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Financing Supported NAMAs (Nationally Appropriate Mitigation Actions) Discussion paper

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Executive Summary

This discussion paper addresses open questions with regards to the financing of Nationally Appropriate Mitigation Actions (NAMAs) and aims to assist experts and practitioners involved in developing financial proposals for NAMAs. NAMAs, first introduced in the 2007 Bali Action Plan, are a relatively new international climate policy instrument aiming to address developed and developing country greenhouse gas (GHG) emissions while supporting sustainable development. Developing country NAMAs refer to mitigation actions that countries can voluntarily implement, and which they may fund domestically (unilateral NAMAs) or for which they may receive international support (supported NAMAs). This paper focuses on the financing of supported NAMAs.

So far, no supported NAMAs have moved to the full implementation phase, but funding has been made available for readiness activities and preparing NAMA proposals in some countries, and one of the first agreements for funding the implementation of a NAMA has been signed recently.

This paper discusses the following questions:

- How do supported NAMAs fit into the larger climate finance context and what are potential differences between NAMAs and existing supported mitigation actions?
- What is the role of incremental costs in estimating the level of international support to be provided and how important is cost-effectiveness for determining which NAMA to support?
- What are appropriate financial instruments for delivering this NAMA support?

Finally, a few cross-sectoral best-practices for the provision of international support for climate change mitigation in developing countries are provided, as well as some practical considerations for a financial proposal for a NAMA.

There are a number of parallels between supported NAMAs and existing supported mitigation actions. The approaches, best-practices and lessons-learned from existing programmes and projects can therefore provide valuable guidance for the financing of supported NAMAs. Cross-sectoral best practices include:

- Optimal interventions address multiple barriers and need to be tailored to the national context (UNDP, 2011);
- Funding commitments by donors should be reliable, predictable, long-term and of sufficient scale if a transformation effect in a sector is to be achieved (AGF, 2010);
- Public funds should be used efficiently and effectively (UNDP, 2011). This implies, for example, that public funds should be spent on interventions where the private sector does not become active on its own, or that cheaper interventions, such as improving the regulatory framework or access to information for consumers, should be undertaken before more costly interventions, such as subsidies or loan guarantees (UNDP, 2011);
- Mutual accountability and transparency with regard to spending in developing countries and financial flows from developed countries are crucial to build reciprocal trust over time (AGF, 2010).

There are also a few features distinguishing NAMAs from many other supported mitigation actions. These include the fact that NAMAs have the potential to include strategic, long-term actions aiming at transformational impacts; that development co-benefits could play a central role for NAMAs; and that it is expected that the leading role in the implementation of NAMAs lies with the host country government. These features should receive special attention in developing the financial proposal for a supported NAMA, as less experience exists with international support for mitigation actions with these characteristics.

On the question of the role of incremental costs in estimating the level of international support to be provided for NAMAs, the paper concludes that for many mitigation actions it is almost impossible to determine their incremental costs in a standardized and unambiguous manner. We therefore recommend to take a pragmatic view on incremental costs when determining the financial support provided for NAMAs. At least in the short to medium term, the level of support is likely to be subject to case-by-case negotiation and agreement. This could be partly based on a consideration of incremental costs (where applicable), but also on other factors such as the scale of available support, potential co-funding commitments by the host government and other aspects determining how to implement a certain mitigation action effectively and efficiently.

With respect to the cost effectiveness of NAMAs, we suggest that supported NAMAs could be actions with either positive or negative marginal abatement costs and that marginal abatement costs are arguably not suitable as the only criterion for choosing which NAMAs to support. However, it is crucial that, although the level of support provided may be subject to case-by-case agreement, there is confidence by donors that international support is spent wisely and produces results. Therefore, it will be important to develop and monitor relevant performance criteria to provide the required accountability.

There is also likely to be an interest from the side of funders to consider performance-based approaches for supporting NAMAs. While there is limited experience with performance-based international support for mitigation actions (apart from the CDM), various approaches are possible for integrating performance-based elements into different types of support. We recommend to review the emerging lessons from performance-based climate support, as well as lessons from other sectors, especially health, where more experience with results-based financing is available.

To give guidance on the financial instruments to be used for a NAMA, the paper describes a general framework for selecting appropriate financial interventions by the public sector, so called Public Finance Mechanisms, depending on the specific barriers to be overcome (see Table below). However, for some of these Public Finance Mechanisms, little experience exists, as to how they could be used on a large scale for international support of mitigation actions in developing countries.

Barriers to mitigation actions	Type of financing	Public Finance Mechanisms
Low (or no) return on investment	Contribution to investment and operational costs	Up-front grant (e.g. direct subsidies, investment tax breaks, grant component of concessional loans) Funding during operation (e.g. feed-in remuneration, carbon markets)
High up-front costs and lacking access to capital	Facilitating access to finance	Provision of debt, e.g. through loans or credit lines Provision of equity Incentivizing existing financing system*
High risk	Provision of risk coverage	Risk guarantees / insurance schemes
High transaction costs		Standardization and aggregation *
Non-financial barriers (e.g. regulatory barriers, lack of information and capacity)	(Financing) technical assistance	Mostly in the form of grants

**Note that these mechanisms are not Public Finance Mechanisms but included for the sake of completeness
 Adapted from Neuhoff et al. (2010)*

As there are still a number of open questions with respect to the financing of supported NAMAs and little experience with coming to a financial agreement, the first detailed financial proposals for supported NAMAs should be developed in close collaboration between host country governments and development partners. This would help to gain mutual experience and understanding. Such experience with financing and implementing NAMAs is urgently needed if NAMAs are to become a successful climate policy instrument.

1. Introduction

Nationally Appropriate Mitigation Actions (NAMAs), which were first introduced in the 2007 Bali Action Plan, are a new international climate policy instrument aiming to address developed¹ and developing country greenhouse gas (GHG) emissions while supporting sustainable development. Developing country NAMAs, on which this paper focuses, refer to mitigation actions (such as policies, strategies programmes or projects) that the countries can voluntarily implement, and which they may fund domestically (unilateral NAMAs) or for which they may receive international support (supported NAMAs). As of May 2012, 44 developing countries had submitted NAMA ideas to the UNFCCC secretariat (UNFCCC, 2012), but none of these NAMA ideas had received international support for implementation, yet.²

The broader topic of climate finance has become another widely discussed topic in the international climate negotiations. In the Copenhagen Accord and Cancun Agreements, developed countries made a commitment to “provide new and additional resources, approaching \$30 billion for the period 2010-2012 with a balanced allocation between adaptation and mitigation”. This so-called ‘fast-start finance’ is expected to come from developed countries’ public sources. In the medium term, developed countries committed to a goal of jointly mobilizing \$100 billion dollars a year by 2020 to support developing countries on mitigation and adaptation.

Within the international climate negotiations, some of the common recurrent issues around climate finance in developing countries include:

- What funding is required in relation to the investment and incremental costs associated with meeting climate change targets and adaptation needs?
- How can the required funds be raised?
- By whom, and according to which criteria and procedures, are public funds distributed?
- How can international (and national) public support be used most effectively? And what are appropriate roles of the public and the private sector in this?

To move NAMAs from ideas and concepts towards implementation, the last two issues are especially relevant. The implementation of a supported NAMA requires international support to be accessed and a feasible financial structure for the implementation of the mitigation action to be developed.

This discussion paper focuses on international support for NAMAs and aims at assisting experts and practitioners involved in developing financial proposals for NAMAs. The paper discusses how supported NAMAs fit into the larger climate finance context and if lessons learned from existing climate change mitigation programmes and projects in developing countries are applicable to financing supported NAMAs (Chapter 2); the role of incremental costs in estimating the level of international support to be provided and the cost-effectiveness of NAMAs (Chapter 3); and what the appropriate instruments are for delivering this international support for NAMAs (Chapter 4). Finally, a few best-practices for the provision of international support for climate change mitigation in developing countries are provided (Chapter 5), as well as practical considerations for a financial proposal for a NAMA and some concluding remarks (Chapter 6).

¹ See UNFCCC (2011; III, A) on Nationally appropriate mitigation commitments or actions by developed country Parties

² In June 2012, the governments of Ethiopia and Norway signed a partnership agreement for financial support for the implementation of Ethiopia’s NAMA “Electricity Generation from Renewable Energy for Off-grid Use and Direct Use of Renewable Energy” submitted to the UNFCCC in 2010. Phase I (2012-2013) consist of readiness activities, but Norway’s financial commitment also covers the Implementation Phase (2014-2016) (Government of Norway, 2012).

