls, tariffs, or other financial incentives) to create incentives for the private sector to engage in adaptation activities overcoming positive externality-related barriers. This option is included under the AF's seventh outcome indicator ('*Improved policies and regulations that promote and enforce resilience measures*') (Adaptation Fund, 2019b). This finding demonstrates the AF's missed opportunities in this area. The AF could intend to actively promote the seventh outcome indicator in projects with an eye towards private sector mobilisation.

Project example 3: Reducing greenhouse gas emissions and the climate vulnerability of Cambodia's agricultural value chains

The Climate-Friendly Agribusiness Value Chains Sector Project in Cambodia, implemented by the Asian Development Bank, is part of the Green Climate Fund (GCF) cross-cutting project portfolio. Its main aim is to make agricultural production of rice, cassava, maize, and mango climate-resilient. Cambodia's agricultural sector has suffered extensive losses of crops and infrastructure during previous extreme weather events. The project focuses on enhancing infrastructure resilience to climate change, such as construction work on farm roads and improving 'last mile' connectivity of local farmers to markets. The project also addresses a variety of barriers to agricultural producers, including promotion of financial products such as weather index insurance, and capacity-building and technology transfer for climate-smart agriculture. Additionally, the project works towards climate-friendly regulations and standards in the agricultural sector to make climate-smart agriculture more competitive.

The project targets all three market imperfections (information asymmetry, imperfect financial markets, and positive externalities). By creating an enabling environment and introducing a public–private partnership, the project promotes future climate-resilient private investments in the agricultural sector.

As with the GCF-financed project in Morocco (see project example 1), the GCF does not classify this as a private sector project.

For more information on this project see: ADB (2018). Climate-Friendly Agribusiness Value Chains Sector Project

6.2.2 The Green Climate Fund

The GCF, since its inception, has had a clear focus on mobilising private sector investment. The GCF Governing Instrument[3] specifically mentions that the GCF will catalyse both public and private climate finance at the international and national levels. The GCF Board invites two private sector representatives – one each from a developing and developed country – to participate as active observers in its meetings (Green Climate Fund, 2011).

Moreover, various key sections in the GCF's project proposal template explicitly request information on the private sector's role and its involvement in the project. For instance, the private sector is mentioned in the section 'Justification for GCF funding request,' where the GCF requests information about (1) the additionality of the proposed measures and (2) why public or private entities cannot fund such measures. The accredited entity is asked to identify market barriers that hinder private sector investments in adaptation or mitigation. This request in the template could potentially deepen accredited entities' understanding of hindrances for private sector involvement in adaptation. It shows the GCF has some awareness of these barriers' existence and the need for projects to play a crucial role in overcoming them.

The analysis also demonstrated that numerous projects outside the Private Sector Facility in the normal funding portfolio directly or indirectly engage the private sector and leverage local private investments in adaptation, mainly through grant finance support. However, the GCF does not seem to make concrete attempts to publicly communicate those project's efforts and measures to engage local private sector actors in developing countries. Most communication on private sector engagement is focused only on projects under the Private Sector Facility. Not communication well those existing examples of successful local private sector engagement outside the Private Sector Facility might lead to those best practices being less likely to be replicated. While any GCF portfolio project can actively promote private sector engagement as part of one or several project components, only those that receive most of their overall funding (GCF funding + other co-funding) from the private sector are located within the Facility (GCF, 2019). The dividing line between private and public project proposals, however, remains unclear (Reyes & Schalatek, 2021).

Within the Facility, most projects targeted the barriers of imperfect financial markets, and none focused on overcoming the positive externalities barrier. A recent analysis of private sector partners in GCF projects concluded the current GCF accreditation framework is more favourable to financial sector actors, such as banks, than to non-financial actors in the real economy (Grüning et al., 2021). Our findings suggest this could lead to a bias and, thus, a focus on imperfect financial markets. These projects' main aim was to set up investment funds or offer concessional loans or risk insurance. Facility projects stood out from other projects in their comparatively high use of a mix of different financial instruments for funding. Only one of the 11 examined Facility projects exclusively used grants.

GCF MSME Pilot Programme

In 2016, the GCF launched the MSME Pilot Programme under its Private Sector Facility and set up a separate call for proposals. So far, only three proposals under this pilot programme have been approved by the GCF Board. Those three proposals include two cross-cutting projects and one mitigation project. No pure adaptation project was among the 30 proposals submitted for this request for proposal. Slightly more than half of the 30 proposals were mitigation projects and the remaining ones cross-cutting projects.

