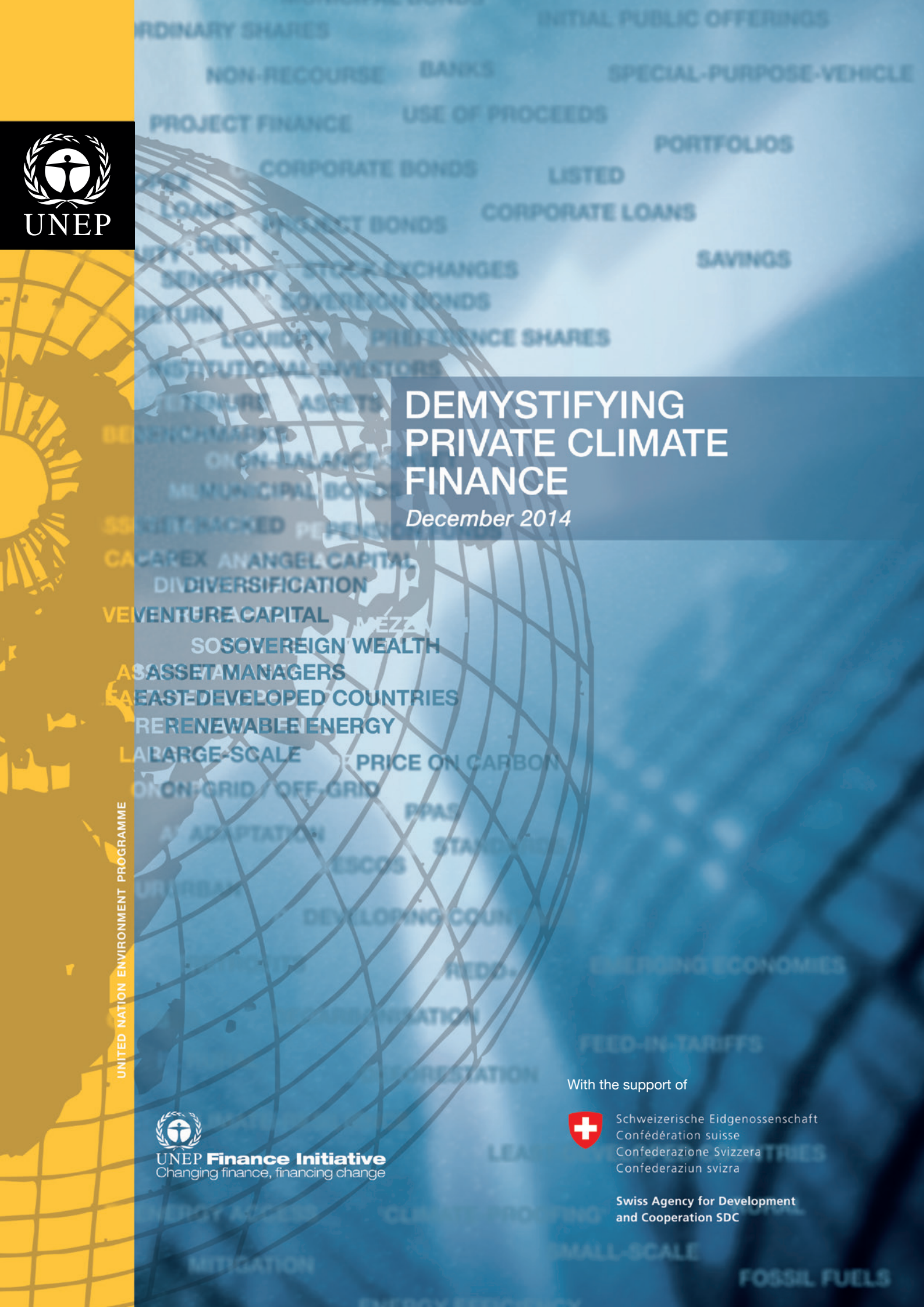
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UNITED NATION ENVIRONMENT PROGRAMME
DEMYSTIFYING PRIVATE CLIMATE FINANCE
December 2014
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UNEP Finance Initiative
Changing finance, financing change

DEMYSTIFYING PRIVATE CLIMATE FINANCE

What is private finance? Where and how does it connect with climate change mitigation and adaptation? And how can it be mobilised by public actors?

First of a series of UNEP FI contributions to the multilateral negotiations on climate finance, the Green Climate Fund (GCF), and its Private Sector Facility (PSF)

Produced by UNEP FI's Climate Change Advisory Group and KPMG with the support of:
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FOREWORD FROM UNEP FINANCE INITIATIVE

As we enter 2015, world governments are markedly intensifying their efforts to jointly achieve a global agreement on climate change in time for the Conference of the Parties 21 to be held in Paris. And for the first in a long time there is reason for all of us to be cautiously optimistic that those efforts might indeed lead to fruition, and to an inflection point in multilateralism's ability to effectively tackle what many agree is the defining global challenge of our times.

Recent agreement between China and the United States, the two largest greenhouse gas emitters of the world, on the importance of global decarbonisation as well as on these two countries' responsibility to take a leading role, is one reason for optimism. So is the current determination among rich countries to adequately capitalise the Green Climate Fund with a view of supporting poorer countries to embark on 'climate-compatible' development paths. It is no exaggeration that success in Paris will largely depend on progress and agreement on the issue of climate finance; and the prospect of mobilising it at the required pace and scale.

It is precisely in this arena where another perhaps less symbolic but equally encouraging observation can be made: there is – now probably more than ever before – a shared understanding in the climate process that tackling climate change will not be possible without major mobilization, or a 're-channelling' rather, of private finance. The underlying rationale is simple: tackling climate change requires economic transformation, meaning a transformation of common business practices in the private sector, which requires unprecedented private investment, which in turn can only be financed privately.

What is noteworthy is that by no means does this make the role of public finance any less important. For long the misconception of a rivalry between public and private finance has inhibited progress in these discussions. Mobilising at-scale private finance requires bold public action, be it of a regulatory, legislative, and/or jurisdictional nature. All public action, in turn, requires public investment and public finance. So the more public finance there is, the better; but, of course, public finance will always be scarce.

Therefore, the central question in the negotiations should be how best scarce public financial means can be used to achieve the greatest possible mitigation and adaptation impact. In other words: how can most mitigation and adaptation investment be unlocked with each unit of available public finance?

Finding answers to this question is what UNEP Finance Initiative's *Demystifying* series aims to contribute to, and our main point is that doing so is far from trivial. There is indeed no silver bullet for the mobilisation of private climate finance. Too numerous and varied are the project, technology, and infrastructure types required for climate change mitigation and adaptation. They range from micro-scale roof-top solar voltaic installations to large-scale offshore wind parks; from the restoration of ecosystems such as mangrove systems to the climate-proofing of large man-made infrastructure. And not only does the nature of project and technology types vary; so do the contexts within which they are needed – which range from rural, largely agriculture-based areas in least developed countries to some of the largest urban and industrial centres in some of the largest emerging economies. Equally varied is, furthermore, the private financial landscape spanning everything from micro-finance institutions, over domestic banks to large infrastructure financiers and institutional investors.

With so much complexity it is easy to get confused and 'misted'. In response, this report aims, firstly, to increase policy-makers' and climate negotiators' understanding of the essentials of private finance. More importantly, it suggests and introduces a generic logic and approach – a sequence of questions – that climate negotiators and policy-makers should follow when debating, and ultimately designing, the public interventions required for the unlocking of at-scale private climate finance.

This report is only the start: future issues in this series will see greater focus and the application of this logic to a set of climate change activities where most demystification seems to be needed, in particular sustainable land-use including REDD+ as well as adaptation.

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LIST OF ABBREVIATIONS

CAPEX	Capital Expenditure
CCRIF	Caribbean Catastrophe Risk Insurance Facility
DFI	Development Finance Institution
EE	Energy Efficiency
ESCO	Energy Services Companies
FiT	Feed in Tariff
GCF	Green Climate Fund
IEA	International Energy Agency
IPO	Initial Public Offering
MIGA	World Bank Multilateral Investment Guarantee Agency
NBFIs	Non-Bank Financial Institutions
OPEX	Operational Expenditure
PPA	Power Purchase Agreement
PPP	Public Private Partnership
PSF	Private Sector Facility
SPV	Special Purpose Vehicles
TCX	Currency Exchange Fund
UNEP FI	United Nations Environment Programme Finance Initiative
UNFCCC	United Nations Framework Convention on Climate Change

EXECUTIVE SUMMARY

The international climate regime will only deliver its objective of transformational impact if it is able to unlock at-scale private finance and direct this capital away from routine business-as-usual investments and towards alternatives that are low-carbon as well as climate-resilient. Delivering change on this scale will demand 'game changing' public interventions, in relation to climate change policies, at the international and national levels, in relation to institutional structures and operations, and in relation to financial mechanisms and instruments.

Designing and implementing effective climate finance policy requires negotiators and policymakers to:

- Understand and appreciate not only the key characteristics of private finance and the corresponding actors, but also the full spectrum and diversity of the private finance landscape.
- Understand where and how exactly private finance fits into the highly diverse and complex landscape of climate change mitigation and adaptation.
- Recognise that different categories of climate change projects present different issues and challenges when trying to attract private sector investment. Policy interventions at both national and international levels, therefore, need to be carefully tailored to the specific projects, sectors or countries in question.

This report is the first of a series of contributions from UNEP Finance Initiative (UNEP FI to the multilateral negotiations on climate finance, the Green Climate Fund (GCF) and its Private Sector Facility (PSF). Using three case studies – large-scale, grid-based, renewable energy, energy efficiency improvements in corporate operations and production processes, and 'climate-proofing' existing infrastructure – it explains where and how exactly private finance fits into the diverse and complex landscape of climate change mitigation and adaptation. From this, the report offers a series of practical suggestions on the factors that need to be considered by national and international negotiators and policymakers when designing and implementing interventions, instruments and mechanisms aimed at mobilising private climate finance.

This report is divided into two parts:

- Part A is an attempt at 'demystifying private finance' to climate change negotiators. It explains the different types of private finance, and describes the variety of sources, intermediaries, legal considerations and investment objectives that are to be found in the private finance landscape.
- Building on Part A, Part B analyses the types of private finance that are particularly relevant to a sample of mitigation and adaptation activities, explains why different project types require different forms of 'private finance' to succeed, and explains how the specific characteristics of the project type affect the forms of public intervention that are needed to attract private sector finance.

THE ESSENTIALS OF PRIVATE FINANCE

The source of private finance is the savings of individuals and corporations (natural and legal entities)[1]. These savings are generally managed, pooled and invested through intermediaries such as banks, portfolio management firms and/or pension funds.

As discussed in Part A of this report, the private financial landscape is complex and diverse. Private finance is provided by a wide range of actors and through a variety of channels. It features different levels of risk and return expectations. It features varying levels of liquidity. It involves different actors ranging from small angel investors to very large banks and institutional investors. It can be short-, medium- or long-term. Individual private transactions can be described and differentiated by reference to the following six dimensions:

- The **legal nature** of the financial transaction.
- The **seniority** of the transaction and the associated **risk profile**.
- The **channel** and the **intermediary actors** through which the flow of finance is arranged.
- The **term or tenure** of the financial arrangement. This is closely linked to the **liquidity** of the financial asset.
- The ultimate **source** of the financial resource and its **origin**.
- The **knowledge of use of proceeds** related to the transaction.

At the heart of most, if not all, forms of private finance; however, is the need to provide appropriate risk-adjusted returns for the providers of these funds. Within this, it is particularly important that policymakers understand that the greater the risk that an investment is exposed to (or the greater the perception of that risk), the greater the returns that will be expected from it by the capital providers.

The language of risk and returns suggests that financial and investment decisions are primarily a matter of balancing financial costs and financial returns. In practice, however, a much broader variety of factors – some of which can be readily described in financial terms, others of which are more difficult to describe in these terms – affect financial decision-making and ultimately the nature and direction of financial flows.

ADDRESSING THE BARRIERS TO PRIVATE CLIMATE FINANCE

Certain barriers to mobilising private finance for climate change related mitigation and adaptation in developing countries are relatively generic. In fact, they often are the same as those encountered when attempting to secure any private finance in the country in question. Depending on the particular country, barriers may include instability of legal, economic, and regulatory frameworks within which private sector activity unfolds, shortcomings in the reliability and longevity of regulatory schemes that the project's viability depends on, and the commercial viability, bankability, and/or creditworthiness of the project or venture at hand.

However, a closer look at specific types of climate change-related projects reveals that each presents different issues and faces different challenges when trying to attract private finance. Not all climate change mitigation and adaptation projects are financed equally. Different project types require different forms of private finance

1 The savings of governments are, in contrast, not considered a source of private finance even though these funds are often provided through private sector channels and are often directed towards activities in the private sector.

to succeed. Furthermore, each project type is likely to confront obstacles that are specific to its special financing needs. It, therefore, follows that different forms of public intervention are needed to move different types of climate change related projects forward.

This report identifies how three quite different climate change related mitigation and adaptation projects are typically financed, and identifies the barriers that are commonly encountered when attempting to mobilise private finance.

NO ONE-SIZE FITS ALL - DIFFERENT FINANCING REQUIREMENTS; DIFFERENT FINANCING BARRIERS

The analysis of the three project types considered in this study indicates that the different project types have quite different financial characteristics, and face quite different financing barriers as a result. This, in turn, means that the public interventions required to overcome these barriers are quite different and must be tailored to the specific project type in question.

Large-scale renewable energy (RE) infrastructure projects, similar to many other large infrastructure projects, require special purpose vehicles (SPVs) to attract project finance through project loans, private equity, and at times through project bonds. Large, often multinational, commercial banks and infrastructure funds (often capitalised by institutional investors) are usually the main actors providing private sector financing.

These projects often struggle with fundamental technological, macro-economic and regulatory challenges. Despite rapid gains in competitiveness in recent years, centralized, RE electricity generation continues to face an uneven playing field relative to conventional power plants. This is exacerbated by fossil fuel subsidies that are still disbursed in many parts of the world, including in developing countries. Domestic policymakers frequently fail to develop public policies and regulatory mechanisms such as carbon pricing schemes, greenhouse gas (GHG) efficiency standards or feed-in tariffs that might 'level the playing field'. Where these policies exist, they are often criticised by private sector actors and financiers for being insufficient or unreliable.

Furthermore, financial markets in many developing countries lack the maturity and depth needed to provide project finance at the scale and tenor of infrastructure projects of this type. Foreign financiers and investors who could, in theory, close the finance gap tend to shy away from local projects given the recurrent presence of considerable currency exchange risks.

Finally, country, policy and political risks are particularly detrimental to RE investment, given the scale of the capital investment required and the long lifetimes of such projects.

Energy efficiency (EE) improvements in corporate operations and production processes usually rely on 'on-balance-sheet' financing by the project's sponsor or they can work through smaller SPV arrangements, involving energy service companies (ESCOs). In either case, the main sources of private financing are domestic or local banks involved in corporate or project lending and/or the project sponsors themselves as providers of equity capital.

EE improvements tend to struggle with methodological issues related to how energy savings are calculated and the way in which they are likely to be allocated to a specific intervention. Often the true amount of savings compared to the real costs of the intervention remains unclear, or appears uncertain to potential project spon-

sors. Another more fundamental challenge is that companies often tend to favour projects that lead to business expansion, continuity and increased revenues rather than investments that primarily lead to cost-savings.

Lastly, determining the funding profile of ***projects that climate-proof existing infrastructure*** can be challenging. The ownership and management model of the underlying infrastructure are important factors as well as the size of the retrofit. When the infrastructure is publicly owned and publicly managed, the corresponding government agency usually provides financing obtained from fiscal revenue or commonly used debt instruments such as municipal bonds, municipal loans or sovereign bonds. Project bonds that are fully dedicated to a particular climate-proofing project are another option in the case of particularly large retrofit interventions. In these cases, the main source of private financing usually comes from commercial banks engaged in municipal finance along with institutional investors and infrastructure funds. When the infrastructure is privately owned and managed, the financing may be provided 'on-balance sheet' by the project sponsor in the case of a small retro-fitting intervention. In the case of a large retro-fitting intervention, financing would typically be provided through an SPV arrangement.

The main financing barriers for 'climate proofing' of existing infrastructure projects are the challenge of monetising any 'climate-proofing' benefits into the cash-flows required to make any given SPV-structure bankable, the general absence of experience in making these investments, and information gaps regarding, for instance, the nature, likelihood and intensity of the meteorological and hydrological impact of climate change that can be expected for the region and location at hand.