2. Supported NAMAs in the context of climate finance

To get an understanding of the scale of financial support that NAMAs could tap into, it is useful to first consider what is included under the term of 'climate finance' and how large climate finance flows are today. In addition, this chapter discusses if and how NAMAs are different from mitigation actions realised with the help of existing international support for climate change mitigation to determine to what extent this experience can inform the development of financial proposals for supported NAMAs. Lastly it touches on the role of the private sector in financing and implementing NAMAs.

What is meant by climate finance?

Although it is such a widely discussed topic, there is currently no internationally agreed definition of climate finance (AGF, 2010; Buchner *et al.*, 2011). The term is occasionally used with a connotation of "climate aid" (in parallel to development aid), covering financial flows of public finance from developed to developing countries to support mitigation and adaptation measures.³ Public finance, in the sense of public support, comprises grants, and the grant components of concessional loans⁴. This definition aligns with the notion expressed in Article 4.3 of the UNFCCC which states that developed countries are to provide financial resources in support of mitigation and adaptation efforts in developing countries.⁵

Other sources use the term climate finance in a broader sense, comprising also climate change mitigation and adaptation related private financial flows, as well as financial flows from carbon markets to developing countries.⁶ This broader definition is used for the mobilization of the "\$100 billion per year by 2020" commitment noted in the Cancun Agreements, which states that funds may come from a wide variety of sources, including public and private, and bilateral and multilateral sources, including alternative sources.⁷ Thus, under this definition, climate finance goes beyond aid by including for example commercial loans and for-profit private sector investments.⁸

Developing countries often stress the importance of the public support or grant element of climate finance whereas many developed country representatives stress the fact that public money is scarce and the importance of "leveraging" private sector investments (see AGF, 2010). Supported NAMAs are expected to (partly) rely on international support for their implementation.⁹ The scale of available funding for supported NAMAs is determined, inter alia, by the following questions: Do developed countries meet their fast start pledges? How much public support is made available in the longer term and how it is split between mitigation and adaptation? What fraction of the mitigation support will be available for NAMAs?

³ E.g. ODI (2011) refers to public finance from developed countries for climate change related actions, in the case of that paper mitigation actions, in developing countries.

⁴ Concessional loans are loans with much more generous terms than available from the market. Concessional loans have lower interest rates than on the market, or the loans have longer grace periods (i.e. the period until the first tranche of capital repayment is due) or a combination of these two features. Concessional loans generally include long grace periods (OECD, 2003). The grant component of a concessional loan with interest rates below the market rate is defined as the 'difference between the loan's nominal value (face value) and the sum of the discounted future debt-service payments to be made by the borrower (present value)' (see <http://www.imf.org/external/np/pdr/conc/index.htm> for further explanation).

⁵ The Financial Mechanism defined under Art. 11 of the UNFCCC refers to financial resources on a grant or concessional basis to developing countries.

⁶ Sometimes the term climate finance also comprises North-North and South-South flows (Buchner *et al.*, 2011). It is also important to note, that private financial flows generally include investment costs, whereas public flows frequently support the incremental costs of an investment.

⁷ Alternative sources could e.g. be income from the auctioning of emissions allowances, taxes or levies on international aviation or on bunker fuels or a tax on financial transactions.

⁸ Note, that in the context of the UN High-level Advisory Group on Climate Change Financing (AGF, 2010) diverging views were raised as to the mix between public and private sources comprising the \$100 billion: Some AGF members favoured public financing as the main source, covering incremental costs and complemented by private flows, whereas others focused on private financing as the primary source.

⁹ Note, that although it is expected that public support for NAMAs will include a grant component, there could also be public, non-grant elements such as loans offered by public institutions, and private sector financing. Therefore supported NAMAs do not only rely on public support for implementation.



Current scale of financial support for mitigation actions in developing countries

According to a recent report on climate finance flows (Buchner et al., 2011), total climate finance flows including financial flows from the private sector were \$97 billion in the year 2009/2010. Table 1 shows international financial flows from public institutions in the same year.

Table 1: International climate finance flows from public institutions to developing countries in the year 2009/2010. (source: Buchner et al., 2011).

Sources of climate finance	Amount
Grants	\$4.2 billion
<i>from bilateral sources</i>	<i>\$3.2 billion</i>
<i>from multilateral institutions</i>	<i>\$0.8 billion</i>
<i>from climate funds (such as the GEF Trust Fund and the World Bank Clean Technology Funds)</i>	<i>\$0.2 billion</i>
Concessional loans	\$12.5 billion
<i>from bilateral sources (mostly from Japan)</i>	<i>\$11.4 billion</i>
<i>from multilateral institutions</i>	<i>\$0.7 billion</i>
<i>from climate funds</i>	<i>\$0.4 billion</i>
Non-concessional loans	\$179 billion
Risk mitigation instruments	\$1.2 billion
Total public climate finance	\$35.8 billion

Little firm data is available on how much of this public funding went to mitigation and how much to adaptation, but it is highly likely that the share of support for mitigation is significantly larger.¹⁰ Historically, more than 80 percent of public climate finance has gone into supporting mitigation actions (including REDD) (Project Catalyst, 2010).

In addition to data on broad climate finance flows, specific data is being collected to track progress on the fast-start finance commitments under the Cancun Agreements. Recent data compiled by WRI (Stasio et al., 2011) shows \$10 billion of requested or committed funds in 2010 and \$6 billion in 2011 (data as of November 2011).

All of the available data suffers from serious shortcomings, though. Data on climate finance flows is rarely reported precisely, i.e. no clear distinction is made between the public support component (technical assistance, grants and the grant component of concessional loans) and commercial financial flows, including provision of loans on commercial terms by Multilateral Development Banks (MDBs). Moreover, for fast-start finance, it is often difficult to distinguish between what has been pledged and what proportion of these pledges has really been spent, as well as how to define what is 'new and additional'.

Looking beyond 2012, the question of concrete donor commitments of new and additional resources after the 2010-2012 fast-start funding period ends remains unanswered. How to close the financing gap between 2013 and reaching the \$100 billion per year from mixed sources in 2020 remains a contentious issues in the international negotiations.

¹⁰ Of the total (including financial flows from the private sector) climate finance flows of \$97 billion reported by Buchner et al., (2011) for the year 2009/2010, 95% or \$93 billion were used for mitigation. However, when only looking at grants (including the grant component of concessional loans), the share of adaptation finance is expected to be larger. The \$4.4 billion spent on adaptation measures are likely to include only a very low proportion of private finance.

So what does the current state of financial support for mitigation actions in developing countries imply for supported NAMA? Support for NAMAs has so far been mostly for the preparation of proposals and for building “NAMA readiness”. As of May 2012 no supported NAMA had moved to the implementation phase, yet.¹¹ While support provided for NAMA preparation has not been insignificant so far, larger scale financing for the implementation of supported NAMAs has not yet been disbursed. In the medium term, it is expected that support for the implementation of NAMAs could be provided through a number of sources, including the Green Climate Fund, bilateral and multilateral arrangements. In the short term, it is expected that the first supported NAMAs will rely on bilateral funding (Tilburg *et al.*, 2012).

The lack of clarity on the continuation of funding beyond the fast-start finance period adds an element of uncertainty to the prospect of funding of supported NAMAs. However, for the first NAMAs to move to implementation, a number of donors have expressed interest in making funding available.¹²

How are NAMAs different from mitigation actions realised under existing international climate change mitigation programmes and projects?

The amount of financial support already disbursed for climate change mitigation related activities in developing countries indicates that substantial experience in structuring international support for mitigation actions exists. To be able to determine to what extent this experience can inform the development of financial proposals for supported NAMAs, the following discusses if and how NAMAs are different from actions supported through existing international climate change mitigation programmes and projects. Box 1 shortly introduces three existing channels for disbursing climate finance, which according to Buchner *et al.* (2011) are among the largest.

Box 1: Examples of existing channels of support for climate change mitigation

The Global Environment Facility (GEF): The GEF acts as the financial mechanism to the UNFCCC and is one of the largest providers of climate support to developing countries and countries with economies in transition. GEF agencies (UNDO, UNEP, the World Bank, FAO, UNIDO, AfDB, ADB, EBRD, IADB, and IFAD) assist eligible governments and NGOs in the development, implementation and management of GEF projects. GEF funding has mostly been disbursed as grants in the past, although more recently the use of selected non-grant instruments has been encouraged to complement grant funding (GEF, 2008). For mitigation projects, the GEF has a broad scope, covering renewable energy; energy efficiency; sustainable transport; and management of land use, land-use change, and forestry (LULUCF). In 2009/2010, the GEF disbursed about \$300mn (Buchner *et al.*, 2011).

¹¹ The NAMA database (www.namadatabase.org) lists two NAMAs in Mexico and South Africa which are in the implementation phase. However, to our knowledge, for neither agreements on the international support for implementation have been reached. See also footnote 3 for Norway’s commitment to support Ethiopia’s NAMA on “Electricity Generation from Renewable Energy for Off-grid Use and Direct Use of Renewable Energy”.

