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Nationally Appropriate Mitigation Actions

Insights from example development

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With contributions by CTS Mexico

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Acknowledgements

This analysis is based on a study of an example NAMA in the transport sector for Mexico, funded by the Inter-American Development Bank (IADB) as part of the CITS project, a project for the Dutch Ministry of the Environment (VROM) on defining NAMA examples for Mexico (building and transport sector) and work conducted for the Danish Ministry for Climate Change on NAMAs. This report summarizes the knowledge gained in these projects, but the findings and recommendations expressed herein are at the sole responsibility of the authors.

1 Introduction

Paragraph 1 (b) (ii) of the Bali Action Plan calls for *"Nationally appropriate mitigation actions' by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity building, in a measurable, reportable and verifiable manner."*

In the international climate negotiations preceding Copenhagen in December 2009, nationally appropriate mitigation actions, (NAMAs) were used as the solution of many open issues and with very different interpretations of what the term actually stands for. The negotiations have so far failed to define what NAMAs actually are. Views also differ on the institutional structure needed for providing support to NAMAs as well as ways to measure, report and verify actions. Due to this vague approach, the negotiations surrounding NAMAs are still very generalised, making it difficult to work on concrete implementation issues.

In many discussions and submissions, NAMAs have been categorized as follows:

- Unilateral NAMAs: mitigation actions undertaken by developing countries on their own
- Supported NAMAs: mitigation actions in developing countries, supported by direct climate finance from Annex I countries (in the following called 'directly supported NAMAs')
- Credited NAMAs: mitigation actions in developing countries, which generate credits to be sold on the carbon market (e.g. sectoral crediting).

Against this background, Ecofys elaborated in several projects, concrete examples of NAMAs to understand the issues arising from this concept. This report summarizes the knowledge gained from elaborating upon NAMA examples. By doing so, we attempt to address the following questions:

1) What are possible examples for NAMAs?
2) What are the important (implementation) issues that arise when developing concrete proposals?
3) What knowledge is gained from elaborating upon NAMA examples?

Section 2 of this report briefly summarizes possible examples for unilateral or directly supported NAMAs and Section 3 specifies implementation issues and describes the knowledge gained from NAMA development.

2 Examples for Nationally Appropriate Mitigation Actions

2.1 Selected examples

In this section, we briefly summarize NAMA examples developed by Ecofys. The NAMAs described in 2.1.1 and 2.1.3 have been elaborated upon within a project funded by the Dutch Ministry of Housing, Spatial Planning and the Environment (VROM) which aimed to develop examples of NAMAs in the transport and building sector for Mexico. The development of the bus optimization NAMA (see 2.1.2) has been funded by the Inter-American Development Bank (IDB) and represents one of four NAMA case studies within the CITS project[1]. The other two NAMAs result from the study of a range of NAMA examples for the Danish Energy Agency.

The NAMAs described are therefore a result of the focus of the different projects within which they have been developed (e.g. focus on the transport and building sector in Mexico) and were not specifically selected to obtain a comprehensive sector coverage. The examples include only directly supported NAMAs. The first three examples, energy efficient buildings, bus optimization and vehicle renovation, focus specifically on a country, Mexico, or region, Mexico City and the last two, renewable electricity support program and support proportional to emission reduction are more generic examples to illustrate certain types of NAMAs.

2.1.1 Piloting energy efficient buildings in Mexico

A commercial building standard exists in Mexico, but its enforcement is not very advanced. The efforts required for proper implementation and enforcement of building standards are large and have substantial influence on the national governance structures. Additionally, the necessary measures are long term and not likely to achieve immediate emissions reductions. We have therefore, chosen an example that emphasizes the 'carrot', rather than the 'stick' approach. The proposal is intended to provide incentives to the private sector and raise awareness of the market opportunities of energy efficiency measures in the building sector, rather than relying on regulatory measures. Although this does not explicitly include the development of a building code, the NAMA does prepare the basis for a possible implementation of a building code in the future.