TABLE 1: SPECIFIC BARRIERS TO PRIVATE CLIMATE FINANCE ACCORDING TO PROJECT TYPE

	Key Issues			
Project type & financial profile	**Financial**	**Policy**	**Institutional**	**Other Issues**
Large-scale renewable energy infrastructure projects *These are generally financed through SPVs to attract large-scale project finance through project loans, private equity and, increasingly, project bonds.*	• Electricity generation from renewable sources is often not cost-competitive with conventional, fossil-fuel power plants. Often this is a result of the higher capital-intensity of the former relative to the latter • Transaction costs can be significant. The best locations for renewable energy projects (e.g. where there is sufficient wind or solar intensity) are often located at a major distance from the centres of demand (urban areas). As a result, RE projects often require significant investment in transmission and distribution infrastructure. Also, developing RE projects requires extensive data (e.g. historic weather-related data covering wind, sun radiation and precipitation). These data are often difficult to obtain in developing countries. • Project returns often depend on subsidies or other forms of policy support. • In many countries, the incentives provided are often not sufficient to compensate for the risks that financiers face. • Elevated off-take risks as a result of the purchaser of the electricity having a poor credit rating.	• Even where RE policies do exist, they are often seen as lacking dependability and longevity, both in developed as well as in developing countries. • Weaknesses in overarching policy and macroeconomic frameworks - in particular country, political, and currency risks - can limit the effectiveness of RE related policies.	• Financial markets in many developing countries lack the maturity and depth needed to provide project finance at the required scale and tenor. • Local financial institutions may not have a substantial enough balance sheet or access to channels needed to provide the large debt volumes typically required for these types of projects. • There may be a lack of refinancing vehicles, making it difficult for project developers to exit their investment. This is particularly important in the case of large renewable energy projects which operate for 20 years or more.	• The absence of an extensive track record of development of large-scale RE projects or uncertainty over their performance (particularly in developing countries) translates into higher upfront costs and higher perceived levels of risk. These can only be addressed through the relatively wide deployment of the technology.
EE improvements in corporate operations and production processes. *These can be financed directly by the project sponsor possibly using bank lending or through some form of SPV involving an energy service company and/or a third party finance provider.* *ESCOs can sit between financiers and the energy end-users. They can invest in EE projects on behalf of these end-users, and take a share of the value of the resulting energy savings.*	• Companies tend to favour projects that lead to business expansion and increased revenues rather than investments that primarily deliver cost-savings (e.g. energy efficiency improvements). • The actual savings that are achieved are often less than those predicted when account is taken of management time, disruptions to production, staff training and information gathering and analysis. • Companies are often reluctant to directly finance energy efficiency improvements through their balance sheets. However, EE equipment tends to have a low collateral asset value and is often difficult or uneconomic to remove and use elsewhere.	• The case for investing in EE is dependent on managements' views on short- and long-term energy prices (which includes the effect of carbon taxes or other climate change-related policy measures). Low energy prices reduce the incentive to invest in EE.	• The novelty and particularities of discrete EE related interventions mean that third party financiers tend to look for other collateral. • It is difficult for ESCOs to obtain third party financing from banks and other lenders. There are various reasons: the ESCOs are exposed to the end-user credit risk, revenue-sharing arrangements between ESCOs and host companies are often difficult to monitor which creates uncertainty that bank loans will be repaid, and the novelty of the ESCO model means that local banks often have limited understanding of the business model upon which ESCOs operate.	• It is often difficult to calculate energy savings and to attribute these savings to a specific intervention. • There can be significant upfront transaction costs associated with researching and analysing energy efficiency opportunities. • ESCOs often lack full control over equipment operation and, therefore, expected cash flows. Energy savings, and consequently the revenue for the ESCO, depend on the host company correctly operating the equipment.
Climate proofing of existing infrastructure *The approach to financing depends on the ownership and management model for the underlying asset and the size of the investment required. For publicly owned infrastructure, any investment is typically made by the corresponding government agency using fiscal revenue or debt instruments (e.g. municipal bonds). For privately owned infrastructure, smaller retrofits may be financed through the balance-sheet of the project sponsor whereas larger retrofits may be financed through SPVs which attract project finance through project loans, private equity and project bonds.*	• It is often difficult to convert (or monetise) the benefits of climate-proofing interventions into cash-flows that a third-party financier would be willing to lend against.		• Climate proofing is still a relatively new concept, and as a result the financial and information systems needed to create a functioning market are frequently absent. • In developing countries, relatively few project-sponsors or financial institutions have the capacity and resources to access, produce or analyse 'climate information' such as the hydrological and meteorological implications of climate change for the infrastructure at hand.	• There are often important information gaps regarding, for instance, the nature, likelihood and intensity of the meteorological and hydrological impact of climate change that can be expected for the region and location at hand. • There is limited information on projects and associated costs.

DIFFERENT FINANCING BARRIERS REQUIRE DIFFERENT FORMS OF PUBLIC INTERVENTION

Given the specific financing requirements of different climate change project types, it is clear that any public intervention (or instrument) that hopes to remove financing barriers needs to be tailored to the unique financing requirements and obstacles faced by the particular project type.

Encouraging private sector investment in ***large-scale RE infrastructure projects*** requires i) regulatory adjustments in incentives and sanctions to 'level the playing field' in the energy sector at the national level; ii) transferring or mitigating political, regulatory and currency risks; and iii) supporting the development of a domestic financial system that is able to provide services at the required scale and tenor. Developers and financiers investing in ***EE improvement projects*** will require a different set of public interventions. These interventions include i) encouraging electricity utilities to provide incentives for improvements in efficiency, for instance through schemes of 'payments for negawatts'; as well as ii) promoting and developing the market for ESCOs.

Finally, public interventions aimed at unlocking private finance for interventions that ***climate-proof retrofits existing infrastructure*** should aim to **i)** close information gaps including doubts about the physical implications of climate change in the future; **ii)** require the owners and/or operators of potentially climate-vulnerable infrastructure to make credible assessments of the climate resilience of their assets; and **iii)** develop methods, tools, and schemes to monetise the resulting climate-proofing benefits so that they can be identified as bankable cash-flows.

STRUCTURING A NUANCED AND EFFECTIVE AGENDA ON PRIVATE CLIMATE FINANCE

The diversity and heterogeneity of climate change activities/projects, the diversity of the types of private finance required, and the barriers to the mobilisation of this finance, need to be carefully considered in the international climate finance negotiations. In other words, there is no 'one size fits all' policy agenda for climate finance. Rather, the policy agenda must be tailored to the specific activities that need to be financed.

Policymakers can help ensure that they take account of the specific financing needs of specific projects or activities by ensuring that they complete the following three steps as an essential prelude to making any decisions on the policy measures that they might implement:

1. Identify and understand fundamental parameters of the on-the-ground activities to be enabled. This includes understanding the project type to be supported, the typical size of such projects, the maturity of the underlying technology, and the developmental and regulatory circumstances of the host countries including the maturity and depth of their domestic financial systems.

2. Determine the types of private finance and the corresponding actors that are most relevant and will ultimately be required for the types of projects or technologies at hand. Once the appropriate and relevant types of private finance have been identified, policymakers can proceed with identifying the specific barriers that inhibit, or might inhibit, these kinds of private finance from flowing to the project categories at hand.

3. Determine which public interventions and instruments are best positioned to address the identified barriers. It makes sense to consider the types of public

interventions and instruments that are already in place, nationally and internationally, as well as their track records and lessons learned.

Policymakers and climate negotiators should be structuring the discussions on private climate finance in line with the following sequence of questions:

- What is the typical funding profile for each of these project categories? Who are the main financial actors? What kind of private finance is required for successful implementation?
- What are the main barriers currently keeping private capital from these project categories, noting that barriers are often specific to the kinds of finance required?
- What kinds of existing public intervention have successfully overcome these barriers? Can they be strengthened, expanded or copied with the support of the global climate regime including its GCF?

Following this logic the international debate on climate finance can deliver sufficiently nuanced insights regarding the public interventions best positioned to unlock private financial flows for mitigation and adaptation.
To illustrate this Part B of this report applies the above approach to the three project categories mentioned above. Some of the indicative results regarding approaches for public intervention are summarised in Table 2

TABLE 2: POTENTIAL PUBLIC INTERVENTIONS TO MOBILISE PRIVATE CLIMATE FINANCE ACCORDING TO PROJECT TYPE

Barrier	Potential Policy Interventions	Examples of Existing Interventions
1. Large-scale grid-based RE		
Cost, specifically the uneven playing field between RE and conventional options, and the lack of adequate and reliable policy support	Revenue support that ensures economic viability. Examples include feed-in or auctioning tariffs for RE generation, and RE quotas. Cost sharing in project development phases. Examples include exploration support facilities, seed finance, etc.	In India, South Africa and Brazil auction tariff systems have proven effective at attracting renewable energy developers with very low price bids. For example, the December 2013 reverse auction in Brazil selected 97 wind projects totalling 2.3GW of capacity and other renewable energy projects totalling 1.2GW with winning wind bids averaging $51.50 per MWh. To address the high transaction costs of geothermal development the Government of Indonesia has developed a $145 million geothermal fund from the national budget to undertake exploration before tendering geothermal working areas. The Seed Capital Assistance Facility (SCAF) managed by UNEP with the Asian Development Bank and the African Development Bank works with commercial private equity funds to seed-finance renewable energy project developments in Africa and Asia.
Elevated off-take risks	Partial risk guarantees and off-take risk insurance to backstop power purchase agreements.	World Bank Partial Risk Guarantees cover off-taker risks and have a strong leverage to avoid default due to an indemnity agreement that must be provided by the host government. They usually come in the form of either 6-12 month late payment guarantees or termination payment guarantees that backstop utility power purchase agreements with lenders.
Lack of local currency financing	Facilitate the engagement of local as well as foreign financiers through, for example, the provision of currency hedging instruments and mobilising institutional investment (e.g. through issuing and placing project bonds).	The European Investment Bank's project bond credit enhancement (PBCE) instrument aims to enhance the creditworthiness of European infrastructure projects by issuing project bonds to institutional and other investors. Credit enhancement takes place in the form of a subordinated debt instrument to support the senior debt issued by the project company. To cover the long-term currency exchange risks that companies and financiers face in developing countries the Dutch Ministry for Development Cooperation supported with public finance the development of the Currency Exchange Fund (TCX). The currency fund offers cost-effective hedges for local currencies, which would otherwise not be available in the commercial foreign exchange markets.
Investment environment risks: the issue of broader political and policy risk	Address the risk of general unfavourable conditions such as political instability, the risk of war and civil unrest.	The Multilateral Investment Guarantee Agency (MIGA) of the World Bank offers political risk insurance guarantees that help investors protect foreign direct investments against political and non-commercial risks in developing countries. The U.S. Overseas Private Investment Corporation (OPIC) has recently piloted a policy risk insurance product for U.S. developers focusing on clean energy projects in developing countries. Insurance can help provide comfort to investors about policy risks, particularly retroactive changes, and guarantee that the project will receive support as agreed.
2. EE in operation and production processes		
The lack of familiarity of third-party financiers with EE and with ESCOs.	Instruments that enhance the attractiveness of EE projects to third-party financiers. Examples include subsidised public loans to commercial banks for on-lending to energy efficiency activities, and risk sharing mechanisms focused on energy efficiency (including partial credit and partial risk guarantees).	Thailand's Energy Efficiency Revolving Fund was established in 2003 to leverage private finance for energy efficiency projects. The fund provides interest-free loans to local banks, which then provide low-interest loans for energy efficiency projects. The duration of the loan is 7 years and the interest rate is capped at a maximum of 4% (negotiable). Eligible borrowers include industrial and commercial facility owners, ESCOs, and project developers. The Bulgarian Energy Efficiency Fund (BEEF) offers partial credit guarantees (80% on a parri passu basis and 50% on a first loss basis), as well as portfolio guarantees for ESCOs and for the residential sector. The ESCO portfolio guarantee covers up to 5% of defaults of the delayed payments of an ESCO portfolio. With this guarantee an ESCO can get better interest rates on its debt with commercial banks.
EE interventions compete with revenue-generating activities for scarce capital, and there are hidden costs	Measures that increase the profitability of EE improvements. Examples include fiscal incentives, the reduction of energy-related subsidies that keep energy prices artificially low, and utility-mediated payment schemes for energy savings, also known as payments for 'negawatts'	Bankable power purchase agreements (PPAs) for energy efficiency: where utilities agree to purchase the project's energy savings ('negawatts') at a pre-agreed rate. By contracting with a utility to purchase the saved energy, the energy efficiency implementing entity has a bankable and credible contract to get internal management buy-in and to help raise finance from commercial banks. This means that such schemes can significantly increase the profitability of energy efficiency improvements by adding a 'revenue component' to the original 'cost-reduction' component. Furthermore, the presence of a purchase agreement will increase the willingness of third-party financiers such as commercial banks to provide the required financing.
3. Climate-proofing of existing infrastructure		
Difficulty in monetising the benefits of climate-proofing	Adaptation-equivalents to schemes on Payments for Ecosystem Services (PES) that could enable the monetisation of extra-financial, adaptation-related benefits.	While not directly related to climate change, one example is the City of New York which implemented a number of initiatives to guarantee its water supply and water quality. One of the applied instruments was the payment, by the end users of additional fees on their water bills. Together with other measures (bonds and trust funds), the additional funds are used for compensation and conservation programs aimed at protecting the city's forested watersheds. Analogous schemes, where the end-users of infrastructure are required to pay an additional fee, could be considered to cover the costs of climate-proofing investments.

INTRODUCTION TO THE REPORT

1. BACKGROUND AND OBJECTIVES

This report provides a practical synthesis of the constantly growing body of literature on climate finance from private sector sources. The aim is to provide a logical and methodical explanation of the nature of private finance and how it relates to climate change projects. It also aims to contribute to the development of an effective agenda for the international negotiations on the mobilization of private finance for low carbon and climate resilient activities.

It is becoming increasingly apparent that the international climate regime will achieve its objective of transformational impact only if it is able to unlock at-scale private finance and to direct investment to mitigation and adaptation in developing countries. As a result, a great deal of analysis in recent years has focused on the need to mobilise private sector climate finance.

However, it is still necessary to clarify exactly where and why private finance is required to achieve the mitigation and adaptation objectives of developing countries. There is also a need to clarify which kinds of private finance are particularly relevant for which types of mitigation and adaptation activities. Additionally, much of the recent discourse on this subject has tended to view the mobilisation of private climate finance as an end in itself, yet from a government point of view, mobilising private climate finance only represents a means towards the end of facilitating mitigation and adaptation investment at the required scale.

In response, this study leverages existing research and knowledge to provide a practical way of structuring an international agenda on private climate finance. The suggested approach and the information provided in this report will assist climate negotiators, including the members of the Board of the GCF, in the design and implementation of public interventions to mobilise private finance for climate investment.

More specifically, this study aims to achieve the following objectives:

- Fill knowledge gaps and create a commonly understood ‘fact-base’ on private finance;
- Initiate an exploration of which ‘kinds of private finance’ (i.e., which kinds of private financial intermediaries, financial instruments, modalities and channels) are of particular relevance to different categories of climate change mitigation and adaptation projects;
- On the above basis, suggest a sufficiently nuanced and pragmatic approach to designing an agenda for mobilizing private climate finance that reflects the realities and complexities of financial markets and the private finance landscape; and
- Provide an apolitical, pragmatic resource and reference for the negotiations taking place at the GCF Board level and in other multilateral and national forums.

2. STRUCTURE OF THE REPORT

This report is divided into two related parts, Part A and Part B. The content of both parts and their constituent sections is summarised below.

PART A: ESSENTIALS OF PRIVATE SECTOR FINANCE – AN OVERVIEW ACROSS SIX DIMENSIONS

This section presents an overview of the private finance landscape as well as a method for classifying private finance according to different 'dimensions'. It is designed to illustrate how private sector finance works in practice and to provide a common language to discuss its 'mobilization' for climate change mitigation and adaptation activities.

Part A lays the foundation for understanding the unique features of different types of private finance. This is a key condition for analysing, in Part B, which kinds of private finance are particularly relevant for different types of climate change mitigation and adaptation activities. An understanding of this connection is crucial when it comes to choosing the most effective and appropriate forms of public intervention.

