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Designing smart green finance incentive schemes

The role of the public sector and development banks

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About E3G

E3G is an independent, non-profit European organisation operating in the public interest to accelerate the global transition to sustainable development. E3G builds cross-sectoral coalitions to achieve carefully defined outcomes, chosen for their capacity to leverage change. E3G works closely with like-minded partners in government, politics, business, civil society, science, the media, public interest foundations and elsewhere. More information is available at www.e3g.org

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Executive Summary

This paper was prepared for and presented to the KfW Financial Sector Development Symposium 2014: "Greening the Financial Sector – From Demonstration to Scale in Green Finance." The paper was developed within the context of the findings of the discussions and other papers prepared for the Symposium[1], in particular, recognition:

> Of the importance of enabling environments as keys to the success of green energy finance and often a bigger hurdle than the availability of finance itself.

> That where influence of the financial sector is possible, support mechanisms play an important role and are mainly provided by Development Finance Institutions (DFIs). Mechanisms such as technical assistance, guarantees, concessional loans (longer tenors or subsidised interest rates), need to be critically evaluated.

> That disbursement channels are important factors in the success of green energy finance.

This paper identifies some criteria and principles for assessing whether a green incentive scheme is 'smart' and uses these to evaluate financial instruments most commonly used by DFIs in the design of green incentive schemes, i.e. concessional lending, including green credit lines; grants for technical assistance and investments, with some consideration of how blending mechanisms are using grants to provide risk-coverage; and guarantees and insurance products.

Analysis of these instruments through case studies identifies the advantages and challenges of each instrument in the design of 'smart' green incentive schemes. An overarching finding is the importance of ensuring the "subsidy" element of incentive schemes is considered in light of how to overcome specific barriers and risks to foster the development of local green markets. However, this will require a bespoke approach that is designed in light of the country, policy and institutional, sector, technology and market specific factors. Key issues are the importance for considering how incentives are:

> Integrated with policy – likely requiring a programmatic approach where grants for technical assistance to strengthen the enabling environment are carefully combined with support for investments;

> Additional – both in financial terms as well as operationally and institutionally – with the aim of crowding in private sector actors either directly or indirectly, with the latter potentially being over the medium to longer-term as the market develops;

> Targeted – where concessional elements are calibrated to specific barriers and risks to the extent possible;

> Providing transparency and predictability – both of the specific incentive provided as well as the impact on market actors. The latter requires greater attention to an internationally coherent monitoring and evaluation system.

Underpinning all of the above is the critical importance of establishing a structured and ongoing dialogue between public policy decision-makers and financiers and commercial finance decision-makers. Climate change and related societal threats underscore the imperative for accelerating learning and developing capacity within the green finance sectors of developing countries. This also implies the need for ensuring a focus on innovation and the national and international systems so that lessons are captured and effectively communicated to public and private finance communities.

DFIs are uniquely positioned to pilot green financial instruments that are currently used less frequently, for example green policy risk insurance mechanisms, green equity co-investment funds for countries with relatively weak local capital markets and first-loss instruments for mobilsing institutional investors into green assets. DFIs should therefore consider appropriate incentives for investment officers to prototype innovative use of a diverse range of financial instruments across a similarly diverse range of country and sector contexts. In addition, DFIs should allocate a small proportion of their portfolios specifically to high risk investments with potentially high value in terms of learning and transformational impact. Coupled with greater support for capturing and sharing lessons learned, these activities would progress understanding of financial decision-makers within public and private sector financial institutions and related regulatory bodies.

Addressing the fragmented nature of international support to developing countries, alongside developing countries' own efforts to use and attract climate finance more strategically, would help ensure resources are used more effectively in the creation of domestic green investment frameworks and markets. This could take the form of an International Green Finance Protocol that promotes convergence towards criteria and norms for the design of smart green incentives, prioritising innovation and coherency in monitoring and evaluation of green finance. Any such work should support and be closely aligned with the new Green Climate Fund.

It is important to note that while this paper focuses on the role of DFIs in design of smart green incentives, the activities and criteria for good practice should ideally be led by developing country governments and their national DFIs. As developing country governments and other stakeholders develop relevant capacity and experience in designing green financial incentives and national systems for monitoring and evaluation, they can increasingly direct international resources, including from the GCF, to complement and supplement domestic resources for implementation of national financing strategies, plans and programmes for green or climate investments.

1 https://www.kfw-entwicklungsbank.de/PDF/Entwicklungsfinanzierung/Sektoren/Finanzsystementwicklung/Veranstaltungen/Agenda-2014-Green-Finance.pdf

1. Introduction

Progress is being made in green financing. The Climate Policy Initiative's (CPI) Landscape of Climate Finance 2013 reports that total climate finance investment in 2012 was estimated at US$ 359bn globally.1 The majority of this total, $224bn (or 62%), was from private sector sources with the public sector contributing $135bn (or 38%). According to the CPI report, there was a roughly even split between finance directed towards developed and developing countries; however, the public sector made up the vast majority of flows of climate finance from developed to developing countries.

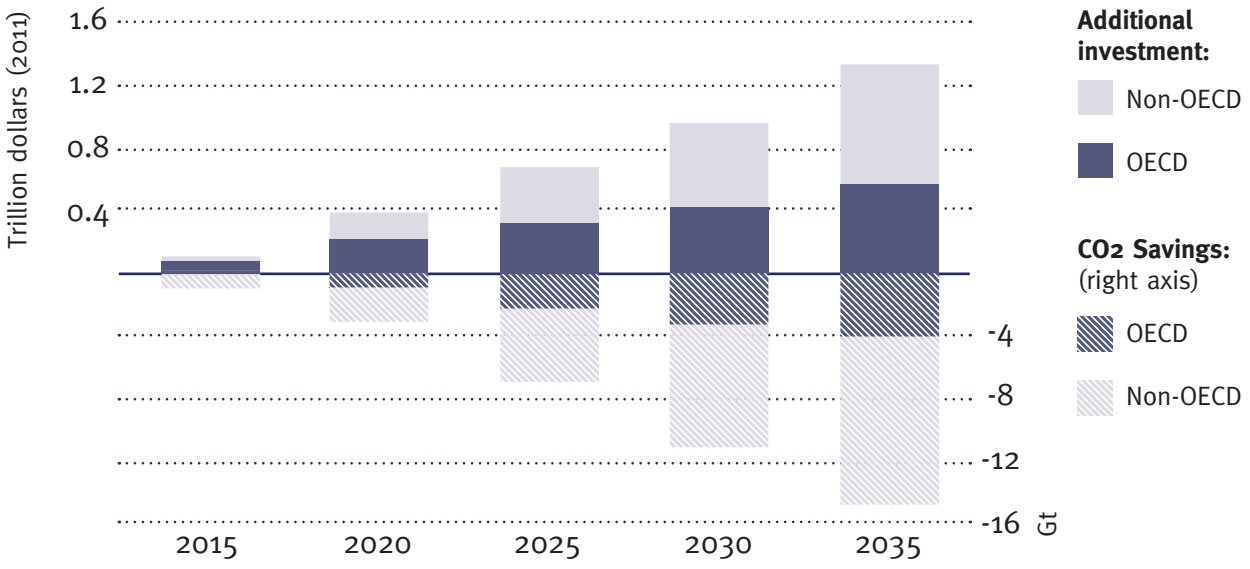
Despite this progress, green investment continues to be outpaced by investment in fossil fuel intensive infrastructure.[2] As indicated in Figure 2, the IEA forecasts that a massive but achievable shift in investment away from fossil fuels to low carbon technology and infrastructure is required to avoid dangerous climate change. Additional, incremental investment needs of roughly US$ 1.3tr per year in clean energy infrastructure, low carbon transport, energy efficiency (EE) and forestry is required to limit global average temperature increase to 2°C above pre-industrial levels.[3] It is important to note that fuel savings can more than compensate for the additional investment needs when considered from a life-cycle perspective.

Most of the lessons drawn here relate to renewable energy and energy efficiency projects or programmes, where the majority of green finance activities are concentrated. Much of the literature is focused on these activities, as well as climate finance, particularly with respect to the role of Development Finance Institutions (DFIs) in supporting developing countries with climate-related activities. Given this, the paper does not attempt to define what "green" finance is in specific terms, nor does it distinguish between green finance and climate finance.

In section 2 the barriers and risks to green investments are reviewed and the role of DFIs in overcoming these is considered. Section 3 presents a discussion of critical issues in designing green incentive schemes in developing countries and identifies criteria for assessing whether these incentives are smart. Section 4 reviews the role of DFIs in the design of green finance incentive schemes, focusing on national, bilateral and international development banks. In section 5 some real case examples are drawn upon to assess the advantages and challenges associated with different instruments that are most commonly used in the design of green incentive schemes. The analysis is summarised in section 6 with a discussion of the characteristics of smart green incentives as related to the identified criteria. The concluding section 7 considers the policy implications for international processes such as the Green Climate Fund, the Multilateral Development Banks or the work of the International Development Finance Club.

The term DFI is defined here as any financial institution that has a mandate to support private sector investments that promote development in developing countries. Multilateral Development Banks (MDBs) and Bilateral Development Banks (BDBs) are types of DFIs that are backed by guarantees and capital endowments from one or more developed country government. A National Development Bank (NDB) is defined here as a finance institution created by a host developing country to promote economic development objectives within that country.

Figure 1. World annual additional investment and CO_2 savings in the 450 scenario relative to the New Policies Scenario



Source: IEA 2013

2 CPI. (2013) The Global Landscape of Climate Finance. October 2013.

3 WEF (2013) The Green investment Report: The ways and means to unlock private finance for green growth: A report of the Green Growth Action Alliance.

2. Challenges for green finance

2.1 Review of barriers and risks to green investments

Green projects or programmes face a range of barriers and challenges in accessing finance. These may relate both to the fact that, as mostly relatively new technologies, they present new and uncertain risks to investors, as well as to the underlying investment framework or lack of a supportive enabling environment. Generally, barriers and risks for investors will also vary depending on the structure of the sector, e.g. private investment in renewable energy generation will likely involve higher risks for investors than investment in transmission and distribution systems, which are often treated as a regulated asset base, whereby returns on investment are guaranteed and subsequently less risky.

Various studies, including the G20 Development Working Group, have identified a number of barriers to green investments in developing countries. Each of these barriers fundamentally relates to the risk-return gap[4] and to the fact that private investors require confidence in the return on investment for the risk undertaken, whether such risk is real or perceived. These risks and barriers include:

- **Technology risks:** Green technologies often have higher upfront capital costs which can deter investors. In developing countries in particular, these may also include operational or performance-related risks, for example interruptions due to lack of or poor supporting grid infrastructure systems which result in lower than expected revenue.[5] Physical risks leading to financial losses due to adverse weather events can also be significant for many green technologies.

- **Policy and regulatory risks:** Policy and structural barriers affect the viability and economic attractiveness of low carbon options. The threat of policy and regulatory changes, for example to feed-in tariffs or renewable portfolio standards, is a fundamental risk that can deter investors. In addition, fossil fuel subsidies still exist in many countries and most countries lack a carbon price that would incentivise green investment.

- **Market risks:** In addition to general market risks, such as country or currency risk, green investments carry additional risks relating to the immaturity of the market. These may include high first-mover costs and risks related to unproven commercial application of a new technology.[6] For example, deal flow problems may result from an insufficient number of commercially attractive deals, making diversification in investment portfolios difficult.

- **Scale of Investment Barriers:** In addition to project specific barriers, a further challenge, particularly for investment in green infrastructure, is delivering the necessary scale of investment at the pace that may be required to meet green policy targets and objectives. On the opposite end of the spectrum, for small-scale green investments other barriers are more common, for example uncertainty of the credit-worthiness of local service providers making it impossible to raise equity, as well as end-users that have poor or non-existent credit profiles. These lead to high transactions costs making the cost of the investment high relative to the benefits provided.

- **Capacity constraints:** For most developing and emerging countries there is a lack of awareness and capacity of green technologies and activities across the policy and investment spectrum. A lack of understanding of the technologies by policy-makers, project developers and financiers may lead to inappropriate measures of support and/or high levels of perceived risk. However, often entities that are best positioned to assume risks such as energy service companies (ESCOs) do not have access to affordable capital.

Studies[7] have acknowledged that many of the above risks are common to most forms of infrastructure investments, but that these are exacerbated for green technologies, which are often subject to extensive timing uncertainty across the development, demonstration and deployment stages, in turn increasing the strategic and financial risk. Similarly, during demonstration and deployment stages, the technologies are more financially vulnerable than conventional alternatives to variations in weather, changes in level of policy support, and operational failure due to system complexity and immature supply chains. Furthermore, as green technologies are more capital intensive, requiring greater levels of upfront financing, the financial risks are exacerbated.

