

# Private Investment in Inclusive Green Growth and Climate-related Activities: Key Messages from the Literature and Bibliography

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**International  
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## SUMMARY

**Context:** As part of their deliberations on inclusive green growth<sup>1</sup>, the G20 Development Working Group (DWG) has tasked an informal group of co-facilitators<sup>2</sup> with developing a Dialogue Platform on Inclusive Green Investment (G20 DPGI) to increase related private investment in developing countries, with a specific focus on lower (middle) income countries. To best inform the design of the G20 DPGI and to avoid duplication, the co-facilitators Mexico and Germany have asked IFC to assist with a preliminary stock taking exercise, drawing lessons from existing initiatives on identifying and overcoming barriers to private investment. The proposal and supporting materials for the G20 DPGI will be presented to the G20 Ministers for their consideration at the June Los Cabos Summit.

**Approach:** In support of this effort, IFC has undertaken an extensive literature review to compile a structured bibliography of relevant reports and research summarizing the contents and pertinence to the G20 DPGI for each one.<sup>3</sup> Given the short time for producing this material, the survey does not cover initiatives in other fields from which relevant lessons could also emerge. The messages and the identified gaps in the available literature have been consolidated into this brief issues note. The bibliography, although not exhaustive, has been structured according to the emerging resonant themes in the literature and is provided as a separate document.

This information may be of use to the DWG in exploring new initiatives under the G20 DPGI to attract institutional funds towards financing investments in non-G20 countries. To be

successful, the G20 DPGI should advance mutual understanding between publicly funded, donor programs and the diverse range of potential private investors in order to better design financing instruments that efficiently use public funds to best mobilize and leverage private funds.

**Findings:** Based on the literature review undertaken for this discussion and broader IFC experience, we have several findings and preliminary conclusions relevant to the discussion of the dialogue platform concept. First is the existence of an extensive and consistent body of knowledge with respect to the issues and challenges for financing clean energy technology, driven particularly by the international focus on climate change. While varying in vocabulary and focus (geographic, technology, etc.), these reports commonly frame issues related to financing needs, barriers to investment (all fundamentally based on the risk/return gap) at different stages of the product cycle (from research to commercial maturity), the range of de-risking instruments (e.g., guarantees) to the potential policy instruments available to bring them about (public guarantees, feed-in tariffs, etc.).

A second finding is the dominance of emphasis on climate change mitigation and clean energy technology relative to other objectives of inclusive green growth, again consistent with the greater focus on climate finance in recent years. While there are numerous significant funding initiatives relevant to other objectives of the green growth agenda with high social benefits, particularly agriculture, infrastructure and public health, these tend to be discussed more as public initiatives and less frequently in terms of leveraging private finance. A closely related point is the availability of many more examples and insight into financing within the G20, where most climate mitigation has so far been undertaken. For similar reasons, we found much less information regarding adaptation to climate change, an issue of relatively greater importance for countries outside the G20 and consistent with the

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<sup>1</sup> “Green Growth” is used as shorthand for longer and more descriptive terms often used in some reports such as “inclusive green growth” to make clear the need to address social justice and distributional concerns in growth.

<sup>2</sup> Consisting of Australia, Brazil, Canada, Germany, Japan and Korea, and led by Mexico.

<sup>3</sup> Much of the material reviewed here is framed around responses to climate change as green growth is still a relatively ‘under-studied’ topic. Many documents addressing green growth and green economy use primarily climate change examples and analysis.

modest amount of international funding so far made available for this purpose.

Finally, we found that the basic objective of the proposed Dialogue Platform – to find innovative ways to leverage private investment in green growth outside the G20 countries – is receiving increasing interest in multiple fora. This is sometimes with a narrow thematic focus, such as in Sustainable Energy For All, or the Green Climate Fund within the UNFCCC, at other times more broadly as in the WEF/IFC/UNF supported Critical Mass Initiative and World Bank-hosted Green Growth Knowledge Platform. Many such initiatives are government led, including the Global Green Growth Forum (3GF), but others are more business driven as in the WEF-led B-20 effort. Consequently, we see considerable room for a process that can provide greater focus and efficiency to this common question. As an initial step towards convergence we would suggest a mapping exercise of existing and planned such initiatives and their areas of focus and overlap. This could underpin calls for greater coordination, knowledge sharing and exchange by the G20 DPGI.

**Possible Next Steps:** One logical next step may be to seek information from the many existing funds and institutions which provide experience, ideas, and lessons learned that warrant consideration in the design of the proposed platform.<sup>4</sup> One such example is the Global Fund - a public-private partnership and international financing institution dedicated to the prevention and treatment of HIV and AIDS, TB and malaria and which has engaged the private sector in its design, governance and strategy as well as funding projects.<sup>5</sup> An example from the agriculture sector is the Consultative Group on International Agricultural Research (CGIAR), a strategic partnership of diverse donors that support 15 international Centers, working in collaboration

with many hundreds of government and civil society organizations as well as private businesses around the world.<sup>6</sup> The network approach is also being spearheaded through Climate Innovation Centers being developed by the World Bank Group's infoDev, which seek to establish a global network of 30 country specific facilities that provide financing, technical assistance and market advice to climate technology small and medium sized enterprises. Other relevant programs among a potentially large universe include the CIF<sup>7</sup> and the GEF<sup>8</sup>, both of which have supported innovative private sector climate change projects using a mix of concessional and grant instruments, themselves “blended” with commercial finance from implementing agencies.