Part A addresses the following questions:

- What is private finance? What is a working definition of this concept?
- What are useful ways of classifying private finance categories according to key features and differences?
- How do key actors in the financial landscape relate to each other?

PART B: STRUCTURING A NUANCED AND EFFECTIVE AGENDA ON MOBILIZING PRIVATE CLIMATE FINANCE

Building on the overview of private sector finance in Part A, this part of the report explains the typical financing needs of different categories of climate change mitigation and adaptation projects. In other words, it deals with the kinds of private finance required for successful implementation of these projects.

Part B highlights the fact that the effective design and implementation of public interventions needs to be guided by a more nuanced understanding of the current barriers to the flows of private finance in developing countries. These barriers, in turn, depend on the type of private finance required, as well as the location of the activity. Finally, the type of appropriate private finance depends largely on the kind of mitigation and adaptation project at hand. Of particular importance are the size of the project, the maturity of the underlying technology, and the maturity, depth and breadth of the domestic financial market.

Part B demonstrates that to be effective, the international agenda on mobilising private climate finance needs to reflect the diversity and complexity of financial markets (described in Part A), and it needs to be structured according to a logic and method that:

- Considers fundamental parameters in the target countries, including their overall state of development and the maturity of the domestic financial system, as well as the size of the project and the maturity of the underlying technology to be supported.
- Analyses the kind of private finance most appropriate and best connected to a specific jurisdiction / technology combination, as well as the specific barriers that inhibit this kind of private finance from flowing under current market and regulatory conditions.

- Completing the first two steps is a prerequisite to identifying and selecting the public interventions best positioned to address the identified barriers, considering the types of interventions that already exist at the international and national level, as well as their track record and any lessons learned.

To make this assessment concise and easy to understand, the report presents this approach in an illustrative manner. It is not possible to deal with an exhaustive list of projects in this document. Rather, the report outlines three project categories in order to explain an underlying logic that can just as easily be adapted to other types of projects and funding situations. The three categories are:

- Large-scale grid-based renewable energy;
- Energy efficiency improvements in corporate operations and production processes; and
- 'Climate-proofing' of existing infrastructure.

The chosen examples have been selected deliberately to highlight the extreme diversity and complexity of the landscape of private finance and spectrum of mitigation and adaptation projects. Part B aims to address the following questions for each of these project categories:

1. What is the typical funding profile of these projects, including the main financial actors typically involved and the types of private finance required to successfully implement such projects?
2. What are current major barriers that prevent private capital from flowing into these projects, noting that often barriers will be specific to the kind of finance targeted?
3. What types of public intervention already exist and have been successfully implemented to address these barriers?

Finally, the concluding section of the report discusses the unique potential and role of the international climate regime, including the GCF as its main financial instrument in resolving these barriers.

The report argues that this logic (sequence of questions) can and should be applied to any other climate change project or activity that public authorities and governments, including international vehicles like the GCF, wish to further support and enable. Subsequent UNEP FI studies on private climate finance will apply this approach to a greater number of climate change projects considered to be key in enabling economies to adapt low-carbon and climate-resilient pathways. By focusing on more specific subsets within the universe of mitigation and adaptation activities, these UNEP FI exercises seeks to provide increased nuance and breadth. One of these studies, for example, is designed to 'demystify private adaptation finance' and as such, focuses on a series of 'project types' oriented to adaptation.

PART A: ESSENTIALS OF PRIVATE SECTOR FINANCE – AN OVERVIEW ACROSS SIX DIMENSIONS

This section explains the common features, i.e. the 'common denominator,' across all types of private finance. It provides an overview of the entire private finance landscape and suggests a simple method to classify different forms of private finance. Beyond defining private finance, Part A discusses how various types of private finance and financial actors differ from each other. This is achieved by using a system of six dimensions to characterise, categorise and explain private finance in an accurate yet quick and practical manner.

The intention is to provide an understanding of private sector financial flows that is sufficiently nuanced to provide the foundation for a methodical and effective discussion on the international agenda on private climate finance.

1. DEFINING IT – THE COMMON DENOMINATOR ACROSS DIFFERENT TYPES OF PRIVATE FINANCE

Despite its increasing prominence in the climate change agenda in recent years, private sector finance remains a nebulous concept among climate practitioners and is interpreted differently by different actors. A number of studies provide academic and technical definitions for the concept.[1]

In keeping with its spirit as a practical guide, the report provides a set of working principles that, taken together, provide a definition of private finance. These are set out as follows:

- The source of private finance is the savings of individuals and corporations (natural and legal entities). Often, these savings are managed, pooled and invested through intermediaries such as banks, portfolio management firms, and/or pension funds.

- Based on the savings of depositors, banks, through their activities as intermediaries, create money known as 'fiat money', 'sight deposits', or 'chequebook money'.[2] The amount of fiat money that banks are able to generate depends largely on the maturity of electronic payment and transaction systems, as well as the monetary policy applied by the corresponding central bank.

- The primary motive of this kind of investment is to realise a risk-adjusted return for the providers of the funds (the corporate or household 'savers'). Co-benefits such as sustainable development outcomes may be explicitly or implicitly included as related motives or filters for investment. While there may be mandates and motives for investing in specific sectors or types of projects, the financial viability of the investment, as well as the expectation of a financial

1 Climate Policy Initiative, The Landscape of Climate Finance 2012, 2012, http://climatepolicyinitiative.org/wp-content/uploads/2012/12/The-Landscape-of-Climate-Finance-2012.pdf;

Overseas Development Institute, Leveraging private investment: the role of public sector climate finance, 2011, http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7082.pdf;

World Resources Institute, Public financing instruments to leverage private capital for climate-relevant investment: Focus on multilateral agencies, 2012, http://www.wri.org/sites/default/files/pdf/public_financing_instruments_leverage_private_capital_climate_relevant_investment_focus_multilateral_agencies.pdf.

2 These terms refer to the general process of the creation of money that is not backed by an intrinsic commodity, but rather by government decree. For more information, see: Foster, R.T., 2010. Fiat Paper Money: the History and Evolution of Our Currency.

return that justifies the risk involved, are the over-riding principles governing the investment. The specific mandate provided to intermediaries is often specifically stated in terms of a fiduciary responsibility to maximise benefits to the group.

As stated previously, these 'working principles' highlight the commonalities across all types and classes of private finance. A nuanced understanding of financial markets requires an understanding of the key features that differ from each other according to the distinct types and forms of private finance. The following section aims to achieve this using a set of six 'dimensions':

1. The **legal nature** of the financial transaction
2. The **seniority** of the transaction and the associated **risk profile**
3. The **channel** through which the flow of finance is arranged and the i**ntermediary actors** through which it is provided
4. The **term or tenure** of the financial arrangement, which is closely linked to the **liquidity** of the underlying asset and to the capital that banks are required to hold to back up loans.
5. The **ultimate source** of the financial resource and its **origin**
6. The **knowledge of use of proceeds** related to the transaction.

2. DIGGING DEEPER – THE KEY DISTINCTIONS BETWEEN DIFFERENT KINDS OF PRIVATE FINANCE

Private money can be invested in a number of different ways, irrespective of the objective of the project, i.e. whether it is climate-related or not. The flows of private finance can be classified and studied from a number of different perspectives.[3] This report presents a method of classification through the six dimensions listed above[4]:

EQUITY FINANCE

1. The first dimension, legal nature, distinguishes between two types of finance; equity and debt. Equity finance is used to acquire a permanent share (also known as 'stock') in the ownership of a corporation or a project. This is permanent in the sense that it can only be disposed of by selling it to another party or if the company buys it back. Equity (shares) can be understood according to the five remaining dimensions as follows;
2. Equity can be split by level of seniority i.e. the order in which the returns on the equity are distributed to shareholders. There are two categories of shares:

3 See Climate Policy Initiative, The Landscape of Climate Finance 2012, 2012, http://climatepolicyinitiative.org/wp-content/uploads/2012/12/The-Landscape-of-Climate-Finance-2012.pdf;

Overseas Development Institute, Leveraging private investment: the role of public sector climate finance, 2011, http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/7082.pdf;

World Resources Institute, Public financing instruments to leverage private capital for climate-relevant investment: Focus on multilateral agencies, 2012, http://www.wri.org/sites/default/files/pdf/public_financing_instruments_leverage_private_capital_climate_relevant_investment_focus_multilateral_agencies.pdf

4 The information presented here is intended to provide a wide overview of the landscape of private sector finance. It is a synthesis of secondary literature on finance and the views of KPMG experts. Where necessary, specific references and sources have been quoted. Unless otherwise identified, the information contained has been developed through original thinking and subject matter expertise from KPMG professionals.

- *Ordinary shares*: These provide the right to a share of the profits and to voting on company matters, but have no preference rights i.e. no preferential claim to the returns on the investment.

- *Preference shares*: These have preferential rights (e.g. in the order in which dividends are paid), but may have some restrictions on these rights (e.g. on reinvesting rights). Generally, they are accounted for as debt.

The relative seniority of these categories corresponds to the varying degrees of risk appetite of the investors. Risk-averse investors (or in the case of investors with a diversified portfolio, the portion of the investment directed towards lower risk investments) tend to invest at least some portion of their investment in preference shares, since they provide priority in the distribution of returns (making it worthwhile for the investor to pay a higher price for preference shares). Investors with a higher appetite for risk tend to prefer ordinary shares. These provide no preference in the order of distribution of dividends, but they are usually less expensive.

1. Equity finance can be received through a number of different channels, each of which involves different actors. The two principal channels are privately raised funding and publicly raised funding[5]:

- **Privately raised funding**: this involves 'direct' injections of equity capital into a company or project, in which financing is not arranged through a stock exchange. By their nature, the companies that typically attract private equity finance tend to be un-listed, i.e. their stock is not traded on a public exchange. Often financing takes the form of a Special Purpose Vehicle (SPV)[6] for a specific project. Depending on the maturity and track record of the company or technology invested in, private equity finance may have different names:

  - *Angel capital* is private equity finance provided to companies, technologies, or projects that are particularly small, new, and hence, risky. Such early stage investments are usually very high risk and experience high failure rates. However, if they succeed, they expect very high returns. The key actors tend to be wealthy individuals, whose investment are sometimes facilitated by family offices or groups of individuals)

  - *Venture capital* is another form of private equity finance for early-stage investment, although it is usually in a more organised form than angel capital. The key actors tend to be groups of wealthy individuals and specialised teams of venture capitalists who target returns that are multiples of their original investment. The high returns are seen as compensation for the high risk of investing at an early-stage.

  - *Private equity capital* usually involves later stages of investment and is often sourced from pooled funds. The key actors are private equity firms, which can range from very small to very large (both with respect to the number of people involved and the assets under management). Since these investments tend to be made at a more mature stage in a project or company development, they involve lower risks and the expected return is also likely to be lower than that of angel investors or venture capitalists. Nevertheless the risk-return profile associated with private equity is still likely to be higher than that associated with public equity finance.

5 Information sourced from KPMG surveys conducted for the South African Venture Capital Association, available at: http://www.savca.co.za/research-and-resources/savca-kpmg-private-equity-industry-survey/

6 A special purpose entity is a legal entity created to fulfil a specific but limited use. The entity is separate from the parent company for tax and legal reasons and is typically used by companies to isolate the firm from financial risk.

- **Publicly raised funding:** this is an injection of equity made through an Initial Public Offering (IPO) or capital that is raised through stock markets. It provides a common platform on which individuals and companies can buy shares of a company listed on a stock exchange. The companies that attract public injections of equity tend of be large corporations, often multinationals, with significant balance sheets. The key actors in this case are individuals, asset managers and institutional investors who hold the funds and investment brokers, who conduct research and act as intermediaries between the buyer of shares and the stock exchange; and banks, which provide their own platforms for accessing the stock exchange.

2. When it comes to term or tenure and the corresponding liquidity of the underlying asset, equity investments are permanent capital for the recipient. However, shares can be traded by the owner of the equity. Holders of privately invested equity shares tend to keep them invested longer than owners of publicly traded ones. This is due primarily to the higher search and transaction costs of changing ownership of privately invested equity. However, even with privately invested equity, the length of time that different actors will typically hold on to their shares, tends to vary. Angel investors and venture capitalists usually look for a quicker (and higher) return than private equity firms.[7]

Any disposal of privately held equity, particularly if it is through a complex investment vehicle, takes time and incurs transaction costs. That makes this form of equity investment relatively illiquid. There is no formally organised 'market-place' where holders of private equity can actively 'trade' their ownership so any change needs to be privately negotiated. Public stocks, on the other hand, can be held for as little as a few seconds, thanks to electronic trading, or it can be held for years. Because stock markets provide a common platform for buyers and sellers to interact in real time, any divestment in public equity is usually quick and has relatively limited transaction costs. That makes this form of equity particularly liquid.

3. The funds used to make equity investments can come from four main sources (including corresponding intermediaries/actors), as follows:

- *Private and corporate savings*: the savings of individuals or legal entities invested directly in equity.

- *Collective funds* and investment vehicles: individuals and corporations that channel their savings or capital into funds offered by investment managers, including pension funds and insurance companies. These are known as institutional investors.

- *National savings*: governments that channel national savings, collected from taxes and/or other fiscal revenues, through national investment vehicles such as sovereign wealth funds and state-owned investment companies. Since these monies come from tax-payers, as opposed to savers, they are typically not referred to as 'private finance'. However, the manner in which they are invested often resembles the operations of private finance actors, especially institutional investors.

- Interest-generated funds: These are funds, financed by the interest that banks collect through their operations, including 'fiat money', 'sight deposits', or 'chequebook money.'

The geographic (or political) origin of the financing is closely linked to the source of the funds. A fund can be classified as either domestic or trans-boundary, depending

7 Source: KPMG Subject Matter Experts

on the source's geographic location or political situation. The origin of the source for trans-boundary funds may be the North (i.e., from developed countries) or the South (i.e., from developing countries).

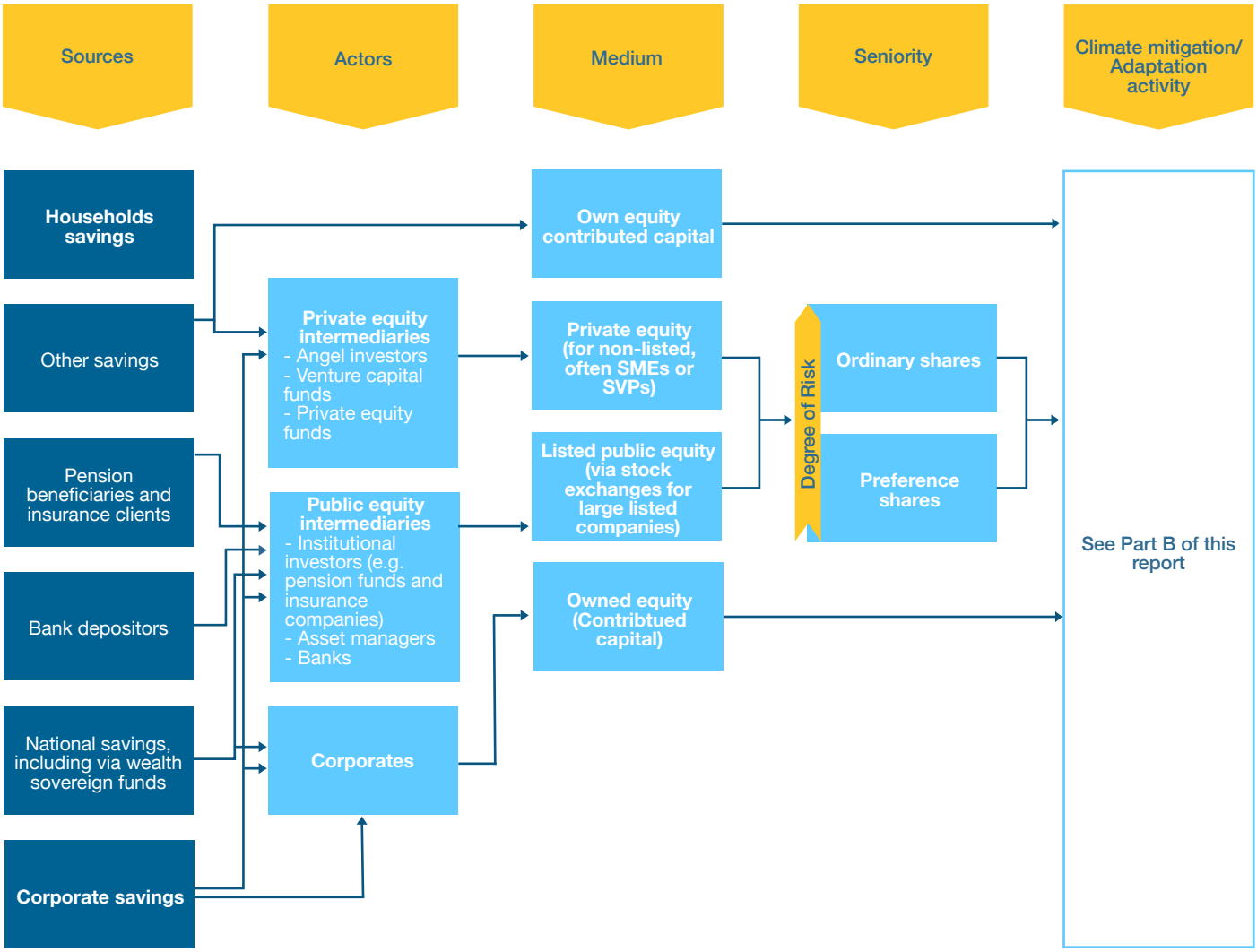
4. Finally, equity transactions can be understood in terms of the financier's knowledge of the use of the funds. At the highest level, a financier will have some knowledge of the use of the funds in order to justify the investment. However, at a lower level, knowledge of the specific purpose for which the funds will be used can give rise to two main types of situations:

- When the funding is for a specific project/physical asset (e.g. renewable energy infrastructure) and the funds are ring-fenced for the sole purpose of that project's activities (e.g. to cover upfront capital expenditure), an investor has a fair degree of knowledge of how the funds will be used. This is generally covered under the realm of 'project finance' (or 'project equity'). Project finance can consist of many different types of funding across the various dimensions and it is often channelled into a Special Purpose Vehicle (SPV), which is created especially for the project. This situation is common for 'privately' channelled equity investments (for more detail see the above section on 'channels').