The adaptation components, of the two cross-cutting proposals approved under the MSME Pilot Programme, do have a strong focus on barriers related to imperfect financial markets.

3 The Governing Instrument is a document that defines the GCF's mandate. It was adopted by the UNFCCC COP in Durban, 2011.

This confirms our general observation for projects within the GCF Private Sector Facility. One of the two projects also focusses on barriers related to information asymmetry. Yet, barriers related to positive externalities were not addressed at all in both proposals. This might relate to the scope and focus of the MSME Pilot Programme. Its focus is particularly on "approaches that deploy financial solutions for MSMEs in support of mitigation and adaptation activities" (Green Climate Fund, 2016) and specifically requests funding proposals from financial institutions. It also strongly focusses on providing financing to mainly those MSMEs "that work in any area of the supply chain for climate goods and services (from production and service, to distribution or retail), in both mitigation- and adaptation-related activities" (Ibid.).

The pilot programme's evaluation criteria and their respective weight mainly focus on the potential for future investments in climate-related MSME activities. The role of MSMEs as actors that need to invest in their own adaptation to the adverse effects of climate change, by e.g., addressing barriers related to positive externalities, is not well reflected. The programme's scorecard does refer to changes in regulatory environment and development of institutional capacity, important for addressing barriers related to positive externalities and information asymmetry. Yet, those measures are weighted very low only representing 5% of total evaluation criteria covering both general programme standards (65%) and impact criteria (35%).

In addition, 15% of the evaluation criteria require that GCF support entails the minimum concession required and that the GCF is not the only investor. However, particularly for adaptation projects public grants and concessional loans remain important to address barriers related to market imperfections that hinder adaptation investments from local MSMEs. In the draft for the revised scorecard for the second phase of the MSME pilot programme, the GCF secretariat suggests strengthening the impact criteria that try to ensure that particular vulnerable communities and countries benefit from the intervention and that specifically micro-sized entities and the informal sector are targeted (Green Climate Fund,2019). Especially for adaptation projects this suggested change might be important. Yet, for the second phase of the MSME Pilot Programme further adjustments to the scorecards should be conducted to reflect a stronger focus on barriers related to positive externalities and information asymmetry.

Both funds offer direct access to national implementing agencies – a unique selling point of the GCF and AF in the international climate finance architecture. Our analysis did not, however, show a difference in the extent to which multinational and national entities targeted the private sector. It could be hypothesised that national direct access entities know the local private sector better or, in contrast, international agencies are more trusted by and well-connected with the private sector. As the results showed no difference, the hypotheses could negate each other or have no substantial effect. This merits further research.

6.3 Limitations and risks of private sector engagement

Crucially, the private sector is more strongly considered in adaptation projects, also in relation to the multiple roles it can assume. However, private sector mobilisation should be a means to an end – namely, improved resilience for the overall society – and not an end in and of itself.

Private sector engagement is not feasible in all contexts. The public sector should therefore be aware of these contexts, as it has the legal obligation to provide and protect vulnerable people where the private sector and the market fail to do so (Pauw et al., 2021). The example of SIDS infrastructure projects has already demonstrated circumstances under which private sector service provision is hampered and the public sector should become involved. However, there are additional examples in which the absence of private actors, due to weak local markets or lack of access to markets, significantly impedes private sector engagement in adaptation actions. This is especially true for projects that address the adaptation needs of particularly vulnerable populations; many small and localised AF projects are implemented in such contexts.

Notably, pure market approaches, as targeted through the identified market barriers, face limitations. For some basic goods, market approaches are not responsive to social inequities or may even exacerbate them, making them an inadequate option (Bond, 2010; UN, 2020). This is unfavourable because climate vulnerability increases with inequality and poverty as it reduces societal adaptive capacities (Mearns & Norton, 2009).

Civil society observers have harshly criticised some Private Sector Facility projects, questioning the actual benefit these projects create. This was especially true for the three new Facility adaptation projects approved at the 30th GCF Board meeting. For one project, concerns were voiced that, instead of helping communities in reef ecosystems in adapting to climate change-related impacts, private actors the project targeted may profit from harming the reefs. There is a considerable risk of this project largely financing business-as-usual activities with a merely tangential relationship to reef ecosystems. Civil society raised concerns about the project's country ownership, as projects addressing multiple countries in various regions seem quite driven by accredited entities rather than country-driven, and without adequate consultation allowing for local and national input. This calls the actual impact of these investments into question, particularly at the national level and for vulnerable communities affected. Such concerns about country ownership have, however, been seen for other multi-country projects and cannot be exclusively attributed to projects in the Facility.