2.2. Challenges for governments pursuing green growth

As these barriers and risks can all contribute towards making finance, whether debt or equity, unaffordable and/or on unfavorable terms,[8] they present a considerable challenge for governments that are pursuing green growth-related objectives at the most affordable cost to either the public sector (if publically financed or subsidised) or consumers (where costs are passed on).

The degree and type of risk will generally impact on the cost of capital as the higher the risk of return on the investment, the higher the cost of capital set by lenders or returns required by an equity investor for taking such risk. Whilst financiers do not seek a risk-free environment, they do require familiarity with the risks so that they can assess whether they are acceptable and how to manage them most effectively.

The OECD (2012) identifies three key investment conditions for attracting private sector investment that can be addressed through public interventions, notably:

I. Existence of investment opportunities;
II. Return on investment, including boosting returns and limiting the costs of investment, and;
III. Risks faced over the lifetime of the project.

4 IEA (2013) Redrawing the energy-climate map. WEO special report.

5 IFC Climate Business Group (2012) Private investment in inclusive green growth and climate-related activities: key messages from the literature and bibliography. Prepared for: G20 development working group. June 2012.

6 WEF (2013) The Green investment Report: The ways and means to unlock private finance for green growth: A report of the Green Growth Action Alliance.

7 World Bank IFC, Climate Finance: Engaging the Private Sector. A Background Paper for "Mobilizing Climate Finance", A report Prepared at the Request of G20 Finance Ministers.

8 Kaminskaite-Salters, G., DFID, (2009) Meeting the Climate Challenge: Using Public Funds to Leverage Private Investment in Developing Countries: Section 4- Spending public finance to leverage private investment: specific instruments for specific challenges. September 2009.

Governments with green policy and investment goals therefore need to focus on all three of these challenges through activities that create green markets and measures to foster supportive enabling environments, which increase the certainty of return on investment and reduce the overall costs of green options. Such governments should also consider use of public instruments for sharing risk with the private sector.

2.3 Investment Grade Energy Policy

The term "Investment Grade" energy policy[9] has been developed to reflect on the role of policy in overcoming barriers to private investors. Through a review of various case studies of public sector interventions, the Capital Markets Climate Initiative (CMCI) has developed five core principles to be considered in delivering investment grade policy and projects.[10] These include:

- Early and on-going managed dialogue with institutional investors and local and international private sector;
- Clear, long term and coherent policy and regulatory frameworks;
- Price signals in the market, including subsidies and carbon price, should support the deployment of low carbon alternatives;
- Underpinning economic drivers that should be realigned to support sustainable growth; and
- National governments having active programmes of public climate finance to support, underpin and develop investment grade projects that mobilise private capital.

In essence, the challenge for governments is to provide long-term certainty through a stable regulatory environment and policy framework. The goal should be first to reduce policy-related risks through, for example, climate change legislation, and then to increase rewards by providing premium price guarantees or tax incentives.[11] Whilst this presents the ideal situation, in most cases, particularly within developing countries, policy-makers and legislators may not be fully convinced of the affordability and/or benefits of newer and low carbon options. Hence, most green incentive schemes are designed in the absence of a supportive enabling environment where "investment grade policy" exists.

A range of policy and financial instruments can also be used to de-risk investments, particularly in the early stages, to build understanding of the risk-reward profile of green investments.

2.4 Public sector instruments used within green incentive schemes

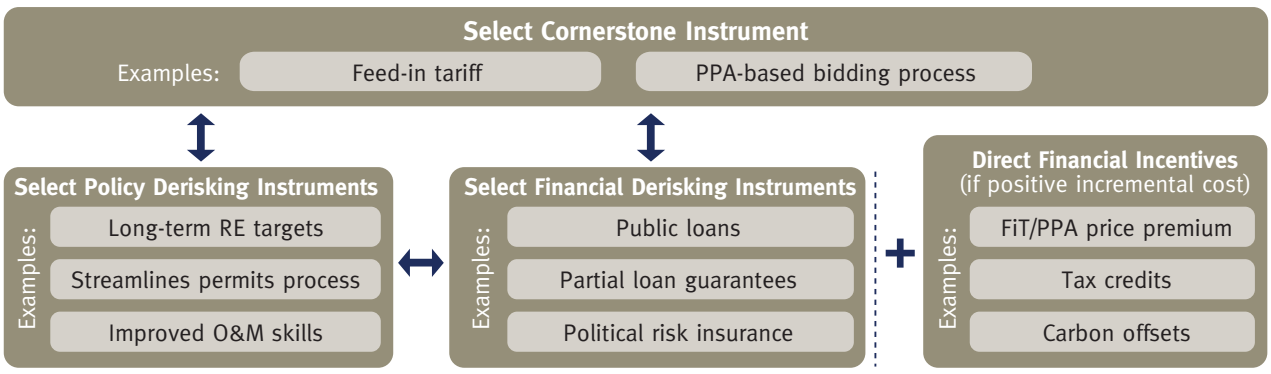
There are many public sector instruments available for encouraging green investment and selecting the right instrument or mix of mechanisms can be a challenge. The appropriate instrument will depend on the type of risk that is preventing private sector investment. Generally public sector instruments are designed either to reduce risk or to increase return and the response will vary depending on sector and country context. UNDP[12] identifies two categories of de-risking instruments:

- **Policy de-risking instruments:** policies or other interventions that address the underlying barriers that cause risks. A policy de-risking approach might involve streamlining the permitting process, clarifying institutional responsibilities, reducing the number of steps and providing capacity building to programme administrators.
- **Financial de-risking instruments:** do not directly address underlying barriers but rather transfer risks that investors face to public actors such as development banks. These instruments can include concessional loans, guarantees and use of insurance and public investment capital of equity co-investments.

The UNDP illustration below (Figure 2) considers how such de-risking measures may work in combination with each other as well as with more direct financing measures.

Instruments that have demonstrated considerable success and often serve as the foundation for other complementary policy and financial de-risking instruments are called 'cornerstone' instruments. These may be necessary, yet are often insufficient to mobilise private sector investors at the scale and pace that is required to meet green related policy objectives. A range of other policy, regulatory and financial instruments are likely to be needed. **This paper focuses on financial de-risking instruments that are being used to provide green incentive schemes within developing countries.** However, given the intrinsic relationship between the relative success of these instruments and the broader enabling environment, these instruments need to be considered in light of how they are integrated with policy measures, which may be cornerstone instruments and/or policy de-risking instruments, as well as direct financial incentives.

Figure 2: Public instrument selection for large-scale renewable energy



Source: UNDP 2013

9 Hamilton, K. (2009) Unlocking Finance for Clean Energy: The Need for 'Investment Grade' Policy Chatham House December 2009.

10 Jones, A. (2012) Principles for Investment grade policy and projects. A report produced for the Capital Markets Climate Initiative. May 2012.

11 UNDP (2011) Catalyzing Climate Finance: A Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate Resilient Development. April 2011.

12 UNDP (2013) Derisking Renewable Energy Investment: A Framework to Support Policymakers in Selecting Public Instruments to Promote Renewable Energy Investment in Developing Countries.

3. Designing smart green incentives in developing countries

3.1 Mobilising green finance in developing countries

By one estimate, public finance has the potential to mobilise four to five times its contribution from private sources. If public sector investment increased to US$130bn it could mobilise private capital in the range of US$570bn.[13] This is only likely to be achieved with a sufficient level of understanding of how best to overcome risks and barriers within the local context. This creates a considerable burden for public policy and finance decision-makers in developing countries, not least because these risks will be in addition to broader social and economic development challenges such as providing education, job creation and development of local domestic markets.

Generally relatively limited institutional capacity may therefore be unable to address the challenges associated with designing green incentive schemes that make best use of public resources for mobilisation of private sector green investment. At the same time, there may be limited private sector knowledge of green investments in developing countries, further constraining potential for development of green domestic markets and realising the growth opportunities these could provide.

3.2 Risks in using green incentive schemes

Concern over the potential for market distortion is common when designing green finance incentive schemes, particularly with regard to the use of concessional finance and grants for investments.

A market distortion occurs when a public intervention or subsidy changes the economics of the market. The term tends to be used in a negative sense, relating to the crowding-out of other finance providers, particularly those in the private sector. This would clearly represent a failure of an incentive scheme that was designed with the intent of mobilising new sources of green finance. One further risk when designing an incentive to reduce technology or operational risks is moral hazard, whereby project developers are cushioned from failure to the extent that they may fail to take appropriate precautions. Specific project implementation risks must therefore be taken into careful account to avoid the potential for such an effect. Market distortions can, however, be referred to in a more positive light, as may be the case in the use of measures to incentivise investment in renewable energy and energy efficiency. Such use of subsidies is justified on the basis that social and environmental externalities are not priced within the market.

There are often differing views on the potential for an incentive to have a distortional impact. For example, in consideration of the EU Blending Mechanisms[14], financiers and the European Commission disagree on the use of interest rate subsidies. Whereas financiers find them straightforward and useful, the Commission notes that they may be distortive to the economy. Where financial markets are weak the potential for interest rate subsidies to distort the market is generally thought to be fairly low. However, for markets with a functioning commercial banking system, investment grants may be considered more appropriate as they encourage the participation of local financial institutions.

The use of grants or concessional finance with a green incentive scheme therefore needs to be justified. A common way of interpreting this is by assessing if the grant or concessional element is essential for a project to exist. However, it is difficult to ascertain if a project would or would not have taken place under commercial market conditions. An ODI working paper on designing public sector interventions to mobilise private participation in low carbon development provides a 20-question toolkit. On the issue of avoiding market distortion it identifies three main issues, which are broadly:

- Need to understand the policy context and barriers, costs and risks to be overcome through the use of a public finance incentive;
- Ensuring additionality of the public finance incentive provided;
- Tailoring concessionality carefully to provide just enough incentive for the investments to take place.

All of the above activities are important in designing green incentives and the extent of risk-coverage to be provided. These are therefore key factors that will influence whether a green incentive is smart or not, and the extent to which it can help ensure green market development and the potential for creating competition within such markets.

3.3 Defining a "smart" green incentive

As one of the key risks in the use of green incentive schemes is that of crowding out other investors, particularly the private sector, 'smart' incentives need to focus specifically on crowding in other investors. In other words it is important to ensure that the overall goal of a green incentive scheme is the development of a domestic green market for production and consumption of green technologies and/or services. Building on the literature above, the following issues are identified here as important criteria in the design of smart green incentives:

Integration with the policy context

The literature and the case studies all indicate the importance of understanding the policy context, specific barriers, costs and risks that may need to be overcome. As set out above, the targeted deployment of public finance has potential to mobilise five or more times its contribution from the private sector (WEF, 2013 and IDFC, 2012). However, this mobilisation will only result where public finance, in combination with other policy and regulatory measures, can mitigate the range of financial and non-financial barriers facing private sector investors. As policy contexts will be unique and determined largely by the political economy of a country, the level of real risks and the extent to which risks may be perceived will also vary.

13 WEF (2013) The Green investment Report: The ways and means to unlock private finance for green growth: A report of the Green Growth Action Alliance.

14 Jorge Núñez Ferrer and Arno Behrens (2011) Innovative Approaches to EU Blending Mechanisms for Development Finance.

Generally, integrating green incentive schemes with the policy context can help to ensure that the level of incentive provided is commensurate with the barriers and risks that exist. This will require a sufficient level of institutional capacity to understand how the policy and regulatory framework impacts on commercial decisions and ensuring that appropriate measures are developed in consultation with relevant stakeholders. A related issue is whether and how commercial decision-makers from the finance sector perceive policies as credible. As discussed with respect to the concept of investment grade policy, institutional arrangements and the processes of policy development have a significant impact.

Additionality of incentive

The term "additionality" has different definitions in different contexts.[15] However, it tends to be considered in two main respects:

> Financial additionality – would the investment have happened anyway? If the incentive does not represent financial additionality then it would be unlikely to leverage private finance, and instead subsidise the beneficiary (potentially enabling windfall profits or inducing moral hazard) or compete with the beneficiary to crowd out private investment.

> Operational and institutional additionality – does the incentive result in an investment that is better aligned with the goals of the public institution supporting it?

In the context of this analysis, the green financial incentive provided is considered additional if the activity would not have taken place in the absence of such support. The emphasis on operational and institutional additionality is interesting when considering the overarching importance of the policy and institutional context towards the success of the green incentive scheme.

However, proving additionality is inherently difficult as it involves establishing a counterfactual, i.e. determining whether or not the investment would have been financed without the green incentive provided. ODI recommends a number of additionality 'tests' that can be used to evaluate whether an incentive scheme will be additional:[16]

> Does the intervention cover only incremental costs between a less costly but high carbon option and a more expensive low carbon option?

> Are there barriers to obtaining sufficient financing from private sources on appropriate terms?

> Does the intervention target countries/technologies where the private sector is not providing investment at all, thereby allowing for first-of-a-kind investments?