[1] The post 2012 Climate Instruments in the transport sector (CITS) project implemented by the Asian Development Bank (ADB), in cooperation with the Inter-American Development Bank (IDB) is a first step to help ensure that the transport sector can benefit from the revised/new climate change mitigation instruments under a post-2012 Climate Change Agreement. The CITS project is a contribution to the Partnership on Sustainable, Low Carbon Transport. For further details, see http://www.sutp.org/slocat/work-program/cits/

The NAMA example comprises of the following elements:

- Preparation of a study, identifying cost-efficient measures for emission reductions in the non-residential building sector (new buildings) in the different regions of the country.
- Development of five pilot projects implementing cost-efficient measures in different regions (to be used as good-practice examples to promote these measures/technologies in the country).
- Carrying out an architecture contest and finance incremental cost of the best 100 projects (stimulate architects to consider energy efficiency measures in their projects, building capacity in the country and providing more pilot project examples).
- Development and implementation of a financial scheme within the national bank to give financial support to project developers and facilitate technology penetration.
- Targeted raising of awareness with market stakeholder emphasizing that implementing the identified energy efficiency measures provides promising market opportunities (technology providers, architects, building companies, etc.).

This development of this NAMA has been funded by VROM.

2.1.2 Optimizing bus transport in Mexico City

The conventional bus system[2] in Mexico City is suffering from a lack of regulation. This results in a highly inefficient transport system characterized by congestion, safety problems and air pollution (leading to related health problems). The optimization of the conventional bus system has been identified in a recent study conducted by the World Bank[3] as one of the opportunities with the highest net benefits and considerable GHG emission reduction potentials.

Elements of the proposal include the following:

- Establishing a new institutional and regulatory framework enabling bus system optimization, including a new regulatory entity as well as an operation and management entity.
- Planning and implementing a new route design, concession management and standards for quality of service (to be carried out by the regulatory entity).
- Implementing awareness, raising measures to inform the public.
- Establishing a fund to finance the scrapping of replaced units
- Implementation of a public transport monitoring system.

The development of this NAMA has been funded by the Inter-American Development Bank (IDB).

[2] This refers to the bus system which does not include the bus rapid transit lanes which are operational and in planning. .g. the Clean Technology Fund will be funding a range of BRT lanes in various cities in Mexico.
[3] Johnson, T. et. al, Low-Carbon Development for Mexico, 2009

2.1.3 Enhancing vehicle renovation in Mexico

Mexico has a national vehicle renovation program that aims to replace the relatively old vehicle stock in Mexico. The program has failed to satisfy expectations, partly due to lack of resources. The Mexican climate plan[4] explicitly includes the goal of scrapping 15,100 vehicles by 2012 and the development of four financing schemes for different sub-sectors to enable the annual renovation of 40 000 vehicles.

To support these goals, the example elements include:

- Development of a financial scheme for one sub-sector of the national vehicle renovation program.
- Alignment of existing federal regulations related to the vehicle renovation program, including environmental standards for federal vehicle emissions and regulation to limit the import of vehicles below standard from the US and Canada.

This development of this NAMA has been funded by VROM.

2.1.4 Renewable electricity support program

Financing available through the NAMA mechanism could be used to implement a national support scheme for renewable electricity production through a feed-in tariff. The activities seek to increase the electricity generation from renewable energy sources. To achieve this, producers of renewable electricity receive a fixed price per kWh, which is set above the market price in order to cover the additional cost related to renewable electricity production. This tariff must be guaranteed for a period, long enough to make it attractive for investors.

In developed countries, the price difference is paid for by the consumers. In developing countries this may be seen as inhibiting the development of the country, and might not be feasible. The price difference can be covered by other sources. Determining the exact amount of the incremental cost is complex and requires a substantial amount of solid data. The determination of the total funding need is further complicated by the fact that it depends on the actual production from renewable sources and needs to be guaranteed for a long period of time.

The setup of such a system also requires substantial legislative and administrative capacity which needs to be constructed. In many countries, the grid infrastructure is also not suited to support large amounts of fluctuating renewable energy and also needs to be enhanced.

A program to support the implementation of a feed-in tariff could therefore include:

- Covering of the incremental cost for renewable electricity generation.
- Capacity-building to expand national technical and regulatory expertise
- Supporting the set up of institutions to operate the system.

[4] Programa Especial de Cambio Climatico (PECC) published in 2009

- Investing in an enhanced grid capacity to support the increased supply of renewables.

2.1.5 Support proportional to emission reduction

The idea of this example is that a country could also propose to achieve a defined emission reduction on a national or sectoral level, given that sufficient support is provided. The target could be defined by total emissions or by intensity[5]. Especially for a sectoral scope data is normally available to enable the development of a bottom-up baseline emissions scenario[6]. The main difference to the examples above is that the NAMA does not include a specific set of concrete actions that are individually monitored, but instead takes a strategic approach. The NAMA proposal would need to outline how reductions are to be achieved, but monitoring and success will be determined by monitoring only the emissions on the sectoral or national level.