¹² Based on personal communications. Moreover, in June 2012, Norway committed to provide support for Ethiopia’s NAMA “Electricity Generation from Renewable Energy for Off-grid Use and Direct Use of Renewable Energy” (see also footnote 3) (Government of Norway, 2012).

The World Bank's Climate Investment Funds (CIF): The World Bank (often in cooperation with other Multilateral Development Banks (MDBs)) is another major provider of climate finance, running various climate change related funds and programmes, including its Climate Investment Funds. These comprise of two funds, the Clean Technology Fund (CTF) and the Strategic Climate Fund (SCF). Under the SCF, the World Bank supports adaptation and land-use related initiatives and the Scaling Up Renewable Energy in Low Income Countries (SREP) programme which aims to help low-income countries use new economic opportunities to increase energy access through renewable energy use and focuses on catalyzing both public and private sector action.

The CTF aims to provide scaled-up financing for demonstration, deployment and transfer of low-carbon technologies with significant potential for long-term GHG emissions savings in the areas of power generation, transport and energy efficiency. The CTF mostly works with middle-income countries and disburses financing based on country investment plans developed by the host country in cooperation with MDBs, which are preferably based on existing low-carbon development or similar strategies. Under the CIF, about \$1 billion was disbursed in 2009/2010; most of the funding under the SREP and CTF is in the form of concessional loans, loans and guarantees (Buchner *et al.*, 2011).

Climate related Official Development Assistance (ODA): In addition to focused climate funds, climate change mitigation related ODA is provided by a number of donor countries. Such aid is targeted at a wide range of different actions across all sectors and can have climate change mitigation as a primary or secondary target. In 2009, more than \$9 billion* of climate related ODA was committed (Heinrich Boell Stiftung, 2010).

*Note that this also includes non-grant elements.

Five main features, specific to NAMAs, are discussed which could determine if experiences and lessons learned from existing climate change mitigation programmes and projects would be applicable to financing of supported NAMAs:

- 1 Requirement for sustainable development:** NAMAs are explicitly placed in the context of sustainable development according to the principle set out in the UNFCCC (1992) that “Policies and measures should be appropriate for the specific conditions of each Party and should be integrated with national development programmes, taking into account that economic development is essential for adopting measures to address climate change”. The link to national development has been strongly emphasized in the climate negotiation texts since NAMAs were introduced in the Bali Action Plan (thus the “Nationally Appropriate”) (Tilburg *et al.*, 2012).

Practically, this implies that development co-benefits could play an important role in NAMAs. However, most existing supported mitigation projects and programmes in developing countries have some development focus as well, although to a varying degree. It remains to be seen if the focus of NAMAs on sustainable development will indeed be stronger than current practice.

The important role of development co-benefits might indicate similarities between NAMAs and ODA. However, in many instances ODA focuses on poverty reduction, which - at least in the case of energy aid - has limited overlap with climate mitigation (Bruggink, 2012). Lessons learned and best-practices from deploying ODA may still be applicable to structuring the financing of NAMAs, but will have to be complemented with considerations specific to supporting climate change mitigation in developing countries.¹³ The potential for significant development co-benefits also has consequences for the calculation of incremental costs (see Chapter 3 below).

- 2 International MRV:** Supported NAMAs will be subject to international measurement, reporting and verification (MVR) in accordance with guidelines to be developed under the UNFCCC.¹⁴ This guidance has not yet been developed and MRV is one of the most widely discussed issues around NAMAs in the international climate negotiations.

In reality, it is already good practice for development programmes to be subject to quite detailed outcome-oriented Monitoring and Evaluation (M&E) frameworks. Major multilateral donors such as the World Bank, regional development banks, GEF, UN organizations, as well as bilateral initiatives such as the German International Climate Initiative (ICI) have their own M&E approaches which aim at tracking GHG emissions impacts and other outcomes of the programmes. In addition, significant experience has been gained with monitoring and verification of emissions reductions under the CDM.

In the absence of international guidelines on NAMA MRV, MRV systems for NAMA proposals may be able to build on existing M&E approaches and - depending on the sector and type of NAMA - on experiences gained under the CDM and voluntary carbon markets. In this sense, the MRV requirements for NAMAs would therefore not imply that a NAMA proposal is fundamentally different from proposals for existing climate related programmes and projects (see also Chapter 4 on performance-based financing). However, international MRV of supported NAMAs remains a contentious topic due to sovereignty issues raised by developing countries.

- 3 Transformational impacts:** NAMAs are a very broad concept and can comprise a wide range of different measures. Although this is not mentioned explicitly in the negotiation texts, NAMAs have the potential to include strategic, long-term actions aiming at transformational impacts. This means that the scope of NAMAs can go beyond simple project based and many programme based approaches with a limited scope.

Such ambitions for transformational impacts would specifically distinguish NAMAs from the project based approach of the CDM with its focus on directly quantifiable emission reductions which are typically realised in the short-term (Jung *et al.*, 2010a). To a lesser extent, it would also differentiate NAMAs from many existing climate change mitigation programmes and initiatives with lower or more short-term ambitions. However, it is important to note that NAMAs are not required to have strategic transformational effects.¹⁵

¹³ See Bird & Glennie (2011) for a discussion of differences between aid and climate finance.

¹⁴ Note that this discussion does not touch on the MRV of climate support.

¹⁵ Moreover, it could also be possible to define specific NAMAs with a limited scope and ambition which are meant as components of a larger low-carbon development strategies which in turn do aim at having a transformational impact.

NAMAs which do aim at transforming a (sub)sector and place it on a low-carbon development path are likely to pose the largest challenges for structuring financing, as little experience exists with international support for successful large-scale low-carbon transformations.

- 4 Lead agency:** Most existing climate mitigation programmes in developing countries are implemented through international organizations which cooperate with the respective host governments. GEF programmes have been implemented through GEF Implementing Agencies, which are multilateral organizations such as UNDP, UNEP etc.¹⁶ The investment plans of the World Bank's Clean Technology Fund (CTF) are also implemented through multilateral entities, in this case MDBs.

For supported NAMAs, there is no such restriction on who takes the lead in implementation; it is rather expected to be with the host country government. This implies that donors are likely to have increased requirements for accountability.¹⁷ Host country government bodies are likely to be expected to meet minimum standards with respect to their capacity for implementing mitigation actions and monitoring their results. Conclusions from the recent discussions on direct access to climate change funds could be useful in considering the potential implications of host countries taking the lead in implementing supported NAMAs.

- 5 UNFCCC registration:** Supported NAMAs can be submitted to the planned NAMA registry under the UNFCCC, which aims at facilitating match-making between international donors and NAMAs seeking support. Many stakeholders expect this match-making role to be for information purposes rather than leading to automatic matches between donors and NAMA proposals given the currently minimal requirements for NAMA registration (Tilburg, 2012). Thus the NAMA registry is not likely to have an impact on or provide guidance for the design and financial structure of NAMAs. It is important to note, though, that the NAMA registry requires countries to specify their support needs by stating the estimated full cost and/or incremental cost of the NAMA (see Chapter 3).

There are also a few additional parallels between NAMAs and mitigation actions funded through the existing channels of support for climate change mitigation described in Box 1. The World Bank's Clean Technology Fund (CTF) has for example a number of potential parallels with supported NAMAs including the aim of achieving transformational impacts and relying on country investment plans. These country investment plans are preferably based on existing low-carbon development strategies or similar plans. Climate related ODA has parallels to NAMAs in the sense that ideally it should be aligned closely with the host countries development priorities, being "nationally appropriate".

Given the parallels between supported NAMAs and existing supported mitigation actions, the approaches, best-practices and lessons-learned from existing programmes can provide valuable guidance for structuring the financing of a supported NAMA as long as the characteristics specific to NAMAs are taken into account. Chapter 5 presents an overview of good-practices and lessons-learned for the use of public climate finance as well as references to complementary studies.

¹⁶ Note that the GEF has started to move towards providing direct access for selected activities, see http://www.thegef.org/gef/EA_direct_access

¹⁷ This may also point to an interest in performance-based support.