Information from these models can serve as interesting precedents for the G20 DWG to consider as they develop the Dialogue Platform on Inclusive Green Investments. As a suggestion for further work, it may be useful to review and pull together a summary of initiatives that have leveraged private finance and identify which of these have been successful. This could include reviewing how various structures and policies have been used to overcome the barriers and risks that have been identified. Where possible, the examples should also extract lessons of relevance for adaptation and non-G20 countries. The findings of this deepened stocktaking exercise could then be used to frame both, the approach to convening and focusing multi-stakeholder discussions through the G20 DPGI, and the issues it addresses, allowing for greater emphasis on investment goals beyond sustainable energy finance.

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<sup>4</sup> The Transitional Committee of the Green Climate Fund also undertook a survey of relevant funds and institutions in the low-carbon space in August 2011. Please see [http://unfccc.int/files/cancun\\_agreements/green\\_climate\\_fund/application/pdf/tc3\\_inf2\\_survey\\_final\\_corrected.pdf](http://unfccc.int/files/cancun_agreements/green_climate_fund/application/pdf/tc3_inf2_survey_final_corrected.pdf) for a description of surveyed entities.

<sup>5</sup> Details are available at <http://www.theglobalfund.org/en/>

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<sup>6</sup> Please see <http://www.cgiar.org/> for more information

<sup>7</sup> Please see <http://www.climateinvestmentfunds.org/cif/> for more information.

<sup>8</sup> Please see <http://www.thegef.org/gef/> for more information

## INTRODUCTION

The G20 Development Working Group (DWG) has tasked an informal group of co-facilitators<sup>9</sup> with developing a Dialogue Platform on Inclusive Green Investment (G20 DPGI) to promote the increase of private investment related to green growth<sup>10</sup> and climate-related activities in developing countries, with a specific focus on lower middle income countries. The G20 DPGI will hone in on stocktaking and lessons learned from existing initiatives, as well as an extensive literature review, with the aim to better identify the barriers to private investment and the mechanisms that have been successfully used to overcome these. Drawing on these ideas, the G20 DPGI may also wish to explore new initiatives to attract world-scale institutional funds that could finance large investments. To be successful the dialogue platform should advance mutual understanding between publicly funded, donor programs and the diverse range of potential private investors, and facilitate the design of financing instruments that encourage the efficient use of public funds in a manner that best mobilizes and leverages private funds.

In order to avoid duplication and to identify gaps in the available literature, G20 DPGI co-facilitators Mexico and Germany have asked IFC to assist in the compilation of a bibliography of relevant reports and research.<sup>11</sup> This note is based on a review of about 50 documents (see list), as well as on IFC's own experience in financing climate-related investment in developing countries. It attempts to summarize the key messages from this wide

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<sup>11</sup> Much of the material reviewed here is more specifically framed around responses to climate change as green growth is still a relatively 'under-studied' topic. Many documents addressed to green growth and green economy use primarily climate change examples and analysis.

array of documents and is organized as follows:

- Typology of green and climate-related investment
- Barriers to investment and risk mitigants typically encountered
- Sources of finance for such investment

This review highlights that there is broad consensus on the challenges and potential solutions in many cases, albeit with differing terminology in use. However, knowledge gaps persist, as identified in this note. A bibliography, annotated to describe key messages and salient points that could be of interest to the G20 DPGI, is attached. This bibliography does not claim to be exhaustive, and should be seen as an adaptive document into which additional materials can be incorporated as they are identified in the course of operationalizing the DPGI platform.

## GREEN AND CLIMATE-RELATED INVESTMENT

"Green investment" encompasses a wide variety of sectors and activities and lacks a consistent definition but is generally tied to investments that promote sustainable development including resource efficiency, pollution reduction, and mitigation of environmental damages (e.g., cleanup of hazardous waste sites and protection/restoration of areas of biological significance)<sup>12</sup>.

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<sup>12</sup> Defining what "green growth" means has itself become a subject of international cooperation and collaborative research. See, e.g., Press Release, "Global Organizations to Expand Cooperation on Green Growth for Development" Jan 11, 2012, Mexico City (<http://www.oecd.org/dataoecd/60/48/49379356.pdf>), joint release of the GGGI, OECD, UNEP, and World Bank announcing the creation of a Green Growth Knowledge Platform. Numerous closely related efforts are already underway to define green growth in practice; e.g., the OECD has ongoing work related to defining and tracking green foreign direct investment, Golub, Kauffmann, and Yeres, "Defining and measuring green FDI: an exploratory review of existing work and evidence (2011)" (<http://www.oecd.org/dataoecd/26/8/48171454.pdf>), and also on defining and tracking climate finance, Clapp, Ellis, Benn and Corfee-Morlot, "Tracking climate finance: what

Private sector climate-related activities are (to date) mostly concentrated on mitigation – efforts to reduce emissions of greenhouse gases, primarily through energy efficiency or renewable energy – and primarily in the G20 countries. In contrast, while there are several donor funds dedicated to climate adaptation,<sup>13</sup> an issue of much greater relevance to most countries outside the G20 than mitigation, there is much less clarity surrounding the role and appropriate public support for private sector investments in adaptation. While the challenge for investment rationale in the case of both mitigation and adaptation is inter-temporal, investors are better able to realize and monetize the public benefits of mitigation than the private benefits from adaptation.