> Does the intervention redirect financing away from high carbon sectors to low carbon sectors?

> Does the intervention contribute to:
  - The fairer or more efficient allocation of risks and responsibilities between public and private actors?; and/or
  - Improvement in the business, developmental, transition, social or environmental performance of the project/programme?

The above tests all provide some form of evaluation of financial additionality with the exception of the last, which relates to the operational and institutional additionality.

Targeted use of incentive

Understanding the details of specific risks and how these can be tackled most effectively will determine the design of an appropriate response. This is important to avoid providing excessive risk-coverage or blanket coverage of risks that could effectively crowd out private finance and/or create windfall profits for those that are able to directly benefit. The OECD (2012) highlights that for managing technology risks the incentives need to be specific to the level of maturity of the technologies and their supply-chains, e.g. offshore wind will require higher levels of support than onshore wind. At the same time financial instruments supporting green investments will also need to be structured according to the maturity of the local financial sector (OECD, 2012). This is also important to avoid moral hazard.

Transparency and predictability of the incentive

As highlighted in the discussion on "investment grade energy policy", institutional arrangements and local market context will impact on the transparency of green incentives as well as the extent to which the private sector views these as credible. Whilst green incentive schemes are required for new and immature technologies, these should be phased out as the technologies mature and where familiarity of the investments is developed. However, sunset clauses for lowering subsidies as technologies become more cost competitive will need to be developed in a transparent manner to provide certainty for investors as to the process for phasing out incentives.

The extent to which the incentive (i.e. subsidy) component of a green financial instrument can be clearly identified and tracked will also be important in identifying whether and how it is a 'smart' incentive. This requires effective monitoring and evaluation procedures that can identify who is benefiting from the incentive and in what way. Effective monitoring and evaluation is also valuable in providing a positive feedback loop to inform future design of green incentives that are closely integrated with the policy process and/or further tailored to ensure the incentives are targeted.

Effective stakeholder engagement

For each of the above key criteria, strong local knowledge and engagement of key national public and private sector stakeholders is required and can therefore be considered as a cross-cutting issue. This needs to go beyond sharing information of the incentive scheme once it has been designed; rather, public and private financial stakeholders should be consulted during the design process itself as well as throughout the lifetime of the incentive scheme. Similarly, a sufficiently wide range of stakeholders should be involved in the consultation process to avoid the potential for incumbents to have a disproportionate influence.

15 Brown, J., Bird, N. and Schalatek, L. (2010) Climate finance additionality: emerging definitions and their implications. ODI and Heinrich Boll.

16 Whitley, S. and Ellis, K. (2012) Designing public sector interventions to mobilise private participation in low carbon development: 20 questions toolkit Working Paper 346. Overseas Development Institute.

3.4 Incentives for transformational impact and green market development

E3G's model of transformational change[17] set out in Figure 3 highlights the importance of ambition (or scale), scope and learning in delivering transformation.

Based on the above framework, it is argued here that decision-makers – whether from developed or developing countries – who are intent on transformation towards a greener economy will need to recognise the value of utilising public resources for increasing ambition and the scope of green finance incentive schemes. At the same time, effort and resources will need to be focused on accelerating learning of successful smart green incentive schemes. When designing a portfolio of smart green incentives in developing countries, broader societal or global public good objectives should be considered, including:

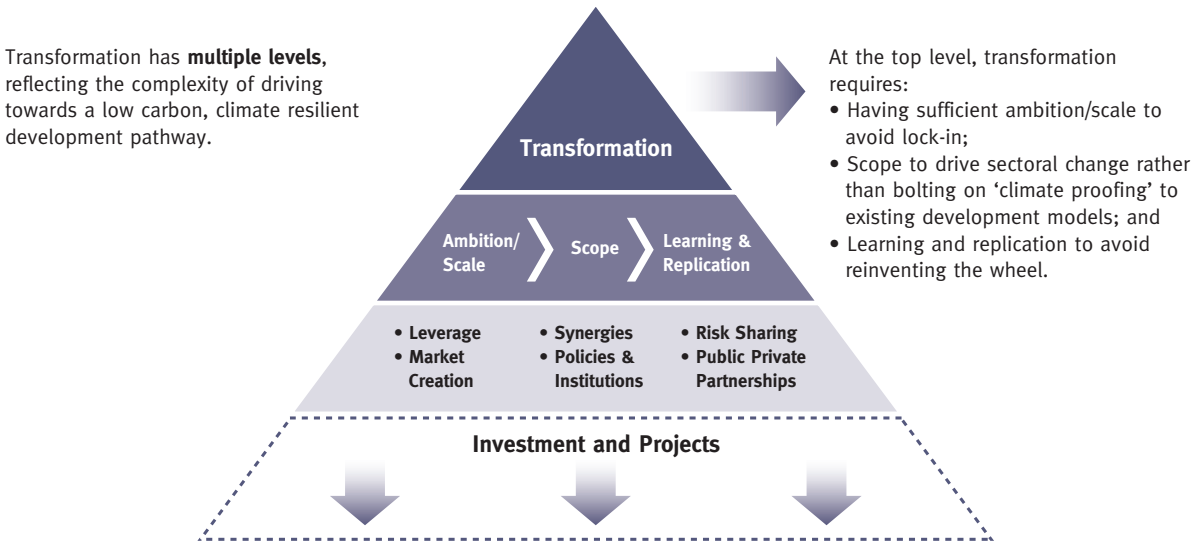
- **Prototyping innovative public-private risk-sharing instruments across a range of country, sector and technology contexts** to demonstrate to public financial decision-makers and the private sector how climate finance can effectively scale-up and mobilise new sources of private capital.
- **Accelerating learning and integrating lessons** of innovative green financial instruments and appropriate business models that work to allocate risks between the public sector and different forms of private finance in a way that reduces overall costs of green investments over time.
- **Collaboration and pooling of resources to ensure limited expertise and financial resources are used for maximising synergies and outcomes** – in support of developing countries' green development objectives.

In summary, smart green incentive schemes can be guided by some key criteria and principles, such as:

- **Integration with the policy context** and related arrangements and capacity of public sector institutions;
- **Financial additionality as well as operational and policy additionality;**
- **Targeted use of concessionality** based on strong understanding of specific risks, including the local policy and market context;
- **Transparency and predictability** of the incentive provided, including the extent to which the incentive can be monitored and evaluated with respect to who benefits and how;
- **Deep and informed engagement of stakeholders**, which should ensure ongoing dialogue between public policy decision-makers, including those from DFIs, and decision-makers from the commercial finance sectors;
- **Innovation and learning** through prototyping of new instruments and investment that build a track record, and focus on capturing and sharing learning that will help inform future design of smart green incentive schemes; and
- **Collaboration across and between DFIs in-country** to ensure approaches are complementary and together create a coherent approach towards design, implementation and monitoring and evaluation of green finance.

The following section considers the specific role of DFIs in meeting the public sector challenges for designing green incentives that effectively overcome barriers and share risks for mobilising private sector finance.

Figure 3: Conceptual framework of transformational change



Source: Adapted from an E3G conceptual framework developed in 2009.

17 This has been adapted from an E3G model developed in 2009 as part of an E3G report on transformational finance for Germany's Ministry of Environment (BMU).

4. Role of Development Finance Institutions in green finance

Development Finance Institutions (DFIs) make a significant contribution to the climate finance landscape. According to CPI they distributed roughly US $121bn in resources in 2012 (with more than half as low cost loans).[18] In addition to channeling public budgets, they can raise funds on capital markets, reinvest earnings and leverage through co-financing with other institutions.[19] Unlike private investors, public finance institutions can take other public policy relevant considerations into account, including market development and social or environmental goals. They can tolerate higher levels of risk if they believe that projects will satisfy one or more of these development goals. Because of this, public development banks often play the crucial role of being the first mover of renewable energy investment in developing countries.[20]

However, the rigorous due diligence processes and respective credit committees of DFIs will need to adapt their thinking to accommodate new barriers and risks posed by green technologies and the extent to which a green incentive scheme is appropriate. If investment officers and credit committee personnel lack familiarity with the technology or other risks, they may be unwilling to approve such green projects. As discussed later, the availability of concessional finance from the Global Environment Facility (GEF) and the Climate Investment Funds (CIF) has been important in providing risk-sharing to the DFIs through the MDBs and their implementing agencies.

4.1 Role of National Development Banks

National Development Banks (NDBs) in emerging economies contribute a large share of public and private financial institutions to the climate finance landscape. Ecofys estimates that in 2011 a select number of NDBs provided around US$89bn in financing to programmes addressing climate change.[21] The unique role of NDBs relative to other institutions such as Multilateral or Bilateral Development Banks arises from their deep local knowledge and relationships, their understanding of local markets, and the fact they have a higher threshold for taking risks than other financial intermediaries.[22] The IDB lists several other advantages of NDBs, including:

> Market development, for example in new sectors and emerging industries through capacity building;

> Long standing relationships with local private financial institutions, hence understanding unique risks and barriers they face (some NDBs have explicit mandate of working with private sector) and helping them to address many of these barriers;

> Ability to aggregate large number of small-scale projects through a portfolio approach when assessing credit risk that streamlines the application process, minimising transaction costs and encouraging the participation of local financial institutions.

According to the IDB there are two main interventions at NDBs' disposal that are used to attract private investment:

i. Building **demand** in the pre-investment stage through technical assistance aimed at creating an enabling environment for private investment.

ii. Providing the necessary incentives to mobilise the supply of climate-friendly investments from the private sector by offering financial instruments on adequate terms and conditions.

Based on a survey of NDBs in Latin America, the IDB[23] has found that, while many NDBs are already employing financial instruments to support low carbon projects, there is a need for governments to provide a clearer mandate in order to allow them to further scale up private investment. Given the inherent advantages of NDBs, efforts should be made to include them in policymaking as well as developing mechanisms for attracting international sources of climate finance.

Box 1: The IDB study suggests the following actions as important:

> Enhancing coordination of national and international climate finance actors with the aims of:
  - Creating clear processes to design one national climate strategy building on sector strategies, leading to robust investment plans
  - Jointly preparing project pipelines with bankable projects; and
  - Enhancing cooperation among UN agencies and multilateral and bilateral donors

> Enhancing the dialogue between national policymakers and NDBs to promote the active role of NDBs in delivering international climate finance including:
  - Using NDBs as a mechanism to manage and channel financial resources;
  - Taking into account NDBs' experience and advice for the design of new mechanisms such as the GCF; and
  - Supporting readiness strategies and internal capacity building efforts for NDBs.

> Building knowledge about best practices of NDBs

> Encouraging NDBs to develop readiness strategies for international climate finance mobilisation and intermediation including:
  - Building internal capacities and knowledge about international climate funds; and
  - Strengthening their capacities to MRV the impacts of interventions.

18 CPI. (2013) The Global Landscape of Climate Finance. October 2013.

19 CPI. (2013) The Global Landscape of Climate Finance. October 2013.

20 IRENA (2012) Financial Mechanisms and Investment Frameworks for Renewables in Developing Countries. December 2012.

21 Ecofys-IDFC 2012 Mapping of Green Finance Delivered by IDFC Members in 2011.

22 IDB (2013) The Role of National Development Banks in Catalyzing International Climate Finance. March 2013.

23 IDB (2012) The Role of National Development Banks in Intermediating International Climate Finance to Scale Up Private Sector Investments. November 2012.

Finally, as NDBs are close to the development priorities of their country they are better able to integrate and mainstream green-related objectives and risks into development planning and investment programmes.

4.2 Role of Multilateral Development Banks in delivering green finance in developing countries

MDBs accounted for about US$38bn or 31% of the total DFI finance in 2012.[24] MDBs have been very successful in mobilising significant levels of financing from private sources. For example, the IFC report for the G20 Development Working Group indicates that one dollar of climate-related investment attracts over three dollars from the private sector, on average (see Figure 3 below).[25] Not surprisingly, they have demonstrated the highest leverage for established technologies within strong regulatory frameworks.