Role of the private sector in financing and implementing NAMAs

Another key issue in the discussion on NAMAs is the role the private sector plays in financing and implementing NAMAs, as this is less clear than for carbon market mechanisms such as the CDM.¹⁸ It is generally assumed that the developing country government takes the lead in the development and implementation of NAMAs. In the limited number of NAMA submissions and proposals to date, which include sufficient level of detail, government agencies indeed have a leading role.¹⁹

It is also clear, though, that given the scale of investments required for climate change mitigation and the inherent scarcity of public sector funds, private sector investments have a significant role in meeting mitigation targets (AGF, 2010). The private sector also has an important role in implementing mitigation actions, e.g. by offering low-carbon technologies, products and services. In recent interviews with practitioners, it was repeatedly stated that NAMAs should be public sector interventions that use public funds to leverage larger private sector investments (Tilburg 2012). Supported NAMAs can create an investment climate and incentive structure which makes it attractive for private sector actors in developing countries to become active in the deployment of low-carbon technologies and services and invest in mitigation actions (without selling carbon credit as generated under the CDM).²⁰

Note though, that not all NAMAs will necessarily aim at leveraging private sector investments. Measures which introduce energy efficiency measures in public buildings, or lower fuel consumption in the public vehicle fleet could, for example, involve no direct private sector investment and limited private sector involvement in implementation. However, such measures are likely only going to be a tiny fraction of global mitigation efforts.

¹⁸ Note that this discussion focuses on supported NAMAs only and does not take into consideration "New Market Mechanism" or credited NAMAs and how they could co-exist with supported NAMAs.

¹⁹ Given that there is so little experience with NAMAs, yet, and no clear definition exists, it can currently not be excluded that a NAMA could be an action where a non-governmental actor has the lead in planning and implementation, but the national government still approves of the action as "nationally appropriate" and submits it to the UNFCCC.

²⁰ It could be possible for NAMAs to co-exist with carbon market mechanisms in the future, in which case private sector actors could develop carbon credits in a sector covered by a supported NAMA. The potential interactions of NAMAs and carbon market mechanisms are not discussed here.

3. Financing incremental costs

How much financial support a developing country can attract from developed countries for the implementation of a climate change mitigation action is a crucial question for the development of the financial structure of a supported NAMA. Under the UNFCCC, incremental costs have been used as a criterion to determine the level of support to be provided (see Box 2). Donors, in particular, are keen to ensure that funds for climate change mitigation are spent effectively. Although for NAMAs, the wording in the latest UNFCCC documents is less clear with respect to incremental costs, also referring to “agreed full costs”²¹, incremental costs have been associated with NAMAs as well.

As no NAMAs have moved to full implementation, yet, and no common understanding on support to be provided for NAMAs has been developed, there is no clarity, yet, on the role of incremental costs in determining the international support made available for a NAMA. The following provides an overview of the current use of incremental costs under the UNFCCC, of the challenges associated with calculating incremental costs and of potential approaches for determining the level of support provided for financing supported NAMAs. In addition, a short discussion on cost-effectiveness of NAMAs is provided.

What are incremental costs?

Under the UNFCCC, “agreed full incremental costs” are cited as the criterion to determine how much financial support developed countries should provide to developing countries for climate mitigation and adaptation actions (see Box 2). However, there is no formal definition of what “agreed full incremental costs” implies (OECD, 2009). Instead, the term has been used with different connotations and in different contexts, which has contributed to misunderstandings.

Box 2: Incremental costs under the UNFCCC

“The developed country Parties [...] shall also provide such financial resources, including for the transfer of technology, needed by the developing country Parties to meet the agreed full incremental costs of implementing measures” (UNFCCC, Art. 4.3) such as “Formulate, implement, publish and regularly update national and, where appropriate, regional programmes containing measures to mitigate climate change” (UNFCCC, Art. 1.3.b)

According to Art 4.3 of the UNFCCC, the GEF, as the financial entity of the Convention, agrees on “full incremental costs” with its developing country partners. The GEF (2011) defines incremental costs as:

“the additional costs associated with transforming a project with national benefits into one with global environmental benefits”.

²¹ The Durban Outcomes on the Green Climate Fund, which is expected to provide funding for supported NAMAs in the future, state that “The Fund will finance agreed full and agreed incremental costs for activities to enable and support enhanced action on adaptation, mitigation (including REDD-plus), technology development and transfer (including carbon capture and storage), capacity building and the preparation of national reports by developing countries” (FCCC/CP/2011/9/Add.1). According to the latest draft AWG-LCA text, the COP “Invites developing country Parties to submit, as appropriate, to the secretariat the following information on individual nationally appropriate mitigation actions seeking international support: [...] The estimated full cost and/or incremental cost of the implementation of the mitigation action” (FCCC/AWG/LCA/2011/L.4).

According to a slightly different view, incremental costs can be defined as the difference in Net Present Value between a mitigation option and a baseline technology. The CDM does not refer explicitly to incremental costs, but in the investment analysis of the CDM additionality test, a project developer needs to prove that the NPV of the project would not be positive without the expected CER revenues (or, alternatively, that there are other barriers that hinder the low-carbon option).

For supported NAMAs, the wording in the latest UNFCCC documents is less definite on the use of ‘agreed’ and ‘incremental’.²¹ Compared to earlier UNFCCC decisions, current documents refer not only to ‘agreed incremental costs’ but also to ‘agreed full costs’.

Before further discussing the potential role that incremental costs could play in determining the international support made available for NAMAs, it is useful to understand the key challenges related to calculating incremental costs.

Challenges in calculating incremental costs

There are only few situations where the calculation of incremental costs is easy and straightforward. In reality, for most climate change mitigation actions, the specific characteristics of the action adds different layers of complexity to the calculation of incremental costs.

Straightforward calculation of incremental costs: The calculation of incremental costs is most straightforward for measures which have no additional benefits other than the reduction of GHG emissions (Schneider, 2007). Such measures are for example the destruction of non-CO₂ gases such as N₂O and HFCs, and most applications of CO₂ capture and storage. For these, the incremental costs are simply the additional costs for the improved plant and its operation compared to the baseline situation.

Difficulty 1 - Projects with differences in investment characteristics: The calculation of incremental costs is more challenging when a specific product (e.g. kWh of generated electricity) is provided by a low-carbon technology which has different investment characteristics than the baseline technology. The differences could include different cash flow patterns, investment requirements, technology lifetime and risks. In this case, the outcomes of the incremental cost calculation tend to be sensitive to the input parameters used, such as discount rates used to estimate the lifetime costs of the project, leading to potentially high uncertainty.

Difficulty 2 - Meeting the same need through a different product/service: The calculation of incremental costs becomes even more difficult if a mitigation action serves the same basic need by offering a different type of product or service; e.g. serving the need for mobility through public transport rather than private modes of transportation. As a consequence, the price and quality of the service generally differs and different groups of stakeholders are involved in taking investment decisions. For public infrastructure related measures, such stakeholders are for example governments taking investment decisions for (public and private) transport infrastructure, private persons deciding for or against the purchase and use of a private car and operators of public transport schemes. Incremental costs can vary greatly for these different parties involved (Huizenga and Bakker, 2010).²²

²² Note that this discussion on incremental costs looks at the concept mostly from the point of view of a government managing its budget.

Difficulty 3 - Existence of sustainable development (co-)benefits: If a mitigation action leads to sustainable development co-benefits or has the risk of negative impacts, the calculation of incremental costs can be further complicated. Co-benefits can range from non-climate related environmental benefits, such as biodiversity preservation, to health benefits, increased energy security and job creation. Negative impacts could exist amongst others for food security and employment. Mostly, these co-benefits are difficult or impossible to quantify and thus there are challenges in the attribution of incremental costs to different types of benefits.

It could be argued that the value of these co-benefits should be deducted from the incremental costs which are to be borne by developed country parties. An early GEF document on the use of incremental costs (GEF, 1993; p.22) indeed argued that some mitigation measures may “generate additional short-term benefits to the local economy or relieve other local environmental problems”, suggesting that these could be “treated as joint costs, as the Convention was not intended to underwrite these strictly local benefits” (GEF, 1993; p.22). The document also notes, that this may be challenging in practice due to the inherent difficulty in monetizing many of these co-benefits/risks, especially more indirect ones (GEF, 1993).

Difficulty 4 - Addressing other barriers than cost-competitiveness: Conceptually, determining funding requirements through an incremental cost approach is most straightforward, when incremental costs (for the recipient of the support) are positive, i.e. where the mitigation measure is more expensive than the baseline alternative, and where this additional cost is the main barrier to implementation. However, there are also situations where there are costs associated with removing other barriers to implementation, but, once this is achieved, incremental benefits are realized. Although a developing country could receive support for such a mitigation action, determining funding requirements by applying the concept of incremental costs is not feasible in this case.

An example is the introduction of minimum energy efficiency standards and labelling of electric appliances which, over the course of a few years, could lead to cost savings: The programme would lead to lower electricity consumption nationally. In turn, if electricity cost subsidies are in place, this would lead to direct cost savings for the government, or, if fossil fuels for electricity generation are imported, the labeling programme would improve the balance of trade. In addition, there are likely to be cost savings for consumers.