A UNFCCC study of expected investment flows for climate change concludes that “*Private sources of funding can be expected to cover a portion of the adaptation costs in sectors (such as AFF -- agriculture, forestry, and fisheries and infrastructure) with privately owned physical assets, in developed countries, in particular. However, public resources will be needed to implement policies or regulations to encourage the investment of private resources in adaptation measures especially in developing countries. Public domestic resources will also be needed to cover adaptation costs related to climate change impacts on public infrastructure.*”<sup>14</sup> [Italics in the original]

Reflecting this absence of clear understanding, a major problem to date has been lack of clarity in defining, identifying, and monitoring private sector adaptation expenditures. Consequently, the literature with respect to private sector adaptation is still very much about giving it a consistent meaning. For example, a recent OECD paper develops a three-tier analytical framework to assess

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and how?” (2012) (<http://www.oecd.org/dataoecd/16/50/50293494.pdf>).

<sup>13</sup> The Adaptation Fund, Least Developed Countries Fund, Special Climate Change Fund are all managed by the GEF and largely or exclusively focused on adaptation. The CIF PPCR is another major adaptation focused fund.

<sup>14</sup> UNFCCC 2007, Investment and Financial Flows to Address Climate Change

companies’ engagement in adaptation: risk awareness, risk assessment, and risk management.<sup>15</sup> They conclude that the level of awareness is high with respect to current climate risks but less so with respect to future climate change impacts, and that far fewer companies as yet assess, much less implement, adaptation options. On the other hand, they also note companies may not fully disclose work they are doing on adaptation for competitive business reasons. The long-term asset management community has also made many references to concern about climate risks, although for the most part without reference to specific responses (see below). It is apparent that attracting large investments into these activities, with perhaps some exceptions for specific sector improvements in infrastructure or monitoring of extreme events, will be difficult until this field is more clearly developed.

IFC has explored the risks of climate change for its own investments through a series of five pilot studies using its existing portfolio.<sup>16</sup> These studies highlight the potential financial risks of climate change for business as well as potential measures firms can take to reduce them. In one instance, a port in Colombia, the owner/operator announced a US\$30 million program of investments in response to the study results.

Adaptation needs and development of business strategies will almost certainly grow over time with increasing evidence of the seriousness of climate change and its impacts. In contrast, clean energy (mitigation) investments are already a very large business. However, private investment in mitigation has been concentrated in industrialized countries and large emerging economies, due to their more conducive operating and regulatory environments, and an abundant supply of larger scale project opportunities to finance. The table below reflects an estimate of the lower levels of investment expected in low

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<sup>15</sup> Agrawala, S. et al., OECD, 2011, Private Sector Engagement in Adaptation to Climate Change: Approaches to Managing Climate Risks

<sup>16</sup> [http://www1.ifc.org/wps/wcm/connect/Topics\\_Ext\\_Content/IFC\\_External\\_Corporate\\_Site/CB\\_Home/Publications/](http://www1.ifc.org/wps/wcm/connect/Topics_Ext_Content/IFC_External_Corporate_Site/CB_Home/Publications/)

income and lower middle income countries across various sectors based on opportunities in line with their abatement potential. These estimates of investment requirements and

others are all scenario dependent, reflecting specific assumptions and can therefore not be seen as predictions.

**TABLE 1: ANNUAL INVESTMENT REQUIRED TO ACHIEVE 2°C PATHWAY**

USD Bn, average per annum 2011–2020 to reach 14 Gt of abatement ■ More than 5 Bn ■ 1–5 Bn ■ Less than 1 Bn

Nations														
	China	United States	EU 27	Africa and Middle East	Rest of developing Asia	India	Russia and Eastern Europe	Latin America	Japan	Rest of OECD Pacific	Canada	Rest of OECD Europe	Total	Percent
Power <sup>1)</sup>	65	47	44	21	22	20	12	10	14	12	5	3	275	41%
Industry	41	10	9	7	3	6	6	5	4	2	1	2	96	14%
Transport road	22	21	17	4	4	4	5	6	5	3	2	1	94	14%
Buildings	34	35	36	12	3	6	9	5	4	6	4	2	156	23%
Waste	1	3	2	3	2	0	2	2	0	1	1	0	16	2%
Forestry	1	0	0	2	11	1	0	2	0	0	0	0	17	3%
Transport Air and Sea <sup>2)</sup>	12												12	2%
<b>Total</b>	<b>163</b>	<b>116</b>	<b>109</b>	<b>62</b>	<b>45</b>	<b>37</b>	<b>34</b>	<b>30</b>	<b>27</b>	<b>23</b>	<b>12</b>	<b>8</b>	<b>650–700</b>	
<b>Percent</b>	<b>24%</b>	<b>17%</b>	<b>16%</b>	<b>9%</b>	<b>7%</b>	<b>6%</b>	<b>5%</b>	<b>4%</b>	<b>4%</b>	<b>3%</b>	<b>2%</b>	<b>1%</b>		

Note: Cement and Deforestation have been taken out

1) Represents total Capex

2) No breakdown on country level available

Source: Credit Suisse/WWF analysis based on McKinsey's Climate Desk tool. Any conclusions are the sole responsibility of Credit Suisse/WWF.