- When the funding is for a company that has many individual projects but is not connected to any one project in particular, it is harder to identify how the invested funds are actually being used. For example, a diversified energy company may issue shares to fund its working capital requirements without dedicating that funding to a specific project activity. In this case, the finance is granted to the overarching entity, which may be the company. Publicly invested equity investments don't typically provide specific details of how the proceeds will be used in the project.

These six dimensions explain the features of equity finance across different types of investment. Figure 1 highlights the salient elements of how equity finance flows from source to destination.

FIGURE 1: A SCHEMATIC OVERVIEW OF THE TYPICAL[8] FLOWS OF EQUITY FINANCE, FROM ITS SOURCES TO ITS DESTINATIONS.



DEBT FINANCE

1. The legal nature of private finance can take on the form of ownership, or debt. Debt represents a commitment to pay back the capital along with interest, and it thus constitutes a financial service (as opposed to a legal representation of 'ownership' in the case of equity). It is the promise to repay the capital sum and the predetermined return that distinguishes debt from equity. As equity can be analysed across the five remaining dimensions above, debt can be studied in a similar manner:

2. Seniority in the case of debt reflects the order in which creditors i.e. the providers of debt capital are paid out in the event of a default. Generally, debt is more senior than equity; in the event of the liquidation of a company, the obligations to creditors are settled before the owners (the providers of equity) are paid out. Further, more senior debt has a greater level of security and therefore attracts a lower return (in the form of interest) than more junior debt. Security (collateral) can consist of specific assets (e.g. a building) or over the generality of assets.

8 This, and subsequent graphical representations of the flow of finance, are meant to be illustrative of how the various components of the financial system most commonly interact. It is not meant to be definitive or to cover all eventualities, but rather to highlight the salient elements of how finance typically flows in the case in question.

Security over specific assets is generally more senior than over the generality of assets. Different types of debt can also be given different names to reflect the hierarchy of their repayment rights:

- Senior debt: this represents the loans that are paid out once the asset-backed loans have been paid and before any other types of loans are paid.

- Mezzanine/subordinated debt: this represents the loans that are subordinated to senior debt, i.e. are paid out after the senior loans have been paid.

The varying seniority of debt is closely linked to the risk profile/appetite of lenders. Lenders with a higher risk tolerance tend to be attracted to subordinated debt for at least a part of their portfolio as the relatively lower security commands a higher return. More risk-averse lenders usually favour senior debt, which provides greater security but at the expense of a lower return.

3. As with equity, debt can be channelled through different channels and have different actors:

- **Privately**: debt funding may be privately arranged between a borrower and a lender. In this case the instrument is most commonly referred to as a loan. This represents a binding contract between a known provider and a known borrower of funds where a specified amount of money is lent for a set period of time at a pre-determined interest rate. The main actors in this case tend to be:

  - Commercial banks, which provide the majority of debt funding privately through loans. Depending on the purpose of the use of funds and the nature of the transaction, a loan can take many forms, including: personal loan (to finance expenditures by an individual), corporate loan (a line of credit extended to a company), and loans provided to finance the purchase of a specific asset (such as a vehicle loan or a mortgage for a building or property).

  - In a number of countries, Non-Bank Financial Institutions (NBFIs) also make debt finance available to individuals and companies on a private basis. Examples include insurance companies, housing finance providers, pension funds and investment funds[9]. The way these institutions are regulated is different from the usual government policy and oversight of banks. Private debt can also come from trading companies or vendor finance, in which a company lends money to be used to buy the vendor's products or property.

- **Publicly**: debt funding between a borrower and a number of lenders can also be mediated through a public market. Typically, an institution (such as a government or large company) issues a bond in the open market through a public bond exchange, which is similar to a public stock market. In this case, a bond has a specified principal, a term and a specific coupon payment.

An important advantage in this approach is that bonds can be traded on the open market. An individual or institution can sell their position to another investor for a price, based on the attributes, amount, term and coupon payment. For this reason, ownership of the bonds can change many times during the term of finance. In the case of public bonds, the main actors depend on the type of institution issuing the bond. This can give rise to the following:

- *Corporate bond*: The borrower issuing the bond is a company, usually a large company that is listed, or a multinational corporation.

9 For more information on NBFIs, see: http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTFINANCIALSECTOR/0,,contentMDK:22180391~menuPK:6122975~pagePK:210058~piPK:210062~theSitePK:282885,00.html

- *Sovereign bond*: The borrower issuing the bond is a national government.

- *Municipal bond*: The borrower issuing the bond is a municipal-level entity.

The key difference between bonds traded on public debt markets and loans provided through bank debt is that bonds tend to involve larger amounts of capital and are open to the general public for investment. They can be traded, while loans tend to involve smaller amounts and represent a specific transaction between two parties (one is usually a bank). Loans are generally not traded on an open market, although the process of securitisation does allow some trading of packages loans grouped together).

4. Debt investments can be made for different periods of time. The following term or tenure classifications are useful for understanding debt finance although they do not constitute a strict rule:

- *Short*: Less than 1 year. This is common in bank loans, which are usually not traded or refinanced because of their small size and short term.

- *Medium*: Between 1-7 years. This includes some bank debt (loans) as well as bonds, which can be issued by governments or listed corporations.

- *Long*: Repayment is over 7 years (in the case of long-term debt, there may be refinancing before the full term of the debt instrument expires). This kind of debt consists mostly of bonds, which are traded through a public exchange.

5. The funds for debt investments fall under the same classification of sources as equity investments.

- *Private savings*: Bank deposits constituting the savings of individuals that are channelled into debt;

- *Collective funds and investment vehicles*: Savings or capital of individuals and corporations channelled into debt funds offered by investment or asset managers. These are known as institutional investors, prominent among which are pension funds, insurance companies and asset managers;

- *National savings*: Savings of national governments, collected through taxes, which are channelled into projects through national investment vehicles such as sovereign wealth funds, which in turn can invest in projects or companies. Since these monies stem from taxpayers, as opposed to savers, they are not typically referred to as 'private finance'. However, the way in which these monies are invested often resembles the operations of private finance actors, especially institutional investors.

- *Interest-generated funds*: Banks 'create' funds known as 'fiat money', 'sight deposits' or 'chequebook money' through their activities as intermediaries (for which they receive interest) and these funds can be channelled into debt investments.

As with equity, the origin of the funds that are channelled into debt can be domestic or trans-boundary (north or south originating).

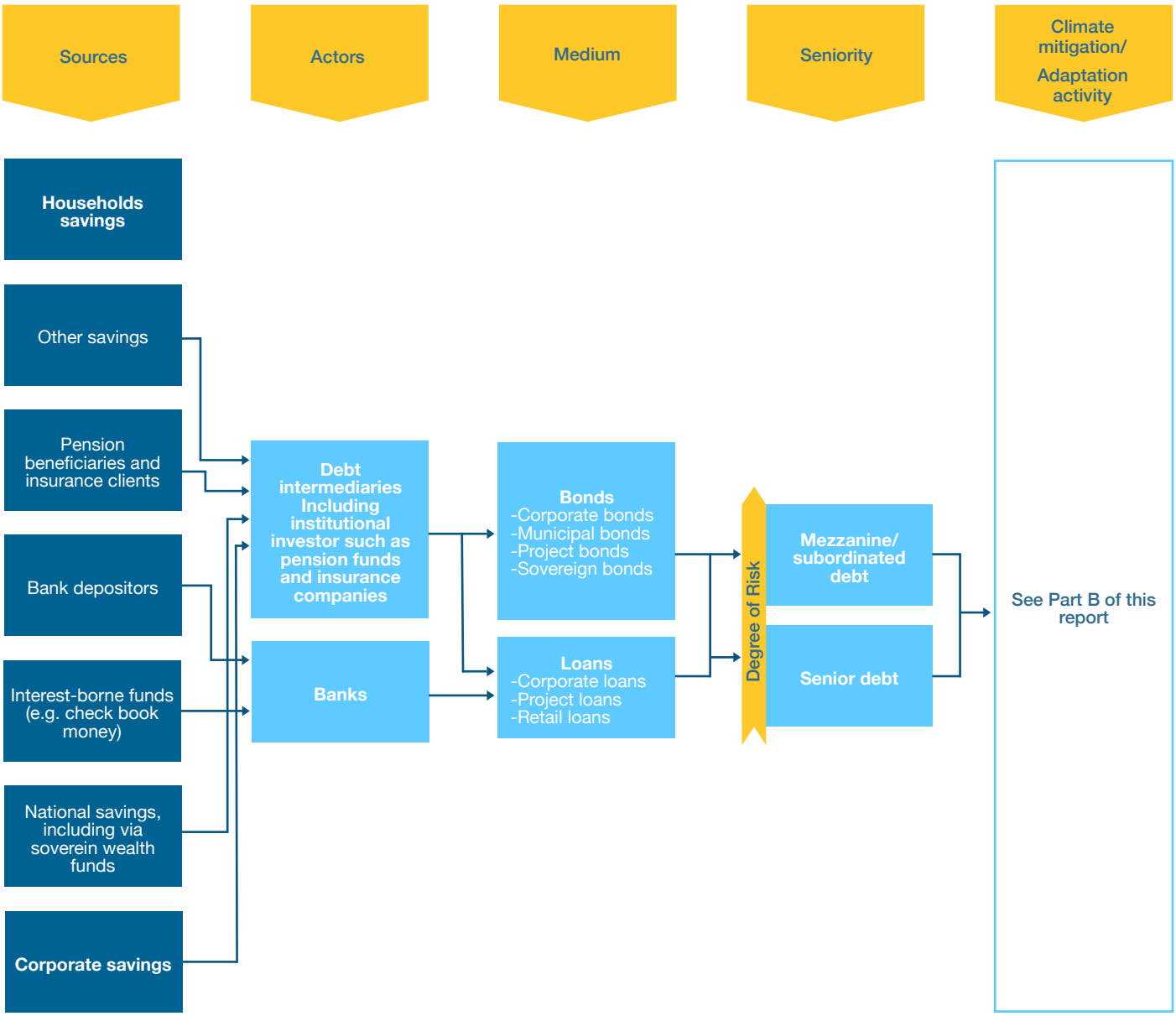
6. Finally, from the viewpoint of the investor's knowledge of the use of funds, debt can be understood from two different perspectives that are closely related to seniority and the security of assets described above:

- How the funds will be used is largely known and clearly defined. In this case, debt is usually provided to finance the purchase of a specific asset. In this case, the debt can be secured against the asset or against contracts associated with the asset. In the case of default the asset can be sold. This is common in the case of Project Finance, and is often known as asset-based finance.

- The eventual use of the funds is not yet determined, or only loosely defined. In this case the debt is often provided to fund the working capital of a company or entity. The debt is usually unsecured and is extended on the basis of the relationship with the recipient and the strength of the balance sheet. This kind of debt is often referred to as corporate finance or entity-based finance. It is not secured by a particular asset.

As with equity, it is useful to view these six dimensions in conjunction with the flow of debt from source to destination. This is provided in figure 2.

FIGURE 2: A SCHEMATIC OVERVIEW OF THE TYPICAL[10] FLOWS OF DEBT FINANCE, FROM ITS SOURCES TO ITS DESTINATIONS



3. THE INVESTMENT VALUE CHAIN – WHERE INVESTMENT AND BANKING SYSTEMS CONNECT

The framework for the six dimensions described in section 2 is intended to outline the multiple features of private finance. Its objective is to provide a context for the study of the role of the international regime in mobilising private capital. The limited scope of this study confines us to a 'linear' approach that favors explanation rather than an attempt to provide an exhaustive description of all the possible permutations in private finance.

10 This, and subsequent graphical representations of the flow of finance, are meant to be illustrative of how the various components of the financial system most commonly interact. It is not meant to be definitive or to cover all eventualities, but rather to highlight the salient elements of how finance typically flows in the case in question.

Within the landscape of private finance institutional investors (e.g. pension funds, insurers, sovereign wealth funds), who often represent the largest discrete pools of capital, are particularly important in providing the finance required for systemic shifts to low-carbon and climate-resilient economies. This has been a prominent area of focus in recent years.

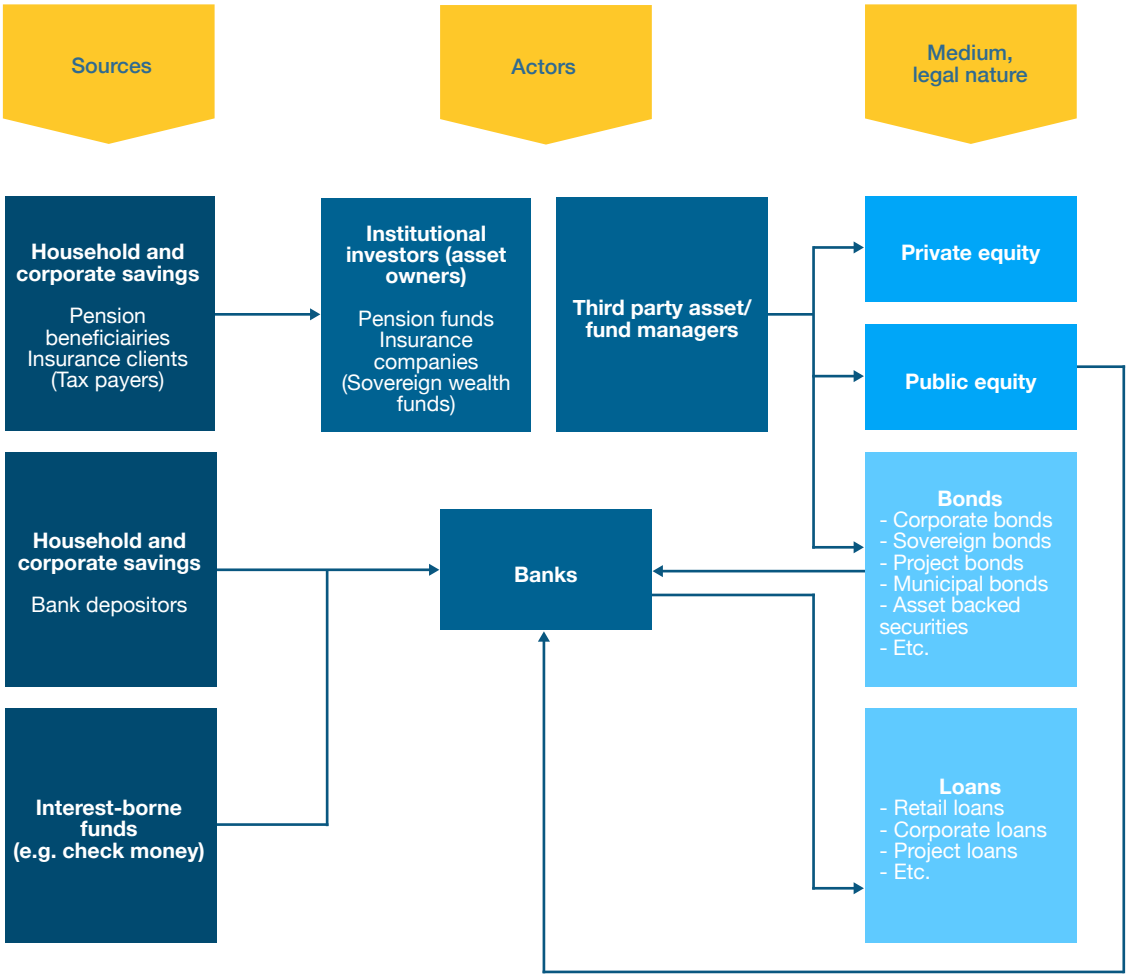
Institutional investors often use pooled investment vehicles[11] to invest on behalf of their beneficiaries (e.g. pension beneficiaries in the case of pension funds). They often outsource the management of their funds to third-party specialised asset management firms which invest in a variety of asset classes ranging from public and private equity to different types of bonds and other fixed-income securities, such as asset-backed securities.

