

**UN Secretary-General's
High-level Advisory Group on Climate Change Financing (AGF)**

**Background Paper for First Meeting, 31st March 2010
prepared by the Secretariat***

Section 1 Introduction

The High Level Advisory Group of the UN Secretary General on Climate Change Financing has been established to study the potential sources of revenue for financing mitigation and adaptation activities in developing countries, guided by the Copenhagen Accord, in which 'in the context of meaningful action and transparency on implementation, developed countries commit to a goal of mobilizing jointly US\$ 100 billion a year by 2020.' The Accord notes that this funding 'will come from a wide variety of sources, public and private, bilateral and multilateral, including alternative sources of finance.'

This paper is provided with sole aim of facilitating initial discussion. Its contents do not reflect the views of the Secretariat or of the Co-Chairs of the Advisory Group, and do not presuppose the decisions on the focus of the work of the Advisory Group which will be guided by its members in accordance with the Terms of Reference of the Group.

Climate change presents a huge challenge to developing countries. On the one hand, to hold the average global temperature rise to no more than 2 degrees Celsius above pre-industrial levels, development paths will have to result in significantly lower greenhouse gas emissions than is projected under currently anticipated 'business as usual' trends. Long-term sustainable development paths will be those that protect the natural resource base in an equitable manner without compromising poverty eradication, job creation and economic growth. While the extent of mitigation effort to be made by developing countries will depend on the creation of a comprehensive global framework and technological collaboration between developed and developing countries - issues which remain subject to considerable debate and negotiation - any global mitigation settlement will require a significant shift in the 'carbon content' of development paths.

At the same time, even if such a mitigation effort can be achieved, the changes in climate to which the world is now locked in will require very significant adaptation responses. Developing countries are already subject to damaging human and economic costs resulting from climatic changes, with certain regions and types of countries (such as small islands and low-lying coastal states) particularly vulnerable to predicted changes over the coming decade and beyond.

These changes must be made in the context of rapid growth in developing countries over the next decade. Such growth will require an estimated capital formation in the trillions

* With the cooperation of the Co-Chairs of the Advisory Group.

of dollars per annum by 2020 in infrastructure, housing, industrial development, agriculture and resource management. The task required to address climate change is therefore to incorporate mitigation and adaptation goals into those investments and growth paths. In doing so the aim must be to achieve higher total productivity from them – not only reducing greenhouse gas emissions but raising economic efficiency, increasing energy security, reducing air pollution, increasing access to energy and water, improving food security, improving health and reducing disaster risk. A major public policy challenge will be to ensure that these investments trigger virtuous growth circles, which ‘crowd in’ private investment and initiate technological change, support economic diversification and create employment opportunities.

In this sense mitigation and adaptation activities cannot be seen as ‘add-ons’ to development and investment plans but integral purposes of them. Yet in the short and medium run both mitigation and adaptation activities will increase the cost of development. Financing these investments will be among the big constraints on the shift to lower-carbon and climate-resilient economies in most developing countries and how to secure additional resources is a major task for the international community.

The challenge of climate financing is therefore to mobilise the resources to pay for the incremental costs of these activities. In some cases these incremental costs will be relatively easily identifiable – the cost of a renewable energy technology, for example, over and above the cost of the high-carbon alternative which would have been used otherwise; or the cost of sea defences which would not otherwise (in the absence of climate change) have been needed. In other cases it will be difficult to distinguish the incremental cost – for example, in investment in public transport systems where no comparable ‘high carbon’ alternative is available; or in new kinds of agricultural practices where it makes little sense to speak of a non-adaptive option.

The finance to pay for a global response to climate change may be generated both domestically and externally. But recognizing that equity considerations are important, as reflected in the principle of ‘common but differentiated responsibilities and respective capabilities’ of the UN Framework Convention on Climate Change (UNFCCC), the proportions will be different in different countries. The Copenhagen Accord notes that developed countries should commit to the goal of mobilizing US\$ 100 billion a year in international financing by 2020.

The central task of the Advisory Group is to examine how such a sum can be raised. With a goal of US\$ 100 billion per annum, a central issue will be how to move money at scale from sources to use. Money will need to move in an effective and transparent manner consistent with both the development goals and processes of developing countries and the publicly-accountable commitments of developed countries. And the integration of mitigation and adaptation activities into wider development plans and investments means that climate finance will have to be designed to leverage much larger resources, much of which will come from the private sector. Whatever mechanisms are proposed, they will need to be supported by transparent accounting methods for this finance and its delivery.