Some estimates suggest up to USD 2,100 bn p.a. of investment requirement

Source: Transition to a low carbon economy: the role of banks, (2011), by Credit Suisse and World Wildlife Fund

In both mitigation and adaptation there are no regrets options, barrier removal issues due to market failures, new technologies with higher current costs, and marginal investments with high social returns but low financial returns. Hence different solutions are needed depending on the category.

The stage at which private investment takes place and the type of finance deployed varies by sector. The diagram below shows the stages of low-carbon technology development and deployment, as well as the financing sources associated with them (Figure 1). Research will typically be funded by government, even if undertaken by the private sector. Technology development is generally financed by early-stage venture capital and

private equity firms interested in making technology “bets” and prepared to take a portfolio approach to risk. Once there is proof of concept, manufacturing and commercial deployment of the technology can be financed by public equity markets; often, established players will acquire new technology through acquisitions. In addition, debt and project finance come into play in scale-up and commercial roll-out of the interventions.

Most deployment of low-carbon technology in developing countries takes place at the later stages of this continuum. IFC's own experience in financing climate-related

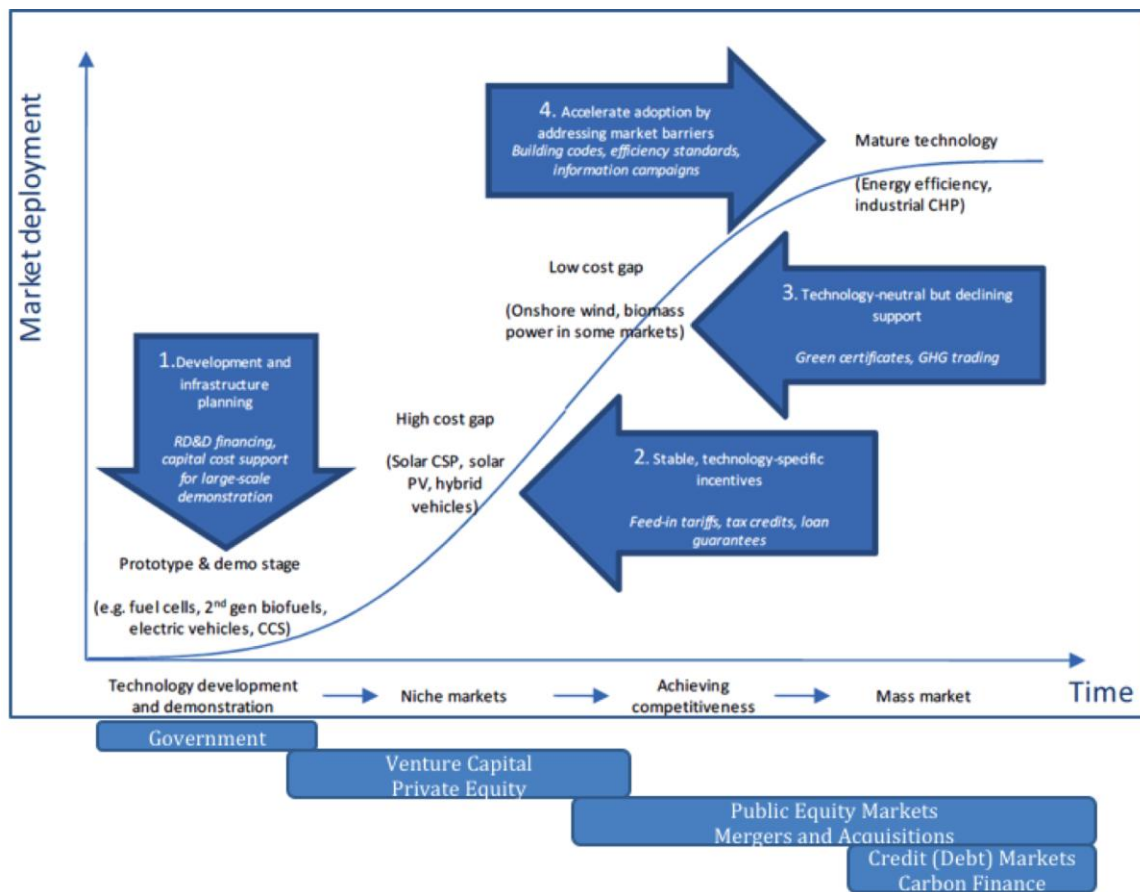
investment<sup>17</sup> suggests that while renewable energy remains the most significant end-use of investment financing, energy efficiency is a fast-growing source of investment, and other “green” areas such as water, recycling, forestry and manufacturing for the renewable and energy efficiency supply chains are increasing in importance.