Support could be divided into two parts. The first is up-front financing, capacity building and technological support to enable the efforts to lower emission (intensity) levels from the reference (business as usual) scenario. The other part could be contingent on achieved success. This part of the funding could, for example, be directly tied to reductions below a defined baseline.
MRV is based on sectoral GHG emissions only and does not reflect the impact of specific policies and measures (as for the other examples above). Any number of policies and measures that the implementing country deems appropriate for the sector can contribute to the improved emissions performance.

This approach is very similar to crediting of actions, with the difference being that reductions are not leading to credits that can be freely sold on the carbon market, but that reductions are leading to an increase in direct financing according to rules set with the funder upfront.

A proposal could comprise of the following elements:

- Development of reference and baseline scenarios.[7]
- Implementation of policies and measures by the country to enable the targeted reductions below the reference scenario.
- Implementation of the necessary institutions and processes for emissions-based MRV.

2.2 Comparison of examples

The following table provides an overview of relevant aspects with regard to the NAMA examples which include

- The complexity and uncertainty in estimating GHG impacts of the NAMA

[5] Like for example submitted by Mexico to the Copenhagen Accord.
[6] This can be either on the national or sub-national level.
[7] This implies baseline development as it has been proposed for sectoral crediting. For more information on this, see the webpage by Ecofys and GtripleC on sector proposal templates (www.sectoral.org).

- The approach to estimating financing needs (for the GHG reductions)
- The potential to leverage private financing
- Non-GHG benefits of the NAMA
- The MRV approach
- Other important aspects to be considered with regard to the respective NAMA.

Table 2 - 1 Comparison of examples

	Piloting energy efficient buildings	Optimizing bus transport	Enhancing vehicle renovation	Renewable support program	Support proportional to emission reduction
Complexity of GHG calculation	Low complexity for direct impact (pilot buildings), long-term impact uncertain	High complexity and low transparency if based on modelling, medium complexity if based on statistical data	Low complexity, high certainty	Low complexity, high certainty	Less complex, since interaction of policies not relevant, complexity and certainty depending on sector, boundary definition and data availability
Basis for GHG calculation	Based on energy savings from measures compared to building without the measures (BAU)	Modelling of public transportation system or simplified calculations based on variables like bus route length, vehicle efficiency, passenger per vehicle, modal split etc.	Decrease in emissions comparing new vs. old vehicle emissions intensity (no decrease in vehicle number and distance travelled)	Based on planned renewable capacity expansion compared to baseline development and on grid factors	Emissions baseline as agreed, based on bottom-up analysis of the sector with resulting observed emissions scenarios compared to the baseline scenario[8]
Determination of financing need	Incremental upfront financing cost of energy efficiency measures, complementary measures are fully or partially financed	Barrier removal costs (institutional, capacity, data and modelling needs etc.)	Full cost of additional incentive provided for planned amount of scrapped vehicles	Difference between market price and guaranteed price for electricity (incremental cost)	Depending on sector
Potential for leveraging private investments	High (This is the primary objective of the programme)	Medium (Main focus is institutional environment, but possibility for Public Private Partnerships)	High (Policy aimed at consumer investments in new vehicles)	High (Guaranteed feed in tariff stimulates private investment)	The success requires private investment, but this will depend on domestic implementation of incentives
Non-GHG benefits	High (cost savings, capacity building, market development)	Very high (improved health due to reduced air pollution, less congestion, reduction in travel time, increased road safety)	Medium (improved health due to reduced air pollution, increased road safety)	Medium (e.g. reduced dependence from external energy supply)	Depending on sector and domestic implementation

[8] See Ellermann et al. 2010 for more information on the process and the use of templates to support the determination of baselines.

	Piloting energy efficient buildings	Optimizing bus transport	Enhancing vehicle renovation	Renewable support program	Support proportional to emission reduction
MRV metric	Number of implemented energy efficiency improvements of pilot projects, process indicators for complementary measures (e.g. workshops conducted, awareness raised based on survey results)	Statistical data e.g. route length, modal split, vehicle efficiency etc. (data collection during implementation is needed for planning purposes anyway) Process indicators for complementary measures (e.g. workshops conducted, awareness raised based on survey results)	Number of scrapped vehicles, which is collected through the application procedure for financing	Amount of additional renewable electricity generated, as part of energy statistics	GHG emission (intensity) of sector
To be considered….	Transformational effect more important than direct GHG reduction	Transformational effect and co-benefits very important	Heavily depending on complementary measures (e.g. those decreasing vehicle numbers, inhibiting import of old vehicles)	Stimulating private sector, direct reduction for every $ spent.	No need to MRV single actions or policy implementation. Unclear how pre-financing linked to ex-post evaluation of actual emission reductions

3 Lessons learned

Exploring possible nationally appropriate mitigation actions to be proposed by developing countries in order to clarify what a 'NAMA' actually is, is only one element of the analysis. The main objective of the respective studies was to evaluate what kind of information a proposal needs to include, and what problems and questions arise when formulating a concrete action. In the following, we have summarized some issues that we analyzed during NAMA development as well as the gained knowledge and conclusions we have drawn from this exercise.