Projects the private sector implemented were also criticised for being less transparent than public projects. Companies and private institutions in charge often use protection of proprietary information as justification for hindering public insight. This makes it more difficult for civil society organisations to assess private sector projects' actual impact and performance (Reyes & Schalatek, 2021).

The above-mentioned concerns from GCF civil society representatives also reinforce the argument that private sector engagement in adaptation finance should surpass large-scale projects that mobilise private co-finance. Additionally, small-scale grant-financed projects can effectively engage the private sector in developing countries and can mobilise private investments in adaptation over the long term. Overall, the public sector will continue to bear the main responsibility for planning and monitoring adaptation measures, and for creating the conditions for effective, socially and environmentally sound private sector engagement.

7. Conclusions

The results showed the three market barriers are not being addressed to the same extent across the project portfolios. The many projects focusing on asymmetric information illustrated existing awareness that knowledge is unequally distributed. However, projects addressing market imperfections due to positive externalities were underrepresented. Factoring in social and environmental benefits enables businesses to benefit from provisioning of public goods and can strengthen overall wellbeing. New business models for climate adaptation become profitable by establishing the right conditions. The positive externalities market barrier is undeniably the most complex of the three and is highly context-specific, yet our analysis showed there is room for improvement. Greater focus on this barrier could be promoted by, for instance, making examples of best-practice projects more tangible.

The analysis also showed that, thus far, private sector actors have mainly been considered as most relevant when they assumed the accredited, implementing, or executing entity role. Pilot programmes and special initiatives show that the GCF in particular aims for direct cooperation with private sector actors. This has proven challenging, as lengthy processes such as accreditation and project application are not especially compatible with the private sector and mainly address the larger private institutions at international level. Private sector actors only oversaw or implemented a fraction of the projects analysed. Overall, throughout its adaptation project portfolio, the GCF should increase efforts towards finance measures that target MSMEs in developing countries and address barriers related to positive externalities. Thus far, GCF adaptation and cross-cutting projects, particularly projects within the Private Sector Facility, have not sufficiently target the analysed barriers.

Both, the AF and the GCF have the potential to unlock more indirectly mobilised private money in adaptation if they strengthen the engagement of MSMEs from developing in their adaptation projects. It is important to highlight that the performance of both funds cannot be compared in this regard given the fact that both funds cover different mandates and roles in the international climate finance architecture. Given the importance and relevance of those different mandates and roles, both funds should thus complement each other in their effort to indirectly unlock adaptation investments from MSMEs in developing countries.

8. Recommendations

This section, based on the insights gained through the analysis, provides recommendations on mobilisation of adaptation investments by the private sector, especially by MSMEs.

8.1. a) Recommendations for the Green Climate Fund

Include response to market barriers in project proposals

Implementing entities should be made aware of the three barriers: asymmetric information, imperfect financial markets, and positive externalities. The GCF's project template should require the implementing entity to explain how these barriers have been addressed. If they cannot be addressed, the entity should give the reasons why. This should not disproportionately increase the bureaucratic burden on accredited entities and applicants, most notably smaller and direct access entities, yet it could provide deeper reflection on how to mobilise private adaptation finance. Other funds and donors could also apply this recommendation.

Improve visibility of best-practice examples in which adaptation projects addressed the market barriers

The GCF should promote private sector engagement in adaptation. Projects should surpass large-scale projects with high private co-financing ratios mainly addressing imperfect financial markets. Our analysis showed that mainly grant-based GCF-financed projects with low co-financing ratios are leveraging private adaptation investments from MSMEs in developing countries. These projects, however, address investment barriers related to information asymmetry and positive externalities. The GCF should actively and visibly promote these best-practice projects (such as those mentioned in the project example boxes) to foster mainstreaming of private sector engagement in adaptation throughout the entire GCF project portfolio and not only for projects under the Private Sector Facility.

The GCF MSME Pilot Programme should consider MSMEs more broadly as a target and beneficiary group of projects focussing on their role to indirectly mobilise further adaptation investments

For the second phase of the GCF MSME Pilot Programme further adjustments to the programme's scorecards for proposals should be conducted to reflect a stronger focus on barriers related to positive externalities and information asymmetry. Having separate scorecards for mitigation and adaptation projects that cover distinct evaluation criteria should be considered for the second phase of the MSME Pilot Programme. Private sector involvement for mitigation and adaptation projects can be of quite different nature. The focus of the pilot programme should go beyond pure investments in MSMEs and rather consider MSMEs more broadly as a target and beneficiary group of projects focussing on how to indirectly mobilise adaptation investments from them.

