

Guidance for NAMA Design in the Context of Nationally Determined Contributions

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GUIDANCE FOR NAMA DESIGN IN THE CONTEXT OF NATIONALLY DETERMINED CONTRIBUTIONS:

A Tool To Realize GHG Mitigation Under NDCs

A collaborative effort between UNDP, UNEP DTU Partnership and the UNFCCC Secretariat

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Abbreviations and Acronyms

ADP	Ad Hoc Working Group on the Durban Platform
BAU	Business as Usual
BRT	Bus Rapid Transit
BUR	Biennial Update Report
CBA	Cost-Benefit Analysis
CDM	Clean Development Mechanism
CEA	Cost-Effectiveness Analysis
CER	Certified Emission Reduction
CPEIR	Climate Public Expenditure and Institutional Review
DNA	Designated National Authority
EIA	Environmental Impact Assessment
EU-ETS	European Union Emissions Trading System
FiT	Feed-in Tariff
GCF	Green Climate Fund
GEF	Global Environment Facility
GHG	Greenhouse Gas
IAEA	International Atomic Energy Agency
ICA	International Consultations and Analysis
IET	International Emissions Trading
INDC	Intended Nationally Determined Contribution
JI	Joint Implementation
KPI	Key Performance Indicator
LCDS	Low-Carbon Development Strategy
LECB	Low-Emission Capacity-Building
LECRDS	Low-Emission Climate-Resilient Development Strategy
LEDS	Low Emission Development Strategy (or Strategies)
MAC	Marginal Abatement Cost
MCA	Multi-Criteria Analysis
MDG	Millennium Development Goal
MRV	Measurement, Reporting and Verification

NAMA	Nationally Appropriate Mitigation Action
NC	National Communication
NDC	Nationally Determined Contribution
NGO	Non-governmental Organization
ODI	Overseas Development Institute
PEER	Public Environmental Expenditure Review
PoA	Program of Activity
QA/QC	Quality Assurance/Quality Control
RE	Renewable Energy
SBSTA	Subsidiary Body for Scientific and Technological Advice
SEA	Strategic Environmental Assessment
TAP	Technology Action Plan
TNA	Technical Needs Assessments
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNFCCC	United Nations Framework Convention on Climate Change

Foreword

Nationally Appropriate Mitigation Actions (NAMAs) represent a valuable opportunity for developing countries to address greenhouse gas (GHG) emissions while remaining true to their sustainable development priorities and needs. They represent mitigation actions that are naturally framed within the targets specified by a country's Nationally Determined Contribution (NDC). NDCs were established under Article 4 of the Paris Agreement as a means for Parties to jointly achieve the objective of limiting temperature rise to 'well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C'. These contributions are not actions in themselves, but constitute a country's vision of its own development through an alternative path which is 'cleaner' in terms of GHG emissions and that enhances a country's resilience to climate change. The objectives and targets specified therein are to be achieved through measures such as NAMAs. NAMAs are therefore a natural means to help countries realize the vision enshrined in their NDCs.

Many countries have already developed NAMAs as instruments for participating in the global mitigation agenda and as a means of leveraging national and international support for more effective and transformational climate actions. National governments, multilateral organizations, development partners and others are joining forces to ensure that NAMAs contribute to urgent efforts to limit the increase in GHG emissions while pursuing development at the national and local levels, including poverty reduction, job creation and access to energy. The NDCs have given a further impetus to these actions, underscoring the importance of the mitigation agenda and the relevance of NAMAs.

In 2013, UNDP, the UNFCCC Secretariat and the UNEP DTU Partnership (formerly UNEP Risø Centre) joined forces to produce a comprehensive Guide on formulating effective NAMAs. The emergence of NDCs as frameworks for mitigation action and the associated processes defined under the Paris Agreement makes an updated second edition of this NAMA guidance document necessary, particularly to bring clarity to the relevance of NAMAs in the context of NDCs. In doing so, the original group of institutions collaborated with the NAMA Facility to produce this updated document, signaling an increased emphasis on the central financial structuring of the mitigation actions to be anticipated as a result of the Paris Agreement.

The second edition of this guide incorporates the relationship between NDCs and NAMAs by suggesting that the latter become an implementation concept for the former. The Paris Agreement, through NDCs, provides a more tangible framework and a clearer structure upon which NAMA development can succeed; the NAMA Guide, however, does not attempt to prescribe a linear path for NAMA development. This process may still be iterative, encompassing and capitalizing on learning from past experience and involving a wide range of stakeholders at the national level, while adapting or establishing policy frameworks that include the necessary means for establishing the institutional, financial and monitoring components that go into solid NAMAs.

This NAMA Guide does not attempt to replace, but rather complements, a growing stock of available relevant guidance materials, including emerging guidance on the relationship between NDCs and NAMAs.² Its purpose is rather to provide additional guidance on NAMAs as an efficient tool to accelerate the materialization of those national contributions that are aimed at reducing global emissions. It includes tools that countries may wish to use or consult throughout the various stages of their NAMA development process and which will be regularly updated in an online ‘toolbox’. This NAMA Guide, including the toolbox in Annex 1, should be considered a ‘living’ document, meaning that future updates will incorporate feedback and experiences from users and stakeholders.

We wish to take this opportunity to thank all reviewers for their valuable comments that went into the drafting of this second edition of the NAMA Guide. We received an overwhelming number of helpful comments and suggestions, indicating a high level of interest, support and commitment from a wide range of partners around the world. It remains our aim to develop a Guide that is as practical and useful as possible in order to best assist countries in navigating through their NAMA development and implementation processes in the context of NDCs.