3.1 Boundary, scope and link to sectoral strategies and national plans

When selecting actions to be directly supported by international climate finance, the country needs to decide if the proposal should be defined with a broad or narrow scope (see Figure 1).

- A broad definition could be, for example, an emission baseline for an entire country.
- Narrow definitions are more project based actions, such as the implementation of one Bus Rapid Transit line within this city.

Which scope is appropriate depends a lot on the capacity and ambition of the country and in the targeted area of activities. A narrowly defined NAMA could be one part of a broader strategy, either of which can be proposed as a (unilateral and/or supported) NAMA. If the narrow (concrete) definition is chosen, it is important that some kind of more general (sectoral) strategy or plan exists, which provides a framework for the respective NAMA and ensures that actions are in line with national development strategies. Therefore, it is important that countries develop national and sectoral plans or strategies[9] as part of NAMA development.

To use the example in the transport sector, a comprehensive mobility plan for a metropolitan area could include transport demand management (TDM) measures (e.g. parking fees, road pricing), improvement of public transport (BRT lines, improvement of the conventional bus system, metro expansion) and non-motorized transport (bike lanes).
The NAMA could then be

- *one measure* (just one BRT line), or
- *a set of measures* which are part of such a comprehensive plan (e.g. road pricing, BRT and metro expansion), or even
- the definition and/or implementation of *the whole plan* itself.

[9] This could be at the national, but also at regional or city level, depending on the NAMA and the sector.

Figure 1 illustrates different options for the definition of a NAMA. It could comprise of the elaboration of a sector strategy for an entire sector, e.g. buildings, the implementation of a building code with various connected elements as part of an existing sector strategy or individual activities within different elements of the strategy.[10] NAMAs can also cover more than one sector. A country could also propose more than one NAMA in the same sector.

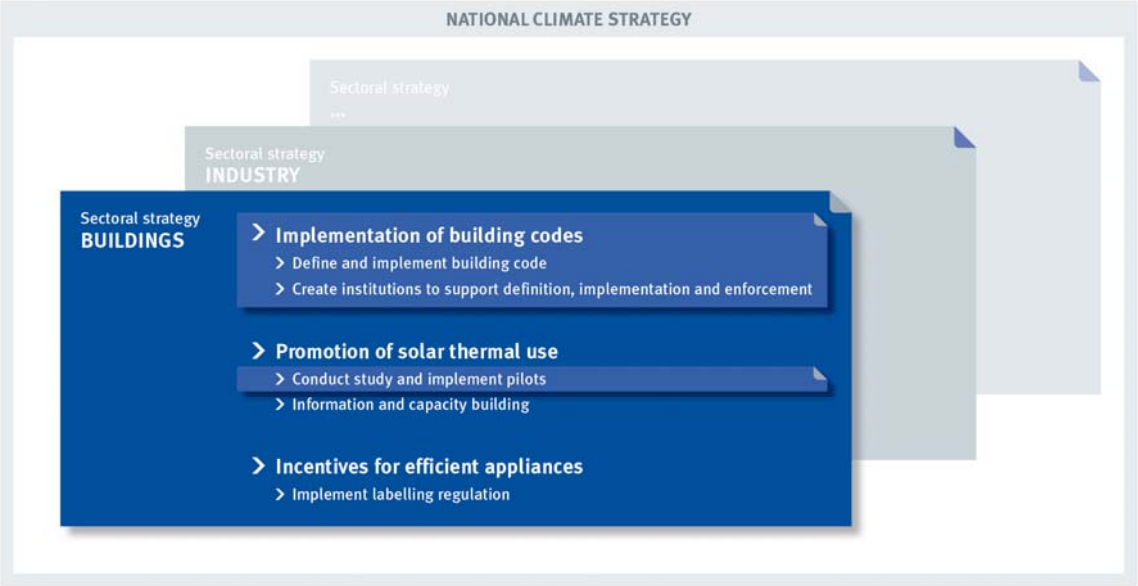

Figure 1. Broad vs. narrow NAMA definition and link to national plans.