8.1. b) Recommendations for the Adaptation Fund

Determine specific niche for private sector engagement while developing a medium-term strategy beyond 2022 with potential focus on small-scale producers and MSMEs

The AF still has room for improving the promotion of private investments in adaptation by MSMEs in developing countries. The AF's Medium-Term Strategy 2018–2022 encouraged inclusion of private sector entities and named the private sector as one of many stakeholders in the AF's vision for innovation. Despite this, our analysis showed that AF projects largely do not address the main market barriers to mobilising private adaptation finance.

The AF with its particular focus on the most vulnerable groups' and communities' needs could, for example, focus on small-scale local producers and MSMEs for its private sector engagement. As part of its medium-term strategy, the AF could increase its efforts for reaching MSMEs, especially from the informal sector. Thus far, multilateral climate funds have not succeeded in such efforts, even though the informal sector is a large part of the economy in developing countries (Watson & Patel, 2018). The AF's taking up this challenge and showcasing a degree of success would be a quantum leap for the goal of private sector mobilisation.

Notably, AF projects often operate in contexts that lack local markets and businesses conducting potentially profitable revenue-generating activities; private sector involvement therefore tends to be unlikely. The intent to foster private sector mobilisation should not come at the cost of the AF's responding to particular adaptation needs of communities and population groups most vulnerable to climate change.

Dedicated call for proposals under the AF's Innovation Facility

Our AF portfolio analysis results showed that only about 15% of projects addressed the positive externalities market imperfection, and of those 15%, most only did so to a minor degree. To further promote such projects, the AF Board may consider a dedicated call for proposals under the AF's Innovation Facility[4]. Thus far, the AF has been quite vague about how its Facility could promote further private sector engagement, specifically of local MSMEs, in its adaptation projects. Instead, the AF should use a dedicated call to specifically promote such engagement. Doing so could help to make the Facility's indicators more impact-oriented rather than process-oriented. The Facility could also test the option of co-financed projects. While it is important for the AF to continue covering adaptation projects' full cost to avoid making co-finance obligatory, voluntary co-financing could help increase projects' impact. However, the experience in the GCF has shown that while in theory co-finance is not obligatory, in practice it has become a precondition and very challenging for many countries and national implementing entities . For this same reason, the topic of allowing for co-finance has been discussed controversially in the AF Board.

Strengthen project activities on policies and regulations that will reflect positive externalities

The study results showed that positive externalities are very rarely the subject of adaptation fund projects. The AF could indeed finance activities that enhance national policies and regulations, (including introduction of fees, tolls, tariffs, and other financial incentives) to create incentives for the private sector to engage in adaptation activities to overcome barriers related to positive externalities. This option is included under the AF's seventh outcome indicator (*'Improved policies and regulations that promote and enforce resilience measures'*) (Adaptation Fund, 2019b). As part of the indicator, the AF could include activities that enhance national policies and regulations that reflect positive externalities in the financial returns of investments and, thus, will create clear conditions and incentives for the private sector to engage in adaptation activities. The AF should therefore actively promote projects aimed at the indicator, with an eye towards leveraging private sector mobilisation.

8.2 Recommendations for the post-2025 climate finance target

Lessons learnt from the current USD 100 billion climate finance target prove that a purely qualitative target and the aim of mobilising private co-finance for adaptation were unsuccessful. Not only did the overall numbers of mobilised private co-finance for adaptation remain very limited, but the anticipated increase in private sector engagement in adaptation measures also failed to materialise. The post-2025 climate finance target should adopt a more qualitative approach on engaging the private sector in adaptation finance including a focus on engaging MSMEs in developing countries.

Include a qualitative objective for adaptation finance to address private sector engagement more systematically by specifically focusing on MSMEs in developing countries and their potential to leverage investments in adaptation and by targeting respective barriers related to information asymmetry, imperfect financial markets, and positive externalities

This analysis clearly showed that several adaptation projects and programmes already address barriers related to the three market imperfections (information asymmetry, imperfect financial markets, and positive externalities). The extent to which adaptation projects and programmes target such barriers and indirectly mobilise further private investments in adaptation, however, is not tracked or communicated well. To report progress on such sub-targets, adaptation finance delivery institutions should track progress associated with a dedicated qualitative objective.