This discussion demonstrates that the concept of incremental costs is relatively straightforward for a few types of mitigation actions, such as project based options with little development co-benefits and few other non-climate impacts for which the main barrier to implementation is “lacking cost-competitiveness”. In these cases, incremental costs may be a useful indicator for the level of support to be provided by developed countries. In reality, in most cases one or more of the above complications must be considered. In many cases, it may prove virtually impossible to determine the incremental costs of a mitigation action in a standardized and unambiguous manner.

Incremental costs in the context of supported NAMAs

So what do the challenges discussed here imply for the use of incremental costs in the context of supported NAMAs? Due to the difficulties associated with determining incremental costs through a standardized and robust calculation, for most NAMAs it seems unlikely that the support provided will in practice be determined through a standardized calculation of incremental costs.

Interestingly, the GEF itself has moved away from incremental cost calculations in 2007, after the complexity and misunderstandings around the applications of the incremental cost principle led to delays in project development and were a point for frequent external criticism (GEF, 2007a; Yamin & Depledge, 2004, cited in Bongardt, 2009). This was also noted in an internal GEF evaluation report (GEF, 2007a). At that time, the concept of “incremental reasoning” has replaced calculations of “incremental costs” within the GEF project development cycle. Incremental reasoning “defines the role for the GEF in the context of the expected agreed global environmental benefits from a proposed project. It is based on an assessment of the value added by involving the GEF” (GEF, 2007).

There is still an open question regarding the treatment of co-benefits in determining funding requirements for supported NAMAs. NAMAs are unlikely to be undertaken for climate change mitigation benefits alone. Ideally, a NAMA would rather be an action that supports economic growth and development or has other sustainable development co-benefits. This could lead to more frequent situations of significant host-government co-funding, when a NAMA is fully in-line with national priorities.²³ The developing country party would bear the costs for the expected development benefits and the developed country party would pay for the mitigation impact of the measure.

There could be resistance to this notion within the international climate negotiations, though, as developing countries may perceive this as shifting more of the cost-burden to them and developed countries may have concerns about the ‘additionality’ of the such actions.²⁴ Irrespective of the approach to determining the level of international support, there are advantages in implementing supported NAMAs with strong development benefits and mutual funding by developed and developing country partners: Such actions are likely to have strong host-country ownership, increasing the likelihood of successful implementation. However, the practical implication of blending international support with domestic funding may pose challenges in implementation.

Generally speaking, following the discussion on key challenges in calculating incremental costs and on incremental costs in the context of supported NAMAs, it seems advisable to take a pragmatic view on incremental costs when determining the financial support provided for NAMAs, following the pragmatic stance taken by the GEF.²⁵

²³ It is important to note that development co-benefits are very difficult to quantify and are perceived differently by different actors. E.g. although improvement of air quality may be a policy objective for a country, its benefits are not often taken into account in investment decisions.

²⁴ For a discussion if additionality should be used as a criterion which NAMAs should receive support, see e.g. Jung *et al.* (2010).

²⁵ Actually, the reference to “agreed” incremental costs in all UNFCCC documents may already provide some leeway for moving away from standardized calculations. Moreover, the language in the NAMA registry (see footnote 21) provides some flexibility as it asks parties to provide information on full costs and/or incremental costs.

At least in the short to medium term, it is expected that the level of support to be provided for NAMAs is likely to be subject to case-by-case negotiation and agreement. This process could be partly based on considerations around incremental costs (where applicable), but also on other aspects such as the scale of available support, potential co-funding commitments by the host government and other considerations around determining how to implement a certain mitigation action effectively and efficiently.

Cost-effectiveness of NAMAs

Incremental costs have been used under the UNFCCC to determine the level of support from developed countries for a particular action, but they say little about cost effectiveness on their own. Marginal abatement costs, which are defined as the incremental costs of a project or programme divided by the expected GHG emission reductions, are often used as an indicator for the cost-effectiveness of mitigation actions.

Marginal abatement costs are also frequently suggested as an indicator for selecting which measures to support. In particular market mechanisms – if functioning properly – ensure cost effectiveness and maximize (short-term) economic efficiency by selecting for the measures with the lowest marginal abatement costs. Some studies on low-carbon development in developing countries, such as ESMAP (2010) and Government of Ethiopia (2011), include marginal abatement cost curves to suggest priority actions. However, experts call for caution with respect to the latter use of marginal abatement cost curves (Vogt-Schilb & Hallegatte, 2011; Ekins et al; 2011). The following discusses the applicability of marginal abatement costs as a criterion to select which NAMA proposals to support.

As incremental costs have the same cost basis as marginal abatement costs, the same challenges (see above) apply to the calculation of marginal abatement costs as to incremental costs. Calculations of marginal abatement costs are further complicated by the need to calculate the total expected emission reductions of actions. For actions with indirect emissions impacts – such as those which target the removal of non-financial barriers (see Table 1 below), increase capacity to take-up mitigation measures or improve the general enabling environment for mitigation actions – it can be difficult to reliably predict the expected GHG emission reductions.²⁶

NAMAs, that target strategic, long-term, and transformational actions, could provide financial support to low-carbon technologies that currently have very high abatement costs, but which are expected to decrease over time as the technology moves towards commercialization. In particular, initiatives which pilot technologies and mitigation measures in countries with the aim of developing functioning markets generally bear much higher costs per tonne of CO₂ avoided than the repeated and large-scale deployment of the same technology elsewhere. Thus, supporting NAMAs with high marginal abatement costs is not necessarily money badly spent.

Several authors have suggested that supported NAMAs should target those actions which have positive marginal abatement costs, with the negative cost options undertaken as unilateral NAMAs (Wehner, 2011, p.12; CCAP, 2009). However, due to lacking financial means, technology and capacity, a developing country may not be able to overcome the barriers for the implementation of mitigation measures with negative abatement costs. Additional support would be required for implementation of these actions. The GEF, for example, supports programs with negative marginal abatement costs to society.²⁷

²⁶ See Jung et al. (2010) for a discussion of direct vs. indirect GHG emission reduction effects of NAMAs.

²⁷ See GEF project on 'Promoting of Appliance Energy Efficiency and Transformation of the Refrigerating Appliances Market in Ghana' as an example (http://www.thegef.org/gef/project_detail?projID=3881)

NAMAs, which lead to GHG emission reductions at net economic benefits to the host country, could be an ideal target for funds which have a development as well as a climate aim. Such NAMAs would be more likely supported through an intervention other than contributions to investment or operational costs (see Table 2) and would be more likely supported in a Least Developed Country (LDC) than in an emerging economy. But, generally speaking, supporting a NAMA with negative marginal abatement costs is also not necessarily money badly spent.

Overall, it seems advisable to not solely focus on marginal abatement costs for providing guidance on which NAMAs to support. However, as stressed by the UN High Level Advisory Group on Climate Finance in its 2010 report (AGF, 2010), it is crucial that there is confidence that international support is spent wisely and produces results. Therefore, it will be important to develop and monitor relevant performance criteria to provide the required accountability. When a NAMA supports, for example, deployment of a technology with high marginal abatement costs in the short term, but which are expected to reduce in the future, it is these cost reductions that could be monitored. The MRV requirements for NAMAs may provide the basis for the development and monitoring of such performance criteria.

4. Structuring public financing for supported NAMAs

The financial structure of a NAMA depends on the type of intervention

NAMAs can encompass a wide range of activities across all sectors of the economy. Based on CCAP (2010) it is possible to distinguish three broad types of interventions for supported NAMAs:

- (1) direct provision of physical and technical infrastructure;
- (2) development of regulation, policies and strategies and their implementation (policy NAMAs); and
- (3) planning, research and capacity building activities.

Note, though, that planning, research and capacity building activities are likely to be not NAMAs on their own, but part of actions that also include the direct provision of physical and technical infrastructure or the development of regulation, policies and strategies and their implementation. For planning, research and capacity building activities, support is likely to be in the form of direct grants and technical assistance. For the direct provision of infrastructure, disbursement of support would likely go directly to the project or to an institution which oversees the project. Disbursement of financial support for policy NAMAs, i.e. for the implementation of regulations, policies and strategies can be more complex. Support could go to the host government, an implementing agency or to other stakeholders.²⁸ Moreover, policy NAMAs can deploy different policy approaches, for example regulatory/non-market based instruments (such as a regulation banning incandescent light bulbs or the introduction of energy-efficiency standards), capacity and information-based approaches or market-based instruments.

For both policy NAMAs and for NAMAs that directly provide physical and technical infrastructure the choice of the appropriate financial interventions by the public sector, such as grants, loans and risk mitigation instruments is important. This question is further dealt with in the following section.