Many activities are interdependent. They can influence the effectiveness of each other. This is especially the case if there are different actions within one sector. In many cases, this makes it difficult to directly attribute impacts (GHG emissions and others) to the individual measures. Furthermore, there might be leakage, meaning negative effects of a measure taken, which affect other measures, areas or even sectors. Thus, a broadly defined NAMA (e.g. a policy package of a sectoral strategy) is likely to be more effective and easier to monitor. As a consequence, GHG and other effects of a comprehensive NAMA can be different from the sum of the single measures alone. This causes significant difficulties for the estimation of emission reductions of narrowly defined NAMAs as well as for their MRV (see section 3.4 for more details). If narrow, directly supported NAMAs in the same sector are proposed, many problems will be avoided if they are proposed as a NAMA package, rather than independent NAMAs. Our NAMA approach described in 2.5 (financial support based on emission reductions below a certain emission (intensity level)) avoids many of these complications (for more details, see also 3.4).

The selection of unilateral and supported NAMAs as well as the submission of a NAMA proposal to the UNFCCC, requires a close cooperation and coordination of various

[10] The NAMA 'Support for sectoral emission reductions' is based on a different approach. For details, see section 3.6.

ministries and institutions at a national, regional and even municipal level[11]. To ensure a full and sustainable implementation of measures, a strong ownership of all related entities must be ensured. This will, in many cases make it necessary to expand existing institutions or processes or create new ones. The objective is to enable and improve communication and cooperation of different government levels and agencies. This issue is not only specific to climate policy, it is a general governance issue. One possible solution could be to determine one federal government institution as a national focal point[12] to coordinate communication and processes with regard to NAMAs.

3.2 Types of actions

Apart from the broadness of scope, the above illustration also indicates that different types of action are possible. Measures can range from project level investments to government policy implementation, such as regulations and economic incentive schemes. This has an impact on the complexity of implementation and MRV as well as on the scale of potential impacts and the timeline for these impacts.

NAMAs can be very different types of action:

- Data collection, studies, research,
- Strategy development on national/regional and sectoral level,
- (Pilot-) Projects,
- Definition, implementation and enforcement of regulation,
- Capacity and institution building,
- Provision of financial incentives,
- Awareness raising/campaigns.

While some of these elements have direct GHG impacts, the effect of others on emissions is rather indirect. However, for most sectors, it is necessary to cover all of these areas to ensure that actions deliver their full impact potential in a sustainable way.

Countries will vary with regard to the depth and extent by which they have initiated the above elements. Some countries have already developed national and/or sectoral strategies, but are lacking the capacity to implement them. Others will first need to develop a strategy in order to learn which actions are appropriate and will lead to the planned emission reductions[13].

[11] Institutional issues at the international level (e.g. with regard to the financing architecture) are out of the scope of this paper.
[12] similar to Designated National Authorities under the CDM
[13] Here we refer to a strategy at sector or lower level and is thus more detailed than the strategy outlined in the national Low Carbon Development Plan (e.g. which measures (new metro line and/or BRT and/or car efficiency standard) are appropriate in the transport sector to reach x % of emission reductions).

Examination of the relationship to the existing policy framework of a country, NAMAs can:

- Increase the scale of implementation and effectiveness of existing measures/actions;
- Add additional elements to existing measures/actions; and/or
- Establish new measures/actions.

In Figure 2, we illustrate the effect of a selection of different possible actions. These are evaluated regarding their GHG emission reduction potential (size of the bubbles), how direct an impact is (vertical axis) and the time for reductions to occur from the implementation time of the measure (horizontal axis).