The largest proportion of institutional investment worldwide is allocated to asset classes that feature high levels of liquidity such as public equities and corporate and sovereign bonds. In contrast, more illiquid investment types (or 'asset classes') such as project bonds and private equity investments, especially in infrastructure and real estate, typically attract only a marginal proportion of institutional investment. Being corporations themselves, many banks are listed on stock exchanges and issue public equity and corporate bonds that investors can purchase. Banks can also issue fixed-income securities (e.g. bonds) that are 'backed' by specific segments of their loan books. These belong to the class of 'asset-backed securities' which investors can purchase. This is considered a promising approach when it comes to mobilising institutional capital for infrastructure investment via the 'project finance' pipelines of commercial banks.

Figure 3 demonstrates how banks and institutional investors relate to each other and illustrates the typical financial flows that take place.

11 Funds from many individual investors that are aggregated for the purposes of investment.

FIGURE 3: A SCHEMATIC OVERVIEW OF THE TYPICAL[12] FLOWS OF FINANCE ALONG THE INVESTMENT VALUE CHAIN, INCLUDING ITS INTERFACES WITH THE BANKING SYSTEM



It should be noted that in some instances there is not a clear line between public and private finance. Examples include the monies raised by Governments from capital markets via sovereign bonds; as well as the monies that Sovereign Wealth Funds often use to invest in private companies operating in market contexts.

The next section of this report discusses how an understanding of the nuances and barriers stemming from the complexity of mitigation and adaptation projects can lead to a more structured agenda for international climate finance mechanisms.

12 This, and subsequent graphical representations of the flow of finance, are meant to be illustrative of how the various components of the financial system most commonly interact. It is not meant to be definitive or to cover all eventualities, but rather to highlight the salient elements of how finance typically flows in the case in question.

PART B: STRUCTURING A NUANCED AND EFFECTIVE AGENDA ON PRIVATE CLIMATE FINANCE

Building on the overview of private sector finance in Part A, this part of the report explains the typical (required) flow of private equity and debt finance towards a set of climate-related activities.

Part A discussed the large diversity of sources, intermediaries, mediums and legal natures across the landscape of private finance. Part B will show exactly how this complex landscape 'connects' to mitigation and adaptation projects on the ground. Not all climate change projects are financed equally: different kinds of mitigation and adaptation projects require different forms of private finance to succeed.

The examples of the mitigation and adaption projects included in this report have been deliberately chosen to show that not only is the landscape and spectrum of private finance extremely diverse and complex, but that the same diversity applies to the landscape of the required mitigation and adaptation projects in developing countries.

FINANCING REQUIREMENTS, BARRIERS AND PUBLIC SUPPORT INSTRUMENTS

For this analysis, we have selected three broad categories of climate change projects:

1. Large-scale, grid-based, renewable energy
2. Energy efficiency improvements in corporate operations and production processes
3. 'Climate-proofing' of existing infrastructure

Each of these project categories is dealt with separately in the sections that follow. For each, we have described the typical nature of funding employed according to the six dimensions discussed in Part A. This is followed by a description of the barriers that impede the private financing of such activities, as well as a summary table containing i) the types of instruments that might be used to overcome barriers and ii) case studies where this has been attempted.

1. LARGE-SCALE GRID-BASED RENEWABLE ENERGY INFRASTRUCTURE

This project category covers renewable energy technologies that generate electricity at centralised plants and deliver it to consumers through a transmission and distribution network. This category includes technologies such as:

1. Onshore and offshore wind farms;
2. Large-scale solar PV and solar thermal energy;
3. Hydropower and large-scale tidal power;

4. Geothermal technology; and

5. Biomass energy generation technologies.

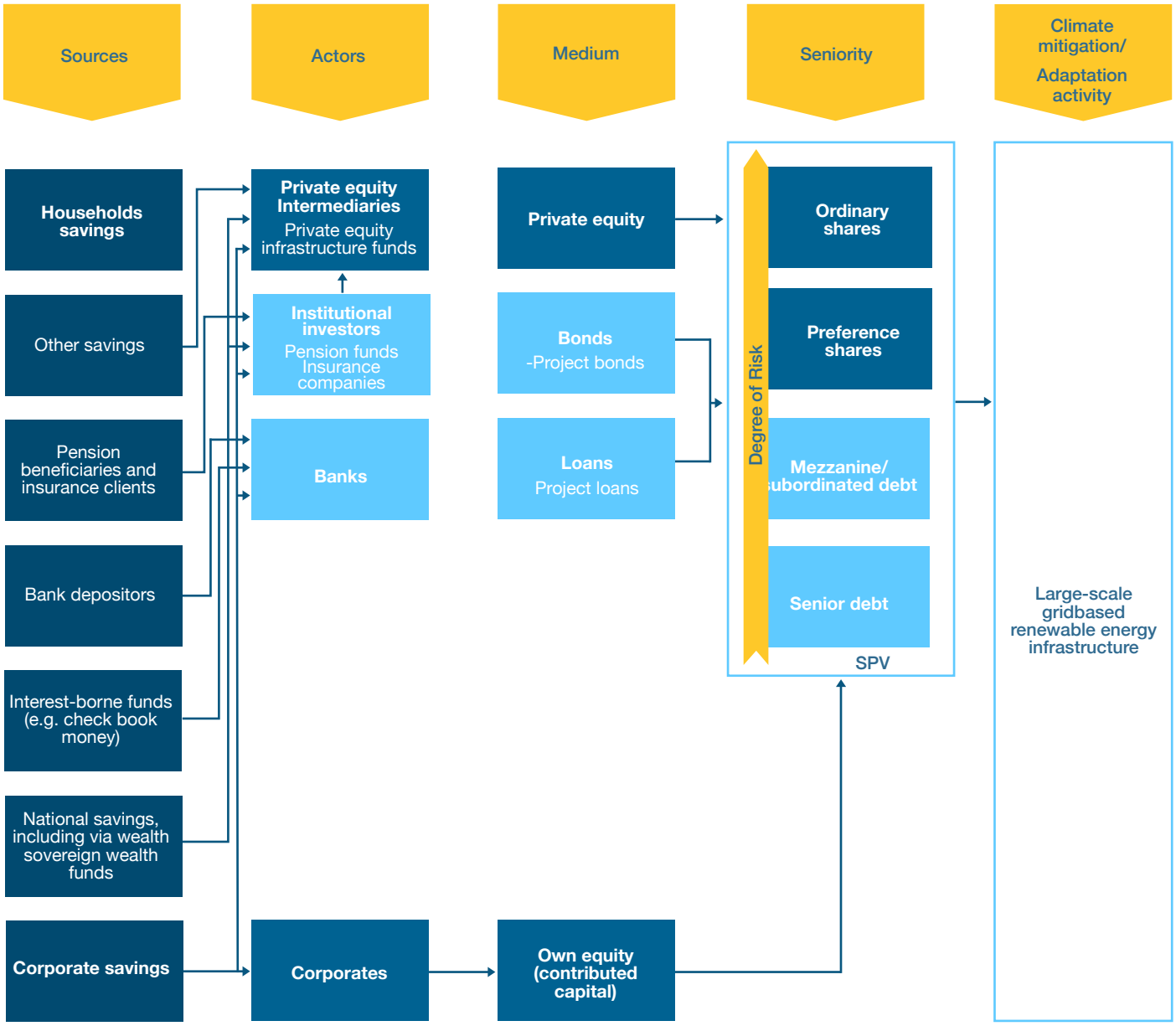
TABLE 3: THE TYPICAL FUNDING PROFILE OF LARGE-SCALE GRID-BASED RENEWABLE ENERGY PROJECTS

Dimension of private finance (from Part A)	Features of large-scale grid-based renewable energy projects[13]
Debt / equity	Often a 70:30 split between debt (typically project loans or project bonds) and private equity provided either by the project sponsor and/or third-party private equity fund (varies widely according to jurisdiction)
Seniority	A mix of senior and subordinated debt is common; no rule of thumb for split between ordinary and preference shares
Medium and actors	The main **equity finance** actors typically are: The project sponsors that provide own equity finance, as well as private equity funds (in particular infrastructure funds) as the providers of third-party equity finance. The main **debt finance** actors typically are: national and international banks with project finance capacities (international banks and investors often play a role because local banks may not be able to get the necessary scale of funding, although international banks may need to hedge currency risk), as well as, in the case that project bonds are issued (typically for very large projects) asset managers and institutional investors as bond holders. Depending on the scale of the project banks may act in syndications to provide the funding - either commercial banks in partnership with a development bank or a group of commercial banks working together under a “lead arranger”.
Term / tenure	Long-term financing (typically 15-20 years or longer).
Source and origin	Varies by country; in more advanced developing countries, the domestic financial institutions may have the necessary scale and experience to provide large-volume project finance to infrastructure projects, whilst in less developed countries, foreign institutions may be required to bring in the required scale and capabilities.
Knowledge of use of proceeds	Generally a project SPV is formed which attracts project finance and there is a high degree of knowledge of the use of proceeds.

This classification can also be seen from the perspective of the flow of finance from sources to destination, as shown in figure 4.

13 Source: KPMG Subject Matter Experts

FIGURE 4: A SCHEMATIC OVERVIEW OF THE TYPICAL FLOWS[14] OF EQUITY AND DEBT FINANCE, FROM ITS SOURCES TO ITS DESTINATION FOR LARGE-SCALE, GRID-BASED, RENEWABLE ENERGY INFRASTRUCTURE.



THE BARRIERS INHIBITING AT-SCALE FLOWS OF PRIVATE FINANCE

a. Capex, the uneven playing field between renewable energy and conventional options, and the lack of adequate and reliable policy support

Large-scale, grid-connected, renewable energy projects by their nature involve significant upfront capital and are long term investments[15]. As a result, they tend to require a large degree of debt funding to reach the required scale of financing. As shown in Part A, in order to be able to comfortably provide lending at the necessary

14 Figure 3 does not mean to imply that all large-scale grid-based renewable energy projects are financed in that manner. The figure only aims to provide a schematic representation of the typical flows of finance from the source to its destination for these type projects.

15 UNEP, Financing renewable energy in developing countries, 2012, http://www.unepfi.org/fileadmin/documents/Financing_Renewable_Energy_in_subSaharan_Africa_02.pdf

scale private-sector financiers need some degree of certainty concerning the cash-flows that the project will generate, and that will ensure the servicing of the debt. The cash flow profile of such projects will be determined by the profitability of the underlying technology and, in particular, the costs associated with developing and operating the asset. When it comes to large, centralized grids, still today electricity generation from renewable sources is generally more costly than from conventional sources (usually fossil fuels).[16] This remains true, despite significant improvements in the financial competitiveness of renewable energy technologies in recent years. In other words: the 'playing field' between renewable and conventional energy technologies is still not level. As a result, renewable energy projects, unless they receive policy support, will have difficulty producing cash-flows and risk-adjusted returns that are competitive with the returns and cash-flows from conventional energy projects. In consequence, renewable energy projects will have difficulty in attracting the private finance required for the investment.

There are a number of reasons why fossil-fuel based technologies financially outperform renewable energy alternatives but an important one is the relatively higher capital-intensity of the latter compared with the former. Despite relatively low 'operations costs' (operational expenditure – OPEX) grid-connected, large-scale renewable energy projects typically involve higher capital investment expenditures (CAPEX) than more conventional energy options. The higher capital intensity means that the investment risk landscape encountered in many developing countries (for more detail refer to the below sections on off-take risks, as well as on regulatory, political, and country risks) will tend to have a particularly negative impact on project cost structure, especially on the cost of capital, in the case of renewable energy projects.[17]

The reasons why renewable energy projects often feature comparably high levels of capital expenditure include the following:

- Appropriate energy sources (e.g. areas where there is sufficient wind or solar intensity) are frequently located at a major distance from the centres of demand (urban areas). As a result, renewable energy projects often require significant investment in transmission and distribution infrastructure.

- Developing a renewable energy project requires extensive data, and this can involve expensive research. Examples include historic weather-related data covering wind, sun radiation and precipitation. This kind of data is often difficult to obtain in developing countries[18]. Obtaining the required data leads to additional cost.

- The transaction costs of renewable energy projects, including resource assessment, siting, permitting, planning, developing project proposals, assembling financing packages, and negotiating power-purchase contracts with utilities may be much larger on a per kilowatt capacity basis than for conventional power plants.

- The absence of an extensive track record of development of large-scale renewable energy projects or uncertainty over their performance (particularly in developing countries) translates into higher upfront costs (as well as high perceived levels of risk).

16 http://www.unepfi.org/fileadmin/documents/catalysing_lowcarbon_growth.pdf

17 UNEP, Financing renewable energy in developing countries, 2012, http://www.unepfi.org/fileadmin/documents/Financing_Renewable_Energy_in_subSaharan_Africa_02.pdf

18 UNEP, in collaboration with a number of partners, has developed the Solar and Wind Energy Resource Atlases http://www.irena.org/globalatlas/, which improve access to, and understanding of, information relevant to solar and wind energy project development through high-resolution maps of solar and wind energy resources.

Given the relative disadvantage of renewable energy projects vis-à-vis fossil-fuel based options, the former often rely on government support mechanisms to succeed. These can range from fiscal incentives to regulations and access policies. One common example is a fixed payment feed-in tariff (FiT) scheme that guarantees that renewable energy suppliers have priority access and dispatch, and sets a fixed price for unit delivered during a specified number of years.[19] Another approach is to hold an auction which sets the tariff levels through a reverse bidding process. This approach has proven effective at driving down costs in countries like Brazil, India and South Africa.

The above means that the 'bankability' of renewable energy projects depends to a large extent on supportive policy and regulatory measures. Domestic policy-makers often fail to put in place such measures, and where they exist they are often perceived by private actors as insufficient, unreliable and hence risky. National governments in many developing countries often lack the capacity and the means to design, implement, and monitor, such support mechanisms.

b. Elevated off-take risks

As stated above, the high CAPEX / low OPEX profile of many types of renewable energy infrastructure results in one significant challenge: The higher capital intensity means higher financing cost and more capital being at risk.[20] One particularly challenging risk category relates to the poor credit-worthiness of the power 'off-taker', i.e. secondary companies that agree to buy the electricity that the project will produce over all or part of its lifetime. The power sectors in many developing countries are poorly capitalised with the main utilities often loss-making due to unsustainable pricing policies and subsidy frameworks, as well as, in some cases managerial, technical and environmental challenges. Banks considering a loan to a renewable energy project will naturally take care to assess whether the power off-taker is financially sound, which is often not the case.

Projects attempting to raise long term financing often require assistance in addressing the elevated off-take risks. The cost of financing is based to a large extent on the perception of the level of risk, including risks related to the financial reliability of the off-taker. Since the private sector is unable to manage the risk on its own, the World Bank, African Development Bank and others have created a number of products that partially guarantee against risk. Different options have different restrictions and costs, and may be applicable to varying degrees depending on the project.

c. Lack of local currency financing

Besides policy support for renewable energy technologies and infrastructure in general, these projects also require capacity in local financial markets to provide project finance at the required scale and term.