Most MDBs provide grants and loans to clients, with loans for the private sector usually being at market rates and sovereign guaranteed loans at below market rates. Some MDBs also provide other financing instruments including equity investment, currency swaps, and other types of guarantees or insurance products.[26]

MDBs play a number of roles in supporting developing countries with the design of green financial incentives. Broadly these include:

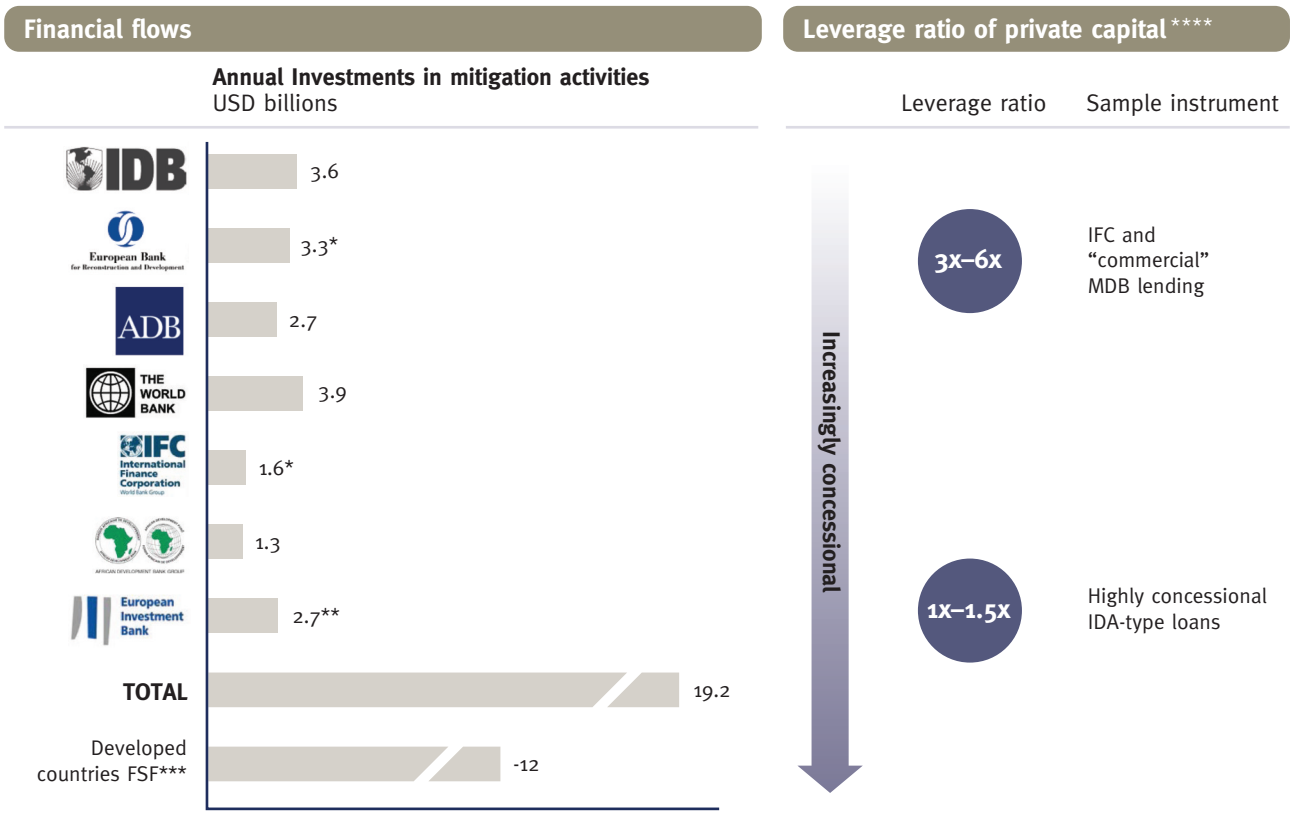
> Potential to play the role of honest broker in dialogue between governments and private sector investors.

> Potential to confer preferential access to foreign exchange compared to other lenders.[27]

> Knowledge of policy, technology and financial risks and ability to provide technical assistance or other capacity building for overcoming these.

In addition many MDBs can access concessional funding from the Global Environment Facility (GEF), the Climate Investment Funds and bilateral green trust funds. As implementing entities for climate and other green funds, the MDBs can access

Figure 4. MDB investment and leverage ratios for mitigation, 2010



Notes

Exchange rates used: €1=$1.50

* For EBRD and IFC private sector lending main activity; for MDBs share of total financing to private sector (separate window)

** Additional USD12.5 billion in climate change mitigation investments in the EU

*** Part of funds through MDBs

**** Leveraged capital can include additional public funds (eg local development banks), however except for large renewables very small share

Source: GEF, MDB reports, WRI

Source: Climate Finance G20 report

24 CPI. (2013) The Global Landscape of Climate Finance. October 2013.

25 IFC 2013 A Dialogue Platform for Inclusive Green Growth Investment: An Expanded Stocktaking for the G20 Development Working Group.

26 WRI (2012) Public Financing Instruments to Leverage Private Capital for Climate-Relevant Investment: Focus on Multilateral Agencies. Working Paper December 2012.

27 G20 report World Bank IFC (2012) Climate Finance: Engaging the Private Sector. A Background Paper for "Mobilizing Climate Finance", A report Prepared at the Request of G20 Finance Ministers.

such dedicated sources of concessional climate and green funds, for co-financing or blending with their own resources. Such concessional funding also incentivises these institutions to try out new and potentially innovative approaches, often requiring them to adopt operational procedures that may also enhance their approach towards the design of green incentive schemes. For example, the CIFs require a programmatic approach whereby policy and institutional barriers need to be addressed alongside the use of concessional finance for investment, and where public (sovereign guaranteed) and private (non-sovereign guaranteed operations) need to be designed in a complementary way towards a similar objective. Emphasis is also placed on the importance of ensuring that investments are made alongside existing measures to enhance the enabling environment. Such an approach is generally considered as important for delivering the transformational impacts that the CIFs aim to achieve.

4.3 Role of Bilateral Development Banks and blending mechanisms

BDBs also contribute a significant share of public climate finance – about US$15bn in 2012. They can draw on a long history of experience supporting projects with sustainable development goals, particularly at the sector level.

BDBs share some characteristics with other development banks, such as experience working with local financial institutions and experience providing both financial and policy-side support interventions. One key advantage of BDBs compared to other developments banks is that decision-making procedures can be much faster and more efficient, so finance is ultimately provided more quickly. According to UNEP, BDBs "typically have easier and faster modalities for disbursements, and higher flexibility to decide and close on innovative financing solutions.[28]

UNEP noted that of the US$13bn invested – which represented a 25% increase from the previous year[29] – the majority went to mitigation activities in the energy and transport sectors. Concessional loans made up the largest share of total climate finance from BDBs at 64%, with non-concessional lending representing about a quarter of total finance, and grants constituting around 7%.

Within Europe, blending facilities that combine concessional loans and grants are increasingly used as a way of pooling financial resources in order to increase the impact of financial instruments. Grants improve the risk-reward calculus while also reducing interest costs to the beneficiary of the loans.[30] Blending can also increase financial leverage and is better suited for programme-based and large-scale development programmes.

Expanding the use of blending facilities should allow for a "better division of projects into those that can only be financed exclusively by grants and those that are bankable"[31] Grants used in blending facilities or as stand-alone instruments can be used at different stages or be tailored to address multiple barriers, including: technical assistance and feasibility; direct investment; interest rate subsidies; loan guarantees; structured finance; risk capital; and insurance premia. Blending facilities used by the European Commission have demonstrated significant success: a grant element of EUR519m led to additional development finance in form of concessional loans of EUR9.56bn for projects with a total value of over EUR19bn.

4.4 Summary of DFIs

There is a wide variety of approaches amongst DFIs[32]. Some only provide grants or other de-risking instruments. Others offer a wide range of financing options across all categories including loans, equity and guarantees. Generally DFIs combine instruments to support projects in both the pre-investment stage (grants and technical assistance) with the investment stage (risk enhancements, funding subsidies or other financial tools to attract private capital). The following matrix (Table 1) provides an overview of the types of instruments available for each type of institution, the barriers being addressed, the green incentives available, and the likely impacts and risks of using such incentive schemes.

It is worth highlighting that Export Credit Agencies (ECAs) are not included in this paper as they are not DFIs, yet these publicly funded institutions are playing an increasingly significant role in supporting green technology exports. ECAs provide loans or guarantees and can also underwrite risks involved in investments in overseas markets. OECD countries recently established rules governing provision of ECA support for renewable energy and there are ongoing efforts to ensure ECAs consider climate change in their policies.[33] The Export-Import Bank in the US, for example, has recently ruled out support for coal plants in all but the most unusual circumstances.[34] The Overseas Private Investment Corporation (OPIC) has made support for renewable resources a top priority.[35] The experiences of ECAs therefore can and should be used to inform the activities of DFIs, including national development bank decision-makers.[36]

28 UNEP (2011) Innovative climate finance: Examples from the UNEP Bilateral Finance Institutions Climate Change Working Group.

29 UNEP (2010) Bilateral Finance Institutions and Climate Change: A Mapping of 2009 Climate Financial Flows to Developing Countries.

30 CEPS (2011) Innovative Approaches to EU Blending Mechanisms for Development Finance. 18 May 2011.

31 CEPS (2011) Innovative Approaches to EU Blending Mechanisms for Development Finance. 18 May 2011.

32 Which here refers to MDBs, BDBs and NDBs.

33 G20 report World Bank IFC (2012) Climate Finance: Engaging the Private Sector. A Background Paper for "Mobilizing Climate Finance", A report Prepared at the Request of G20 Finance Ministers.

34 http://sierraclub.typepad.com/compass/2013/12/ex-im-bank-announces-historic-coal-finance-ban.html

35 http://www.opic.gov/opic-action/overview/renewable-resources

36 For a useful overview of the role of OPIC and the Ex-Im Bank in the provision of climate finance see: Christianson, G., Shally, V. and Shilpa, P. (2013) Unlocking Private Climate Investment: Focus on OPIC and EX-IM Bank's Use of Financial Instruments. Working Paper, Installment 3 of Public Financial Instruments Series. Washington DC: WRI.

Table 1. Summary of financial instruments and mechanisms used within green finance incentive schemes

Type of Instrument/ Mechanism	Institutions (NDBs, BDBs, MDBs and ECAs)	Barrier being addressed	Green Incentive (Support/terms and conditions)	Impact of the incentive	Key risks
Concessional Loans	Many DFIs offer concessional finance; GEF and CIF are prominent examples. Low cost debt accounts for the majority of climate finance provided by DFIs. MDBs can provide sovereign guaranteed highly concessional loans through use if CIF.	Country lacks sufficiently developed financial sector/green projects lack access to finance.	Loans offered at well below market rates. Lowers overall capital costs and increases profitability. Long tenors.	Can leverage significant investment.	May crowd out private capital and investors. Requires method of evaluation to provide evidence that concessional finance is working to help develop and expand the local market in a way that crowds in new players. The CTF has such procedures in place. Furthermore, individual or programme CTF proposals have to be approved by the CTF Trust Fund Committee prior to their finalisation in the MDB internal project cycle.
	Non-sovereign guaranteed.	Market development.	Careful tailoring of concessional element.	Provides significant leverage.	Higher risk of failure to recoup investment due to lack of guarantee.
Green Lines of Credit	CTF has proven success in offering green lines of credit. Usually includes loans and guarantees offered on a concessional basis.	Markets with high interest rates. Lack of familiarity of commercial/ development banks.	Short term finance for projects without consistent cash flow.	Builds local capacity for green financing within national institutions.	Leverage potential is relatively low. Usually requires technical assistance as public and commercial financial intermediaries lack expertise and technical capacity.
Grants for technical assistance/ policy support	Limited availability. Need for effective partnerships between stakeholders.	Lack of readiness/ enabling environment/ expertise/awareness.	Support in very early stages/ feasibility or capacity building.	Flexibility. Can be directed towards wide variety of purposes such as supporting enabling policy or regulatory environment.	May not have lasting impact unless blended with loans.

Type of Instrument/ Mechanism	Institutions (NDBs, BDBs, MDBs and ECAs)	Barrier being addressed	Green Incentive (Support/terms and conditions)	Impact of the incentive	Key risks
Grants for investment support and/or risk coverage	Most NDBs, MDBs and BDBs.	Lack of local capital available. Risks involved are too high for private sector.	Direct investment – either at early stage or performance-based. Can be used in wide range of risk-coverage instruments i.e. lower interest rates, loan guarantees or insurance premia and as first loss tranche.	Flexible for use in different instruments Supports markets where access to finance is most challenging including least developed countries and new technologies; adaptation projects.	May not have lasting impact. May create distortions in well developed financial markets.
Guarantees and insurance products	Offered by many development banks and ECAs. Regulatory risk guarantees or insurance and interest rate or currency facilities still not widely available.	High perceived repayment (credit) risk.	Low capital commitment but large leverage effect. Partial or full coverage credit or policy based guarantees; political risk insurance to protect against macroeconomic or political volatility.	Flexibility. Can be tailored to mitigate specific risks. Political risk guarantee can be critical in less developed countries. Appropriate in markets where borrowing costs are reasonably low. Partial guarantees can incentivise local institutions to develop internal knowledge and improve their own risk assessment techniques.	Requires a clear strategy to phase out these support mechanisms. Monitoring and reporting procedures can be onerous and insurance products can have restrictive legal clauses.