It is our hope that this NAMA Guide will make a positive contribution to the development and implementation of technically robust NAMAs that help achieve the ambitions underlying NDCs and that it will aid in bringing to light the crucial connections and positive human development potential that exist between mitigation actions and national development priorities and planning.

2 See e.g. ‘NAMAs and INDCs: Interactions and Opportunities, <http://www.mitigationmomentum.org/downloads/NAMAs-and-INDCs-Interactions-and-opportunities.pdf>

Executive Summary

Under the Paris Agreement, the Parties agreed, among other things, to hold the increase in the global average temperature to well below 2°C above pre-industrial levels and to pursue efforts to limit this increase to 1.5°C. Article 3 further specifies that, as Nationally Determined Contributions to the global response to climate change, the Parties will undertake and communicate ambitious efforts under different areas.

Under Article 4 of the Paris Agreement, the temperature goal is translated into an aim whereby global greenhouse gas emissions will peak and be followed by rapid reductions so as to achieve a balance between emissions and removals. The global trajectory of greenhouse gas emissions is to be achieved through the combined efforts of the Parties: under Article 4, paragraph 2, 'each Party shall prepare, communicate and maintain successive nationally determined contributions that it intends to achieve. Further, Parties shall also pursue domestic mitigation measures, with the aim of achieving the objectives of such contributions.' NAMAs, originally conceptualized as voluntary actions taken by developing countries to reduce GHG emissions to levels below those of 'business as usual' (BAU) scenarios, are well placed to help countries achieve these objectives. NAMAs, as well as NDCs, generally support and are aligned with sustainable development as interpreted by the host country, including any existing Low Emissions Development Strategy (LEDS). Since this is the case, and since NAMAs benefit from alignment not only with NDCs, but also, and particularly, with existing policies and priorities, they will often be driven by priorities other than emissions reductions, thus providing additional sustainable development benefits.

NAMA's point of departure from existing development objectives and priorities might consist of re-evaluating these and placing additional emphasis on options for emissions reduction. A number of prioritization tools have been designed to strike a balance between a NAMA's alignment with current policies: its sustainable development benefits, including the Sustainable Development Goals (SDGs), its overall benefits to the economy, its financing and of course its emissions reduction. Some of this process of prioritization, particularly prioritizing among focus sectors, has shifted to the NDC level, while the sub-sectorial level, and particularly implementation modalities, tools and instruments, have become more focused at the NAMA level.

A common requirement among donor agencies, through their support programs, is for NAMAs to constitute a transformational change in an economic sector or provide support for such change. In order for NAMAs to instill sufficient interest among such support programs, they are therefore also evaluated for their transformational qualities (hence, NAMAs can also be non-transformational, yet still achieve significant emissions reduction). Although transformational change does not have a definition, it is generally thought to reflect a permanent (irreversible) change from one situation to another and probably more rapidly than would otherwise have been the case. In such changes, finance and financial flows are central.

Finance, and thus implicitly NAMA financing, is a central issue in the present context as well. Financing remains solidly at the implementation level (mitigation actions). To the extent that countries choose to pursue the NAMA route, this also applies to the NAMA sphere, as it is the measures that underpin a country's

NDC that are financed in the end, not the NDC per se. A necessary starting point for any dialogue concerning NAMA financing is the provision of a transparent estimate of the total cost and possible incremental costs for the mitigation action incorporating already existing national budgetary allocations for the sector, the first step being to consider if and how such national budgetary allocations can be redirected in support of lower emissions alternatives. Hence, regardless whether the NAMA is likely to need international financial support, NAMA financing should begin by identifying the relevant domestic funds, public and/or private. Public funding may be used to build a foundation for investment from the private sector. In such cases, the creation of an enabling environment for corporate or other private financing must be a consideration from the outset, that is, in the initial conceptualization phase of the NAMA.

While the NDC articulates the emissions reduction ambition of the country concerned and hence is a part of the framework for NAMA development, the specific NAMA development processes are non-linear and iterative. The production of information and documentation, however, is incremental. The implementation phase should be based on firm planning and dependable, appropriate organizational structures. This is also true for the measurement, reporting and verification (MRV) system.

Quantifying the benefits of a NAMA, commonly compared to its baseline both in terms of GHG emissions and sustainable development benefits, is the gauge that all those involved – governmental bodies, international donors and financiers, non-government organizations (NGOs), civil society, scientists, and the private sector and supervisory bodies such as those within the UNFCCC itself – use to determine whether or not a NAMA is successful. The NDC may provide general baseline information, while the NAMA development process would (probably) go into further detail. MRV systems are then used to measure its concrete benefits. MRV is an essential tool for managing mitigation actions. It involves parameters for measuring the progress of the implementation of a NAMA, as well as for measuring or estimating its impacts in terms of emissions reduction and related sustainable development benefits, the latter of which are often the underlying motivation for the activity. The measurement methodology must be accurate, complete, transparent and conservative. It will also be very dependent on methods for retrieving, compiling and storing data and on principles used for estimating impacts.

Even with an NDC as the framework, transforming a NAMA from idea into practice can take a significant amount of time and involves the establishment of an institutional dialogue to make it happen. Of vital importance throughout the phases of NAMA development is the engagement of all stakeholders within these institutions, capitalizing on the national priority of emissions reduction as signaled through the NDCs.

1.1. RELEVANCE AND OBJECTIVE OF THE GUIDE

Under the Paris Agreement, the Parties to the United Nations Framework Convention on Climate Change (UNFCCC) have, among other things, set the objective of limiting temperature rise to ‘well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase to 1.5°C’. This goal is to be achieved through the joint efforts of the Parties in different areas.