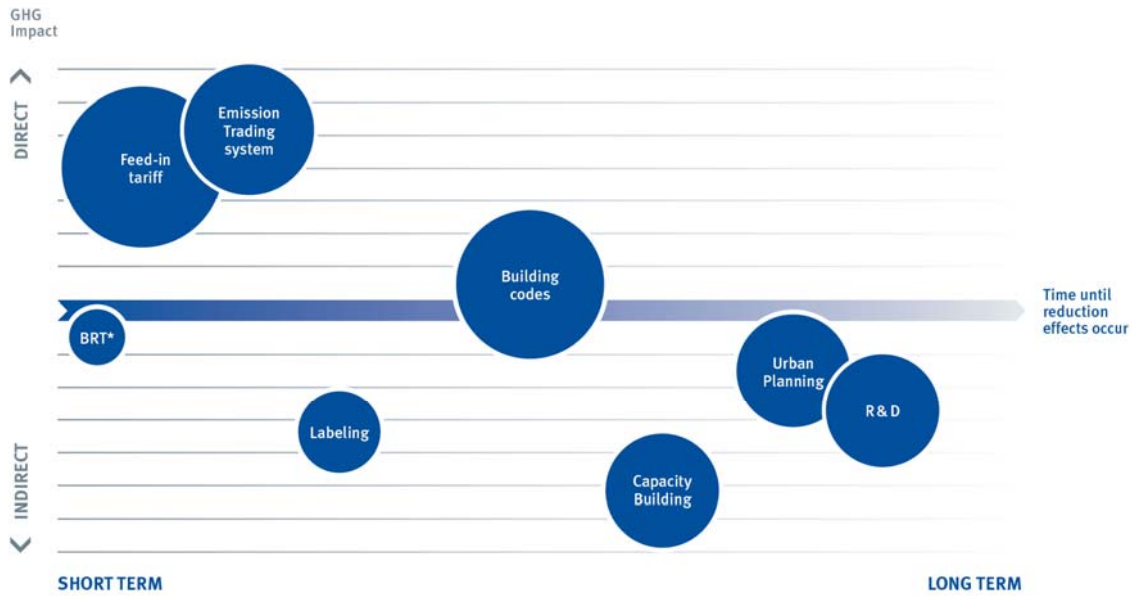

Figure 2: Indirect vs. direct GHG impacts of NAMAs over time.

Capacity-building and the set-up of institutions, for example, is often essential for the implementation of climate policies and measures. Effects are, however, mainly indirect. Conversely, the impact of the implementation of a feed-in tariff has largely direct influence on emissions. Moreover, some NAMAs will lead to emission reductions in the near future, while others facilitate long-term emission reductions, for example, research and development efforts. Despite the urgency to cut emissions quickly, the long-term perspective should not be neglected. An important strength of the NAMA concept when compared to a carbon market mechanism, is that this comprehensive long-term view can be incorporated.

3.3 Measurement, reporting and verification of actions

3.3.1 Emissions-based or not?

Emission reductions of directly supported NAMAs will need to be quantified within the proposal to give an indication of the magnitude of expected results. The GHG impact can be easily quantified for certain NAMAs, although for others, quantification is more complex and vague. Contrary to CDM and credited NAMAs, emission reductions deriving from directly supported NAMAs *are not sold* on the carbon market and do not offset other emissions in Annex I countries. It can therefore be argued that the estimation of emission reductions of NAMAs does not need to be as accurate as it does in the case of carbon offsetting mechanisms.

While NAMA funders are likely to require an estimation of expected GHG impact, the monitoring, reporting and verification must not necessarily be based on emissions. MRV metrics follow the setup of the underlying NAMA. They can therefore be based on GHG emissions, but also on other indicators. Although the level of accuracy would have to meet the expectations of the Parties providing the support, an estimation of expected GHG impact would provide more certainty the certainty that

- the developing country will use the financing for the stated purpose,
- it will be used effectively,
- proposed actions are actually happening and lead to the expected outcomes.

Ex ante estimation of GHG reductions (in the NAMA proposal) could be derived by the method of choice of a country, provided that the method is transparent. The best way for doing so will depend on the capacity of the country, the data availability, etc. We should keep in mind that setting the requirements for NAMA proposals (with regard to data requirements etc.) too high will inhibit those developing countries in taking actions through supported NAMAs that are likely to need it most.

While the projection of emissions and the determination of the impact of specific actions on future developments, in most cases pose serious challenges, the measurement of actual GHG emissions is often easier to implement. The amount of financing for a NAMA by developed countries will in practice likely be related to the stringency of the proposal and the MRV ability towards the ultimate goal of achieving GHG emissions reductions. A developing country that undertakes more stringent measures with clear, communicable results may find that a GHG-based metric is appropriate for their case. A proposal where quantifiable emission reductions are directly MRVed will most likely result in more financing, both in absolute terms and per ton of CO_2 reduced than NAMAs consisting of policies that only indicate the GHG reduction effect.

In cases where quantification is difficult or for actions with indirect GHG impacts, the measurement, reporting and verification of directly supported NAMAs can rely on other

(proxy or process) indicators.[14] One can draw on existing experience from development finance for this purpose.

The Copenhagen Accord specifies some important aspects regarding MRV:

1. Mitigation actions by developing countries shall be communicated every two years via National Communications.
2. MRV of unilateral NAMAs will be conducted domestically.[15]
3. Supported NAMAs are subject to international MRV according to guidelines by the COP.