5. Case study analysis of the use of green financial incentives

5.1 Concessional Loans

The OECD defines concessional loans as those extended on terms of substantially lower rates than market loans. The concessionality is achieved either through interest rates below those available on the market or by grace periods, or a combination of these. Concessional loans can be used to help develop new markets or policy goals as they address the high cost associated with early market entrants by tackling liquidity issues, tenor and cost of funds.

Advantages

> Can leverage significant investment.

> Use local expertise and allow capacity building.

> Can be integrated with other development focused investments.

Challenges

> Usually require a long-term coherent policy and regulatory framework underpinned by legislation to ensure the success of the project.

> Determining the right level of concessionality to avoid undesired market distortions and maximise leverage may be a complex process.

> May require educating investment officers on criteria for use of concessionality as well as novel investment profiles.

> M&E challenges in the transparency and execution of programmes, which currently limit evidence that concessional finance is working to develop and expand local markets by crowding in new players.

Box 2: Case Study Example – The Clean Technology Fund (CTF) Investment Programme (IP) for Renewable Energy in Mexico

The IP was submitted by the Government of Mexico to CTF and agreed in 2009 with the International Bank for Reconstruction and Development (IBRD), the Inter-American Development Bank (IDB) and the International Finance Corporation (IFC). The IP seeks to support the achievement of the low-carbon objectives set by the Government of Mexico.

I. **Direct use of concessional loan to mobilise private sector:** The Renewable Energy Part I (Private Sector) The CTF IP includes a number of programmes to be executed by the three MDBs, in which the IDB was defined as the implementer of the programmes related to renewable energy. >

The IDB proposed a programmatic approach incorporating a combination of policy and regulatory support, development enhancing technical cooperation and knowledge management to capture and disseminate relevant knowledge and direct and indirect funding of projects. This last item is a good example of use of Concessional loans.

IDB provided a concessional loan for the project developers of Eurus, a 250 MW wind farm in Oaxaca, Mexico developed by Acciona of Spain. To date, Eurus is the largest operating wind farm in Latin America. As lead arranger for the transaction, IDB provided US$45 million A-Loan plus a US$34.4 million B-Loan alongside a group of international and local financial institutions, including Mexican National Financiera (NAFIN[37]).

II. **Indirect mobilisation of public and private sector – The Mexico Renewable Energy Financing Facility (REFF)**

The Mexico Renewable Energy Financing Facility (REFF), implemented by the IDB, received US$70 million provided by the CTF as part of the agreed investment plan, and was backed with funds from NAFIN and IDB. REFF aims to leverage more than US$1.5 billion for renewable energy projects[38] to provide a track of successful projects that help to address risks and cost barriers for early market entrants.

NAFIN is a national credit institution nominated to host the Mexican Green Fund, which operates on a learning-by-doing basis, and is designed to attract, blend and deploy climate finance. The total proceeds of the REFF will be channeled to end users by NAFIN directly or indirectly, through the intermediation of other financial institutions including Mexican development banks, which will be financed by NAFIN though second tier transactions[39].

REFF provided financial support though two mechanisms:

> **The provision of direct loans by NAFIN to project developers:** with long repayment terms (10 – 15 years) and fixed interest rates to finance the constructions of new RE projects and support their financial needs during the life of the project.

> **Contingency credit lines:** to cover cash flow deficits (e.g. due to unexpected lower energy generation prices) during the life of the project.

5.2. Green lines of credit to commercial banks

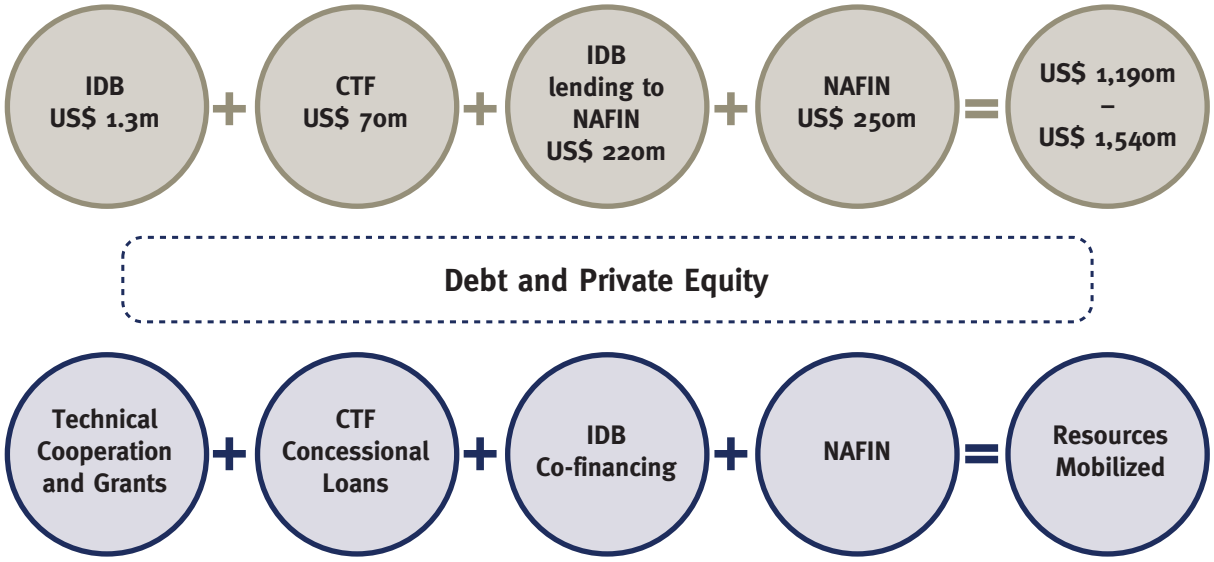
Green credit lines offered by DFIs to local financial institutions, including NDBs or commercial banks, usually include loans and guarantees offered on a concessional basis. KfW identifies several

37 IDB, http://www.iadb.org/en/projects/project-description-title,1303.html?id=ME-L1068

38 IDB, News Realize: http://www.iadb.org/en/news/news-releases/2011-11-30/mexico-will-boost-renewable-energy,9719.html

39 IDB, CTF-REFF.

Mexico's Renewable Energy Financing Facility (REFF)



Source: Smallridge et al, Visconti and CPI

Outcomes

Leverage

Up to 2013 REFF leveraged financing for a portfolio of investments valued at some US$2,000 million, and contributed to almost 1 GW of additional RE installed capacity, the majority of which was wind power.

Market Growth and Development

The gross wind power generation increased 390% between 2011 and 2012, thanks to the implementation of wind projects in Oaxaca. A further 2,000 MW are in the pipeline: over 20 projects have closed financing or begun construction under the self-supply framework. In addition, an emerging wind manufacturing sector is being developed with heavy industry relocating to Mexico.

The programmatic approach combining concessional finance and grants for technical assistance (see below in 5.3) has helped to develop Mexico's renewable energy market from a relatively low base. However, managing environmental and social risk has proved to be an ongoing barrier for wind project implementation. Various stakeholders have stressed the need for improved communication of objectives/results and access to information, better definition of responsibilities among the government levels (national and sub-national) and with MDBs in order to improve transparency and execution of programmes as well as enforcement of MDBs' social and environmental safeguards.

direct and indirect leverage effects that allow green credit lines to deliver international climate finance for small-scale investments.[40] Private investment leverage is twofold: combining public funding and capital market funds by AAA-rated International Financial Institutions (IFIs); and via private sector investment decisions in developing countries.

Green credit lines help the recipient banks to develop their strategy and portfolio of green investments and to mitigate credit risk, in turn promoting the financing of private green investments, including from private companies and households. Green credit lines can also be accompanied by technical assistance aimed at building capacity and overcoming the financial and technical barriers to scaled-up investment[41].

Advantages

> Mitigate risks of allocating commercial banks' capital for unfamiliar technologies, and help build track record and confidence in such investments.

> Build local capacity for green financing within national institutions and mobilise local capital into new markets.

> Draw in local expertise for development of a robust pipeline of projects.

> Can allow blending with other (more expensive) funds to provide well-structured, reasonably-priced loans and create awareness in the EE and RE markets.

> Marketing efforts of involved NDBs and commercial banks can help to increase awareness and reach a larger number of customers.

Challenges

> Lack of transparency as M&E systems may not exist to track the line of credit, making it difficult to provide evidence that concessional finance is working to help develop and expand the local market in a way that crowds in new players.

40 KfW 2012 Concessional finance routed through financial intermediaries. International workshop. Berlin.

41 UNEP, Innovative climate finance, 2011

- Leverage potential is generally low.
- Usually require technical assistance, because public and commercial financial intermediaries often lack the expertise and technical capacity to appraise new green technologies and investments.
- Concerns over market distortion effects if used in established green sectors that benefit from well functioning commercial finance at acceptable risk-return levels.

Box 3: Case Study Example – Turkey Private Sector Renewable Energy and Energy Efficiency Project.

In 2009, Turkey launched a Private Sector Renewable Energy and Energy Efficiency Project that seeks to overcome the financial constraints faced by these sectors and to help to increase privately owned and operated energy production from renewable sources, enhance energy efficiency, and thereby reduce greenhouse gas emissions, contributing towards the achievement of the low carbon objectives defined in Turkey's 9th Development Plan (2007-13).

This project was supported by CTF, which provided concessional funds to promote private sector investment in energy efficiency and renewable energy projects in Turkey, and was backed by the International Bank for Reconstruction and Development (IBRD), the European Bank for Reconstruction and Development (EBRD) and the International Finance Corporation (IFC), which had contributed and mobilised a total of US$1.535bn by the end of 2012.[42] The project was implemented through the privately owned Industrial Development Bank of Turkey (TSKB), the government-owned Development Bank of Turkey (TKB) and five EBRD-supported Banks: Akbank, Denizbank, Garanti Bank, Is Bank and Vakifbank.

Outcomes

As of August 2012, the project had financed 969 megawatts (MW) of renewable energy and energy-efficiency investments, which resulted in energy savings of about 1 percent of electricity consumption in Turkey in 2009.

Capacity of Financial Sector

Since the launch of the project, local commercial banks have entered the market for financing renewable energy, for example small-scale hydropower and wind power projects are now being financed commercially.

Other financial institutions have started financing energy efficiency investment as well; however, in this case the investment is generally limited to large-scale industrial projects. >

In addition, the partner banks have reported an increased technical capacity to evaluate, finance and monitor EE projects.[43]

Direct effects of green lines of credit to commercial banks include: providing incentives for investments into green technology and promotion of their implementation and broad distribution; the introduction of specialised credit products in local banks for investments in green technology; and the support of economic and private sector growth in the host country. Indirect effects include: support of local green technology markets; long term anchoring of climate change into the strategy of local banks; and raising of public awareness.

Transparency

An ODI working paper[44], the Effectiveness of Climate Finance: review of the Clean Technology Fund (CTF), considers the experience of using concessional finance for green lines of credit under the CTF. Whilst this highlights that some significant achievements are being accomplished, for example in further developing the renewable energy market in Turkey, since many programmes are in early stages and there is limited information available on the impacts of financial intermediary projects to date, it is difficult to draw strong conclusions on the effectiveness of these programmes in targeting smaller-scale green projects and programmes.

The transparency challenge faced by this type of financial instrument is being tackled by innovative initiatives such as the KfW financial incentives for household energy efficiency in Germany. KfW, in support of the federal government's energy efficiency agenda, have directed funding to the housing and the Small and Medium Enterprise sector by providing promotional loans distributed to intermediary investing banks via a branch network of German commercial banks. The commercial bank of the final beneficiary handles the credit application, takes the credit risk and concludes the credit agreement. To ensure that the commercial bank passes on the low interest rate to the investor, the KfW establish and publish a maximum interest rate, including the commercial bank's margin that can be applied.

5.3 Grants for technical assistance

Grants for technical assistance (TA) and other advisory services are considered important to improving project preparation, planning and management as well as the sustainability of the investment. In addition, such services can help to set the enabling environment for complex projects, promote market awareness among customers and build local capacity. TA allows for knowledge sharing and dissemination of experiences, ensuring a demonstration effect and can also help to prepare the appropriate financial package that may lead to further grants and loan-blended support and speed up the start of projects[45].

42 https://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/CTF_Impact_Assessment_Report_Final_130528.pdf

43 http://www.worldbank.org/en/results/2013/04/08/turkey-building-market-for-renewable-energy-and-energy-efficiency

44 Nakhooda, S, and Amin, A. The effectiveness of climate finance: a review of the Clean Technology Fund, ODI Working Paper, 2013. http://www.odi.org.uk/sites/odi.org.uk/files/odi-assets/publications-opinion-files/8643.pdf

45 CEPS, Innovative Approaches to EU Blending Mechanisms for Development Finance, 2011

TA can also be offered as another financial support instrument or a comprehensive package. For example, as mentioned in section 5.1, the IP for Renewable Energy sector in Mexico included a component to develop a Robust Policy and Regulatory Framework. IDB provided support for the government of Mexico's national climate change strategy through policy-based loans to develop the institutional framework, grants for studies to strengthen policy and regulatory agencies and to develop methodologies to define pricing incentives, as well as a grant to undertake a comprehensive assessment of opportunities for attracting finance including carbon finance.