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<sup>17</sup> IFC began tracking climate-related investment in 2005. Since then, it has provided a cumulative US\$6.3 billion in financing towards project investments (climate components only) of US\$29.2 billion.



**FIGURE 1: MAPPING SOURCES OF FINANCING TO STAGES OF LOW-CARBON TECHNOLOGY DEVELOPMENT & DEPLOYMENT**



Source: Adapted from OECD (2011) and Bloomberg New Energy Finance (2011)

## BARRIERS TO INVESTMENT

**Adequate risk/return profile of the investment:** a private investor will invest in those activities where there is an adequate return for the risk – real or perceived – that she faces. A key starting point is to distinguish the types of risks given to any specific technology or location, as projects which appear superficially similar may face very different

risks. This is particularly important when focusing on countries with less developed regulatory frameworks, smaller markets, and less well established financial systems. The table below identifies the barriers to investment and risks considered in deploying capital for climate related activities.

**TABLE 2: BARRIERS AND RISKS INVOLVED IN SECURING CLIMATE CHANGE FINANCE**

<b>TRANSACTIONAL RISKS</b>	
Risk/Reward Imbalance	Insufficient returns available given risks involved
Private Sector Funding Shortage	General shortage of funding
Complexity Risk	Financial instruments are too complex
Policy Development Risk	Lack of understanding within policy development role /civil service
Currency Risk	Currency fluctuations
Economic/Commodity Price Volatility	Fluctuation in economic conditions and commodity prices
Fungibility Risks	Lack of fungibility between regimes / environmental instruments
Liquidity Risk	Fragmented measures lead to too many different regimes
Branding Risk	Public unacceptability of mechanism e.g. market-based solution, securitization etc
<b>PROJECT RISKS</b>	
Transaction Cost Risk	High transaction costs, including high costs of complying with MRV requirements
Fraud/Cash Leakage	Investment eroded by leakage costs and/or fraud
Physical Risk	Natural hazards, including fire, explosion, war, machinery breakdown and other material damage
Scale Risk	Individual project size unattractive
Technology Risk	Technology is not efficient and/or too complex and/or not publically accepted
<b>POLICY RISKS</b>	
Additionality Risk	Lack of clear environmental additionality
Cannibalization Risk	Climate budgets are not additive to ODA spending
Enforcement Risk	Rules not fully binding or difficult to enforce
Illegitimate Policy Changes	Nationalization, confiscation, expropriation, deprivation
Inconsistency Risk	Regional, national, international rules and regulations in conflict
Legitimate Policy Changes	Change in legislation in the ordinary course of government
Longevity Risk	Regulations only in force for a short period compared to investor horizon / capital commitment
Methodology, Reporting & Verification (MRV) Risk	Lack of appropriate methodologies
<b>CAPACITY RISKS</b>	
Multitude Risk	Multiple project types in multiple countries and/or employing multiple technologies
Aggregation/ Commoditization Risk	Difficulty in aggregating &/or commoditizing individual transactions into large-scale investment vehicles
Human / Operational	Lack of well trained work force to implement projects
Infrastructure	Poor physical infrastructure
Institutional - property rights	Lack of property rights and/or legal system
Institutional - Regulatory	Lack of well established and resourced regulator
Quality assurance risk	Lack of standards for new technologies as a risk for market uptake

Source: adapted from Can Capital Markets Bridge the Climate Change Financing Gap? (2010), by Parhelion and Standard & Poor's

At the project level, the key risk is the overall financial viability of the project – cost structure, markets, availability of inputs and certainty of revenues, to name a few defining factors. Technology risk is typically a concern with new, less proven technologies (e.g., large scale solar power projects) and includes risks associated with high first-mover costs and unproven commercial application of a new technology. This issue may also arise when a technology is established in one region or for one application, but is new to a location or used in a different way. Project risk is assessed through the investor’s due diligence process, and addressed in the project structuring. Risk mitigants can take many forms and project developers are constantly seeking ways to divide risks and allocate them to those in the best position. For example, a strong contractual agreement with a creditworthy party may mitigate the risk from a renewable energy project that payment from the utility purchaser of the power will not be forthcoming; insurance products may provide comfort on business interruption.

A number of country risk factors also come into play, including regulatory issues related to pricing, protection of property rights, tax and subsidy regimes and contract enforcement. A foreign investor needs access to foreign exchange and the ability to hedge exchange risk due to fluctuations in the relative value of currencies over time. Foreign exchange risk may be hedged where such instruments are available. Other sovereign risks relate to nationalization, overall economic and political stability of the country in which the investment takes place, and the ability to repatriate profits. Political risk insurance can cover certain sovereign risks such as those associated with expropriation. Multilateral development banks (MDBs) are able to structure financing packages that provide long tenors with de facto political risk cover; they also provide partial risk guarantees to provide comfort to investors on government performance. Sometimes governments provide explicit undertakings, such as a feed-in tariff and incentive tax regimes.

Financing risk concerns the availability of financing at affordable cost and required tenors. When donor subsidies are involved, a concern can be that those financing the project do not obtain capital at costs that normally reflect low risks while retaining the potential for high returns.