In terms of scale, local financial institutions, particularly in less-advanced, developing countries, may not have a substantial enough balance sheet or access to channels needed to provide the large debt volumes typically required for these types of projects.[21]

19 PPAs represent only one type of government support mechanisms for renewable energy. For an explanation on PPAs and other types of support mechanisms, see: http://www.irena.org/DocumentDownloads/Publications/Evaluating_policies_in_support_of_the_deployment_of_renewable_power.pdf

20 UNEP, Financing renewable energy in developing countries, 2012, http://www.unepfi.org/fileadmin/documents/Financing_Renewable_Energy_in_subSaharan_Africa_02.pdf

21 Not all developing countries would be faced with this challenge. Middle-income developing countries may have well developed financial markets that can provide financing-at scale, whereas low-income and least-developed countries are more likely to lack the necessary scale.

In addition to high-volume financing, large scale renewable energy projects frequently require a range of services, which can evolve along the lifecycle of the project. Financial markets in developing countries, particularly in the least developed countries, may lack the capacity to meet these needs. Finding a suitable vehicle for refinancing is a common unmet need. Re-financing vehicles allow for the interim sale of assets from one financier to another in 'mid-flight' and can help release the project from debt or change the funding structure to better suit project requirements. This kind of vehicle is important in the case of large renewable energy projects since they tend to involve long-time periods up to 20 years or more. When combined with the heightened risk profile of such projects, the long term may exceed the appetite of financiers to remain exposed for the entire period. Developing country financial markets tend to have less experience in creating refinancing vehicles or in dealing with them.

A lack of long-term financing also hinders the development of large-scale renewable energy infrastructures, especially in developing countries.

The lack of scale and longevity in domestic financial systems, particularly in low-income developing countries, often results in a reliance on foreign actors to provide financing at the necessary scale. However, while foreign investment is often encouraged, macroeconomic risks, especially foreign exchange instability, may impede the flow of foreign financing unless cost-effective hedging options are available. The corresponding costs of hedging also add to the overall cost of capital associated with the technology. Given that renewable energy projects tend to feature higher capital costs than conventional energy projects (see above), the need for hedging can be particularly inhibiting.[22]

d. Investment environment risks: the issue of broader political and policy risk

The barriers that are specific to financing large-scale, renewable energy projects are enough to discourage most financiers, but a wide range of non-renewable-energy specific political and regulatory risks in both developed and developing countries exacerbate the difficulties even further. Either set of challenges (the technology-specific barriers or the country-specific risks) may not be enough to block a project on its own, but combined, they significantly reduce the attractiveness of renewable energy projects for most financiers.

Investment environment risks can take many forms. Many developed and developing countries suffer from unfavourable business conditions.[23] These include; political instability, the risk of war and civil unrest, high levels of corruption, which can be found in both public and private sectors and unfavourable government interventions such as breach of contracts.[24] When the risk associated with renewable energy projects is already high, these compounding factors tend to drive investment away.

In particular, investors may be unsure about how long governments will continue to provide the regulatory mechanisms that are critical to enabling renewable energy investment. There is a history of unstable and unpredictable regulatory changes in many developed and developing countries alike.[25] As discussed above, one of the main risks for investors is the likelihood that policies and incentives underpinning investments in renewable energy projects may be altered or reversed, rendering

22 For an example of a case study where the requirement for financing in local currency and its impact on the attractiveness of the project, see: https://www.tcxfund.com/sites/default/files/a_powerful_case_for_local_currency.pdf

23 Source: UNEP and Partners, 2009

24 See Baldwin, Political risk in sub-Saharan Africa, 2006.

25 For an explanation on the impact of regulatory frameworks on growth and investment, see: https://dspace.lib.cranfield.ac.uk/bitstream/1826/1455/1/Impact%2520of%2520regulation-Economic%2520growth-March06.pdf)

renewable energy projects suddenly unviable and leaving investors with stranded assets. The fact that public actors play a key role in enabling private actors to deploy, install, operate and finance renewable energy technologies makes it imperative that project sponsors and financiers have confidence that these incentives will remain in place over the life-time of a project and that public institutions and the legal system are stable and can be trusted.

TABLE 4: SUMMARY OF BARRIERS AND EXAMPLES OF PUBLIC INTERVENTIONS AIMED AT MOBILISING PRIVATE SECTOR FINANCE FOR LARGE-SCALE GRID-BASED RENEWABLE ENERGY

Barrier	Public intervention that can be made	Expected result of the intervention	Illustrative case study
a. Cost, the uneven playing field between renewable energy and conventional options, and the lack of adequate and reliable policy support	Revenue support that ensures economic viability of renewable energy projects; Examples: - Feed-in or auctioning tariffs for renewable energy generation - Renewable energy quotas - Fiscal incentives	Provide sufficient level of revenue s needed to meet minimum risk adjusted return requirements	In India, South Africa and Brazil auction tariff systems have proven effective at attracting renewable energy developers with very low price bids. The December 2013 reverse auction in Brazil selected 97 wind projects totalling 2.3GW of capacity and other renewable energy projects totalling 1.2GW with winning wind bids averaging $51.50 per MWh. In November 2013 South Africa used an auction to select 1.5GW of renewable energy projects, with winning bids averaging $72 per MWh for wind plants, and $97 per MWh for photovoltaic plants.[26] If existing regulations for renewable energy in developing countries are too weak or risky to mobilise private finance, international support can be used to strengthen the regulatory mechanisms at hand (for instance, by 'topping-up' levels of existing feed-in tariffs). This is the rationale underpinning Deutsche Bank's GET FiT idea developed in 2010; in the meantime, a successful pilot scheme has now been implemented in Uganda with support from the governments of Germany, the UK, Norway as well as from the European Commission.
b. Elevated project development and transaction costs	Share and lessen risks and/or (transaction) costs of project development; Examples: - Exploration support facilities - Seed finance	Increased volume of project development activity and, over time, decreased transaction cost barriers.	To address the high cost and riskiness of geothermal development the Government of Indonesia has developed a $145 million geothermal fund from the national budget to undertake exploration before tendering geothermal working areas.[27] The Seed Capital Assistance Facility (SCAF) managed by UNEP with the Asian Development Bank and the African Development Bank works with commercial private equity funds to seed-finance renewable energy project developments in Africa and Asia. Tanzania recently established a standardised power purchase agreement for small-scale renewables that helps lower the development risk of projects up to 10MW in size.
c. levated Off-take risks	Interventions to backstop power purchase agreements; Examples: - Partial Risk Guarantee - Off-take risk insurance	Increased credit-worthiness of the off-take agreement will lower the overall project risk and thereby increase access to debt financing.	World Bank Partial Risk Guarantees cover off-taker risks and have a strong leverage to avoid default due to an indemnity agreement that must be provided by the host government. They usually come in the form of either 6-12 month liquidity (i.e., late payment) guarantees or termination payment guarantees that backstop utility power purchase agreements with lenders. The African Trade Insurance Agency offers instruments that can be used to protect projects against utility non-payment. Their products are more commercial with faster decision making processes, however the instrument is slightly less powerful in avoiding default as a government indemnity is not required.

26 Global Trends in Renewable Energy Investment 2014, Frankfurt School-UNEP Centre/BNEF. http://fs-unep-centre.org/publications/gtr-2014

27 World Resources Institute, Mobilizing Climate Investment – The Role of International Climate Finance in Creating Readiness for Scaled-up Low-carbon Energy, 2013, http://www.wri.org/sites/default/files/pdf/mobilizing_climate_investment.pdf

TABLE 4 CONTINUED

Barrier	Public intervention that can be made	Expected result of the intervention	Illustrative case study
d. Lack of local currency financing	Interventions to facilitate the engagement of local as well as foreign financiers; Examples: - The provision of currency hedging instruments, particularly for countries not sufficiently covered by commercial hedging options, to mobilise appropriate forms of foreign financing. - Interventions that enable (in particular domestic) institutional investment to flow to such projects – for instance: support to the issuance and placement of project bonds (see Figure 3).	- Enable domestic lenders to offer higher-volume and longer-term finance. - Mitigate currency risks which are often detrimental to the mobilisation of foreign finance. - Mobilise (in particular domestic) institutional investment by enabling the issuance and placement of project bonds.	- Mobilise institutional investment, particularly domestic, by enabling the issuance and placement of project bonds: The European Investment Bank's project bond credit enhancement (PBCE) instrument aims to enhance the creditworthiness of European infrastructure projects to facilitate the funding of their investment requirements by issuing project bonds to institutional and other investors. Credit enhancement takes place in the form of a subordinated debt instrument to support the senior debt issued by the project company. The expected result is an increased availability of private sector financing from the capital markets to finance key infrastructure.[28] - Mitigate currency risks: To cover the long-term currency exchange risks that companies and financiers face in developing countries the Dutch Ministry for Development Cooperation supported with public finance the development of the Currency Exchange Fund (TCX). The currency fund using public money offers cost-effective hedges for local currencies, which would otherwise not be available in the commercial foreign exchange markets.[29]
e. Investment environment risks: the issue of broader political and policy risk	Addressing the risk of general unfavourable conditions such as political instability, the risk of war and civil unrest. Examples: - Policy Risk Insurance - Insurance against changes in policies	Reduce country risk premium, thereby lowering the overall cost of funding.	The Multilateral Investment Guarantee Agency (MIGA) of the World Bank is an international financial institution, which also offers political risk insurance guarantees that help investors protect foreign direct investments against political and non-commercial risks in developing countries.[30] With regards to the risks of policy change, the U.S. Overseas Private Investment Corporation (OPIC) has recently piloted a policy risk insurance product for U.S. developers focusing on clean energy projects in developing countries. Insurance can help provide comfort to investors about policy risks, particularly retroactive changes, and guarantee that the project will receive support as agreed.[31] Another approach to mitigate a variety of different investment risks is to combine both private and public capital in a public-private partnership (PPP) by setting up a tiered risk-sharing structure, or 'waterfall'. The liabilities of a waterfall-structured fund consist of several types of tranches with different degrees of risks. While private investors could invest in less risky senior tranches, public sector investors may hold more risky junior tranches. This type of structure mitigates risk for private investors, thereby helping to leverage private capital for what may be considered excessively high-risk investments without the capital provided by public sector investors.

28 European Investment Bank, An outline guide to Project Bonds Credit Enhancement and the Project Bond Initiative, 2012, http://eib.europa.eu/attachments/documents/project_bonds_guide_en.pdf;

29 UNEP, Catalysing low-carbon growth in developing economies, Public Finance Mechanisms to scale up private sector investment in climate solutions, 2009 http://www.unepfi.org/fileadmin/documents/catalysing_lowcarbon_growth.pdf;

30 Ibid.

31 WEF, The Green Investment Report, The ways and means to unlock private finance for green growth, A Report of the Green Growth Action Alliance, 2013 http://www3.weforum.org/docs/WEF_GreenInvestment_Report_2013.pdf

2. ENERGY EFFICIENCY IMPROVEMENTS IN CORPORATE OPERATIONS AND PRODUCTION PROCESSES

This category covers projects/activities that reduce the amount of energy consumed by industrial and business entities in their operations and production processes (excluding building energy efficiency in this case).[32] This category includes projects such as:[33]

1. Industrial process efficiency (e.g. motor and steam systems);
2. Process heat recovery;
3. Measurement and control systems;
4. Electrical motors and transformers;
5. Space heating; and
6. Energy-intensive process equipment.

The typical funding profile of such projects, in line with the landscape of private sector finance presented in Part A of this report, includes:

32 For an overview of the types of energy efficiency projects supported through public funding, refer to: http://www.iea.org/policiesandmeasures/energyefficiency/?country=South%20Africa

33 Source: European Bank for Reconstruction and Development (EBRD), 2013. Available: http://www.ebrd.com/downloads/research/factsheets/industriale.pdf

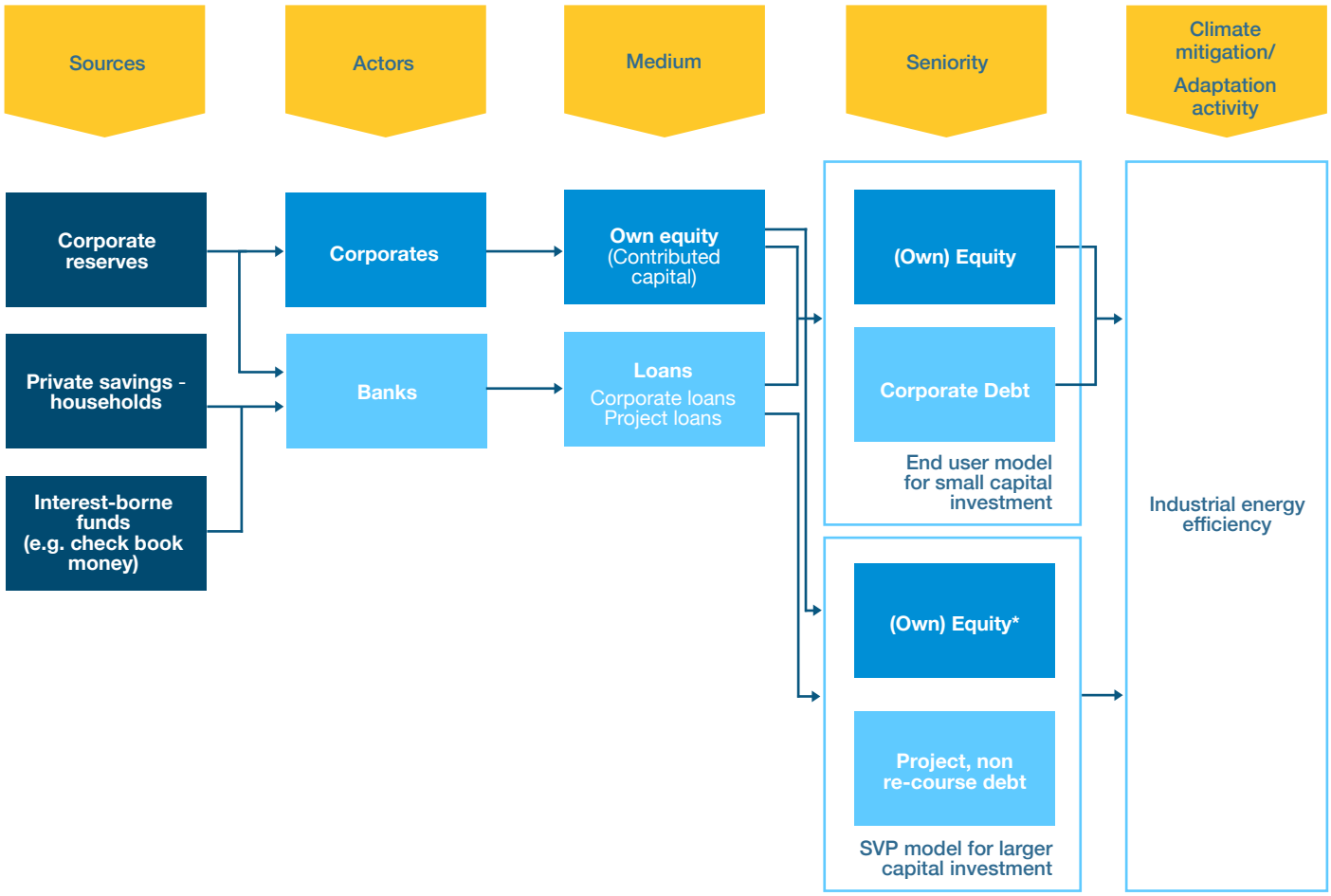
TABLE 5: THE TYPICAL FUNDING PROFILE OF INDUSTRIAL ENERGY EFFICIENCY PROJECTS

Dimension of private finance (from Part A)	Features of industrial energy efficiency projects [33]
Debt/equity	The debt/equity split for industrial energy efficiency projects is dictated by the type of intervention and the parties involved. If the energy efficiency intervention is relatively small and diffuse, the initiative will often be funded by the project sponsor through its corporate balance-sheet. This means that the underlying finance will typically stem from corporate credit lines ('corporate finance' provided by banks) and/or from the equity capital of the company at hand. This, in turn, means that from the outside (the perspective of third-party financiers, for instance) there would be little 'knowledge of the use of proceeds' (see below) and it would be difficult to determine any typical split between the amounts of debt and equity ultimately channelled into such EE activities. If, however, the energy efficiency intervention is being applied to a single installation or a relatively few sites and each intervention represents a sizeable project in itself (or there is scope to bundle interventions to create a single sizeable project), it is common for the parties involved to setup an SPV. The most common form of an energy- efficiency related SPV is one based on the model of an Energy Service Company (ESCO). This model typically involves three players; the technology provider for the energy efficiency intervention; the company which hosts the project on its site or equipment; and the provider of the funds. Typically, such a vehicle would receive 70-90% of the required funds in the form of a project loan, with the project sponsors providing 10-30% of the funds as private equity injections.
Seniority	Where debt is used to fund these projects, there is often a single debt instrument. There is no general rule with regards to the seniority of equity.
Medium and actors	The funding for such projects, whether equity or debt, is most often negotiated privately (commercial bank loans in the case of debt and private equity or direct capital injection in the case of equity).
Term/tenure	Short- to medium-term financing (6 months – 5 years) .
Source and origin	Debt funding (loans) is usually provided by local commercial banks. There is usually sufficient liquidity in the local banking system of most developing countries to fund such interventions (even on the basis of the ESCO model) as they typically do not involve very large capital injections. Equity can be sourced either through private equity investors but would typically be taken from corporate reserves that are channelled by the project sponsor as direct capital injections.
Knowledge of use of proceeds	As explained above, in cases where a large number of diffuse interventions are funded through ordinary commercial loans, there is no clear knowledge of the use of the debt funds for specific interventions. If however, the vehicle used is an SPV, there is greater sight of the use of funds as the SPV is dedicated to developing that particular project.