Depending on the chosen MRV approach, this means that verification of supported NAMAs would take place at least every two years and would be subject to review at the international level. Therefore, the chosen MRV method should enable an international review. This also implies that MRV should use methods with a sufficient degree of transparency for international review procedures. MRV methodologies using simple, directly observable indicators in a transparent way are therefore likely to be more appropriate than complex methods (e.g. based on complex models).

3.3.2 Classification of potential indicators

If emission reductions are not used to monitor the impact of a measure, the question of which alternative indicators are most appropriate arises. The most suitable indicator will vary depending on the type of activity. However, possible indicators can be characterised by the following categories:

- *Quantitative*
  - Technical: build units / capacity / no. of vehicles, etc.
  - Financial: funds granted, investment triggered, etc.
  - Process: number of workshops conducted, study completed, etc.
- *Qualitative*
  - Content: policy is defined and adopted, strategies are existing and comprehensive, etc.
  - Process: stakeholder processes in place, etc.
  - Institutions: responsible institutions appointed, new institutions created, etc.

[14] MRV of carbon market NAMAs will however have to be based on GHG emission and should be more stringent as carbon market units are generated.
[15] The para states: '….. provisions for international consultations and analysis under clearly defined guidelines that will ensure that national sovereignty is respected' (5. Copenhagen Accord)

Table 3 - 2 Examples for indicators by type of activity

Type of activity	Example indicators
Data collection, studies, research	• Coverage of data sources (share in total) • Study results published
Strategy development on national/regional and sectoral level	• Strategies are existing and comprehensive • Stakeholder processes were in place to define strategy
(Pilot-) Projects	• Number of projects • Funding per project • Built units / capacity, etc. • Number of visitors (for demonstration projects)
Definition, implementation and enforcement of regulation	• Regulation adopted by the government • Implementing institutions named and/or created
Capacity and institution building	• Number of workshops • Number of participants (total, per workshop) • Participants from right target groups? • Information material published and distributed • Institutions with clear profile (role and responsibility) established
Provision of financial incentives	• Amount of funding provided • Number of entities / projects that received funding • Private investment triggered through activity
Awareness raising/campaigns	• Information material published • Number of activities (e.g. poster distribution, TV-adds, etc.)

3.3.3 Interaction between different measures

Some NAMAs only lead to emission reductions if they are complemented by further actions. Capacity building by technicians on energy efficiency measures in buildings may not automatically lead to emission reductions if it is not accompanied by the appropriate regulatory and policy measures in the building sector. These interactions are difficult to capture if only isolated, individually targeted actions are proposed. In these cases, the proposal must analyse possible relations with other existing and planned measures and the overall strategy.

If several NAMAs are developed separately in the same sector, MRV of emission reductions from these actions will be complex. Effects on GHG emissions are not likely to be independent from each other (e.g. improvement of public transport and re-densification of city growth patterns) and cannot be simply added up. The implementation of one NAMA might affect the baseline of another.

There are different possible solutions. One is to use non-emission based indicators for MRV for actions with greater potential for overlapping. Another option is to formulate and MRV actions at a broader level, such as sector level. This avoids some of the problems that arise when monitoring separate lower level NAMAs.

3.4 Financing

Proposed actions are, in many cases programmatic in nature and include enabling components like capacity building. They are similar to policy-based or program-based approaches used by international financial institutions (GEF, World Bank, regional development banks etc.). It is therefore important to learn from these existing experiences in the development area. Enabling activities do not directly lead to emission reductions but they can prove essential for achieving them. Although the inclusion of such elements might lead to overlaps with areas of development finance, supported NAMAs do have the advantage that they address barriers and development issues in a targeted manner (which other climate instruments, such as CDM do not).

One of the main questions arising from the development of NAMA examples is, how it can be determined which part of the NAMA will be supported by climate finance and which part, by other financing sources (domestic, ODA etc.).[16] The definition of The Bali Action Plan explicitly puts actions to developing countries "*in the context of sustainable development*". This creates a large potential for overlap with development aid efforts. Climate funds for supported NAMAs will need to be evaluated, not only for their climate impact, but also for the additional benefits of each (e.g. development of local markets, increase in technical capacity, etc.). This aspect is especially important regarding the determination of additional climate funds. Currently, there are already many activities in development assistance that have a 'climate element', and carbon market mechanisms also currently contain an element of sustainable development. This issue needs to be addressed at the international level.