This Agreement constitutes a framework for global action and provides a concrete and solid institutional platform for efforts in mitigation and adaptation, whether ongoing or planned for the future. Article 4 provides guidance for action in striking a balance between global greenhouse gas emissions and removals, where nationally determined contributions (NDCs) represent the main avenue for communicating national efforts. An NDC document outlines a country’s mid-term vision in reducing its emissions, in many cases through a quantified target (e.g. reducing national emissions to a certain level), which is to be achieved through concrete national measures.

In preparing their first round of NDCs (initially communicated as ‘intentions, or ‘Intended NDCs’ prior to the adoption of the Paris Agreement), a large group of countries built on their experiences with NAMAs. Some structured their NDC as an aggregation of planned NAMAs, while others specified that they will use NAMAs in the implementation phase. In either case, NAMAs represent those measures to be implemented to achieve the objectives of the NDC and, therefore, are a natural means of implementing the latter.



Photo Credit: UNCDF Photo/Adam Rogers

NAMAs hold out the promise of scaled-up mitigation efforts by and in developing countries on a voluntary basis, free of the constraints of a project-by-project approach. NAMAs are designed to change emission trends while supporting national development plans, and such changes are increasingly being required by dedicated 'climate financiers' to explicitly support transformational changes in the countries that host them. With this premise, NAMAs have the potential to leverage large-scale emissions reduction integrated into and supporting sustainable development in developing countries.

This Guide aims to support developing countries in the NAMA development and implementation process by providing guidance and good practices on the key aspects of NAMAs, including: the policy framework (encompassing the NDCs); potential types of actions; financing; institutional arrangements and the roles of different actors; and MRV procedures. The NAMA concept is an emerging one, and since by its very nature it is a 'nationally appropriate' tool, its overall definition may remain incomplete. However, the additional context that has been established by the NDCs is implicitly a big step forward in defining the position of the NAMA. This being the case, the objective of this Guide is to take renewed stock of what has so far been agreed upon with regards to NAMAs, as well as to provide insights on how NDCs and NAMAs may mutually support each other. The Guide will also reflect on what can be considered as falling within the domain of 'good practice.' It is important to note that NAMAs are already being implemented, and NAMA frontrunners are already providing an experience base, which has been used to inform this Guide and the NDC preparation processes as well. A number of such NAMA cases are examined below.



Photo Credit: UN Photo/Mark Garten

1.2. HOW TO USE THE GUIDE

Policy processes and national circumstances vary from country to country. Therefore, this Guide should not be read as a step-by-step approach to developing a NAMA. To repeat, NAMAs must be developed in a 'nationally appropriate' manner. Nevertheless, it is important to consider carefully the key building blocks of a NAMA as described in this Guide. The Guide also aims to provide guidance on best practice and other practical advice for those who are faced with the task of developing a NAMA, probably in the context of an NDC. In that regard, the Guide is more of a toolbox and less a general information document for the public.

The guidance provided here is based on experiences and lessons learned from existing NAMA proposals, from the UNFCCC Secretariat, the United Nations Development Program (UNDP), including UNDP's MDG Carbon and Low Emission Capacity Building (LECB)³ Programs, the NAMA Facility, the UNEP DTU Partnership, the Global Environment Facility (GEF) and the CDM. The Guide also provides 'further reading' recommendations and a toolbox.

1.3. CHAPTERS AT A GLANCE

Chapter 2 introduces the NDC as the new overall political context in which the national emissions reduction agenda, and thus also NAMA development, exists, including linkages with Low Emission Development Strategies (LEDS - in the Paris Agreement referred to as Low GHG Emission Development Strategies) and the close ties to general development planning. It explains the 'work division' between LEDS, the (Intended) Nationally Determined Contributions and the NAMA.

Chapter 3 describes the NAMAs and how its definition has changed as the NAMA concept steadily matures, the diverse approaches developing countries are using for NAMA development, and the ways in which NAMAs fit into national and international contexts. The fact is that many NAMAs are driven by other, more pressing development priorities, and such drivers are to be retained as core elements in NAMA development.

Chapter 4 considers the prioritization of focus areas in the context of NDCs. It specifically maps NAMA identification and the prioritization of implementation modalities. Since these implementation modalities are related to political, economic and technical issues, this chapter identifies decision-making support tools that can deliver more robust analyses and presents criteria that may be helpful when prioritizing implementation modalities or NAMA options.

Chapter 5 discusses the financing aspects of NAMAs, emphasizing that the transformation of a sector, or a part of it, is intricately linked to the sector's financial characteristics. The chapter takes a holistic approach to financing, going beyond emissions reduction to include the various instruments found in a financing value chain and presenting some of the most important possible financing instruments for NAMA implementation. As pointed out in the chapter, financial issues are among the first to be considered when developing a NAMA.

Chapter 6 focuses on the process involved in developing a NAMA. It emphasizes stakeholder consultation as a core activity for barrier analysis, risk mitigation and ultimately ensuring national ownership of the NAMA. It provides an overview of the information required for a NAMA proposal. Recommendations are included for the NAMA design phase, in order to ensure that documentation is sufficient for a NAMA proposal to be approved domestically.

3 www.lowemissiondevelopment.org

Chapter 7 deals with quantitative aspects of NAMAs with respect to emissions reduction, including baseline setting and ways to estimate the effects of NAMA implementation. It explains the relevance of MRV as a management tool for GHG management, with information on what to measure and good GHG emissions measurement and estimation practices. Also discussed are the links to the Sustainable Development Goals (SDGs) and the development of new ways to measure the sustainable development benefits of NAMAs: those benefits beyond GHG mitigation that not only affect, but are often central to sustainable development and that improve the general quality of life for the public.