34 Source: KPMG Subject Matter Experts

This classification can also be seen from the perspective of the flow of finance from sources to destination, as shown in figure 5.

FIGURE 5: A SCHEMATIC OVERVIEW OF THE TYPICAL FLOWS[35] OF EQUITY AND DEBT FINANCE, FROM ITS SOURCES TO ITS DESTINATION, HERE: ENERGY EFFICIENCY IN OPERATION AND PRODUCTION PROCESSES



THE BARRIERS INHIBITING AT-SCALE FLOWS OF PRIVATE FINANCE:

a. The novelty and particularities of discrete EE-interventions and ESCOs, and the unfamiliarity of third-party financiers with them

As the table above makes clear, private sector financing of energy efficiency solutions in operation and production processes is often facilitated through an arrangement involving an ESCO. Different types of arrangements are possible:

One possible arrangement entails direct lending to the end-user (similar to the 'end-user model' displayed in Figure 5). Here, a company hosts the project, while an ESCO acts as project developer and provider of technical services. The third element, funding, is provided directly to the host company (or the end-user) by a

35 Figure 5 does not mean to imply that all large-scale grid-based renewable energy projects are financed in the same manner. The figure only aims to provide a schematic representation of the typical flows of finance from the source to its destination for these type projects.

financial institution, typically a commercial bank. The ESCO implements the project in the host company's operations in order to achieve energy savings relative to a historical baseline. Savings that result are shared between the host company and the ESCO. In this type of arrangement, it is the host company's responsibility to repay the loan and agreed-on interests to the financial institution.

The advantage of this arrangement is that the financial institution is only exposed to end-user credit risk. The disadvantage is that end-users will often be uncomfortable with placing the financing for EE-improvements that are not essential for business continuity or survival on their balance sheets.

Instead they are likely to prefer having these interventions financed against the cash-flows that are associated with the intervention (i.e., the cash-flows resulting from the saved energy) following a 'non-recourse' (project finance) model (see the 'SPV-ESCO model' in Figure 5). This can be problematic, for the following reasons: i) financial institutions will often reject non-recourse contracts because they are unfamiliar with EE technologies and projects; ii) many EE-interventions are too small to justify establishing a non-recourse finance arrangement (usually through an SPV); iii) EE equipment is often not valuable enough to serve as debt collateral, specially because once installed at the end user's facilities, it is often difficult or uneconomic to remove and use it elsewhere (e.g. lighting or motors). The major consideration here is that EE equipment often has a low collateral asset value while it represents a sizeable share of total project cost and an important share of engineering, development and installation costs.

A third type of arrangement entails lending to the ESCO, which essentially packages financing with project implementation in a services agreement. In this case the financier has to evaluate not only the risks associated with the end-user (the company hosting the project), but also issues like ESCO financials and equity contribution, ESCO management and performance track record, as well as project contracts including the Energy Services Agreement.[36]

This makes it difficult for ESCOs to obtain third party financing from banks and other lenders. In addition, the ESCO model is relatively new, which means that local banks often have little or no track record of engaging with this type of company. Particularly in developing countries, financing to ESCOs has often been hampered by a lack of familiarity on the part of financial institutions who don't understand the business model upon which ESCOs operate.

The ESCO model also faces challenges relating to how energy savings are calculated (methodological issues) and allocated (governance issues).[37]

The situation is exacerbated by the fact that it is often difficult to tell how much savings really result from a specific intervention and are not simply due to the normal course of business, anecdotal circumstances or other operational interventions. Revenue sharing arrangements between the ESCOs and the host companies are often difficult to monitor and that creates uncertainty that bank loans will be repaid.

Finally, the ESCO lacks full control over equipment operation and, therefore, expected cash flows. Energy savings, and consequently the revenue for the ESCO, depend on the host company correctly operating the equipment. This further increases the risk associated with these projects and it limits the appetite of banks to provide funding.

36 European Commission, Joint Research Centre, Financing Energy Efficiency: Forging the link between financing and project implementation, 2010, http://ec.europa.eu/energy/efficiency/doc/financing_energy_efficiency.pdf

37 For a detailed account of this network of challenges, see: http://www.nbi.org.za/Lists/Publications/Attachments/307/NBI_Barriers_to_Climate%20Finance%20Report_v5_11022013.pdf

b. Energy efficiency interventions compete with revenue-generating activities for scarce capital, and there are hidden costs

Many companies, particularly those in energy-intensive sectors, have a significant potential to cut costs through energy saving measures, but several factors often keep them from being implemented.

Energy efficiency projects frequently find themselves competing for a limited pool of capital, whether external or internal. Since energy efficiency is usually not critical to business continuity or survival, it tends to be placed at a lower level on most corporations' priorities than investments aimed at generating revenue. Particularly in times of tight operating margins and constrained cash flows, capital allocations are likely to go elsewhere. Since energy efficiency projects usually have a payback that only becomes apparent after two or more years, other operational interventions with a quicker return are usually prioritized.[38]

Furthermore, while gains in energy efficiency can effectively reduce costs, their ultimate impact on profitability is often considered to be smaller than it first appears to be. Any future savings have to be weighed against hidden costs, including overhead for management, disruptions to production, staff training and replacement, as well as the expense associated with gathering, analysing and applying information.[39] As a result, the profitability of any intervention is likely to be reduced and in some cases, completely eliminated. This makes it even more difficult for corporate management to prioritize energy efficiency improvements and secure external financing.

38 For a detailed discussion on this dynamic, see: http://www.nbi.org.za/Lists/Publications/Attachments/307/NBI_Barriers_to_Climate%20Finance%20Report_v5_11022013.pdf

39 For a detailed account of the impact of hidden costs and of other barriers to industrial energy efficiency, see: http://www.unido.org/fileadmin/user_media/Services/Research_and_Statistics/WP102011_Ebook.pdf

TABLE 6: SUMMARY OF BARRIERS AND EXAMPLES OF PUBLIC INTERVENTIONS AIMED TO MOBILISE PRIVATE SECTOR FINANCE FOR ENERGY EFFICIENCY IN OPERATION AND PRODUCTION PROCESSES

Barrier	Instrument(s) that can be adopted	Expected result of the use of instrument	Illustrative case study
The novelty and particularities of discrete EE-interventions and ESCOs, and the unfamiliarity of third-party financiers with them	A variety of instruments that enhance the attractiveness of EE-projects to third-party financiers, including: - Subsidised public loans to commercial banks for on-lending to EE activities - Risk sharing mechanisms focused on energy efficiency (including partial credit and partial risk guarantees)	Enhanced risk-return profile of EE projects from the perspective of third-party financiers, which helps project developers get access to finance by reducing financing costs	**Thailand Energy Efficiency Revolving Fund** Thailand's Energy Efficiency Revolving Fund was established in 2003 to leverage private finance for energy efficiency projects. The fund provides interest-free loans to local banks, which then provide low-interest loans to energy efficiency projects. The duration of the loan is 7 years and the interest rate is capped at a maximum of 4% (negotiable). Eligible borrowers include industrial and commercial facility owners, ESCOs, and project developers.[40] **The Bulgarian Energy Efficiency** Fund (BEEF) offers partial credit guarantees (80% on a pari passu basis and 50% on first loss basis), as well as portfolio guarantees for ESCOs and for the residential sector. The ESCO portfolio guarantee covers up to 5% of defaults of the delayed payments of an ESCO portfolio; with this guarantee an ESCO can get better interest rates on its debt with commercial banks.
Energy efficiency interventions compete with revenue-generating activities for scarce capital, and there are hidden costs	Regulatory interventions that increase the profitability of energy efficiency improvements, including: - Fiscal incentives - Reduction of energy-related subsidies that keep energy prices artificially low - Utility-mediated payment schemes for energy savings, also known as payments for 'negawatts'	Enable revenues that increase the profitability and appeal of energy efficiency measures and that prompt additional lending. Help ESCOs raise finance by creating bankable contracts.	**Bankable PPA for energy efficiency** The approach mirrors a renewable energy tariff through which a utility agrees to purchase power at a set fee per MWh. In the case of energy efficiency, however, a utility agrees to purchase the project's energy savings ('negawatts') at a pre-agreed rate. By contracting with a utility to purchase the saved energy, the energy efficiency implementing entity has a bankable and credible contract to get internal management buy-in and to help raise finance from commercial banks. This means that not only can such schemes for 'negawatt' payments significantly increase the profitability of energy efficiency improvements by adding a 'revenue component' to the original 'cost-reduction' component; the issuance of a purchase agreement will, furthermore, increase the comfort level of third-party financiers such as commercial banks to provide the required financing.[41]

40 IEA, Joint Public-Private Approaches for Energy Efficiency Finance, 2011, http://www.iea.org/publications/freepublications/publication/finance.pdf

41 Bank of America Merrill Lynch, Abyd Karmali, New approaches to mobilise climate finance

3. ‘CLIMATE PROOFING’ OF EXISTING INFRASTRUCTURE

This project category covers interventions to make existing infrastructure more physically resilient to the effects of climate change, including higher temperatures, an increase in the frequency and intensity of extreme events, sea level rise and changing patterns of precipitation.[42]

Instead of targeting the construction or development of an underlying infrastructure asset such as a road or a bridge, this type of project focuses on the implementation of a retrofit that makes an existing infrastructure more ‘climate-proof’, thus more resilient to the physical effects of climate change (such as the reinforcement of flood defences or the construction of enhanced storm drainage systems). There is already a fair degree of private sector and private finance participation in the development of underlying infrastructure assets through the public-private partnership (PPP) model in its various forms. However, the instances of climate-proofing interventions themselves are very limited, and the involvement of the private sector in these is almost untested.[43]

Examples of such projects include:

1. Enhancing existing risk-mitigation infrastructure, such as the reinforcement of flood defences to deal with sea level rise;

2. Adding to existing infrastructure, such as the construction of enhanced storm drainage systems on existing roads to deal with increased water flows;

3. Redesigning or refurbishing existing infrastructure, such as relaying existing roads with a higher temperature-resistant coating to deal with increased heart stresses.

42 For an explanation on the types of climate-proofing actions possible and a risk-based approach to adaptation, see: http://www.chs.ubc.ca/archives/files/Climate%20Proofing_%20A%20Risk-based%20Approach%20to%20Adaptation.pdf

43 Based on the secondary research conducted for this study

TABLE 7: THE TYPICAL FUNDING PROFILE OF PROJECTS THAT CLIMATE-PROOF EXISTING INFRASTRUCTURE

Dimension of private finance (from Part A)	Features of projects that climate-proof existing infrastructure [44]
Debt/equity	The type of finance that a project of this nature attracts is largely dependent on the ownership (and/or management) model of the underlying asset (i.e. public or private) and the size of the potential intervention. In publicly owned and managed infrastructure, any retrofit investment (including the climate-proofing of existing infrastructure) is typically made by the corresponding government agency using funds that stem either from fiscal revenue or commonly used debt instruments (municipal bonds, municipal loans where possible, and/or sovereign bonds). Issuance of 'project bonds' with proceeds fully dedicated to a particular climate-proofing project are also possible in the case of particularly large retrofit interventions. In the case of privately owned and managed infrastructure the type of finance that a project of this nature will attract is dependent on the size of the intervention. **Smaller retrofits** Many retrofit interventions themselves (such as the construction of enhanced storm drainage systems) will often represent a relatively small investment / expenditure; they may, therefore, not be of a size that would justify the set-up of SPVs attracting project finance. Similarly, smaller interventions will not be able to source finance from public debt markets in the form of project bonds because the amount would typically be too small to justify the transaction costs. In such cases, the climate-proofing exercise would be financed through the balance-sheet of the project sponsor (the private owner or manager of the infrastructure). This means that the underlying finance would typically stem from corporate credit lines ('corporate finance' provided by banks) and/or from the equity capital of the sponsor himself. This, in turn, means that from the outside (the perspective of third-party financiers, for instance) there would be little 'knowledge of the use of proceeds' (see below) and it would be difficult to determine any typical split between the amounts of debt and equity ultimately channelled into such a small-scale climate-proofing exercise. **Larger retrofits** Financing a climate-related retrofit of existing infrastructure via an SPV hinges on two factors: - First, the size of the retrofit intervention has to be large enough to reach a project finance scale that justifies the transaction costs associated with establishing the SPV. - Second, the intervention will have to be 'monetisable' i.e. the SPV itself will eventually have to generate enough cash flow to service the debt (interest and repayment of the principal) and equity (dividends). In fact, it is the expectation that the 'project', legally confined in an SPV, will generate cash-flows that make it 'bankable'. As detailed further below, there are no known examples up until now of benefits from the climate-proofing of infrastructure actually being monetised into SPV-able cash flows (through, for instance, an adjustment in the fees raised from the users of the infrastructure).