One solution could be to negotiate with funders at national level which components or actions of the overall country or sector strategy will be financed from which source (including domestic). Another option would be to define clear regulations at international level on how to attribute support. It is, however, likely to be difficult to develop such general criteria.

[16] It is however still unclear how "climate finance" can actually be defined, e.g. does it only include the public funding element, or other elements such as carbon market finance, etc.

Generally, the question of, which criteria a proposal needs to fulfil to be supported by climate finance, arises. Many studies have shown that the overall investment necessary to progress the world economy towards a sustainable path are huge and cannot be delivered by public funds alone. Therefore, a key element in evaluating proposals must be how far climate finance can leverage private investment. NAMAs which use public funds to foster market development, through incentive schemes for renewable electricity, for example, or through pilot programs for energy efficiency in buildings, are good examples of how climate finance could be used effectively to trigger sustainable market developments.[17]

[17] More detailed analysis on this can be found in the Ecofys report "Nationally appropriate mitigation actions – A framework analysis"

4 Relationship to the carbon market

Financing of climate actions in developing countries can occur in the form of either direct support or via carbon market mechanisms. Although the focus of this paper is on directly supported NAMAs, we still address some important questions regarding the relation of directly supported NAMAs and the CDM or credited NAMAs such as sectoral crediting schemes.

4.1 Clean development mechanism (CDM)

Financing to be provided for (supported and credited) NAMAs has a significant double-counting potential if it exists at the same time as the CDM. Effects of broader NAMAs in a certain sector are likely to overlap with emission reduction efforts of CDM projects in the same sector. This would lead to a situation in which developed countries pay twice for the same emission reductions, once in the CDM and one via financial support for NAMAs.

It is straightforward to argue that no new CDM projects can occur in the sector in which a country decides to implement a sectoral crediting NAMA. The argumentation is more complex for directly supported NAMAs as their scope can differ significantly. CDM projects can be easily excluded from the calculation of the GHG baseline of a directly supported NAMA. It is however, more difficult to determine the impact of directly supported NAMA on the future CDM baseline in the sector. Broadly defined, policy based actions are likely to change CDM baselines in a way which make CDM projects in this sector less attractive.

4.2 New carbon market mechanisms

Most directly supported NAMAs outlined in this paper imply financial support for relatively concrete actions in developing countries. The example on sectoral emission reductions is different from this concept because it does not specify actions, but links part of the financial support to the achievement of a certain emission (intensity) level. It combines elements of sectoral crediting with elements of directly supported NAMAs. While the establishment of a baseline is an element developed for sectoral crediting, the provision of finance operates through direct funds, rather than through carbon credits for offsetting. Experience gained in implementing this form of NAMA can nevertheless be very valuable for countries on their way to possible future carbon market mechanisms.

Directly supported actions do not incur the risks that up-front investments carry. It may be that the government will not pay back in form of emission credits/allowances, in case the target is not achieved. Additionally, since directly supported actions are not

used to offset, MRV requirements are likely to be less stringent. For these reasons directly supported NAMAs are likely to be more attractive to many developing countries than credited options. This is the case if we assume the availability of sufficient international funds. If funds are not provided at a substantial level, crediting mechanisms could be the tool of choice to trigger private investment in developing countries.

5 Conclusions

This paper summarizes the conclusions and knowledge gained from the development of NAMA examples (for directly supported NAMAs). While the current status of negotiations does not provide any guidance on which NAMAs can be directly supported, this openness makes it very difficult to draw concrete recommendations regarding NAMA implementation.

We can draw some general conclusions:

- An important conclusion is that NAMAs should be based on well developed national and/or sector strategies. Only then can it have the maximum impact and avoid overlapping or even contrary activities.

- Proposing NAMA packages at a sectoral level avoids a range of difficulties arising from interdependencies of single actions. Therefore, it is advantageous for NAMAs to be proposed at the broadest level possible. However, this will not be possible for all countries and sectors. In this case more narrow NAMAs can be proposed, but these should be embedded in a sectoral strategy.

- Development finance can be a model for NAMA finance. Existing processes and tools for development finance can give insights on wins and pitfalls. The existing tools can be adapted where necessary and simplified where possible.

- NAMAs are a good tool to target more strategic, long-term, transformational measures which are unlikely to be funded through carbon market mechanisms, which focus on maximum short-term emission impacts.

- MRV metrics follow the setup of the underlying NAMA. They can be based on GHG emissions, but also on other indicators. Emissions based MRV at the sectoral level can be possible for broadly defined NAMAs and avoids having to attribute reductions to individual measures.

Relevant literature

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