**Barriers to investment in low carbon investment:** However, and particularly in the area of low carbon investment, there exist certain barriers to investment such that some of the above commonly-used mitigants may simply not be available, or would render the economics of the project unattractive. Low-carbon technology often faces an incremental cost disadvantage. As discussed below, this may be due to any of several reasons including subsidies provided to fossil fuels, the high costs of any first product introduction, regulatory and tax policies which disadvantage certain financial structures (particularly higher capital costs), or inherent limitations of the design or application (e.g., the intermittent nature of wind and solar power). These barriers can often lead to under-investment in activities promising strong environmental and social benefits but lacking in required and reliable returns. In the climate space, the key externality is carbon emissions, the cost of which is not yet integrated into decision making in any meaningful way in most parts of the world. Increasing low-carbon investment requires that these barriers be addressed so as to bring perceived or real project risk down to levels that can be mitigated by the market.

Policy and Structural barriers: Policy and structural barriers affect the viability and economic attractiveness of low carbon options, and policy and regulatory measures are essential for pricing the carbon externality. Market structures and constraints on the ability to enter domestic markets from the outside can also hamper investment. Many low carbon technologies face network requirements (solar and wind require appropriate grid capacity). Furthermore, many low carbon investments are small scale, leading to higher transaction costs. Adopting new technologies requires overcoming the status quo bias prevalent in many societies.

**Financial barriers:** The playing field is not level with regard to energy prices. Fossil fuel subsidies still exist in many countries, while the carbon externality is not priced in most. This affects the economics of clean energy. Many low carbon technologies have higher capital costs than conventional technology, even if operating costs are lower. A related issue arises when those in the best position to assume risks may not be “bankable” or have access to capital at reasonable rates. This is often the case with energy service companies (ESCOs) who offer to implement energy efficiency measures in return for sharing in the savings. Such firms are often too small to have ready access to cheap capital, but are in the best position to take performance risks associated with projecting the impact of efficiency improvements.

**Capacity Constraints:** A lack of awareness of alternative technologies, and imperfect understanding of technical solutions, leads to higher perceived risk. The technical capacity to implement low carbon solutions may simply not exist, stifling business innovation. Furthermore, limited local financial intermediary capacity can also hamper investment.

Developing countries that have succeeded in attracting investment into low carbon areas have typically provided policy and other support to create an enabling environment conducive to overall investment as highlighted in the annual Doing Business reports produced by the IFC (see Bibliography). Below are some of the policy and regulatory responses, as well as enabling conditions, commonly encountered to address such barriers.

**TABLE 3: BARRIERS FOR SELECTED CLIMATE SECTORS IN DEVELOPING COUNTRIES**

PROJECT TYPE	KEY BARRIERS	HOW TO ADDRESS
Renewable Energy	<ul style="list-style-type: none"> <li>• Fossil fuel subsidies</li> <li>• Large up-front capital cost</li> <li>• Some technology risk</li> <li>• Network effects</li> </ul>	<ul style="list-style-type: none"> <li>• Price externality</li> <li>• Feed-in tariffs</li> <li>• Predictable regulation</li> <li>• Risk reduction measures</li> <li>• Network upgrades</li> <li>• Develop project risk data</li> </ul>
Industrial Energy Efficiency	<ul style="list-style-type: none"> <li>• Energy pricing distortions</li> <li>• Lack of standards</li> <li>• Lack of ESCOs / in-house technical expertise</li> <li>• Transaction costs</li> <li>• Inability to price risk</li> </ul>	<ul style="list-style-type: none"> <li>• Develop and enforce standards</li> <li>• Local banking capacity</li> <li>• Risk reduction measures</li> <li>• Demonstration projects</li> <li>• Develop industry/risk data</li> </ul>
Building Energy Efficiency	In addition to the barriers for industrial energy efficiency: <ul style="list-style-type: none"> <li>• Agency problems</li> </ul>	In addition to the measures for industrial energy efficiency: <ul style="list-style-type: none"> <li>• Reduce builder-user information asymmetry by establishing building codes and performance standards</li> </ul>
Supply Chains for RE and EE	<ul style="list-style-type: none"> <li>• Dependent on downstream market</li> </ul>	<ul style="list-style-type: none"> <li>• Develop downstream markets for EE and RE</li> </ul>
Cleantech	<ul style="list-style-type: none"> <li>• Weak local venture capital or private equity markets</li> <li>• Most technology innovation originating from developed countries</li> </ul>	<ul style="list-style-type: none"> <li>• Support local R&amp;D</li> <li>• Supportive tech transfer regime</li> <li>• Support local venture capital / private equity funds</li> </ul>

Source: Climate Finance: Engaging the Private Sector, (2011), IFC

## SOURCES OF FINANCE & LEVERAGING TOOLS

Finance can be public or private; domestic or international; concessional or commercial. A wide range of private sources can be tapped for the financing of private investment,<sup>18</sup> as long as risk-return expectations are met. These include the private companies themselves, local, regional and global commercial banks, non-bank financial institutions, leasing companies, private equity investors and institutional investors.