Selecting an appropriate public finance mechanisms

The rationale for undertaking a supported NAMA is generally to remove one or several barriers hindering the implementation of the mitigation action. These barriers include financial barriers such as low return on investment, high risk and lacking access to capital, as well as non-financial barriers such as regulatory barriers, lack of information, knowledge and capacity on low-carbon options, and conflicting interests of different stakeholders. How international (and national) public finance is best used in supporting mitigation options directly depends on the financial and non-financial barrier(s) to be overcome. The following provides a general framework to select financial interventions by the public sector, so called Public Finance Mechanisms²⁹ suited to overcome specific barriers, followed by a discussion on the use of performance-based funding.

Table 2 includes 5 categories of barriers potentially hindering the implementation of mitigation actions and, for each of these, demonstrates which Public Finance Mechanisms (PFM) can be applied to overcome each type of barrier.

²⁸ For example to local banks in the form of a credit line with reduced interest rates

²⁹ Public Finance Mechanisms are defined as "interventions" of a financial nature by public sector bodies (governments, MDBs, BFIs) - e.g. direct grants, concessionary loans, guarantees, political risk insurance, foreign currency risk insurance" (Ward, 2010).

Barriers to mitigation actions	Type of financing	Public Finance Mechanisms	Examples of international climate finance
i) Low (or no) return on investment	Contribution to investment and operational costs	Up-front grant (e.g. direct subsidies, investment tax breaks, grant component of concessional loans) Funding during operation (e.g. feed-in remuneration, carbon markets)	GEF projects; bilateral support; climate related ODA CDM*, Norway's Energy Plus initiative, <i>DB GET FIT</i> , <i>Low Carbon Advance Market Commitments</i>
ii) High up-front costs and lacking access to capital	Facilitating access to finance	Provision of debt, e.g. through loans or credit lines Provision of equity Incentivizing existing financing system**	EBRD Energy Efficiency Finance Facilities, WB CTF concessional loans to renewable energy projects, micro-finance credits for solar lights or solar home systems IFC Cleantech Venture Capital investments Support for ESCO market development, temporary provision of interest rate subsidies
iii) High risk	Provision of risk coverage	Risk guarantees / insurance schemes	Use of the WB Multilateral Investment Guarantee Agency (MIGA) for clean energy projects, various examples in GEF projects
iv) High transaction costs		Standardization and aggregation ***	-
v) Non-financial barriers (e.g. regulatory barriers, lack of information and capacity)	(Financing) technical assistance	Mostly in the form of grants	Most bilateral support, GEF projects and climate related ODA include a capacity building and regulatory assistance component

Note: Examples in italics are concepts only which have not yet been implemented in practice. *The CDM is not Public Finance Mechanism (PFM) but included here for the sake of completeness. ** "Incentivizing existing financing system" is not a PFM, but included here due to its important role in avoiding to "crowd-out" private-sector providers of financing. *** "Standardization and aggregation" is not a PFM but included here due to the important role of the barrier "High-transaction costs".

Table 2: Financial instruments to overcome barriers to mitigation actions and examples of the use of climate finance (adapted from Neuhoff et al., 2010)

The following describes in more detail the 5 categories of barriers and corresponding Public Finance Mechanisms presented in Table 2:

- i) *Low (or no) return on investment*: Many low-carbon technologies are simply more expensive than conventional technologies making it difficult to create a viable business case. These are the mitigation actions with positive abatement costs on a marginal abatement cost curve. The low returns of such mitigation actions can be improved by providing a financial contribution to the investment and/or operational costs of the respective technology, either through a form of up-front grants (including the grant component of a soft loan) or through funding during operation (Neuhoff *et al.*, 2010). The GEF and many bilateral agencies for example regularly provide upfront grants for the incremental costs of clean energy projects.³⁰

In particular, technologies that are not yet fully commercial (but are expected to have the potential for sufficient future cost reductions) require public support to bring down the costs of these technologies. As the technology matures, the need for public support generally tends to decline.

- ii) *High up-front costs and lacking access to capital*: Low-carbon technologies or measures often require a high up-front capital investment, even though this high up-front investment may be offset through lower operational costs over time. A typical example is energy efficiency measures in industry or buildings. Also, many renewable energy technologies have higher investment costs but lower operational costs than conventional solutions as, apart from biomass, renewable fuels have no costs.

High up-front costs pose a barrier to investment, as decision makers may not be willing to make these investments or because they lack internal capital and/or face difficulties getting access to external capital for financing mitigation options. Companies which are trying to introduce new low-carbon infrastructure technologies into developing markets are also often faced with a lack of funding for early-stage project development (see Ritchie & Usher, 2011).

In practice it is often difficult to distinguish between situations where projects lack access to capital because of high risks (see iii below) and where there is a genuine lack of capital availability. Although high risk often plays a determining role,³¹ there are situations where indeed capital is simply scarce, for example following the 2008/2009 financial crisis. Access to capital is also an issue at the consumer level; many individuals in rural areas in developing countries face difficulties in paying the higher up-front costs for clean technologies, such as improved cook stoves or solar lanterns, even though these technologies would have comparatively short pay-back times.

The barrier of high up-front cost and lacking access to capital can be addressed through the provision of debt financing, e.g. via specific credit lines or directly providing access to loans³² and through the provision of equity financing in the form of venture capital, private equity or long-term equity investments (Neuhoff *et al.* 2011).

³⁰ See e.g. <http://www.gefonline.org/projectDetailsSQL.cfm?projID=1040>

³¹ CDM projects are for example unevenly distributed across the developing world, with an unproportionally large share in China, India, Brazil and Mexico, which are considered to be less risky from an investor's point of view when compared to for example most African countries which only have a small share of total CDM projects

³² See e.g. WB CTF concessional loan for private sector wind development in Mexico

(http://www.climateinvestmentfunds.org/cif/sites/climateinvestmentfunds.org/files/Current_Information_Document_Mexico_Private_Sector_Wind.pdf)

Moreover it is possible to incentivize the existing financing system to provide the required capital. Whilst this measure is not a Public Finance Mechanism in itself, it can be very relevant: There is a risk that public sector institutions, for instance MDBs, offer services such as the provision of loans that could also be provided by the private sector, thus ‘crowding out’ the private sector. If private sector financial institutions can successfully be incentivised to provide the required capital, a programme is likely to have higher chances of long-term sustainability, as private sector players develop new business opportunities.

The support programme for solar thermal water heaters (PROSOL) in Tunisia is an example where the local commercial banking sector has successfully been incentivized to offer loans for solar thermal installations. Through this programme, customers repay their loans for solar thermal equipment through their electricity bill, which reduces the risk of default for the involved banks. Moreover, in the first 18 months of the programme, an interest rate subsidy was offered through UNEP, and the programme was accompanied by a capacity building programme for the involved banks to raise their understanding of renewable energy technologies. These measures made it attractive for the local banks to start lending for solar thermal equipment on a large scale (Würtenberger *et al.*, 2011).

- iii) *High risk*: Investment in low-carbon infrastructure, for example for electricity generation, are often considered high risk, particularly in developing countries, for a number of reasons, including:
- a) Technology risk, i.e. low-carbon technologies are considered less reliable and more susceptible to operational underperformance than conventional alternatives, especially in countries which so far have little experience with these technologies.
 - b) Regulatory risks related to the specific characteristic of the sector, such as the risks related to the contractual adherence to a Power Purchase Agreement by a public sector counterpart.
 - c) Market risks related to the uptake of new technologies, such as uncertainties related to the number of potential users of new public transport schemes or to the number of people willing to switch to electric vehicles.
 - d) Political and currency risks present in many developing countries.

Potential investors consider these risks and may be deterred or would require significantly higher returns from their investment to compensate for the risks. Risk guarantees or insurance schemes can be deployed to mitigate some of these risks, such as political, currency and regulatory risk.

The use of publicly backed guarantees for low carbon investments has recently been extensively discussed (UNEP, 2010), but so far few instruments for risk mitigation are specifically targeting low-carbon investments. Some non-climate related products, especially the political risk insurance guarantee offered by the World Bank Group’s Multilateral Investment Guarantee Agency (MIGA), have been successfully applied for clean energy investments.³³ For a more detailed overview on potential publicly backed guarantee schemes to promote clean energy see UNEP (2010).³⁴

³³ See <http://www.miga.org/news/index.cfm?aid=3177> and <http://www.miga.org/news/index.cfm?aid=2503>

³⁴ GEF (2007, pp. 16-19) also provides a detailed overview of the use of risk mitigation instruments under the GEF

- iv) *High transaction costs*: High transaction costs are often a major barrier for the deployment of low-carbon technologies. Renewable energy projects for example tend to have much smaller project sizes than fossil-fuel based projects leading to inherently higher transaction costs. Transaction costs are also likely to be high when low-carbon technologies are introduced to a country for the first time as the required regulatory framework and procedures for smooth deployment have not, yet, been established. This barrier can be overcome by introducing the required regulations, standardizing procedures and contracts, introducing mechanisms such as transaction cost sharing (Ritchie & Usher, 2011) and, where applicable, aggregating small projects into larger tranches. To the authors' knowledge, there is little experience with these approaches in the provision of international support for climate change mitigation, yet..
- v) *Non-financial barriers*: In addition, to the financial barriers listed above, non-financial barriers often play an important role in hindering the uptake of low-carbon technologies and services. These include regulatory barriers, a lack of information on the benefits of low-carbon options among private sector and consumers, and a lack of technical capacity within the government and workforce. International support for addressing these barriers is usually provided in the form of grants or technical assistance which can support, among others, the development of improved policy and regulatory frameworks and technical standards, training and capacity building programs, and the collection and processing of data which would be required for the MRV of NAMAs. Most bilateral programmes with a climate change mitigation focus, GEF projects and climate related ODA include a grant component that addresses non-financial barriers through capacity building or policy assistance.