Chapter 8 provides a discussion of the institutional aspects of NAMA development. The focus is on the good practice elements of the design and NAMA implementation and operation, including the need for an implementation framework that is aligned with domestic development processes and a sound institutional structure. It is emphasized that the NAMA institutional structure should take into account and benefit from the institutional anchoring of the NDC.

NAMAs as measures to achieve the objectives of NDCs

2

NAMAs were introduced by the Bali Action Plan (2007) and were given further impetus through the Cancun Agreements, in which developing countries agreed to take action to lower their emissions below business as usual scenarios in the form of NAMAs. Over the years, the approach and use of NAMAs has been under constant evolution: they emerged as part of an international agreement and were viewed by many as implicit commitments, but increasingly they are used by governments to identify and implement concrete projects, programs and/or policies nationally. In many cases, NAMAs have also been used as mechanisms for technical assistance or financial cooperation. Experiences with NAMAs so far have generated valuable knowledge on the different aspects and elements of mitigation action and have also identified what constitutes good practice. These remain the core parts of this Guide. Experience also indicates that many countries and organizations that have prepared government-led actions under the NAMA ‘heading’ have seen their initiatives stranded, in many cases due to the lack of a concrete framework or even a national mandate for NAMA implementation. It is therefore of central importance that NAMAs, even if they are not initiated by the government from day one, become government-led initiatives with appropriate implementation mandates before they move into concrete implementation.

More recently, practical experiences with NAMAs have played a major role in informing the conceptual development of NDCs under the Paris Agreement. As already noted, some countries have used them as building blocks for their own NDCs, others as a means of implementing measures. An important development with the emergence of NDCs is that NAMAs will no longer be regarded as implicit international commitments, a factor that prevented many countries from preparing and implementing them. NAMAs should now rather be considered a concept to help countries meet commitments that have already made (albeit not binding ones) through the NDC. Thus, the Paris Agreement, through the NDCs, provides both the context and the mandate for NAMAs to play a major role in action to combat climate change.

The purpose of the second edition of this Guide is to provide guidance on how to use NAMAs to fulfil the mitigation ambitions expressed in the NDCs as central elements in support of the Paris Agreement.

2.1. NATIONALLY DETERMINED CONTRIBUTIONS (NDCS)

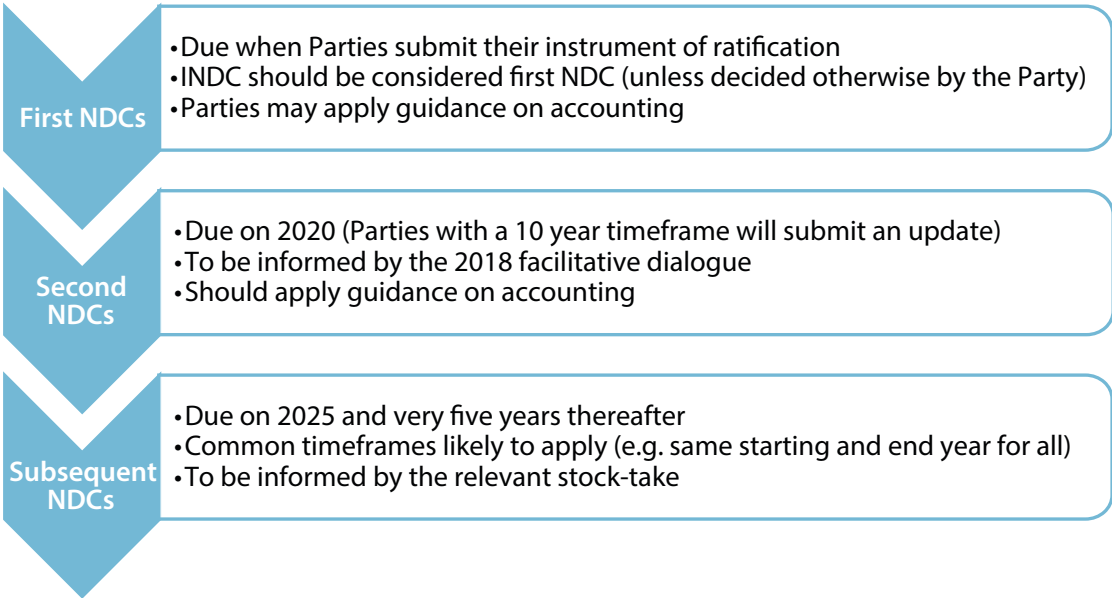
Under Article 4, the Parties have agreed to peak global greenhouse gas emissions and then introduce rapid reductions thereafter to eventually achieve a balance between emissions and removals. This trajectory would require governments to transform their economies in the direction of low, even zero, greenhouse gas emissions. The Paris Agreement acknowledges that this process should have national circumstances as a starting point, requiring each country to contribute with its best efforts; be iterative, e.g. through a regular and long-term assessment of efforts and capabilities; specify further efforts; and foster cooperation and support. To this end, the Agreement requires each Party to prepare and communicate their NDCs and to pursue national measures, such as programs and policies, to achieve the targets specified therein. A

new (or revised) NDC should be communicated every five years, be more ambitious than the previous one in terms of national efforts to address climate change, and reflect the Party's 'highest possible ambition'. The main feature of NDCs, as the acronym suggests, is the fact that they are nationally determined. This means that each country will decide on its own the level and type of effort, taking into account, on the one hand, national circumstances and priorities, including adherence to the Sustainable Development Goals (see Chapter 7), and on the other hand, the progress and efforts required to achieve the temperature goal.