This first section of this paper sets out some of the key issues in relation to climate finance and to the work of the Group. Section II sets out and explores briefly some of the potential sources of revenue which have been proposed for long-term climate finance.

What is climate finance for?

‘Climate finance’ includes finance for activities aimed at both adapting to climate change and mitigating it in developing countries, including technology development and transfer and capacity-building related to these activities:

- *adaptation* includes a wide range of different kinds of activities, including investments in disaster risk management, such as physical protection against flooding and sea level rise; actions designed to improve agricultural, water and other kinds of resource management under changing climatic conditions; investments in health systems to cope with diseases associated with higher temperatures, and so on;
- *mitigation* includes investment in energy efficiency and lower carbon energy supply, investment in lower carbon transport systems and in emissions reduction in industrial sectors; action against deforestation and forest degradation and promoting afforestation (‘REDD plus’); and other kinds of actions reducing emissions in land use;
- *technological development and transfer for mitigation and adaptation*, including research, development and demonstration, and financing of the transfer of intellectual property rights; and
- *capacity building*, including institutional development, training and dissemination of best practice.

Sources and forms of climate finance

The US\$ 100 billion of climate financing required by 2020 is unlikely to come from a single source of finance, but from a portfolio of different sources. Different kinds of finance will be required for different uses. Recipient countries will also differ in their needs, capacities, and ambition, which must be recognised in any fair distribution. This will have implications for the sources of financing and the forms it takes.

In terms of *sources*, the following categories may be identified:

- public finance from climate-related & non-climate sources;
- finance generated through the carbon market; and
- other international financing mechanisms, including the role of the United Nations system and the IFIs.

It will also be important to examine carefully the role to be played by public instruments in supporting and leveraging private finance for climate change.

For public finance, a critical issue will be the degree of ‘internationalisation’ of different sources. At one end of a continuum lie contributions by national governments from general revenue or specified national taxes and equivalent sources; at the other, international taxes, or comparable instruments, collected internationally.

Different *forms* of finance are also needed for different kinds of activities. Each financing source has characteristics that determine the most likely type of use. Concessional loans for example are likely to be appropriate for large infrastructure projects in power or transport to support the required capital investment and reduce financing costs. Carbon (offset) finance is most suitable to finance mitigation in particular in sectors with large MRV²able installations such as power and industry. ‘Payments for services’ might be appropriate for avoided deforestation or delivery of abatement measures such as co-payments towards feed-in tariffs. Grants will generally be appropriate for capacity building, for adaptation projects that do not generate a return, for technology R&D and demonstration projects. Funds for micro-finance may also be appropriate e.g. for distributed energy systems. Consideration will need to be given to how different sources and forms of funds and delivery mechanisms are matched to needs and potential within overall funding totals.

Illustrative Example : Suitability of different financing instruments for different uses

		Mitigation							
		Power & industry ¹	Transport, buildings	REDD +	Technology	Adaptation	Capacity building		
Public finance (climate sources)	Grants	✗	✗	✗	✓	✓	✓	Working Draft	
	Payments (linked to performance)	✓	✗	✓	✗	✗	✗	Last Modified 17.03.2010 10:57:25	
Public finance (non - climate sources)	Concessional debt	✓	✓	(✓) ²	✗	✓	✗		
	Project based offsets	✓	✗	(✓) ²	✗	✗	✗	Printed 03/12/2010 4:34:54 PM	
Carbon finance	Sector/programmatic schemes	✓	✗	(✓) ²	✗	✗	✗		
	Private capital	✓	✓	✓	✓	✓	✗		

✓ Where instrument should be used
 ✗ Where instrument should not be the main financing instrument

¹ Excluding energy efficiency
² Concessional debt and offsets could be used for afforestation (where national REDD strategy exists); limited market access for REDD , only with

SOURCE: Team analysis

Criteria that should guide the provision of finance

A number of criteria may be used to assess the different sources of finance, including:

- *revenue* - the potential financial contribution both in 2020 and in the period 2013-20. The key assumptions underpinning any revenue estimation will need careful examination to ensure they are robust;
- *efficiency* - the relation between the cost of the source of finance and the impact achieved, including transaction and intermediation costs;

- *incidence and equity* - the fairness in the burden of the source of finance;
- *practicality* - the feasibility of implementation, for example in the institutional design and in relation to Treasury rules and law in different countries;
- *acceptability* - the likelihood of political acceptance in different countries and among different constituencies;
- *additionality* - the extent to which the finance is additional to current efforts, which itself depends on how baselines and categories of assistance are defined;
- *reliability* - the extent to which the source of finance is likely to lead to a predictable revenue stream.