Private finance may be domestic or international. Some countries have mature capital markets, while others may not be able to provide private equity or long tenor debt or even take the non-recourse project financing structures upon which much privately financed infrastructure depends. In more mature markets, international agencies can focus on addressing risk perception to catalyze private financing, while nascent markets may require a strengthening of the local financial sector and capacity building in order to do so.

In its simplest form, a private sector project could be financed on the company's balance sheet which itself will consist of shareholder's equity and short- and long-term debt. Financing plans often increase in complexity with an increase in project complexity, and a variety of financial instruments may be used to complete a financing plan in a large project finance structure. For example, contractual arrangements embodying feed-in tariffs or other price support, such as take-or-pay provisions, can serve as collateral or otherwise provide comfort to lenders.

Several different kinds of instruments may be required together to bring together the range of investors required to provide the full financing of a project or program. For example, the GET-FiT pilot program in Uganda is bringing together KfW to prepare a pipeline of projects, bilateral donors to fund the feed-in tariff, the

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<sup>18</sup> This note refers to long-term financing needs; generally, the local banking sector is able to meet firms' short-term financing needs.

World Bank to provide a partial Risk Guarantee, and commercial banks such as Deutsche Bank to finance the projects.

Capital Markets and Institutional Investors<sup>19</sup>: Additional equity finance may be provided by private equity funds, or raised through capital markets through share issues. Debt can be raised through borrowing from a bank, or through capital markets via the issuance of bonds or other commercial paper. Institutional investors control vast amounts of capital and have a longer-term investment horizon, and these large asset holders are of great interest from a green and inclusive investment perspective (see Figure 2). For example, the Institutional Investors Group on Climate Change<sup>20</sup> with about 70 members represents over €6 trillion under management, and the Carbon Disclosure Project<sup>21</sup> which sends out an annual survey to hundreds of companies for information on their climate change activities and policies represents 655 institutional investors with US\$78 trillion under management. Even a small shift in these large funds could make a sizable contribution to addressing climate change.

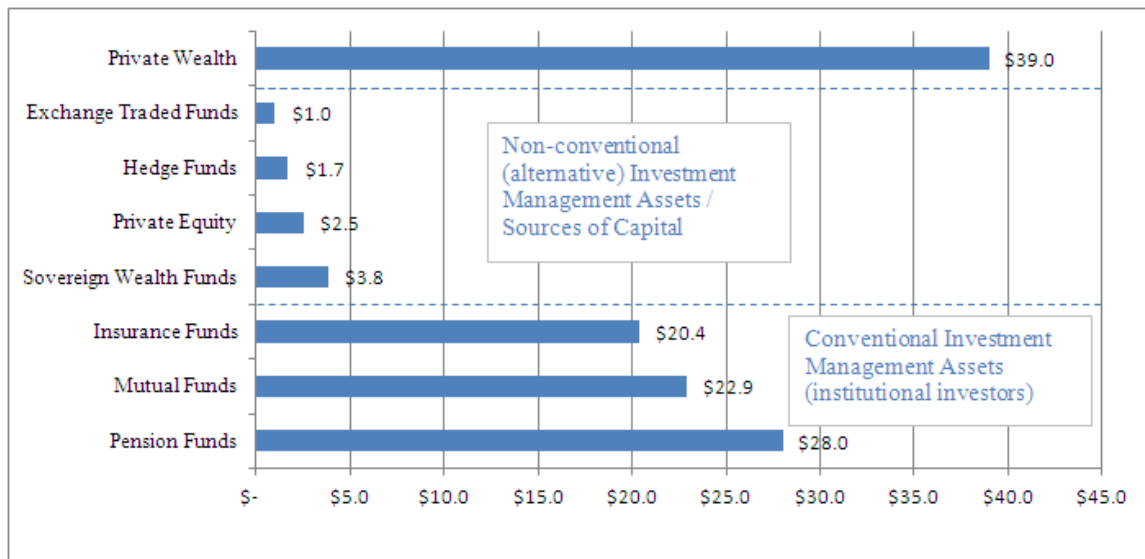
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<sup>19</sup> The OECD has forthcoming research and analysis into long term investment issues including engaging institutional investors in financing green growth, analyzing the effects of banking, solvency and accounting regulation, and providing policy recommendations. Kaminker, Christopher & Stewart, Fiona, 'The Role of Institutional Investors in Financing Clean Energy', OECD Working Paper (2012). OECD (2012 – forthcoming), 'Largest Pension Funds 2011 Survey'. OECD, (2012– forthcoming), 'The Effect of Solvency Regulation and Accounting Standards on Long-term Investing'.

<sup>20</sup> Please see [www.iigcc.org](http://www.iigcc.org) for more information

<sup>21</sup> please see [www.cdpproject.net](http://www.cdpproject.net) for more information

**FIGURE 2: 2009 GLOBAL FUND MANAGEMENT INDUSTRY, ASSETS UNDER MANAGEMENT (US\$TN)**



Source: The Role of Pension Funds in Financing Green Growth Initiatives. (2011), Della Croce, R., Kaminker, C., Stewart, F., OECD

As reflected in several documents summarized in the bibliography, this segment of the financial community is increasingly engaged in climate change discussions and in recent years has begun to organize in response to climate-related issues. However, there are so far only limited examples of such entities making significant commitments to green economy investments and an even smaller commitment to investments (of all kinds) in economies outside the G20 (the 2012 survey published by Mercer Associates and summarized in the bibliography indicates some recent qualitative evidence this may be changing). One reason, at least for pension funds, may be that they change direction very cautiously due to legal obligations to their clients which leads naturally to a primary reliance on low risk, low return investments. An interesting development in this regard is recent legislation in South Africa, perhaps the first of its kind, mandating that public pension funds take into consideration larger social and environmental considerations in addition to conventionally measured financial returns.