NDCs originated with an invitation to the Parties by the COP, the supreme body of the UNFCCC, to 'initiate or intensify domestic preparations for their intended nationally determined contributions ... and to communicate them well in advance of the twenty-first session of the Conference of the Parties' in 2015. At the time, the aim was to ensure that the Paris Agreement will be adopted with concrete and identified efforts by all Parties to reduce emissions and adapt to the adverse effects of climate change and not only a set of provisions and obligations. They were described as 'intended' due to the lack of a legal framework for them. An overwhelming 190 countries communicated their intended NDCs up to the Paris COP. As already stated, many of these NDCs include NAMAs as an implementation modality, hence underscoring the natural linkage between the two.

The Paris Agreement and its decisions outline the process of how countries should communicate the first and subsequent NDCs. The first is already under way: many countries will submit their INDC as their first NDC (as noted in the previous paragraph, INDCs were originally merely 'intended' due to the lack of a legal framework). The second submission of NDCs is due in 2020, with subsequent NDCs being communicated every five years. Those countries that have set a timeframe of ten years in their NDC (e.g. until 2030) are likely to send a revised or updated NDC rather than a new one (see Figure 1). The Paris Agreement also makes provision for a global stock-take every five years for the Parties to assess jointly progress with implementation and, in particular, with efforts to meet the temperature goal. An additional objective of the stock-take is to provide information to the Parties for their next NDC for Parties. To that end, the stock-take takes place in between the call for NDCs (e.g. starting in 2018 as a facilitative dialogue and subsequently every five years).

Figure 1. NDC process



In practical terms, the Paris Agreement establishes a five-year cycle that starts with the communication of NDCs, is followed by the global stock-take, and finishes with the planning and communication of the next round of NDCs. From a national perspective this is translated into the identification, planning and implementation of measures to respond to this request. As already stated, NAMAs constitute an ideal framework for these measures to materialize.

The periodic updating of the NDC allows it to function as an instrument with which to focus on specific elements of the overall strategy in a mid-term perspective, this being a way to select certain parts of the strategy for implementation without framing it as concrete actions. In this way, it serves to fill a gap between LEDS and NAMAs that has a logical parallel in strategic, tactical, and operational levels of planning (see Figure 2).

2.2. THE RELATIONSHIP BETWEEN LEDS, NDCS AND NAMAS

Global greenhouse gas-emission scenarios In the direction of achieving the long-term temperature goal consider timeframes of up to 2100. For example, scenarios consistent with limiting temperature rises to below 2°C assume zero net global emissions between 2045 and 2070 (see, for example, the UNEP gap report 2015). Reaching this goal implicitly requires that countries achieve zero net emissions in the second half of this century. However, policy responses rarely use timeframes longer than the national political cycles. In fact, NDCs and NAMAs are generally defined for the shorter and medium terms (e.g. five- or ten-year timeframes). To address emissions in the longer term (e.g. 2050 and beyond), several countries have adopted low emissions strategies or zero net emissions development objectives in the longer term.

Low emission development strategies, or LEDS, were introduced by COP16 in 2010 as an approach to meeting overall emission-reduction objectives by inviting developing countries to incorporate LEDS into their overall policies for sustainable development.⁴ The Paris Agreement, Article 4.19, also provides for the Parties to formulate and communicate long-term low greenhouse gas-emission development strategies in light of the fact that NDCs and related measures are set only for the medium term. As such, long-term strategies are designed to become overarching national low-emission frameworks which complement general development plans and guide the preparation of NDCs and NAMAs. While not being a requirement for a country to prepare an NDC and implement NAMAs, LEDS can be a valuable tool for climate change policy formulation. In fact, a recommended situation is that in which these three concepts are articulated within the policy framework: a country sets a long-term vision for its emissions (say, achieving zero net emissions in 2060); and every five years it develops an NDC which includes an emissions reduction target that is progressively more ambitious, which the relevant line ministries translate into concrete measures (NAMAs) in order to achieve this target. The iterative NDC process should lead the country to achieve its long-term vision of low emissions development. The three concepts taken together are useful in illustrating the steps from long-term vision via the prioritization of certain focus areas to concrete mitigation action, as illustrated in Figure 2: strategy, 'tactics' and operation.

The efficiency of the NDC process has brought about almost full coverage among countries of mitigation intentions, and 43 countries specifically mention NAMAs as an implementation concept for the NDC. Tunisia, for instance, specifically refers to five NAMAs it has already developed for Cement, Buildings, Electricity, Forests and Sanitation, and Mongolia refers to NAMAs having been developed for Transport and Cement already in 2010.

⁴ Cancun Agreement (UNFCCC, 2010), and reiterated in the Doha Decisions (UNFCCC, 2012b).

While in principle NAMAs may be developed outside this NDC context, they should be kept within it in order to streamline and unify national mitigation initiatives and to treat the NAMAs as the implementation vehicle for NDCs (see Figure 2). For NAMAs to function efficiently as such, they must provide the kind of information that is now being required for the NDCs. NAMA guidance should therefore adopt these requirements, which are reflected where relevant throughout this Guide.

Figure 2. LEDS, NDCs and NAMAs at strategic, tactical and operational levels of planning: NDCs filling a conceptual gap.