Advantages

> Contributes to project and programme preparation as precursor to utilising lines of credit and/or concessional finance.

> Supports institutional strengthening and market/business development.

> Local capacity building and increase of awareness.

> Allows for combining local knowledge and international expertise.

> Can help to establish an enabling environment to attract private sector investment.

Challenges

> Government leadership and extensive inter-agency collaboration within the government is critical for the success of building appropriate policy and institutional arrangements and capacity. Essential that resource is provided at the request of the government.

> High transaction costs can reduce use by DFIs of this instrument: i.e. requires ensuring coordination and effective engagement of local stakeholders as well as robust planning to establish clear processes and direct responsibilities. Risk of lack of customised approach and flexibility to country specific characteristics/needs.

> Risk of lack of continuity in that the responsibility and outcome of initiatives may not be taken up by the developing country counterparts.

5.4 Grants for investment and start-up capital

Investment grants can be used to cover costs of specific parts of a project, reducing the overall cost of the project in a transparent manner. Investment grants can be used upfront to accelerate projects giving them a kick-start, or at closure as an incentive to the beneficiary to keep to the loan contract terms.

Grants for direct investment can be particularly important in pilot projects where the associated risks are very high and the economic profit uncertain. Grants can also be linked to conditionalities, such as performance targets or output based grants.

Box 4: Case Study Example – China's Green Credit Policy

China has developed a pioneering and comprehensive regulatory framework for sustainable finance. This framework includes the Green Credit Policy launched in 2007[46] and which has involved close working between China's financial institutions and the China Banking Regulatory Commission (CBRC), with support from the Ministry of Environmental Protection (MEP) and technical support from the IFC on policy advice, capacity building, and development of technical resources and tools for financial institutions. In addition, IFC provide support to the design of the Green Credit Guidelines, introduced by CBRC in February 2012, and which set the practical steps in implementing the Green Credit Policy.

The Green Credit Guide Lines defines three pillars for the Green Credit Policy:

i. Business Opportunities: Increased support for the green, low-carbon and recycling economies.
ii. Risk Management: mitigate and reduce environmental and social risks.
iii. Footprint Management: manage bank's own environmental and social footprint.

The banking reform in China has been characterised for its extensive inter-agency collaboration, particularly the banking and environmental regulators as the CBRC, Ministry of Environmental Protection (MEP), the People's Bank of China and the Ministry of Finance.

Outcomes

Strong regulatory signal to the market

Big state-owned banks are now required to make decisions on a commercial basis following the Green Credit Guidelines.

Financial sector investment switch/increase of awareness

In 2009 CBRC data indicated all major Chinese banks reduced their credit for high energy consumption and pollution industries by more than 50% from 2008, while investments related to energy efficiency and emissions reductions increased. 856 billion Yuan were directed to Green Credit loans, which represented 9% of the total bank lending in China for the year[47].

This can enhance the efficiency of project implementation and increases the alignment of the interests of the beneficiaries with the development objectives pursued by the donors[48]. Combining grants with additional backing (such as loans and risk capital) can help to increase the leverage impact.

46 IFC, Greening Banks, Highlights of 2012 International Green Credit Forum, Washington, 2013.

47 IFC, Creating Opportunity in East Asia and the Pacific, Climate Change, 2011

48 CEPS, Innovative Approaches to EU Blending Mechanisms for Development Finance, 2011

Advantages

- Flexible and relatively simple to use
- Useful in countries such as LDCs where financial markets are often underdeveloped
- High level of transparency
- Builds local capacity through learning-by-doing
- Increases awareness of types of risks associated with investments

Challenges

- Can have low leverage if not carefully designed to crowd in other sources of finance
- Can have a distortional impact if not designed carefully, particularly in more mature financial markets
- Risk of lack of continuity and may need to be coupled with technical assistance

Box 5: Case Study Example – IDCOL for micro-finance institutions

In 2002, the Government of Bangladesh launched a market-based off-grid electrification programme and designated the Infrastructure Development Company Limited (IDCOL) as the implementing agency for the programme. A government-owned company established in 1997, IDCOL has played a major role in bridging the finance gap in infrastructure and rural energy projects in Bangladesh.

This programme initially received grants to provide the subsidies from the GEF, which was followed by the UK Department for International Development and the Swedish International Development Cooperation Agency, through the Global Partnership on Output-Based Aid. Grants have also been received from ADB, KfW, GOB, the Deutsche Gesellschaft für Internationale Zusammenarbeit and the Netherlands Development Organisation. In 2009, the Islamic Solidarity Fund for Development (ISFD), the poverty alleviation arm of the ISDB Group, contributed US$18 million to the refinancing scheme, joining the World Bank/IDA, the Asian Development Bank (ADB) and the Kreditanstalt für Wiederaufbau (KfW).

IDCOL manages the financial aspects of the programme. It provides grants to the approximately 30 participating organisations (POs), mainly NGOs, to subsidise the cost of Solar Home Systems (SHS), or small photovoltaic system- and soft loans to enable them to purchase and install SHS for consumers. It also provides technical assistance (logistic and promotional support) and capacity building. The collection efficiency of the POs and project implementation are also carefully monitored by IDCOL.

Outcomes

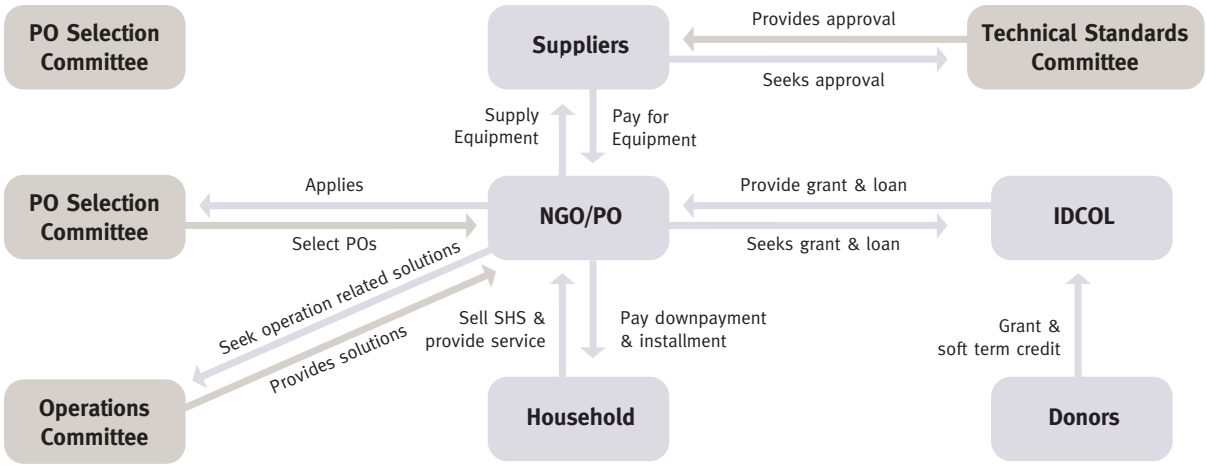
Wide coverage

The wide network of the POs offering a micro-credit scheme covers the entire country. This has allowed the programme to reach over a million households with basic electricity services from low cost and reliable SHS. By December 2011, 1.25 million SHS had been installed (65 MW) and nearly 1200 SHS are currently installed every day under the programme, making it one of the fastest growing renewable energy programmes in the world[49].

Market growth and development

SHS costs in Bangladesh are now among the lowest in the world at US$8–9/Wp[50] and 70,000 new jobs are associated with the project as well as local supply chain and technical skills development.

Structure of the SHS Programme



Source: IDCOL Renewable Energy Initiatives, 2012

49 IDCOL, IDCOL Renewable Energy Initiatives , 2012

50 Islamic Development Bank (2012): Solar Power is Turning on the Lights in Bangladesh, IsDB Success Story Series: No 4

Grants can also be used for risk coverage or as insurance premia for very high-risk development projects. Generally risk capital grants are used to cover specific risks for the entire project. The EU blending mechanisms adopt such an approach, and have been assessed in some detail by CEPs (2011). Of note, the key advantages of risk capital grants are that they can be used for underdeveloped markets in developing countries that require higher risk coverage, but are otherwise profitable. However, the main challenge with this type of instrument involves choosing an appropriate level of risk coverage and creating excess risk-coverage that distorts investment incentives.[51] Insurance premia may be used at the initial stages to help launch projects or to cover political or foreign currency risk.

Box 6: Case Study Example – The Utility-based Energy Efficiency Finance (CHUEE) Programme in China

The Utility-based Energy Efficiency Finance (CHUEE) Programme in China, initiated in 2006, is a successful example of use of guarantees to support private investment in energy efficiency measures. CHUEE is delivered by IFC under the leadership of, and with financial support from, the Chinese Ministry of Finance, the Global Environment Facility (GEF), Finland and Norway.

In CHUEE, a loan loss reserve fund (LLRF) set up by IFC and GEF is used to share the financial risks Chinese commercial banks face by guaranteeing loans they make to energy management companies who finance upgrades for their customers.

The LLRF will refund 75% of the first 10% of the loan amount in case of default, and 40% of any losses on the remaining 90% of the loan amount. The fund has been set up with US$50 million contributed by the GEF and IFC, which the programme aims to use to mobilise US$0.7-1.45 billion for energy efficiency project financing from the private sector[52].

CHUEE was initially backed by a cooperative agreement signed by the Industrial Bank and IFC. Recently, four more banks have joined the initiative, including the Banks of Beijing, Jiangsu, Shanghai and Nanjing – which it its latest phase is focusing on supporting investments by Small and Medium Enterprises (SME).

An evaluation of CHUEE undertaken by the World Bank's Independent Evaluation Group in 2010 highlights that the top two drivers for banks to engage in energy efficiency lending are government policies and market opportunities, which underlines the importance of backing this type of programmes with clear government commitments. In addition, 28% of the energy management companies surveyed in this evaluation reported ongoing challenges to obtain loans due to the banks' request of fixed asset collateral, rather than cash flow[53].

Outcomes

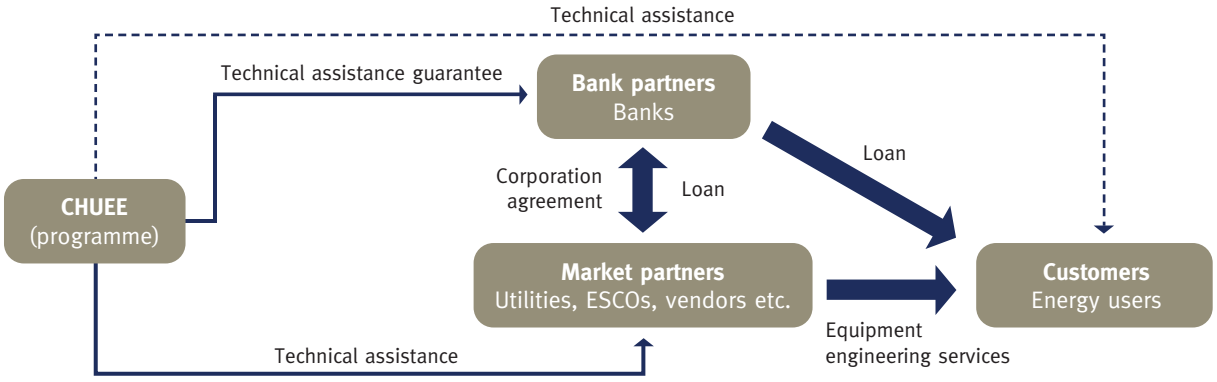
Leverage effect

As of December 2010, 142 sub-projects were financed under CHUEE by US$573 million of IFC loans, backed by the risk sharing facility. This is estimated to have leveraged an estimated total of US$1.18 billion, with emission savings of 2.3mtCO_2/year[54].

Capacity building of Financial sector

CHUEE impact can also be reflected in the growth and quality of the energy efficiency loan portfolio of the participating banks in China, as well as in their improved capacity to finance energy efficiency projects commercially and the demonstration effects of the programme on non-participating banks.

CHUEE Programme Design



Source: The World Bank, 2010[55].

51 IDCOL, IDCOL Renewable Energy Initiatives , 2012

52 CEPS (2011) Innovative Approaches to EU Blending Mechanisms for Development Finance. 18 May 2011.

53 European commission, CREATIVE EUROPE PROGRAMME THE CULTURAL AND CREATIVE SECTORS LOAN GUARANTEE FACILITY, 2012 http://ec.europa.eu/culture/media/media-content/creative-europe/faq_ccs_financial_instrument_july2012_final.pdf

54 E3G internal paper, China's Green Finance Agenda: Key Challenges and Opportunities for Financing the Low Carbon Transition.