Some criteria are more amenable to objective analysis; others are more subjective, and some evidently political. Conceptually however it may be possible to imagine a matrix of sources of finance against criteria, and this may enable a broad assessment of the issues.

Section 2 Potential Sources of Finance

Multiple proposals for sources of financing have been made in recent years. This paper describes the key sources for long-term finance for climate change mitigation and adaptation measures as put forward by a range of institutions including the UNFCCC¹ and the World Bank². For each of the sources, the paper describes the general mechanism, outlines key issues and considerations, and provides preliminary estimates of their potential contributions in 2020. The sources listed are not definitive and are in no particular order. This preliminary analysis is designed to aid the initial work of the Advisory Group.

The different types of financing are discussed in more detail:

- public finance drawn from climate-related & non-climate sources;
- finance generated through the carbon market; and
- other international financing mechanisms, including the role of the United Nations System and the IFIs

This section also discusses the role of public instruments in supporting and leveraging private finance for climate change.

1. Public finance from climate and non-climate related sources

Public finance from climate sources

Various mechanisms for raising public finance from sources related to climate change have been proposed.

AAU auction proceeds

The Kyoto Protocol creates a carbon market among Annex-I nations. Annex I countries currently are allocated Assigned Amount Units (AAUs) equivalent to their emission caps in the Kyoto Protocol without incurring any cost for them. Under a proposal by Norway, a share of the AAUs would be sold in an auction by an international body, with the proceeds going to a multi-lateral fund. Whether and how to fund these purchases is a matter of choice for individual countries.

It is important to note that countries have multiple alternative means to meet their emission caps. For example countries can reduce their domestic emissions, buy AAU credits from other parties or buy carbon offsets (CERs). The amount of AAUs they would buy in an auction is therefore uncertain. There is also currently an 'AAU overhang' from the first compliance period (i.e., a surplus of AAU credits not needed to meet country targets) totaling 7-10 Gt³, mostly held by Russia and the Ukraine. This compares to emissions of 16 GT in Annex-I nations. Countries could decide to buy these AAUs rather than bidding for the auctioned AAUs, effectively reducing the amount of income from this mechanism.

In estimating potential revenues from AAU auction proceeds, the key assumptions are the acceptance of an international Accord that imposes (tight) emissions caps on countries, the (market) price for AAU credits (which depends on the tightness of emissions caps) as well as the percentage of AAUs auctioned. External estimates for a 2% levy have suggested that the range of revenues is US\$ 14-25 billion (based on estimates of US\$ 15-25 billion by Norway⁴ and US\$ 14 billion by Müller⁵).

ETS auction proceeds

Countries operating domestic emission trading schemes (ETS) can choose between auctioning or free allocation of emission credits to market participants. Moving to wider auctioning is part of the plan for the third phase of the EU ETS (70-80% auctioning by 2020⁶) and the basis of the most recent proposals in Australia (65-100% auctioning⁷). This can create significant income for the auctioning entity. A share of these auction proceeds could be allocated to fund international mitigation and adaptation measures, although the choice on how to allocate the proceeds remains with national governments.

In estimating the potential revenues from ETS auction proceeds the key assumptions are the number of countries with domestic carbon markets, the market coverage in each country (share of total emissions), the carbon price, the percentage of emission credits auctioned and the percentage of proceeds allocated to international climate finance. Volatility in the carbon price, driven by economic conditions and speculative investment, could hamper long-term investment incentives.

Carbon taxes

In 2008, Switzerland made a proposal⁸ to introduce a US\$ 2 carbon tax per ton of CO₂ globally (for emissions that exceed emissions per capita of 1.5t CO₂ per annum) some

of the proceeds of which would be channeled into an international climate fund. Several countries have also introduced different forms of domestic carbon taxes: Finland and Sweden introduced a carbon tax in the early 1990s⁹, with taxes that stand at US\$ 24/t CO₂ in Finland and ~US\$ 55/t of CO₂ in Sweden.