	Strategic level	Tactical level	Operational level
Low Carbon Development Strategies	Long-term vision	X	X
Nationally Determined Contributions	X	Prioritization and target setting	X
Nationally Appropriate Mitigation Action	X	X	Mitigation action

Further reading:

- Cameron and Harms (eds.) (2015) [NAMAs and INDCs: Interactions and opportunities](#)

Towards a definition of NAMAs

NAMAs are voluntary country-driven actions taken by developing countries to reduce GHG emissions while pursuing sustainable development. Their aim is to assist developing countries in dissociating GHG emissions from economic growth to a level below that of BAU scenarios, but they do not represent legal commitments under the UNFCCC. A NAMA should not be perceived as a separate area of activity confined to the international climate change negotiations, nor does it benefit from a separate source of financing or operate on terms that are any different from other areas of economic activity. NAMAs are integrated into national development strategies and must equally integrate national development agendas implemented by relevant sector ministries, adding an emissions reduction aspect to that agenda. NAMAs therefore depend on such agendas, they do not create them.

NAMAs allow developing countries to keep pursuing high-priority national goals such as improved transportation systems, energy security and public health, and to promote the coupling of these with GHG emissions reduction objectives that are lasting and ingrained in policy, rather than of a project-by-project nature. However, a NAMA can never become the development agenda itself. The development agenda is not driven by emissions reduction objectives; the emissions reduction 'co-benefit' is added through a possible revision of implementation modalities for development agendas that have already been defined.

The NAMA concept underpins diverse approaches that host countries use to identify, prepare for and implement actions that are sustainable, lead to green growth and development, and lower their GHG emissions. NAMA proposals submitted to the UNFCCC demonstrate significant diversity in national priorities and circumstances. Some submissions describe objectives for reducing GHG emissions in a particular sector through the introduction of certain mitigation measures using a project-based approach and remaining within certain boundaries, while others describe sector-wide initiatives.

Since the Paris Agreement, NAMAs exist in the context of NDCs and as measures or implementation vehicles to achieve the objectives of NDCs. Determining which actions to take under a NAMA is each country's sovereign right, since the definition of 'appropriate mitigation action' is relative to a Party's particular national circumstances and goals. The NDCs now articulate these goals, lending to the NAMA a relevant framework for drawing up implementation plans. By way of illustration, Box 1 shows how Chile has adopted the NAMA in its NDC.

3.1. CENTRAL CHARACTERISTICS OF NAMAS

NAMAs typically promote or impose a certain shift in investment behavior by introducing a set of laws and regulations (e.g. standards) with an enforcement structure (hard regulation) or promotional schemes and investment incentives (e.g. feed-in tariffs (FiT) or 'green lending' (green bonds)) to generate investment in alternative low-emission assets and mitigation actions (soft regulation). The target audience for such measures is almost always the private sector, which, by responding to either (the enforcement of) hard regulation or incentives for investment in low emission assets and concrete, measurable actions, will

help the country achieve its pledges under an NDC. Therefore, private-sector capacities will be pivotal in achieving many of such pledges. Private-sector involvement is considered further in Chapter 5 on NAMA finance. On the other hand, many NAMAs also have the public sector taking the lead in sectors in which it has a significant stake, e.g. through focusing on energy efficiency in public buildings or by improving public transport infrastructure.

Significant attention has been paid to the MRV component. MRV requirements are not part of the definition of NAMAs, but by their nature, they must be considered throughout NAMA development and implementation. However, given the relatively precise requirements for reporting related to NDCs following the Paris Agreement, the NAMA and the NDC may mutually influence each other: the NAMA, on the basis of years of conceptual development, should inspire the detailing of NDC requirements in terms of measuring the achievement of results while also reflecting the reporting requirements laid down for NDCs. For more on MRV and NAMAs, see Chapter 7.

Among agencies that support the development and implementation of NAMAs, it is an established perception that NAMAs must be transformational. This perception was institutionalized by the NAMA Facility⁵ in its 1st Call for NAMA outlines in 2013, when it required projects to:

‘contribute to bringing the country on a low-carbon development trajectory in line with the 2-degree-objective and yield (climate) benefits beyond the direct project goals. Projects can do so by enabling a significant evolution in terms of scope (e.g. scaling-up or replication), a faster change or a significant shift from one state to another. In most cases, transformational change implies the existence of a catalytic effect (incl. leverage) and the fulfilment of a number of pre-conditions including mechanisms to ensure the sustainability of the impacts, local ownership and political will, the use of innovative technologies or approaches, etc.’

The Green Climate Fund has also used transformational change as an objective of its interventions, but it seems to have moved towards ‘radical paradigm shift’ or just ‘paradigm shift’ instead.

It should be emphasized that there is no interchangeability between NAMAs and transformational change, i.e. emissions reduction actions can also not be transformational, but remain ‘nationally appropriate’. Transformational change is an increasingly common international funding criterion, but it does not mean that a NAMA must be transformational in order to be a NAMA. In other words, in some cases transformation is not nationally appropriate (yet), whereas a less ‘radical’ mitigation action might be suitable. Also, the degree of transformation is on a sliding scale with no strict criteria to be met, hence even among international financiers there may be different assessments of the degree of ‘transformationality’ of a given action.