55 World Bank (2010): Assessing the impact of the IFC's China Utility-based energy efficiency finance program, report by the Independent Evaluation Group.

5.5 Guarantees

Loan guarantees offer the lender protection in case the borrower fails to reimburse. Loan guarantees act as insurance by which a third party - or risk sharing facility – commits to be responsible for all or part of the debt upon an event that triggers such a guarantee, such as loan default. In this type of risk-sharing mechanism, the guarantee provider offers a protection with grant funding serving as warranty, reducing the risk of a project and thus lowering the interest rate charged to the borrower.

Most loan guarantee programmes are established to correct perceived market failures or under-developed markets, in which small borrowers lack access to the credit resources available to large borrowers, or where the perceived risk to enter in a new sector is high, making market-based pricing for the first loss tranche prohibitively expensive[56].

Advantages

> Potentially higher leverage effect than other instruments.

> Can help to build diversified and risk-mitigated portfolios of loans by financial intermediaries.

> Allow for easier access to private sources of finance by loans tailored to specific market needs.

Challenges

> Monitoring and reporting procedures can be particularly onerous and insurance products can have restrictive legal clauses.

> Overreliance on this type of subsidy could undermine the sustainability of the investments after the completion of the programme, making an exit plan critical.

> May be challenging to structure in the absence of extensive data on market conditions and credit profiles.

5.6 Summary

Public interventions in support of green investments should ideally be designed to plug gaps within the private sector financial market. However, whilst determining the exact size of these gaps is important it is difficult to do as the maturity and capacity of financial markets change. If levels of support are set too high, they can lead to moral hazard. If not closely managed both in terms of objectives as well as appropriate phasing out, public interventions can also lead to broader market distortions. The case studies demonstrate the value of involving national public or private finance institutions to provide public risk-sharing mechanisms that are carefully designed to mobilise private sector investment. However, experience indicates that whilst national finance institutions may be familiar with the local market conditions and stakeholders, they may lack the necessary expertise to design and execute smart green incentive schemes. This underscores the value of partnerships between national financial institutions and international DFIs both for transferring knowledge of the barriers and risks of green investments as well as for access to concessional finance.

At least in the initial stages of many green investments, the availability of concessional finance has been important in increasing the risk appetite of multilateral and bilateral development financial institutions, for engaging in new unproven sectors in developing countries as well as partnering with local institutions. The ability to provide grants for technical assistance alongside concessional loans has played a critical role in targeting policy, market and capacity barriers. However, the relatively limited availability of grants for technical assistance make these scarce and therefore valuable resources. This increases the need for effective partnering among different stakeholders, including between international and national financial sector and between public and private sectors.

The case studies demonstrate a number of areas where DFIs can add significant value in the design and support for implementation of green incentive schemes, including by enabling:

> **Policy expertise** – that can be shared through targeted technical assistance so that it best tackles institutional barriers for complementing the provision of financial instruments e.g. role of IFC in China, IDB in Mexico, and IDCOL working with MFIs.

> **Closing of information gaps** – for reducing market barriers that may have resulted due to asymmetry of information among players, e.g. KfW's role in sharing experience of energy efficiency housing within Germany to countries and EBRD's role in Turkey.

> **Access to international and bilateral sources of concessional finance** – from the GEF, the CIF, government national climate funding and in the near future from the new Green Climate Fund.

> **Leverage** – often seen as key measure of success (for delivering scale of investment) directly at a project level (e.g. Mexico Eurus project) and indirectly through financial intermediaries (e.g. IDCOL, NAFIN in Mexico), as well as at the institutional level, as typically AAA rated institutions can leverage capital at relatively low cost in the form of green bonds.

> **Engaging stakeholders** – in design and execution of new national funds and mechanisms (e.g. NAFIN role in design of REFF) and providing a platform to bring together international financial institutions and domestic players, and engaging local financial sector (e.g. Turkey RE programme and IDCOL in Bangladesh).

> **Programmatic approaches** – which DFIs are well placed to follow where they combine technical assistance for strengthening policy and regulatory approaches to overcome barriers to third party renewable energy investors, accompanied by use of concessional finance to provide risk coverage instrument via the REFF.

56 Islamic Development Bank (2012): Solar Power is Turning on the Lights in Bangladesh, IsDB Success Story Series: No 4

6. Analysis of smart green finance incentive schemes

Table 2 draws from the literature and case studies to assess the most commonly used financial instruments against the four key criteria. In general, concessional finance is likely to be most effective when coupled with technical assistance that is carefully applied to overcome specific policy and regulatory barriers. Grant funding for technical assistance is therefore an important instrument that can provide operational and institutional additionality.

6.1 Characteristics of successful public green incentive schemes

Key issues for consideration with respect to the criteria identified here and used to evaluate financial de-risking instruments most commonly used by DFIs are summarised below:

Integration with policy

Tackling the wide range of barriers to private sector investment in green technologies will require a similarly wide range of public sector interventions. Green incentives should be designed to mitigate risks for private sector investors, who will need to assess the ratio between risks and returns on their investment. Understanding project specific barriers, and real and perceived risks of investors, will help to determine the appropriate mix of policy, regulatory and financing incentives:

> Technical assistance should be used to support a policy and regulatory framework that creates long, loud and legal signals to investors.

> Policy and regulatory measures can be combined with financial instruments for risk-sharing in a programmatic way. Bespoke programmatic approaches will provide the most effective way of ensuring incentives are integrated with policy.

> Public support for development of new green markets through activities that benefit all private sector actors should be incorporated within programmes.

> Design should also identify an exit strategy for public support and ensure that this is well understood by all market actors.

Additionality

> The issue of additionality can be very complex. This report emphasises the importance of ensuring public incentives are only provided where the private sector is unwilling to engage. However, financial additionality needs to be assessed beyond pure leverage, as other activities, e.g. first-of-a-kind demonstration effects, can also support market development.

> Understanding the policy and market context, as well as technology and financial barriers, is also important for assessing additionality.

> Greater attention should be paid to operational and institutional additionality, which grants for TA will be most effective in providing.

> Funds that provide concessional finance like the GEF and the CIFs have an important role because they can mobilise a range of other sources of finance, including co-financing or blending with a DFI's own funds. Concessional support can also promote financial innovation and use of a wider range of financial instruments.

> Combining grant funding for technical assistance and concessional finance for investments that leverage other public and private sector resources are proving to be relatively effective.

> De-risking tools like guarantees and insurance are underused yet can play a vital role in de-risking investment capital. Insurance against policy changes are emerging and gaining considerable interest.

Targeted concessionality

> Targeted use of public finance to mobilise finance from the private sector must be carefully tailored to specific risks and barriers, including the policy and political economy context.

> Understanding such risks and barriers in detail will require deep and ongoing dialogue with the private sector and engagement on policy objectives and incentive design features.

> Programmatic approaches that carefully combine and tailor grants for policy support and concessional finance for investments are key to the design of a smart green incentive scheme.

> The CIFs' emphasis on a programmatic approach and encouragement of co-financing between different DFIs is valuable and further lessons should be drawn from their experience.

Transparency and predictability

It is important to have transparency regarding who benefits from the subsidy element and in what way. However, whilst this may prove challenging in practice, it underscores the need for:

> Investing in appropriate systems and processes for effective engagement of stakeholders as necessary to increase clarity of policy objectives and the role of green incentives in delivering these. This should also provide certainty regarding when and how the incentive will be phased out to ensure the predictability that is required by investors.

> Establishing monitoring and evaluation processes that can increase transparency of the impact of the incentive scheme as well as capture learning for future design of schemes.

> Greater coordination on green finance terminology, design criteria and standards amongst DFIs and with the OECD

DAC would help create a more coherent approach towards green finance and monitoring and evaluation schemes.

Engaging Stakeholders for Transformational Impact

The above requires a good understanding of country, sector and technology specific barriers and risks, underscoring the importance of building and strengthening dialogue between public policy and finance providers with private sector investors and other market actors. From the literature and case study material reviewed it is difficult to assess the level and form of stakeholder engagement and the degree to which their involvement impacted on the design of the green incentive scheme. It would be valuable to explore this through more in-depth case study research, involving structured interviews with those involved at different stages of design, deployment and monitoring and evaluation of the incentive scheme.

Table 2. Authors' analysis of "smart" green finance incentive schemes

Type of Instrument/ Mechanism	Integration with Policy	Additionality	Targeted	Transparency and predictability	Impact / beneficiary of the incentive (subsidy element)
Concessional Loans (direct to end client)	Usually requires a long-term coherent policy and regulatory framework underpinned by legislation to ensure the success. Can be designed In line with national development priorities.	Can lead to significant additional investment.	Requires careful tailoring of concessional element to ensure investment is both additional and effective.	Challenges related to lack of transparency. Need for programs to provide evidence that concessional finance is working to help develop and expand the local market in a way that crowds in new players.	Concessional loans can be used to help develop new markets or policy goals as they address the high cost associated with early market entrants by tackling liquidity issues, tenor and cost of funds.
Green Lines of Credit (indirect to end client)	Not necessarily integrated with wider policy or regulatory changes. However banks may be unwilling to take a loan if they don't believe there will be a market demand for the green product.	Leverage potential is relatively low; Usually requires supporting technical assistance as public and commercial financial intermediaries lack expertise and technical capacity.	As lines of credit, they are often not targeted. However, supportive TA can help to overcome specific barriers.	Generally there's a lack of transparency and accountability associated with green credit lines due to the use of financial intermediaries. However measures can be taken to increase transparency of the incentive (subsidy element).	Builds local capacity for green financing within national institutions and mobilises local capital into new markets. The concessional finance can allow blending with other (more expensive) funds to provide well-structured, reasonably- priced loans and create awareness in the EE and RE markets.

Type of Instrument/ Mechanism	Integration with Policy	Additionality	Targeted	Transparency and predictability	Impact / beneficiary of the incentive (subsidy element)
Grants for technical assistance/policy support	Will naturally have high degree of integration in cases where grants focus specifically on building policy or regulatory capacity.	TA grants for policy and regulatory that are combined with an investment can be considered as providing operational and institutional additionality. TA used to foster knowledge sharing and dissemination of experiences, capturing learning of demonstration effects, feasibility studies and financial structuring package will likely increase demand for further loans and/or speed up the start of projects. In this respect they can be considered indirectly additional.	Grants used in blending facilities or as stand-alone instruments can be used at different stage/tailored to address multiple barriers including technical assistance and feasibility; direct investment; interest rate subsidies; loan guarantees; structured finance; risk capital; and insurance premia. Concessional finance is likely to be most effective when coupled with technical assistance that is carefully applied to overcome specific barriers and risks.	As provides support for creating supportive enabling environments it can be used to increase transparency of a green incentive scheme. E.g. of institutional arrangements and market data and information important for encouraging new market entrants.	Generally low risk of market distortion. Can have a lasting impact if policy and regulations adequately implemented?
Grants for investment support and/or risk coverage	Not necessarily.	Relatively easy to assess for investments but harder when used as risk capital.	Risk capital must be targeted to appropriate level of support and avoid excessive risk coverage, biasing investment incentives, and use for the profits and proceed etc. Performance-based grants can help better align interests of beneficiaries and donors.	Investment grants have high level of transparency. Risk coverage instruments may be less transparent without careful design.	May be challenging to ensure the incentive reaches the end-user. Potential for crowding out other financial providers if used in well developed financial markets.
Guarantees and insurance products	Insurance against policy change is gaining considerable interest.	Loan guarantees can increase volume public finance available as only paid out in event of default.	Can be tailored to mitigate specific risks. Political risk guarantee can be critical in less developed countries. Appropriate in markets where borrowing costs are reasonably low.	Difficult to measure leverage and other impacts of such de-risking tools as disbursements are only made in the event of default.	These de-risking tools are underutilised yet have significant potential to positively impact risk-reward profile of green projects/programmes.

7. Conclusions and policy recommendations

7.1 Conclusions on lessons for design of smart green incentives

This paper has shown how tackling the wide range of barriers to private sector investment in green options will require a similarly wide range of public sector interventions. The most common instruments being used to encourage more green investment are: concessional loans; guarantees; and grants for technical assistance, including for policy development and support, or investment capital. A wider range of financial instruments could be used within green incentive schemes, particularly for delivering scaled-up and long-term green investment, for example through use of green project bonds, green securitisation and other capital market instruments. Technical assistance to establish and/or strengthen appropriate policy and regulatory measures has been identified as necessary to complement the use of financial instruments designed for risk-sharing between public and private sector actors.

Whilst the focus of this paper has been on the role of DFIs, it is important to recognise that developing country governments should ideally lead on design of green incentive schemes. In this role they would identify and direct where international sources of finance can best support their national strategies, plans and programmes. The criteria identified and used to evaluate various financial instruments in this paper can also provide a useful framework developing country governments and their NDBs in the use of domestic public finance for the design of smart green incentive schemes.