4 The Adaptation Fund's Innovation Facility has three distinct opportunities to access funding: small grants, for innovation, up to USD 250,000 for AF-accredited national implementing entities, large innovation grants of up to USD 5 million available to all AF-accredited entities, and competitive grants of up to USD 250,000 to be awarded to non-AF-accredited entities (such as government organisations, non-governmental organisations, local businesses, and entrepreneurs) through the Adaptation Fund Climate Innovation Accelerator carried out by the United Nations Development Programme and United Nations Environment Programme (Adaptation Fund, 2020).

Acknowledge the importance of public grant finance for adaptation including for MSME engagement in developing countries to indirectly mobilise adaptation investments from local private actors.

Include a sub-target for adaptation grant finance

The new target should acknowledge the continued need for large amounts of grant finance to address adaptation needs. This, among other things, will be needed over the coming years to address the three main market imperfections Pauw et al. (2021) identified. Grant finance helps to engage private actors, specifically MSMEs in developing countries, in adaptation efforts. Ultimately, this will leverage further local private investments in adaptation over the medium-to-long term. Our analysis, however, also identified various adaptation projects, especially those benefitting the most climate-vulnerable populations, for which market imperfection-related barriers could not be addressed because of the absence of markets. For these projects, grant finance in particular will be needed to address the adaptation needs of societies' most vulnerable parts.

8.3 Recommendations for negotiations on the Global Goal on Adaptation

Consider the engagement of private sectors actors from developing countries, especially MSMEs, when defining the Global Goal on Adaptation and its subsequent progress review

The decision was made at COP26 in Glasgow in 2021 to launch a two-year work programme to further define the Global Goal on Adaptation (UNFCCC, 2021). A review of overall progress will be part of the Global Stocktake[5]. An Adaptation Committee (2021) technical paper highlighted opportunities and limitations for using metrics and indicators to assess the Global Goal.

The portfolio analysis in this study, as well as other analyses (Reyes & Schalatek, 2021; Stoll et al., 2021), clearly showed that indicators such as mobilisation of private co-finance for adaptation, and the number of adaptation projects private entities implement, were insufficient for tracking progress on private sector engagement in adaptation. The level of such engagement should be part of assessing progress towards the Global Goal. However, tracking such progress requires a comprehensive approach that surpasses the above-mentioned two indicators (mobilisation of private co-finance and number of adaptation projects private entities implement) and focuses on engaging MSMEs at the national level and their potential to leverage investments in adaptation. Such an approach to tracking progress could include assessing efforts to address the barriers for mobilising private investments in adaptation, mainly caused by the three market imperfections Pauw et al. (2021) identified.

5 The Global Stocktake is the process of assessing implementation of the Paris Agreement with the objective of reviewing the global community's collective progress towards achieving the Agreement's purpose and long-term goals.

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Annex 1: Classification method

The following method was applied for categorising the actor roles.

For the accredited/implementing entity, executing entity, and sub-executing entity roles, projects scored 0 or 1, respectively, if the private sector did or did not assume that role. For the target group, beneficiaries, and consulted categories, we applied a more granular rating system depending on how much the respective project targeted, benefitted, or consulted with the private sector. Thus, projects that did not consult with local private sector representatives or did not target or benefit the private sector scored 0, while projects in which the private sector was among various other target beneficiaries or groups scored 1. The same applied for cases in which only a subcomponent of a project benefitted or targeted the local private sector, and in cases when the private sector was only marginally consulted. A score of 2 was given for projects that mainly benefitted or targeted the private sector in one of its main components, and for projects in which the private sector was fully consulted in the planning phase. This rating system assessed the extent to which private sector actors were considered project stakeholders.

Local private sector entities could assume several of the above-mentioned roles simultaneously. For instance, when the private sector was a project ‘beneficiary,’ the private sector was in many cases also the ‘target group.’

We also analysed to what degree project proposals addressed barriers regarding the three market imperfections: information asymmetry, imperfect financial markets, and positive externalities. If no barriers related to any of those imperfections were targeted, the project scored 0. If barriers related to one of them were somewhat addressed in a subcomponent, the project scored 1 for that imperfection. If barriers related to one of the imperfections were addressed within several subcomponents or were the subject of one main component, the project scored 2. Projects whose main objective addressed one or more of the three barriers scored 3 for the imperfection(s) addressed.

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