Work on defining ‘transformation’ is still ongoing among think tanks and practitioners,⁶ and from that perspective giving specific guidance on adopting ‘transformational change’ as a qualification for a NAMA is difficult. Also, transformational change is not reserved to the climate change agenda alone: actions that can be characterized as transformational do not necessarily imply substantial emissions reduction but should contribute to a transformation towards sustainable economic development pathways in order to differentiate

5 <http://www.mitigationmomentum.org/downloads/NAMAs-and-INDCs-Interactions-and-opportunities.pdf>

6 See, e.g., ‘Transformational Change Taxonomy: methodological framework for the assessment of transformational change in NAMAs’, version 1 (UNEP DTU 2016, NAMA Partnership).

between climate finance and ordinary development finance. Nevertheless, some central characteristics of ‘transformational change’ that guide NAMA financiers’ assessments of NAMAs can be identified:

1. Transformational change is ‘permanent’, i.e. it establishes a new situation which does not fall back to its point of departure once the dedicated NAMA implementation phase ends. In the NAMA Facility it is called ‘a sustainable phase-out concept’.
2. Transformational change is ‘radical’, i.e. it deviates significantly from an already expected path of change and development.
3. Transformational change is ‘abrupt’, i.e. it happens in the shorter term and earlier than otherwise possibly to be expected.

It is emphasized again that these are not established definitions, but only reflect observations of NAMA evaluations as undertaken by international NAMA financiers. They highlight the differentiation between ‘change’ and ‘transformational change’ in the sense that, for instance, a change that is permanent, but neither radical nor abrupt, may well constitute a NAMA. It should also be added that transformational change may happen at multiple levels comprising not only technology, but also behavior and social values, and very often a combination of these and other parameters.⁷

Changes that comply with these requirements are rarely achieved through stand-alone projects: they are rather permanent changes in policy frameworks in a given sector or sub-sector. For instance, the NAMA Facility has increasingly focused on the definition of permanent financial frameworks, in many cases supported by regulatory initiatives, as central elements of a transformational action. Transformational actions are also more likely to create winners and losers, because those that benefit from current and less emission-friendly practices have less time to adapt to more radical changes than would be the case in a normal-paced development.⁸

Examples of such short-term actions can also be less policy- and more campaign-oriented, for instance, a program to retire all inefficient coal-fired boilers over a period of 24 months or to take all trucks that do not meet certain standards off the city streets. Such short-term programs may well be transformational despite their limited duration, although they may need to be repeated occasionally in order for their effects to be optimal. Commonly, however, NAMAs involve policy development processes that are lengthy by nature, with long lead times from drawing up such frameworks till they yield substantial results. According to the latest Annual Report from the NAMA Facility, little if any emissions reduction will be achieved within the five-year implementation phase for the support projects it is financing: the major effects will emerge in the following years. NAMAs are therefore not commensurate with short-term shifts in conceptual frameworks: once established, they yield results over many years, sometimes decades.

7 See, e.g., [‘Transformational Change Taxonomy: methodological framework for the assessment of transformational change in NA-MAs’](#), version 1 (UNEP DTU 2016, NAMA Partnership)

8 ‘This requires deliberate management of rents (Schmitz et al., 2013) and awareness of the ways incumbents exercise their power to resist change’ (Geels, 2014). See also [Tilburg and Rawlins \(2016\)](#)

Box 1 includes compilations of NAMAs and information on the status of NAMA pipelines.

BOX 1. INFORMATION ON THE CURRENT NAMA PIPELINE

UNFCCC NAMA Registry. UNFCCC's registry of NAMA proposals for the purposes of seeking international support, facilitating matching financing, seeking technology and capacity-building support and sharing knowledge about NAMAs. See Registry Reports: <http://unfccc.int/resource/docs/2014/cop20/eng/inf01.pdf>.

NAMA database by Ecofys. The NAMA wiki contains a database of NAMAs and related activities around the world. The aim is to share information on these activities so that countries and other participants are able to learn from these experiences and gain insights into how to undertake mitigation activities within the NAMA framework.

UNEP DTU Partnership NAMA Pipeline Analysis and Database. This database contains all submissions of NAMAs to the UNFCCC. The site is not a registry, but rather a less formal overview of NAMAs submitted to the registry.

The NAMA Facility project portfolio is central for information about NAMAs under implementation, as the Facility is involved in a significant share of these.

The UNDP NAMA portfolio contains a list of best practice examples of NAMA development.

3.2. BEYOND THE LABELS OF UNILATERAL AND SUPPORTED NAMAS

The linkage with NDCs provides guidance on the interpretation of NAMAs that are implemented as 'unilateral' actions and NAMAs that require international support. Following the Cancun Agreement, developing countries will undertake NAMAs 'supported and enabled by technology, financing and capacity-building', which, however, does not exclude NAMAs 'for recognition', i.e. NAMAs that countries undertake without international (financial) support. The NAMA Registry, hosted by the UNFCCC Secretariat, underpins such differentiated reporting. In principle, NDCs also frequently differentiate between what a country 'intends to contribute' on its own account and which part is optional and conditional upon international support.

In practice, however, it may not be possible to make a clear distinction between unilateral and internationally supported NAMAs. Mitigation actions may initially be unilateral, but they may expand and develop and ultimately combine domestic and international support, attracting domestic and/or international private-sector interest throughout several phases of development and implementation. Such multiphase and multisource financial routes are more realistic in terms of making mitigation actions happen initially and structuring their financing over time. The notion of 'supported NAMAs' may connote a certain approach to financing: a clearly defined activity with a clear start- and end-date, with a financing gap to be closed by a donor. This could ultimately conflict with the nature of many NAMAs that are intended to result in a permanent change. They may include donor funding in the initial stages, but ultimately they must be rooted in a national financial context, as no donor funding is perpetual.

Furthermore, if 'unilateral' is taken to mean 'entirely initiated and then financed and operated by the host country only, for the life of the activity', the fact that many NAMAs are long-term frameworks and that these may be exploited by either domestic or foreign private investors is being ignored. The ad hoc involvement of bilateral assistance might also not be considered. In some cases such assistance may be crucial, but financially too insignificant to challenge the unilateral denomination given to the initiative.