Taxation is considered an issue of national sovereignty and there may be barriers to raising a domestic tax earmarked for international uses. Moreover, a carbon tax is generally estimated to be regressive in developed as well as in developing countries, with lower income households paying disproportionately more environmental compliance costs. Thus, the incidence of such a tax needs to be carefully considered.

The key assumptions are the global carbon emissions, the percentage of emissions covered by the tax and the tax level. External estimates have suggested that a carbon tax of US\$ 2 could raise up to US\$ 48.5 billion (the Swiss proposal)^{10/11}, though it should be noted that Switzerland proposes that different groups of countries retain different shares of the revenue domestically for climate purposes. Only US\$ 18 billion would be transferred to an international fund. Estimates by the United Nations Development Programme¹², put the potential revenue a US\$ 265 billion if a US\$ 20 tax per ton of CO₂ were charged in countries members of the OECD at current emission levels.

Marine and aviation / bunker fuel levies

There have been several proposals to generate revenues from taxing marine and aviation bunker fuels. In practice this would come in the form of a carbon tax on all bunker fuels, equivalent to a US\$ 5-10/tonne of CO₂e price. All suppliers of fuels would be asked to register and to collect the bunker fuel levies, which would be managed by a global organization. Proposals have been forward by the European Union¹³, the International Maritime Organisation (IMO)^{14/15} the IETA¹⁶ and Nigeria¹⁷. The levies have generally been proposed mostly as a source of adaptation finance.

There are several considerations including of equity as developing nations will also pay a share, (island nations could be harder hit), and practicality given risks such as fragmentation of the transportation industries, and the ability to raise the levies. Various proposals have been made on how to address these issues (e.g., by exempting certain countries from the levy and by providing refunds to developing countries).

The key assumptions in estimating revenues from bunker fuels are the share of marine and aviation fuel consumption covered by the levy as well as the height of the levy. Estimates of the total financing in 2020 are in the range of US\$ 13-49 billion per annum. In aviation, there are estimates of US\$ 10-26 billion by Müller (2008)¹⁸ and Müller and Hepburn (2006)¹⁹. In maritime, revenues are estimated at US\$ 3 billion by UNDP (2008)²⁰ and up to US\$ 23 billion by Stochniol (2009)²¹.

Offset levies

Finance could be raised by taxing the proceeds from offset transactions in carbon markets and using them, channeled through a multilateral institution, to finance mitigation and adaptation. Currently 2% of most CDM offsets is collected for the

Adaptation Fund to finance its activities. This tax could be extended to include other trading schemes, such as Joint Implementation.

One consideration with this levy is that a large share of the incidence could fall on developing countries and would reduce their offset finance income. However the incidence may also fall on companies from developed countries.

The key assumptions are whether the levy is applied to units issued or only to units traded internationally, as well as offset volumes and the carbon price. Estimates for the amount of financing raised range from US\$ 200-500 million (WRI, 2008²²) to US\$ 2 billion (Fankhauser, 2009²³).

Public finance from non-climate sources

One option for financing climate change is from general taxation revenues. While some countries already have in place climate-related revenue instruments (e.g. carbon market revenues and green taxes), the majority of general taxation revenues come from non climate-related sources.

This option is the main source of existing international climate finance. For example, many countries already provide bilateral development assistance that is targeted at adaptation and/or mitigation in developing countries. More specifically, the Copenhagen Accord suggests that developed countries provide up to US\$ 30 billion new and additional "Fast Start" climate finance over the period 2010-2012.

Funding climate finance through general taxation, however, has some obvious limitations. These include near term fiscal constraints and pressures for many countries, as well as the efficiency impacts of the existing tax structure (e.g. any welfare costs would increase as the rates of taxation rose). Thus, some have proposed the need to consider new public sources including revenue from taxation of the financial sector.

Revenues from financial transactions tax ('Tobin tax')

Proposals for taxing financial transactions have existed for a number of years and were most notably proposed by James Tobin in 1971 to tax spot currency conversions to manage exchange-rate volatility by suppressing such transactions. Some have suggested that the proceeds from a tax on financial transactions, could be used, among other things, for international climate finance.