Table 2 and the subsequent discussion present a general framework to select public finance mechanisms suited to overcome specific barriers for the implementation of mitigation actions.³⁵ However, for some of these Public Finance Mechanisms, little experience exists with using them on a large scale for supporting mitigation actions in developing countries.

To develop a detailed financial proposal for a supported NAMA, many additional decisions need to be taken, including the question if support is to be performance-based which is further discussed in the following section.

Performance-based support in the context of NAMAs

Recently, strong interest in the concept of performance-based (or results-based) support for low-carbon actions has emerged from the side of various donors (EC, 2009; Chatham House, 2010; Government of Norway, 2011). In this context, performance-based means that the amount of support provided depends on the performance of a programme or project according to pre-defined indicators. For supported NAMAs, it is not yet clear, if, and to which extent, international support will be linked to “measured, reported and verified” performance. A short discussion is provided of the general implications of giving upfront incentives versus funding during operation (which is generally performance-based) to overcome the barrier of low returns on investment (category i in Table 2). This is followed by some additional considerations if and how performance-based support could be applied in the context of NAMAs.

³⁵ Wienges (2012) describes another approach for selecting financing instruments for NAMAs with a stronger focus on combining domestic funding with international support.

Support targeted at making low-carbon options more cost-competitive compared to conventional technologies can be given as upfront incentives (such as direct subsidies or investment tax breaks) or as funding during operation. Funding during operation tends to be linked to the performance of a project. Examples are feed-in remuneration or the carbon markets, where support is linked to the amount of electricity produced or of GHG emissions reduced.

Both approaches have advantages and disadvantages: Upfront support is administratively easier to implement as it does not require monitoring of project performance to determine the financial contribution. (For accountability reasons, project performance may still be monitored, though.) In addition, upfront support provides an immediate incentive to get started with an activity or project. However, it may lead to perverse incentives to inflate investment costs (especially when support is provided as a percentage of investment cost) and provides little incentive to ensure and improve project performance (Wohlgemuth & Madlener, 2000).

Classical examples where upfront support failed to achieve the desired targets due to a wrong incentive structure were investment tax credits for wind energy in California in the 80's and in India. In the field of energy access, the handing out of free equipment such as improved cook stoves and solar lanterns, thus an extreme form of upfront support, is controversial as it may lead to a lack of commitment from the new owners of the equipment and inhibit the creation of local markets (GVEP, 2009).

One disadvantage of operating support is that market participants - such as project developers, investors and companies offering low-carbon technologies - must trust that incentives will continue to be available in future years (Wohlgemuth & Madlener, 2000). In the case of international support, this also implies that the international donor needs to stay involved in the programme for an extended period of time. If such certainty exists, the guaranteed revenues provided through operating support lower the investment risks and financing costs of a project (Neuhoff *et al.*, 2010).

Another disadvantage of operating support is that many developing countries require at least some initial funding to get started with a project or programme. In particular for mitigation options with barriers of high-upfront costs (Table 2, category II), such as sustainable transport infrastructure, relatively small amounts of grant finance in future years (compared to the required large upfront investment costs) will hardly reduce these barriers.³⁶ For the public sector, an advantage of providing funding during operation is that it smoothens the provision of support over the lifetime of the project or programme.

There is ample experience in supporting renewable electricity generation with feed-in schemes in the developed, and increasingly the developing world, and the CDM provides performance-based financing to low-carbon projects in the developing world. However, beyond that, there is little experience with performance-based international support for mitigation actions in developing countries, yet.

³⁶ Therefore, it is suggested that for NAMAs in the transport sector, up-front finance is of key importance (Huizenga and Bakker, 2010).

Recently, strong interest in the concept of performance-based support for low-carbon actions has emerged from the side of various donors. In 2009, DFID suggested the concept of “Low Carbon Advance Market Commitment” (Vivid Economics, 2010; Chatham House, 2010) based on successful programmes in the health sector to incentivize the development and manufacturing of vaccines for developing country markets.

In 2010, the Norwegian and Indonesian government signed an ambitious agreement over \$1 billion of performance-based grant funding for verified emissions reductions from avoided deforestation in Indonesia’s peat lands. The idea of performance-based payments to forest owners and users is fundamental to the concept of REDD+. Following these initial experiences in the forestry sector, the Energy+ initiative by Norway, which was launched in 2011, also takes a results-based approach (Government of Norway, 2011).

Moreover, ESMAP started a programme in 2012 to assess if, and under what circumstances, results-based approaches are feasible instruments to improve the outcomes and scale-up financing for energy sector development, specifically in the areas of energy efficiency, low-carbon development and energy-access (ESMAP, 2012).

For supported NAMAs, it is not yet clear, if, and to which extent, international support will be linked to “measured, reported and verified” performance, but there is likely to also be an interest from the side of funders to consider performance-based approaches. The discussion above focuses mostly on support aimed at making low-carbon options more cost-competitive. Where supported NAMAs address other barriers, such as regulatory barriers or a lack of information, knowledge and capacity on low-carbon options, GHG emissions impacts are likely to be indirect. This makes performance-based financing more difficult to apply if financing is linked to a GHG emissions indicator, but performance-based support could also be linked to the achievement of other goals.

Technical assistance for capacity building and regulatory development can for example be given a performance based component by staging support. This can be done by dividing programmes into different phases where the next, larger phase is contingent on successful implementation of the previous phase or where part of the grant payment made for technical support is linked to demonstrating success in meeting pre-defined indicators. Such an approach has been chosen for the implementation of REDD+ through readiness, investment and performance-based payment phases (although the phases can overlap to a certain extent).³⁷

³⁷ See http://unfccc.int/methods_science/redd/demonstration_activities/items/4536.php

To programs providing loans for low-carbon technologies or measures, a performance-based element can be introduced by granting a certain amount of debt relief depending on the achievement of a performance target. In Germany, this approach has been successfully applied by KfW, Germany's promotional bank, in its programmes offering loans for the energy efficient refurbishment of buildings: After the renovation, an authorized expert assesses which energy performance standard has been achieved. Depending on that assessment, debt relief between 2.5% and 12.5% is granted to the building owner (KfW, 2012; Würtenberger, 2011).

This discussion on performance-based support shows that, while there is little experience with performance-based international support for mitigation actions in developing countries, there is strong interest in considering the concept from the side of donors. Various approaches are possible for introducing performance-based elements, not only for the provision of operating support but also for loans and technical assistance. When developing the financial structure of a supported NAMA, it is recommended to review the emerging lessons from performance-based climate support, as well as lessons from other sectors, especially health, where more experience with performance-based financing is available (see World Bank, 2012).

5. Good practices for the use of public climate finance

A number of good-practice principles and lessons learned for the use of public climate finance have recently been identified (see e.g. UNDP, 2011; AGF, 2010; Hamilton, 2009; CMCI, 2012). The following presents cross-sectoral good-practices and lessons learned that are relevant to the financing of supported NAMAs.

Optimal interventions address multiple barriers and need to be tailored to the national context (UNDP, 2011):

In almost all situations, more than one barrier prevents the uptake of mitigation actions. As a consequence, a single public sector intervention is unlikely to lead to the desired changes. In the vast majority of cases, a package of different interventions is required, including complementary efforts such as capacity building and strengthening and enforcing the regulatory framework (UNDP, 2011). Optimal interventions strongly depend on the specific local circumstances (UNDP, 2011). Therefore, although it is possible to learn from successful initiatives and programmes elsewhere, interventions cannot simply be copied, but need to be tailored to the national (or local) context.

Private sector requires public sector interventions to be “loud, long and legal” (Hamilton, 2009; AGF, 2010):

The UK Capital Climate Market Initiative’s (CMCI, 2012) “Principles for Investment Grade Policy and Projects” stress the importance of active programs by national governments which improve the general investment climate and, as a consequence, mobilize private sector investments into low-carbon projects and technologies. International support for NAMAs can likely only play a supporting role in these efforts by national government.