One product that has had some appeal for institutional investors has been "Green Bonds", issued by the World Bank, IFC, and other

MDBs. This product allows for commitment of funds to environmental purposes, without any concurrent project risk.<sup>22</sup> While promising, the total value of such bonds remains very small and their actual environmental and market impact has yet to be evaluated. Most pension funds remain focused on lower risk investments which provide a steady, inflation adjusted income stream, and their asset allocation to green investments remains low (less than 1%), with green bonds a "drop in the ocean" (0.017% of the capital held in the global bond markets)<sup>23</sup>. Issuance of such bonds cannot be hugely scaled up without some intervention to substantially increase demand.

Public Support: Governments can support climate-related investment by the private sector through a variety of mechanisms, including public-private partnerships. Much of the public support is embodied in policies and conducive enabling environments. The cost of the policy is sometimes passed on to the

<sup>22</sup> While the proceeds of an MDB's green bond may be earmarked for specific environmental activities, the servicing of the bond is from general revenues.

<sup>23</sup> Source: The Role of Pension Funds in Financing Green Growth Initiatives. (2011), Della Croce, R., Kaminker, C., Stewart, F., OECD

consumer directly, or provided through budgetary support. Furthermore, public support can be domestic, provided through the host country's budget, or it can be international, provided through public funds by donor governments as part of their official aid programs.

A number of other sources of public or quasi-public support are also encountered in inclusive and green investment in developing countries. Export credit agencies (ECAs) provide funds (direct loans) or guarantees to facilitate exports, and can remove the risk and uncertainty of payments to exporters. They can also underwrite the commercial and political risks of investments in overseas markets. Bilateral official development assistance (ODA) is also an important source of finance for climate change related activities, primarily mitigation.<sup>24</sup> However, ODA generally flows to the public sector in recipient countries. Development banks – both MDBs and their national counterparts – are an important source of finance for climate-related investment in developing countries. MDBs are able to provide tenors that are compatible with the needs of climate-related investment, and also offer de facto political risk coverage.

Concessional finance: The Global Environment Facility (GEF) and the Climate Investment Funds (CIF) are examples of multilateral public sources of blended “concessional” finance for climate-related investment in developing countries. There are typically three main rationales for providing blended finance to private sector climate investments: (i) market failures, which undermine economic efficiency; (ii) equity or distributional goals, such as promoting affordable access to basic services to under-served people; and (iii) market development or policy goals, such as promoting investment in innovative clean technologies. Many authorities agree the most important market failure in most of the world today is the lack of climate policies to provide a clear signal on pricing carbon emissions.

An increasingly critical role is for concessional finance to absorb the gap in risk-return expectations of the market (private sector). This concessional finance is typically provided by the concessional finance taking a small, but more adverse risk-return position in the financing of a program or a project than the private sector, enabling the project to move forward. Such structures hold the promise to unlock large private flows to low carbon investment in developing countries for relatively small amounts of public funds. Some examples of financial instruments intended to leverage private finance by reducing risks or lowering the cost of the investment are indicated in the table below. No two mechanisms have the same characteristics, indicating that each mechanism is appropriate for a different type of project and risk being covered. Sometimes, mechanisms may be used in combination.

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<sup>24</sup> OECD-DAC. (2011). *Tracking aid in support of climate change mitigation and adaptation in developing countries*. September 2011. [www.oecd.org/dac/stats/rioconventions](http://www.oecd.org/dac/stats/rioconventions)

**TABLE 4: SUMMARY OF FINANCIAL LEVERAGING TOOLS**

Mechanism	Direct public financing or guarantees	Debt or equity?	Risk level	Mitigates many risks or few?	Estimated leverage ratio	When tool most useful /in what contexts?
Loan guarantees	Guarantee	Debt	High	Many	6x-10x	Countries with high political risk, dysfunctional energy markets, lack of policy incentives for investment
Policy insurance	Guarantee	Debt	Medium	Adaptable to many, but ultimately one	10x & above	Countries with strong regulatory systems and policies in place, but where specific policies are at risk of destabilizing
Forex liquidity facility	Direct Financing	Debt	Low	One	-	Countries with currency fluctuations
Equity 'pledge' fund	Direct Financing	Equity	Low	Many	10x	Projects with strong IRR, but where equity cannot be accessed. Projects need to be proven technology, established companies
Subordinated equity fund	Direct Financing	Equity	High	Many	2x-5x	Risky projects, with new or proven technologies, new or established companies

Source: Leveraging private investment: the role of public sector climate finance, (2011), Brown, J. and Jacobs, M., Overseas Development Institute



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