Estimates regarding how much revenue could be raised vary widely depending on assumptions made and more analysis would be needed on this issue. One study presented in October 2007 by the Canada-based North-South Institute estimated that a 0.005% tax on currency transactions would generate US\$ 33 billion a year (Schmidt, 2007).

Proposals for taxes on the financial sector raise complex questions of incidence (who pays, and on what basis is the tax levied?), impact (what effect would the measure have on underlying financial sector behavior?), consistency with the wider international

financial regulatory reform agenda, and sovereignty (for example in the case of international taxes with taxes levied nationally but earmarked for international uses). Global co-ordination would be essential to avoid double taxation or market distortion.

2. Carbon markets

This is the finance mobilized by offset sales through the carbon markets. There are two main sources of demand: (1) Country governments buying offset credits to meet their Kyoto Protocol emissions caps or using offsets to provide climate finance, and (2) companies buying offset credits to comply with the caps in domestic carbon markets. Both sources create demand for purchase of CER credits from developing nations under the Clean Development Mechanism (CDM).

In 2009, the CDM mechanism generated 123 Mt of CO₂e emissions reductions in developing nations generating finance of approximately US\$ 2.5 billion p.a. of CO₂e emission reductions in developing nations. There are proposals to scale up the potential contribution of the offset mechanism by creating sectoral, programmatic or policy support mechanisms that would create more scale than the current project based mechanism. Currently the main uncertainties facing the offset market are: the magnitude of offset demand in the absence of binding country emission targets post 2012, the future of the CDM offset mechanism, and the implications of new sectoral mechanisms.

It should also be noted that between 2004 and 2007, four out of five projects implemented under the CDM were concentrated in just four countries, namely Brazil, China, India and Mexico²⁴. In the absence of dedicated technical assistance there is a risk that only a few emerging economies will be able to benefit from such financing.

There are a number of key assumptions in estimating the contribution of the carbon market to finance flows. These are the level of overall mitigation targets, structure of the carbon market emission caps that are put in place (internationally and domestically), the amount of offsets demanded (which depends among other things on the quotas allowed as well as the relative competitiveness of offsets in the market place) and the offset price (which depends on emission caps, among other elements). Estimates of finance from carbon markets are in the range of as high as US\$ 15-20 billion²⁵ p.a. (based on an analysis of the higher end of pledges submitted to the UNFCCC in January 2010) and € 38 billion (based on European Commission analysis).

3. Other international financing mechanisms, including the United Nations system and the role of the IFIs

There are several other international financing mechanisms that have been proposed to meet the costs of climate related activity. In this category, the United Nations System and the IFIs can play an important role in financing climate change adaptation and mitigation, including technical assistance and private sector investment. The United Nations system has the experience, presence and mandate to assist countries in developing their own national capacities to address the threat of climate change, including their access to climate finance. The IFIs for example could contribute by

aligning their lending practices increasingly towards climate friendly investments (and avoid high carbon investments). Proposals to increase the MDBs' capital bases could support this. In addition, the United Nations system and the IFIs can play a role in the creation, financing and implementation of new and innovative sources of international finance.

The United Nations System

The UN system manages several financial mechanisms which provide funds for catalyzing capital towards low carbon and pro-poor development mitigation and adaptation measures. More than US\$ 4 billion is under management in multi-donor trust funds, and over US\$ 2.6 billion is channelled through the Multilateral Fund (MLF) of the Montreal Protocol.

The UN system coordinates and facilitates public funds to attract and leverage larger private finance and investment flows. It also supports countries to access, combine and sequence new sources of environmental finance as funding is scaled up. The UN system can play an important role in developing the capacity of low income countries to create conditions that improve country-risk profiles to increase the return of climate projects for private investors.

Multilateral Development Banks

The World Bank and the Regional Development Banks provide finance for investment in mitigation and adaptation measures to developing countries - some loans at commercial rates, other loans at concessional rates and some grants (e.g. in the case of IDA). They also finance private sector investment in developing countries, mobilizing capital in the international financial markets, and providing advisory services to businesses and governments, through agencies like the IFC.

The largest portfolio of non-UNFCCC funds were established under the World Bank, about US\$ 8 billion of capital has been cumulatively committed to a range of climate-specific funds like the Climate Investment Funds (CIF). The CIFs are channelled through four regional banks as well as the World Bank. Some banks, such as the EBRD, have specific targets to ensure that a share of their lending helps meet climate goals. And the World Bank has already issued green bonds worth over US\$ 1 billion.