For supported NAMAs which aim at mobilizing private sector investment, one should be mindful that:

- Incentives should be high enough to really make a difference to a private sector actor, ensuring commercially attractive returns (“loud”).
- Incentives should be sustained long enough to justify the upfront investment, e.g. the capital investment into a project or the investment required to enter into a new market or start selling low-carbon technologies (“long”). This is challenging because international support for climate change mitigation has in the past been mostly granted over relatively short periods of time, rather than as long term interventions.
- There should be a clear and stable regulatory framework which inspires confidence (“legal”) (Hamilton, 2009). This is challenging in all countries and is more pronounced in many developing countries.

Therefore, funding commitments by donors should be reliable, predictable, long-term and of sufficient scale if a transformational effect in a sector is to be achieved (AGF, 2010).

Public funds should be used efficiently and effectively (UNDP, 2011): Given the scarcity of public funds, they should be used as efficiently and effectively as possible, i.e. use of funds should be cost-effective and environmentally-effective (UNDP, 2011). Public funds should be spent on interventions where the private sector does not become active on its own and should not substitute or compete with private sector funds. The latter may for example be an important consideration for multilateral institutions providing loans for low-carbon projects.

The costs of different public sector interventions to the tax payers varies. Cheaper interventions, such as improving the regulatory framework or access of information for consumers should be undertaken first before applying more costly interventions, such as subsidies or loan guarantees (UNDP, 2011). One should also consider that in most cases it is more efficient to internalize environmental externalities, e.g. through removing subsidies for fossil fuels, than to subsidize the low-carbon activities (UNDP, 2011).

Ownership by developing countries and mutual accountability are crucial (AGF, 2010): Mitigation actions should be consistent with country priorities. In addition, there should be mutual accountability and transparency with regard to spending in developing countries and financial flows from developed countries to build and improve reciprocal trust over time (AGF, 2010).

These four sets of best practices for the use of international public climate finance to support developing countries' mitigation actions are broad and cover all sectors and thus are likely to apply to a wide range of potential NAMAs. In addition, there is also a growing number of sector- specific and/or regional lessons learnt, as well as specific good-practices emerging from some of the larger climate finance programmes, which may inform supported NAMAs. For energy efficiency investments, Sarkar & Singh (2010) provide for example best practices for developing countries and RUSEFF (2011) specifically for Central and Eastern Europe.

6. Conclusion

This paper has attempted to shed some light on open questions regarding the financing of supported NAMAs, aiming to assist experts and practitioners involved in developing financial proposals for NAMAs. Based on this discussion, the following describes some practical aspects in developing a financial proposal for a NAMA, before briefly summarizing the main conclusions drawn in each of the chapters.

Practical aspects in developing a financial proposal for a NAMA

Many steps required for the development of the financial part of a NAMA proposal are likely to be similar to what needs to be done for other proposals for funding of supported mitigation actions. In addition, there are certain aspects specific to supported NAMAs.

The first general step is to gain a thorough **understanding of existing gaps and barriers** from the point of view of the implementers (i.e. the private sector, or in some cases the public sector). In doing so, it is not sufficient to look at specific gaps and/or barriers in isolation, because all barriers need to be addressed for successful implementation of mitigation actions (see Chapter 6). However, a NAMA could still focus on addressing one or more specific gaps and barriers, complementing existing efforts by other programmes. In addition, an analysis of stakeholders in the sector should be undertaken to understand existing interests, capabilities and spheres of influence.

Following this analysis, the **(high-level) reason for the use of public money** can be developed, and a decision on the type of intervention can be taken, which will impact the financial structure (see Chapter 4). The high-level reason for the use of public money should also include a rough assessment of how much public money is required (closely linked to the discussion on incremental costs in Chapter 3), of the **expected GHG emissions reductions** and development co-benefits and if there are additional needs in terms of technology and capacity.

Based on this assessment, the host government will need to estimate on what can be serviced using domestic resources, and **how much international support** will need to be attracted (see Chapter 3). (Eventually, the amount of international support and potential contributions by the host country will likely have to be negotiated between the host country and the donor, though.) In parallel, based on a thorough understanding of the gaps and barriers, **appropriate public finance mechanism(s)** can be selected (see Chapter 4) and a decision on the size, scope and timing of the NAMA taken.

Only then does it make sense to **develop the detailed financial part of the proposal**. The scope and detail of this financial proposal will largely depend on the size of the NAMA, on the level of complexity of the suggested financial structure and the requirements by potential donors. The financial proposal will likely include a financial plan, the details of the financing structure, e.g. terms and characteristics of the suggested financial instruments, an assessment of risks and an impact assessment. Specific to supported NAMAs, there also needs to be additional information on MRV requirements and set-up.

Although there are similarities between supported NAMAs and current approaches to financing mitigation actions in developing countries, there is currently very little experience with financing NAMAs, neither from the side of host nor from supporting countries. For this reason, it is recommended to develop the first detailed financial proposals for supported NAMAs in a close collaboration between host country government bodies and development partners. Even if the development partners eventually cannot commit to funding implementation and funding needs to be sought elsewhere, developing a proposal could be a mutually beneficial learning experience.

Gaining mutual experience and understanding is especially important in areas where there are open questions or where little experience with existing supported mitigation actions exists. Such areas are for example the role of development co-benefits in NAMAs, reaching agreement on potential co-funding of mitigation actions by host countries and donors, designing practical approaches for blending international support with domestic funding, and questions around demands for accountability and practicalities of performance-based support.

Conclusions

So far, no supported NAMAs have moved to the full implementation phase, but funding has been made available for readiness activities and preparing NAMA proposals in some countries. Furthermore, a number of donors have expressed interest in making funding for implementation available and one of the first agreements for funding the implementation of a NAMA has been signed. There are a number of parallels between supported NAMAs and existing supported mitigation actions. The approaches, best-practices and lessons-learned from existing programmes and projects can therefore provide valuable guidance for the financing of supported NAMAs.

Cross-sectoral best practices include:

- Optimal interventions address multiple barriers and need to be tailored to the national context (UNDP, 2011);
- Funding commitments by donors should be reliable, predictable, long-term and of sufficient scale if a transformation effect in a sector is to be achieved (AGF, 2010);
- Public funds should be used efficiently and effectively (UNDP, 2011). This implies for example that public funds should be spent on interventions where the private sector does not become active on its own, or that cheaper interventions, such as improving the regulatory framework or access to information for consumers, should be undertaken first before taking on more costly interventions, such as subsidies or loan guarantees (UNDP, 2011);
- Mutual accountability and transparency with regard to spending in developing countries and financial flows from developed countries are crucial to build reciprocal trust over time (AGF, 2010).

How much financial support a developing country can attract from developed countries for a climate change mitigation action is another crucial question in the context of supported NAMAs. Under the UNFCCC, incremental costs have been used as a criterion to determine the level of support to be provided. The paper concludes that for many mitigation actions it is almost impossible to determine their incremental costs in a standardized and unambiguous manner.

We therefore recommend to take a pragmatic view on incremental costs when determining the financial support provided for NAMAs. At least in the short to medium term, the level of support is likely to be subject to case-by-case negotiation and agreement. This could be partly based on a consideration of incremental costs (where applicable), but also on other factors such as the scale of available support, potential co-funding commitments by the host government and other aspects determining how to implement a certain mitigation action effectively and efficiently.

With respect to the cost effectiveness of NAMAs, we suggest that supported NAMAs could be actions with either positive or negative marginal abatement costs and that marginal abatement costs are arguably not suitable as the only criterion for choosing which NAMAs to support. However, it is crucial that there is confidence that international support is spent wisely and produces results. Therefore, it will be important to develop and monitor relevant performance criteria to provide the required accountability.

There is also likely to be an interest from the side of funders to consider performance-based approaches for supporting NAMAs. While there is limited experience with performance-based international support for mitigation actions (apart from the CDM), various approaches are possible for integrating performance-based elements into different types of support. We recommend to review the emerging lessons from performance-based climate support, as well as lessons from other sectors, especially health, where more experience with results-based financing is available.

To give guidance on the financial instruments to be used for a NAMA, the paper describes a general framework for selecting appropriate financial interventions by the public sector, so called Public Finance Mechanisms depending on the specific barriers to be overcome. However, for some of these Public Finance Mechanisms, little experience exists, as to how they could be used on a large scale for international support of mitigation actions in developing countries.

Overall, the discussion in this paper shows that there are still a number of open questions with respect to the financing of supported NAMAs. Moreover, there is currently very little experience with financing NAMAs, neither from the side of host countries nor from supporting countries. If NAMAs are to become a successful climate policy instrument, it is crucial to gain mutual experience with their financing and implementation.

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