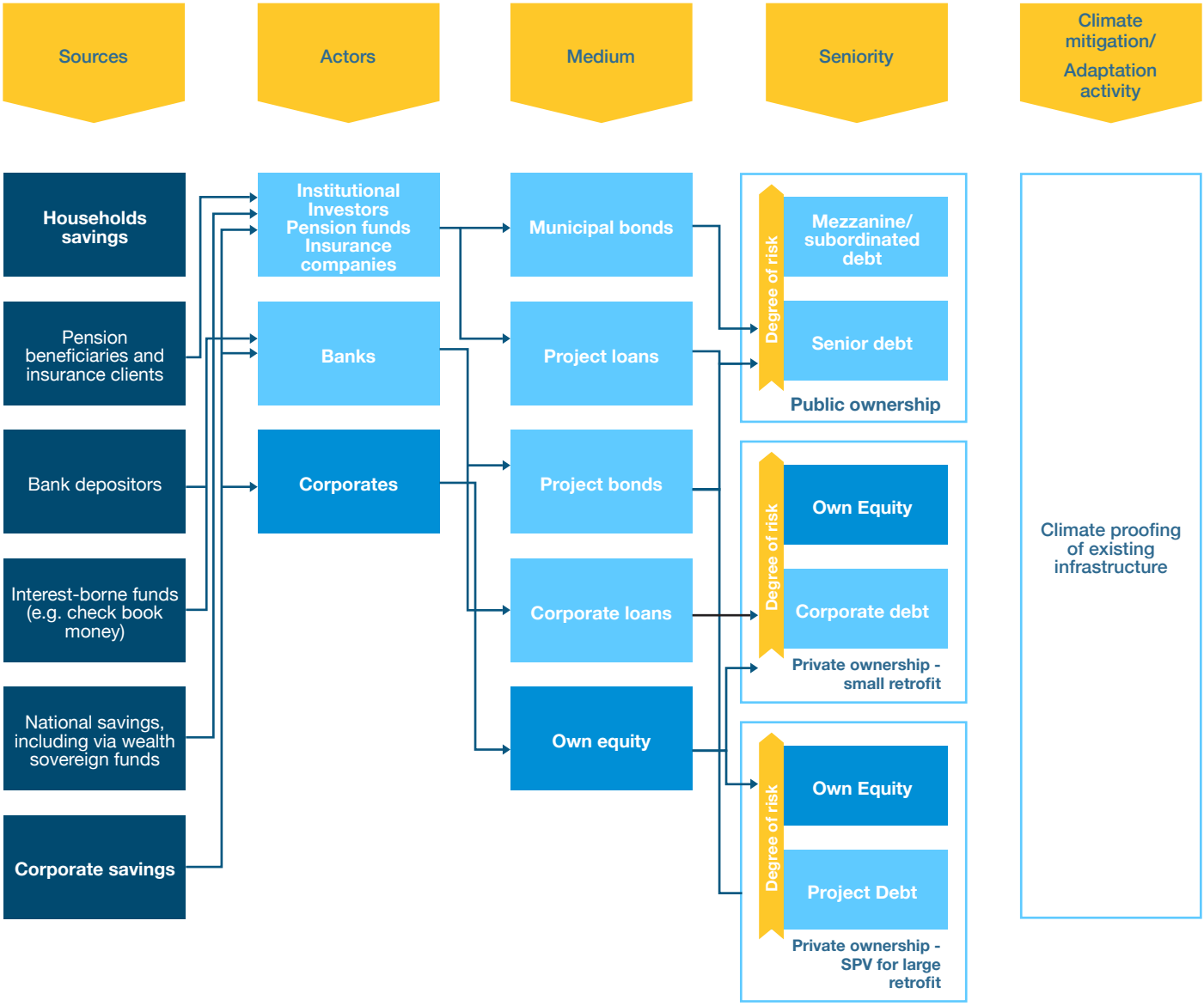
44 Source: KPMG Subject Matter Experts

TABLE 7 CONTINUED

Dimension of private finance (from Part A)	Features of projects that climate-proof existing infrastructure [44]
Seniority	No rule of thumb
Medium and actors	If the project is of sufficient size and scale to be set-up as an SPV, as mentioned above, it can attract infrastructure loans from commercial banks; private equity from the project sponsor or third-party investors; as well as the proceeds from the issuance of project bonds that can be placed with institutional investors. If the project is not of sufficient size and scale to be set-up as an SPV, it would rather attract funds 'on-balance-sheet', meaning from the balance-sheet of the project sponsor. In the case of a private-sector sponsor these funds would typically stem from corporate loans extended by commercial banks or from the equity capital of the sponsor.
Term/tenure	The long-term nature of these projects usually requires long-term financing (5 years – 30 years).
Source and origin	**In the case of smaller interventions** that do not justify the establishment of an SPV: - Debt funding (through corporate finance) will typically be provided by domestic commercial banks, as there is usually sufficient liquidity in the local banking system of most developing countries to fund smaller interventions - In the case of privately owned infrastructure, the project sponsor will most likely provide funds from its own equity reserves which, by definition are domestic - In the case of publicly owned infrastructure, funds may also come from fiscal and other public revenues including different kinds of bonds issued by public authorities at either national or sub-national level **In the case of larger interventions** requiring an SPV, The origin of funds varies from country to country; domestic financial institutions in more advanced developing countries, may have the necessary scale and experience to provide large-volume project finance (including private equity by corresponding actors) to infrastructure SPVs, while less developed countries may need foreign institutions to provide the required scale and capabilities.
Knowledge of use of proceeds	As SPVs are expected to be the main delivery mechanism for funding and hosting such projects, financiers will have a fairly clear line of sight concerning the use of the funds. On the contrary, if the size of the project does not warrant an SPV and financing is handled through the balance sheet of the project sponsor, the knowledge among third-party financiers of the use of proceeds will be limited.

This classification can also be seen from the perspective of the flow of finance from sources to destination, as shown in figure 6.

FIGURE 6: A SCHEMATIC OVERVIEW OF THE TYPICAL FLOWS[45] OF EQUITY AND DEBT FINANCE, FROM ITS SOURCES TO ITS DESTINATION, HERE: CLIMATE-PROOF OF EXISTING INFRASTRUCTURE[46]



THE BARRIERS INHIBITING AT-SCALE FLOWS OF PRIVATE FINANCE:

a. Difficulty in visualising and monetising the benefits of climate-proofing

Monetising the benefits of climate-proofing is the core challenge when it comes to seeking finance for climate-proofing infrastructure.

However, how this challenge manifests itself depends on whether the infrastructure at hand is privately or publicly owned. For publicly owned infrastructure, any climate-proofing exercise is likely to be financed through the use of public funds generated either from fiscal revenue or commonly used debt instruments (see Table 5 for more detail). The societal benefits derived from such interventions can easily

45 Figure 7 does not mean to imply that all large-scale grid-based renewable energy projects are financed in the same manner. The figure only aims to provide a schematic representation of the typical flows of finance from the source to its destination for these type projects.

46 This has been constructed for the case where climate proofing of existing infrastructure is driven by a corporate developer with own equity and no private equity portion

justify public spending and the mobilization of finance but the political will needed to allocate resources will depend on the extent to which the need for climate-proofing is already visible and being demanded for by political constituents. Given that climate change is an evolutionary process, political support may not always be there: an understanding of the effects and impact of climate proofing will often rely on projections into the future rather than observations made today.

In the case of privately owned infrastructure, project sponsors are likely to find it difficult to monetise the benefits of climate-proofing interventions into cash-flows that a third-party financier would be willing to lend against. Despite the benefits to private individuals and entities that use the asset (such as road users who benefit from improved storm drainage), it will often be difficult to quantify the benefit or to prove that the benefit is solely the result of a specific 'climate-proofing' intervention. This, in turn, will often make it difficult to charge users for the improvement, and that is likely to impede the development of a business model that proves to a private financier that there will be a steady and predictable revenue stream to service debt.

The track record for infrastructure projects with explicit 'climate-proofing' objectives may be new, but many of the challenges faced in arranging the required financing bear similarities to the challenges faced in the provision of 'public' or 'club goods' more broadly, as well as those faced in the protection / restoration of ecosystems through schemes of ecosystem services payments (PES) (see Table 6 below for further elaboration).

TABLE 8: SUMMARY OF BARRIERS AND EXAMPLES OF PUBLIC INTERVENTION AIMED TO MOBILISE PRIVATE SECTOR FINANCE FOR CLIMATE PROOFING OF EXISTING INFRASTRUCTURE PROJECTS

Barrier	Instrument(s) that can be adopted	Expected result of the use of instrument	Illustrative case study
Difficulty in visualising and monetising the benefits of climate-proofing	Adaptation-equivalents to schemes on Payments for Ecosystem Services (PES) that could enable the monetisation of extra-financial benefits. Although this model hasn't been applied to adaptation-related projects yet, it provides insights and parallels on how the benefits of climate-proofing projects could be monetised.	Schemes of payments for ecosystem services facilitate the monetisation of previously un-monetised benefits delivered by ecosystems. They 'link' conservation and ecosystem protection projects and programmes to the generation of cash-flows. These, in turn, are needed to raise up-front private financing to enable the activity in the first place. As such, PES make conservation and ecosystem protection projects and programmes 'bankable'.	The city of New York implemented a number of initiatives to guarantee its water supply and water quality. One of the applied instruments was the payment, by the end users, of additional fees on their water bills. Together with other measures (bonds and trust funds), the additional funds are used for compensation and conservation programs aimed at protecting the city's forested watersheds. Compensation programs include the payment to dairy farmers and foresters to share the costs of adopting better environmental management practices. Conservation programs focused on land acquisition and construction and implementation of stream corridor protection measures.

CONCLUSIONS AND RECOMMENDATIONS

Through its two constituent parts, A and B, this study makes two distinct but 'connected' contributions to international negotiations on (private) climate finance:

PART A: ESSENTIALS OF PRIVATE SECTOR FINANCE

Private finance is a complex and diverse universe and it can come in many forms: i) it originates from a plethora of sources and origins; ii) it can possess varying legal natures; iii) it can feature different seniorities and different levels of return expectation and risk exposure; iv) it can flow and be intermediated through private or public mediums and feature varying levels of liquidity; v) it can involve different actors, ranging from small angel investors to very large banks; and vi) it can be short, medium or long-term.

What applies to 'private finance' in a broad sense applies in principle, to the narrower concept of 'private climate finance'. If one defines private climate finance simply as private finance that enables investment in climate change related activities, then private climate finance can take as many shapes and forms, and materialise in as many ways as private finance does in the broader sense.

If international climate negotiations decide to focus on mobilising private climate finance, negotiators will need to be conscious of the diversities and complexities that characterise the broader realm of private finance in general. Otherwise there is a risk that the negotiations will result in outcomes that are not compatible with the demands of the current world of finance and are consequently not likely to succeed. **Part A** of this study is intended to contribute to climate change negotiations by providing a context for the study and understanding of private finance.

PART B: STRUCTURING A NUANCED AND EFFECTIVE AGENDA ON MOBILISING PRIVATE CLIMATE FINANCE

The diversity and heterogeneity of climate change activities/projects, the diversity of the types of private finance required, and the barriers to the mobilisation of this finance, need to be carefully considered in the international climate finance negotiations. In other words, there is no 'one size fits all' policy agenda for climate finance. Rather, the policy agenda must be tailored to the specific activities that need to be financed.

Policymakers can help ensure that they take account of the specific financing needs of specific projects or activities by ensuring that they complete the following three steps as an essential prelude to making any decisions on the policy measures that they might implement:

2. Identify and understand fundamental parameters of the on-the-ground activities to be enabled. This includes understanding the project type to be supported, the typical size of such projects, the maturity of the underlying technology, and the developmental and regulatory circumstances of the host countries including the maturity and depth of their domestic financial systems.

3. Determine the types of private finance and the corresponding actors that are most relevant and will ultimately be required for the types of projects or technologies at hand. Once the appropriate and relevant types of private finance have been identified, policymakers can proceed with identifying the specific barriers

that inhibit, or might inhibit, these kinds of private finance from flowing to the project categories at hand.

4. Determine which public interventions and instruments are best positioned to address the identified barriers. It makes sense to consider the types of public interventions and instruments that are already in place, nationally and internationally, as well as their track records and lessons learned.

Policymakers and climate negotiators should be structuring the discussions on private climate finance in line with the following sequence of questions:

- What is the typical funding profile for each of these project categories? Who are the main financial actors? What kind of private finance is required for successful implementation?
- What are the main barriers currently keeping private capital from these project categories, noting that barriers are often specific to the kinds of finance required?
- What kinds of existing public intervention have successfully overcome these barriers? Can they be strengthened, expanded or copied with the support of the global climate regime including its GCF?

Following this logic the international debate on climate finance can deliver sufficiently nuanced insights regarding the public interventions best positioned to unlock private financial flows for mitigation and adaptation.

To illustrate this Part B of this report applies the above approach to the three project categories mentioned above. Some of the indicative results regarding approaches for public intervention are summarised in Table 7

TABLE 9: SUMMARY OF POTENTIAL INTERVENTIONS AND RECOMMENDATIONS FOR THE INTERNATIONAL CLIMATE CHANGE REGIME, INCLUDING THE GREEN CLIMATE FUND

Category	Barrier	Explanation / sub-categories	Examples of existing public interventions	Potential interventions and recommendations by the international climate change regime that should be additional to existing interventions (at both domestic and international level) and supportive of particularly successful instruments
Country and market specific barriers	Unfavourable business conditions	- Political instability and the risk of civil unrest - Unfavourable government interventions - Enforceability of contracts and agreements - Lack of or uncertainty over specific policies for low-carbon investments such as tariff levels and other subsidies (more detail on this barrier in the specific context of electricity generation from renewable energy sources can be found in Table 1 further above) - Elevated off-take risks linked to the creditworthiness of utilities, in the case of renewable energy generation	- At the national level many countries have put in place policies and regulations for low-carbon investment, including feed-in tariffs and quotas for renewable energy; reverse bid auctions; etc. Often, however, these remain insufficient and fail to fully level the playing field with conventional investment options - Furthermore, such policies and regulation are often considered by private-sector actors and financiers unreliable and risky. To address this as well as broader country and political risks, multilateral and bilateral organisations such as OPIC and the World Bank Group (though MIGA) have put in place instruments that transfer and mitigate political risks (for more information, see **Table 2** above)	Provide support to governments in developing countries in the design and set-up of low-carbon policies and regulatory mechanisms at the national level. Support can include capacity and institutional support as well as monetary compensation for the incremental costs associated with the policy interventions, such as, for instance, the aggregate price premiums granted through feed-in-tariffs. - **Put in place international mechanisms that level the playing field between low-carbon / climate-resilient and conventional options including schemes for performance-based payments** - **Insurance and guarantees to mitigate country, political as well as policy risks** This category of public ntervention includes guarantees and insurance products with an explicit mandate to cover country, political, policy, and regulatory risks explicitly in the context of climate-related investments in developing countries. **Where such interventions already exist the GCF should aim to support, expand and strengthen those instruments that feature successful track records.**
	Unstable macroeconomic environment	- Fluctuations in economic conditions and commodity prices, and interest and exchange rates (more detail on this barrier in the specific context of electricity generation from renewable energy sources can be found in **Table 1** further above)	- To cover the at times significant foreign exchange risks that companies and financiers face in developing countries the Dutch Ministry for Development Cooperation supported with public finance the development of the Currency Exchange Fund (TCX) (See Table 1 above) that provides hedging solutions particularly for developing countries not covered by commercial actors.	- **Interest rate and currency facilities** This category includes public interventions / facilities aimed at protecting project developers against macroeconomic risk in such developing countries for which commercial hedging options do not exist (or where they only exist at prohibitive pricing). Examples of the instruments such facilities could deploy include interest-rate and currency derivatives, as well as a lines of credit that can provide short-term cash flow into projects, allowing the borrower to manage exchange rate fluctuations. It is important to note that such solutions can be, and are, offered by commercial market actors. To avoid a 'crowding-out' effect, therefore, public intervention should only occur where there is a structural lack of commercial offers. Where such interventions already exist the GCF should aim to support, expand and strengthen those instruments that feature successful track records.
	Incomplete financial markets	- Lack of liquid and deep domestic equity and debt markets - Lack of scale and sophistication to offer project and equity financing Lack of long term financing (more detail on this barrier in the specific context of electricity generation from renewable energy sources can be found in **Table 1** further above)	- The European Investment Bank's project bond credit enhancement (PBCE) instrument aims to enhance the creditworthiness of European infrastructure projects to facilitate the funding of their investment requirements by issuing project bonds to institutional and other investors (See **Table 1** above)	- **Instruments to facilitate access to finance** This category includes mechanisms that can increase the availability of, and access to, private finance with required features (scale, term, risk-appetite) etc. for low-carbon technologies and infrastructure. These can take various forms, including: - Credit enhancement mechanisms to reassure that the borrowers will honor the obligation of loan repayment - Concessional lines of credit to commercial banks to provide debt at lower interest rates over a longer term (for an example of this in the domain of energy efficiency, refer to Table 2 above) - Putting in place the infrastructure, tools and standards required to advance the market for green bonds, as well as providing support to potential issuers of project bonds in developing countries (for an example of this, refer to Table 1 above)
Project and technology specific barriers	Technology uncertainty	- The possibility that a technology will underperform or not perform at all resulting in uncertain returns	- Tunisia's Prosol Programme is an example of debt default risk being removed from suppliers of solar water heaters. Commercial banks provided loans to customers through accredited suppliers, which were repaid through customers' electricity bills. Customers' services were withheld when they did not pay. The state utility acted as debt collector, enforcer and loan guarantor, shifting the credit risks from lenders to borrowers. This has improved awareness and expertise of commercial banks for renewable energy lending.	- **Performance insurance** This category includes instruments that transfer risk by either attributing some responsibility to the guarantor for the performance of a project or by allocating losses to them in the event of failure. Examples of such instruments include risk coverage via guarantee to cover non-performance of a technology.
	High project capital and development cost	- High relative technology costs - High development costs	- In Thailand the Energy Efficiency Revolving Fund was established in 2003 to leverage private finance for energy efficiency projects. The fund provides interest-free loans to local banks which then provide low-interest loans for energy efficiency projects.	- **Instruments to reduce costs and increase the economic viability of investments** This category includes instruments that reduce the incremental costs and improve the economics of specific projects. Support can come at different stages of the project cycle and in various forms. Examples of such instruments include price and repayment guarantees, tariff support (e.g. via a feed-in tariff scheme), low interest loans and grants.

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