The MDBs also have a role to play in innovative sources of finance. For example, the World Bank has played a leading role in the design and implementation of the Advanced Market Commitment (AMC) for vaccines - a model which could be applied to the development and diffusion of climate-related technologies in developing countries. MDBs can also help underwrite climate risks in developing countries and leverage private investment, through innovations like cornerstone climate funds, guarantees and other risk sharing and mitigation activity.

IMF - Special Drawing Rights (SDRs)

In line with its mandate, the IMF focuses on the macroeconomic, fiscal, and financial challenges of climate change, and not on actual mitigation or adaptation policies. However, the Fund does have a mandate to assist low-income countries develop and grow, and therefore an indirect mandate to help them tackle the challenges of climate change. The Fund also promotes understanding of the challenges the international community faces in designing effective fiscal policies to tackle climate change, by publishing research papers and taking account of climate change in its global forecasting.

SDRs are issued by the IMF to its member countries as a way of increasing the insurance offered by their own reserves. SDRs worth more than US\$ 280 billion were issued during the economic crisis in 2009 and are now held by member countries on their balance sheets. The IMF and George Soros have suggested two proposals - i) that member countries could provide SDRs to a US\$ 100 billion climate fund or ii) that bonds could be issued guaranteed by SDRs. In both approaches, the funding raised could be provided as loans at concessional rates to finance developing country low carbon infrastructure investments. As the SDR is not a freely usable currency itself, these proposals raise a number of a number of design and financing questions, including how to ensure liquidity of the SDRs to support their core role as an international reserve asset, how to concessionalise the lending, who should own the default risk, and what the public expenditure implications could be.

Foreign Exchange Reserves

Proposals exist to facilitate enhanced deployment of existing national foreign exchange reserves. Many countries have established Sovereign Wealth Funds to hold and invest reserve holdings, but these resources are not used as efficiently as they could be. There is already significant demand for a 'Fund of Funds' financed by the private sector and managed by a private Fund Manager to tackle climate change and raise substantial, long-term finance for investment in renewable energy sources.

Working with the IFC and other private sector-focused IFIs, a Fund of Funds could link institutional investors and private firms active in developed world markets, with bankable infrastructure projects in developing countries. Such a Fund would need to follow internationally recognised governance principles for mutual funds in terms of shareholding and voting rights, and interventions. There may also be scope for smaller, regional sub-funds within the Fund of Funds run by Fund Managers who offer specialist regional expertise. The World Bank could support the Fund of Funds by helping countries develop viable projects to create a global project pipeline and offering a package of risk mitigation instruments for investors.

Debt for clean energy swap

Proposals have been made for a debt for clean energy swap, whereby sovereign creditors would agree to forego outstanding liabilities of debtor governments under the condition that the funds are used domestically by the debtor governments to reduce

emissions by an agreed amount. Under this approach, debtor countries would then be able to use local currencies to finance recurrent costs of operations related to emission reduction within the country, instead of using it to purchase foreign currency to repay outstanding debt.

This approach would base resource allocation on the level of indebtedness of a country, rather than mitigation capacity or adaptation need and would result in financing flows based on the maturity profile of the debt that has been forgiven. It is very difficult to estimate the likely finance flows from this approach as it would depend on the location of debt and the willingness or ability of creditor countries to provide financing in this way. Key questions include whether this would be done on a bilateral or multilateral basis and the mechanism to ensure mitigation is achieved.

4. Public instruments to leverage private sector finance

The public sector has a significant role in creating the right conditions for private investment. This is not about generating sources of finance, but creating the right conditions to mobilize private capital. To mobilise private capital at scale, it is important that investments have risk/return profiles that make them attractive to private investors, and that there is a strong financial system to channel these funds. There are multiple barriers to investment, which can be overcome by public sector support:

- *creating the right incentives for companies to invest by covering the incremental costs of measures (e.g. feed-in tariffs) or by putting in place regulation forcing companies to act (e.g. standards).* Most measures are not economical in their own right and require additional (income) support to make them competitive. Examples of this are carbon pricing, or measures like feed-in tariffs which can (partially) be financed through public finance contributions. Key for investors will be stable and predictable income support for incremental costs (over the duration of the project life) in order to increase the returns of investment;
- *reducing risk²⁶.* Barriers to investment include country risk, currency risk and difficulties of evaluating multiple overlapping risks. Often the public sector is better able to carry those risks than private investors. Using public mechanisms to help reduce the risks associated with private investment in mitigation and adaptation activities will reduce the associated returns expectations. Some proposals include country risk that could be addressed by an insurance facility like MIGA, or currency risk that could be addressed by establishing currency funds offering foreign exchange hedging products, like TCX (The Currency Exchange Fund supported by the Dutch Ministry for Development Corporation) The promotion of borrowing in local currency has also been seen as a way to enhance financial development and reduce the currency mismatches that affect debt structures in developing countries;
- *overcoming the start up challenge²⁷.* Using public interventions to create a pipeline of viable investment opportunities (e.g. supporting project developers and low carbon growth policy planning) and supporting pilot projects to demonstrate the financial viability of private sector involvement. This could be done by creating

low carbon project development companies that are publicly funded but privately run to invest in early stage low carbon project development;

- *strengthening local capital markets and lending from local banks.* In countries with underdeveloped capital market, strong support for local policymakers by Multilateral Development Banks is crucial to mobilising local capital markets. The EBRD Sustainable Energy Financing Facility²⁸ which provides loans to local banks for energy efficiency lending is an example for such as facility.

The appropriate responses will differ according to the country, sector and the degree of local capital market development.

Annex I

Current climate finance funding

Climate-related financial resources provided to developing countries currently are of the order of USD 15 to 25 billion per year for mitigation, less than USD 250 million per year for adaptation, and less than USD 25 million for technology transfer. International funding for mitigation action in developing countries comes from a variety of sources:

- Private investment in renewables and energy efficiency estimated at USD 7 to 10 billion per year (7% to 10% of the USD 100 billion global total)
- Revenue from the sale of CERs estimated at USD 3 to 10 billion based on expected annual emission reductions of 340 million tonnes for registered projects and a sale price of USD 10 to 20 per CER
- Bilateral aid of USD 3.5 billion per year
- Multilateral aid of less than USD 2 billion per year based on pledges of USD 5.5 billion for mitigation activities of the Climate Investment Funds
- Mitigation spending by the GEF Trust Fund of less than USD 0.2 billion per year (USD 2.1 billion over 18 years)
- Unknown amounts, believed to be small, provided by export credit agencies and foreign direct investment

Private investment is the largest single flow. Purchases of CERs by developed country governments and entities is the next largest source, probably equal to and perhaps substantially larger than the funds provided by developed country governments through bilateral and multilateral channels.

The available data suggest that most of the resources flow to a few countries. About 75% of the emission reductions by CDM projects are expected to occur in China, India and Brazil. The geographic distribution of bilateral and multilateral aid, including the GEF, is much broader. Public funds, then, fill gaps in the geographic distribution of private funds. Market mechanisms are not effective for some types of mitigation measures. The CDM has few energy efficiency projects outside large industrial facilities and few transportation sector projects. Such projects face well documented market barriers. Public funds are likely to be needed to support mitigation measures that do not respond well to price incentives and measures with emission reduction costs higher than the market price. The CDM also has few afforestation / reforestation projects, in part because the market for credits from such projects is limited.

International funding for adaptation action in developing countries comes from a variety of sources, including:

- GEF strategic pilot approach to adaptation: USD 50 million; USD 50 million disbursed
- Special Climate Change Fund (SCCF): USD 88 million received; USD 21 million disbursed
- Least developed Countries Fund (LDCF): USD 155 million received; USD 18 million disbursed
- Adaptation Fund: USD 110 collected; no funds disbursed
- Pilot Programme for Climate Resilience (PPCF): USD 130 million received; no funds disbursed
- Unknown amounts through bilateral and multilateral OAD

To date about USD 500 million has been collected for adaptation and about USD 65 million has been disbursed. Most of the funds have been contributed by developed

country governments, but over 20% has been raised for the Adaptation Fund through the levy on CERs issued. Adaptation requires financial support since there is no market mechanism for adaptation measures.

The LDCF has funded the preparation of National Adaptation Programmes of Action (NAPAs) for virtually all least developed countries. A review of 38 NAPAs identified 430 “urgent and immediate” adaptation projects, of which 385 had been costed.[†] The total cost of these projects is over USD 800 million, excluding a single USD 700 million project. Projects in 32 countries with a total funding requirement of over USD 100 million are under consideration by the LDCF. Current pledges appear to be sufficient to support one project per country of the 11 identified by a typical NAPA.