As illustrated in Figure 5, these criteria need to be considered within a broader context of (1) ensuring relevant expertise and capacity is pooled for most effective design of green incentives; (2) the importance of continuous innovation and prototyping of new instruments, and; (3) ensuring experiences and lessons are captured in order to inform future efforts in the design of smart green incentives.

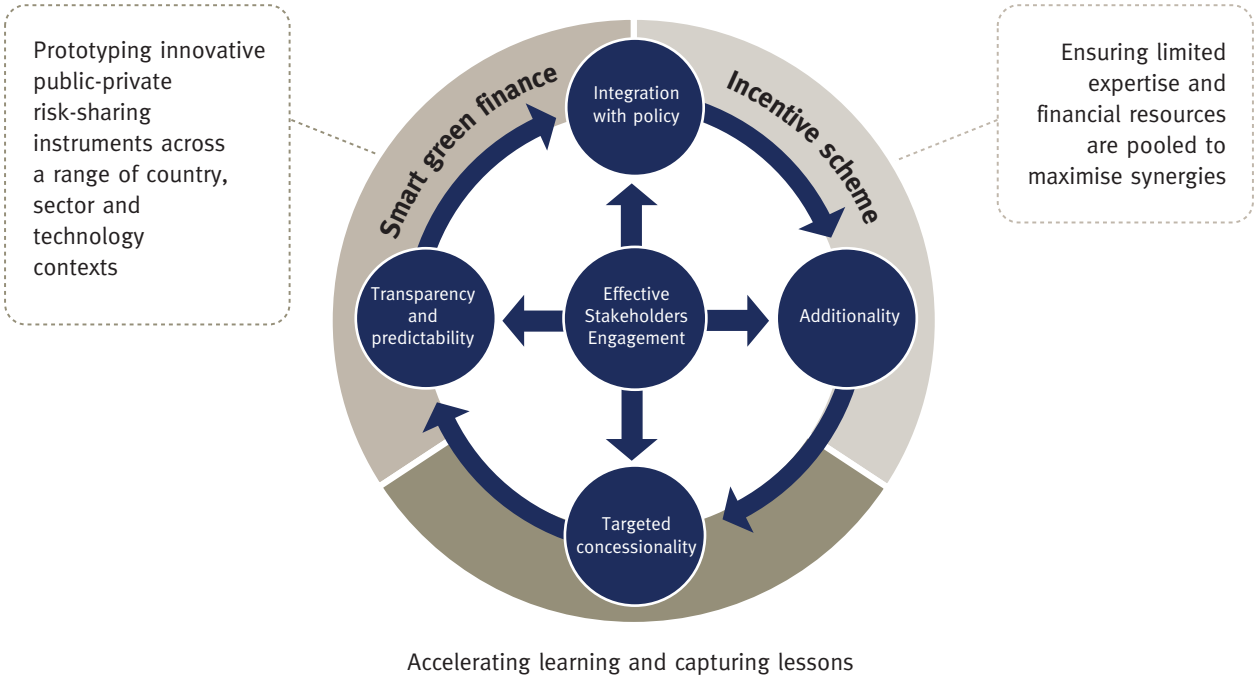
7.2 Policy implications for an international green financial ecosystem

It is important to ensure that green incentive schemes are developed within the local context, which implies a strong role for National Development Banks where they exist. However, these institutions often lack the necessary expertise and capacity to design and deliver smart green incentive schemes. Partnering with bilateral and multilateral development banks provides an important opportunity for strengthening this capacity. Where concessional finance is available via these institutions it can help to ensure that learning-by-doing facilitates the design of smart green incentives.

Creating an effective international ecosystem for green finance

Evidence from the literature and case studies suggests there is great potential for developing countries to use domestic and international public finance in the design of smart green incentives that mitigate risks, close cost gaps and support the development of enabling environments. Over time, the use of green incentives will

Figure 5: Defining "smart" green finance incentive schemes



Source: Authors' depiction

allow private sector investors to build understanding of relevant risks and returns on their investment. Such cumulative learning and understanding of project, technology and market specific barriers will therefore help green the financial sector.

This paper has identified broad guiding criteria for design of smart green incentives. However, differing interpretations of these issues is leading to a fragmented international ecosystem. Such fragmentation is likely to reduce the potential for creating strong green market signals and investment frameworks within developing countries as required for delivering scaled-up green investments. Therefore further collaborative work by DFIs on criteria for good practice in design and M&E of green incentives would help create the norms and institutions necessary to ensure a coherent international financial ecosystem for green finance emerges as the predominant global investment framework.

Policy recommendations on design of smart green incentive schemes:

Deepening and broadening existing collaboration between DFIs are underway through the IDFC and MDBs joint work on tracking climate finance, as well as in-country through the Climate Investment Funds. Specific areas of collaborative work should focus on developing common criteria for design of smart green incentives, taking into consideration the need for:

> **Integration with the policy context** and related arrangements and capacity of public sector institutions in developing countries;

> **Financial additionality as well as operational and policy additionality** – the latter may require greater proportion of grant funding as decision-makers become familiar with the new green investments;

> **Targeted use of concessionality** based on strong understanding of specific risks, including the local policy and market context;

> **Transparency and predictability** of the incentive provided, including the extent to which the incentive can be monitored and evaluated with respect to who benefits, in what way and for how long;

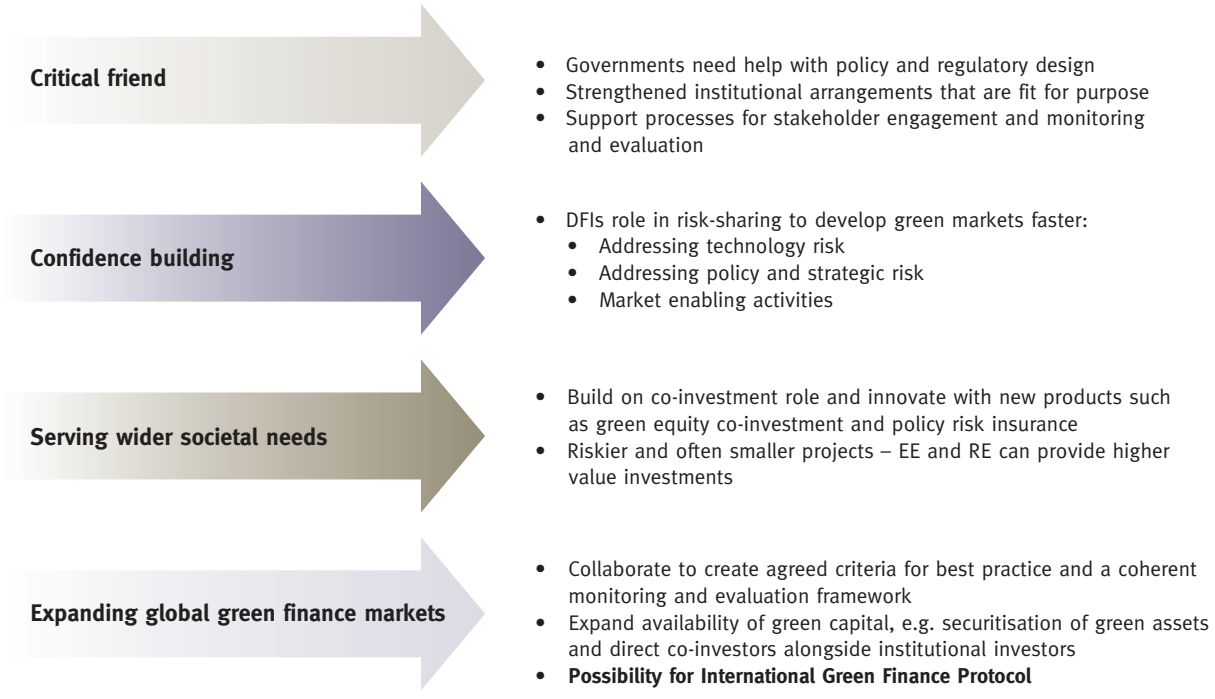
> **Deep and informed engagement of stakeholders**, which should ensure ongoing dialogue between public policy decision-makers and decision-makers from the commercial finance sectors.

DFIs as Drivers of Innovation and Learning

As developing countries increase their capacity to design green financial incentives and create national systems for their monitoring and evaluation, DFIs may remain important partners in the delivery of green finance. As countries become more familiar with existing green technologies and associated risks, as well as financial instruments to mitigate these, international DFIs should focus on newer technologies and innovative use of other financial instruments. Figure 6 summarises the key roles that DFIs are and/or could play in increasing activities for working with public and private financial decision-makers in developing countries in the design of green incentives.

In conclusion, the international DFI community is stepping up its focus on partnering with national DFIs, and investing in knowledge management and capturing lessons learnt. However, much greater efforts are required for dissemination of relevant information, supporting country market data systems and capacity that can be developed through learning-by-doing. Increasing activity to prototype new instruments – such as use

Figure 6: Development Finance Institutions as key partners on green finance



of green project bonds or green securitisation – across a wider range of country and sector contexts would help to broaden the scope of instruments available. It is therefore recommended that international and bilateral DFIs should explicitly encourage innovation in green financial instruments that have potential for delivering transformational impact. This could require incentivising investment officers towards such objectives and allocating a small proportion of their portfolios for potentially high risk investments that have high learning and transformational value.

A concern that has emerged through this research is that of the fragmented nature of international support to developing countries on green finance. This creates additional burdens on relatively limited institutional capacity within developing country governments and national public finance agencies, serving to reduce transparency and predictability for investors. In this respect such fragmentation is likely to undermine efforts to create effective green investment frameworks and markets within developing countries, and certainly reduces potential for establishing a global green financial ecosystem that is required for the transition to greener economies. Ideally developing countries should direct international DFI activities though national financing strategies and programmes for green or climate investment.[57] This will help to ensure international support is channeled most effectively in support of national objectives in the design of smart green incentive schemes. In many countries NDBs, which also DFIs, can and should lead on design of green incentives. As such, it is suggested here that international and national DFIs should deepen and widen collaboration in support of an **International Green Finance Protocol**[58] which would include convergence around:

- Criteria and norms on the design of smart green incentives;
- Incentivising innovative approaches by DFIs to deliver green transformational impacts;
- Indicators for monitoring and evaluation of green finance, working jointly with developing country decision-makers and the OECD DAC task team on enhancing the Rio Markers for tracking the environmental finance used for climate, biodiversity and desertification purposes.

7.3 Final considerations on the role of the Green Climate Fund

Once operational, the GCF is envisaged to become the primary vehicle for distributing climate finance to developing countries. The experience of DFIs in designing smart green incentive schemes can provide valuable input towards the development of the GCF. Building on a synthesis of recent research from both UNEP[59] and WRI[60] on best practices in public climate finance, it is suggested that:

- It is imperative to leverage and further strengthen the existing expertise and capacity that now exists within some national and most international DFIs. National Development Banks can and should play an important role in ensuring that international climate finance and other green related finance available most effectively supports national priorities and strategies.
- National DFIs may benefit from partnering with international DFIs as they strengthen capacity in line with green mandates. The GCF can foster such partnerships and promote positive feedback loops and mechanisms for enhancing design of green financial incentives.
- Given the existing role of the DFIs within the financial spectrum, the GCF design should ensure it has a complementary and catalytic role in mobilising resources from both the public and private sector. Incentives should be put in place to foster co-financing as well as blending between GCF resources and those of DFIs.
- The GCF should draw from the experience of the Climate Investment Funds, the GEF, European blending mechanisms and bilateral climate funds with respect to incentivising coordination between various DFIs at the country and programme level.
- Grant resources from the GCF will need to be available most notably for providing the technical assistance required to strengthen institutional arrangements, including for public and private sector financial institutions in developing countries.
- Were an International Green Finance Protocol to be developed, the Green Climate Fund could become the custodian of this effort, partnering closely with DFIs in its execution.
- Ultimately developing countries should take the lead in identifying where and how the GCF can support them in design, implementation and monitoring and evaluation of country owned strategies, plans and programmes for climate finance investments.

57 Naidoo, C, Amin, A, Dimsdale, T and Jaramillo, M. (March 2014), E3G, paper: Strategic Approaches to National Climate Finance.

58 The term Protocol is used here in the way that diplomatic customs and norms are formed, and does not intend to imply a legal treaty.

59 UNEP (2011) Innovative climate finance: Examples from the UNEP Bilateral Finance Institutions Climate Change Working Group.

60 WRI (2013) Mobilizing Climate Investment: The Role of International Climate Finance in Creating Readiness for Scaled-up Low-carbon Energy.

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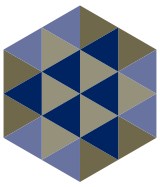
Notes



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