An evaluation of the LDCF concluded that disbursement of funds for priority projects has been of an insignificant scale compared to adaptation needs in LDCs.[‡] The poor performance is due to the design and function of the LDCF and to dealing with a complex subject that is new to many stakeholders. Funding has not been predictable nor adequate. The evaluation recommends that the UNFCCC reassess the role of the LDCF and, if it is retained, review the present institutional arrangements and delivery mechanisms, and provide sufficient funding to implement NAPA programmes rather than individual projects.

The SCCF has committed its available funding to 21 projects covering 34 countries (including 8 LDCs). Additional projects are approved only as more funds are received. As of September 2009, the SCCF waiting list includes projects seeking funding of USD 242 million, almost three times the amount received for adaptation to date.

The unfunded projects identified by NAPAs – USD 700 million – and on the SCCF waiting list – USD 242 million – indicate a need for almost USD 1 billion. It is possible that some or all of those projects could also seek funds from the Adaptation Fund and/or the Pilot Programme for Climate Resilience (PPCR). If all of the PPCR pledges – USD 735 million – are received and the Adaptation Fund continues to collect about USD 100 million per year, this backlog of projects could be funded within a few years.

Despite the relatively modest amounts raised so far to address adaptation, funding is spread over multiple entities whose roles are not clearly distinguished. A clearer definition of the respective roles, better coordination, or consolidation of some of the entities funding adaptation might be appropriate. Too few adaptation projects have been completed yet to assess the effectiveness of the existing channels.

The only source of international funding dedicated to technology transfer is the Poznan Strategic Program on Technology Transfer with a budget of USD 50 million created by the GEF late in 2008. It will provide financial and technical support to assist 35 to 45 developing countries in preparing and/or updating their technology needs assessments (TNAs).[§] As well the Program will fund 14 technology transfer pilot projects at a cost of USD 36.8 million with additional USD 21.2 million requested from the GEF Trust Fund.

[†] UNFCCC, 2008. Investment and Financial Flows to Address Climate Change: An Update, FCCC/TP/2008/7, UNFCCC, Bonn, November, p. 25.

[‡] DANIDA Evaluation Department and GEF Evaluation Office, 2009. Executive Summary Of The Joint External Evaluation: Operation Of The Least Developed Countries Fund For Adaptation To Climate Change, GEF/LDCF.SCCF.7/5, October 13, 2009, Washington, D.C., pp. 3-6.

[§] Global Environment Facility, 2009. Implementation of the Poznan Strategic Program on Technology Transfer: An Interim Report of the GEF to the Subsidiary Body for Implementation at its Thirty-First Session, GEF, Washington, D.C., November 5, 2009. 39 proposals seeking funding of USD 81 million from the technology transfer window were submitted of which 14 were selected.

Although it is not an explicit objective of the CDM, it contributes to technology transfer by financing emission reduction projects using technologies not available in the host countries. Several studies have analysed the technology transfer in the CDM based on the statements by project proponents.** They find that roughly 35% of the projects accounting for about 60% of the annual emission reductions claim to involve technology transfer. Technology transfer is more common for larger projects and projects with foreign participants. Technology transfer varies significantly by project types and host country.

The existing financial architecture includes numerous channels that provide different forms (grants, debt, equity) of public and private finance. Unfortunately, the amounts provided through each channel to developing countries for mitigation, adaptation, technology development and transfer and capacity-building can not be determined accurately. The available data suggest that:

- Substantially more funding has been provided for mitigation than adaptation;
- Bilateral and multilateral flows are much larger than flows through funds under the Convention;
- Flows generated by the CDM probably are of the same order of magnitude as conventional private flows;
- A specific mitigation or adaptation project often involves funding from several channels; and
- Most of the funding goes to a relatively small number of large developing countries.

** See Seres, S., Haites, E., and Murphy, K., 2009. Analysis of technology transfer in CDM projects: An update. *Energy Policy*, 37, 4919–4926 and Haites, E., Duan, M., Seres, S., 2006. Technology transfer by CDM projects. *Climate Policy*, 6 (3), 327–344.

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2020 in the high abatement case; at an assumed CDM offset price of US\$15-20/t, this suggests a total market size of US\$15-20 billion in 2020

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