There is another possible complication in attempting to distinguish between unilateral and supported NAMAs. For many NAMA host countries, the mitigation effect of a NAMA may be of secondary importance compared to the fundamental objective of development in a particular economic sector. Overall political agendas often focus on development, and this development focus, rather than climate-related issues, is what influences the availability of resources and attracts international financing.

While it may be tempting to conclude that distinguishing between unilateral and supported NAMAs is not practicable, most NDCs continue to make the distinction. Therefore, NAMA developers need still to consider the issue, although probably without specifically labeling their NAMA.



Photo Credit: UN Photo/E Darroch

Further reading:

- [UNDP Materials on Low-Emission Climate-Resilient Development Strategy \(LECRDS\)](#)
- [Low-Carbon Growth Country Studies: Getting Started](#): Between 2006 and 2009, with the assistance of the World Bank, Brazil, China, India, Indonesia, Mexico and South Africa undertook in-depth analyses of national mitigation options, identified policy instruments to mobilize the most promising options, and assessed how barriers to policy implementation could be overcome (ESMAP, 2009).
- UNEP Risø (2011): [Low-Carbon Development Strategies](#).
- UNEP Risø (2013): [Understanding The Concept of Nationally Appropriate Mitigation Action](#).
- vanTilburg and Rawlins (2016): [NAMA development and stakeholder engagement](#).



Photo Credit: UN Photo/Eskinder Debebe

Identification and Prioritisation of NAMAs

4

As emphasized in the previous chapter, NAMAs, just like their overarching NDCs, should emerge from or be in line with national long-term development planning. Both NDCs and NAMAs should be regarded as an alternative path of development, one that delivers the same social benefits and services but that also results in lower emissions. The NDC consists of a re-evaluation of current development objectives and priorities with an additional focus on options for emissions reductions. The NAMA, then, represents the concrete operationalization of these options as specific actions in the form of projects, programs and policies. If such options have already been captured in an NDC that maps out mitigation options based on current development priorities, this provides a framework for such a re-evaluation. The NDC may also identify areas in which a shift in priorities or in technology could result in (additional) emissions reduction while retaining long-term development objectives.

4.1 ALIGNMENT OF NAMAS WITH DOMESTIC PLANS AND POLICIES

Aligning NAMAs with current development plans and policies entails aligning with or embedding in economic development plans and national budgeting: a NAMA should reflect and ultimately be built into these plans. In some instances, emissions reduction is an implicit consequence of an initiative with other purposes. For example, a country might focus on resolving traffic congestion in order to reduce the time spent in traffic, the frequency of accidents and levels of particle pollution, as well as generally improve health and mobility. Doing so will reduce carbon emissions as well, either overall or per mile travelled. The means of resolving the congestion problem may, for example, be a bus rapid transit (BRT) system with diesel-fueled buses or one with electric buses. Here, the overall remedy is the same, but the electric modality is likely to have a lower emissions profile (depending on the source of its power) than the less expensive diesel modality. Although a clear differentiation can be difficult in practice, in principle the BRT system is a transport development initiative, while the choice of low emission electric buses can be considered a NAMA. Without differentiation there is a risk that scarce climate finance will crowd out development finance.

In this case, to state the obvious, and regardless of the definition used for the NAMA, the two decisions should be aligned. If a BRT system is introduced, the choice of buses should be made at the outset, rather than opting first to implement a diesel solution and then to shift to electricity two years later. If financing for the larger investment is not at hand, this would be an obvious target for international NAMA finance. Other sectors may have different interconnections between system and technology, where due diligence prompts decision-makers to consider emissions reduction in addition to other development plans simply because this is the most practical thing to do.

For instance, if a county's development plan foresees the addition of, for example, 1000 MW of capacity within a five-year timeframe, the options to deliver this capacity may include coal, LPG, solar and energy efficiency. A country may consider that coal would be the cheapest option, while in its NDC it already aims at delivering the same capacity with the lowest possible emissions, say 50% lower emissions than the coal baseline. The NAMA operationalizes this ambition through, for example, a combination of a feed-in tariff for

renewable energy and a program for energy efficiency, where the latter is profitable and thus may help pay for the former, possibly achieving an emissions reduction agenda at no cost at all.

Box 2 briefly outlines how some NAMA host countries have aligned NAMAs with existing plans and policies.

BOX 2. NAMA ALIGNMENT WITH DOMESTIC PLANS AND POLICIES

A survey conducted during the development of this document identified the different challenges involved in aligning a NAMA with domestic processes. For instance, Chile underscored that, in order to pass legislation (even for NAMAs), the focus must be on economic development and sustainable development benefits rather than on GHG reduction. Costa Rica emphasized the need for improved coordination among stakeholders and donors. Lebanon pointed out that national approving authorities (UNFCCC focal points, for example) should be trained in a national NAMA evaluation and approval system, and that information should be publicly available in order to avoid confusion and information asymmetry among potential beneficiaries and investors. Colombia and Mexico urged the involvement of the respective sector representatives in decision-making processes. Along similar lines, Peru underscored the need for close interaction with the private sector, since this will improve the sustainability of the measures. It is also clear that faster procedures are required, as well as the avoidance of high turnover in public offices in order to keep an expert group on hand and maintain institutional capacities.

Furthermore, a multitude of experiences exists with regards to engagement in CDM activities. In Bhutan, the experience of CDM has been that, since baseline emissions are negligible, and due to the relatively small scale of projects there, it has been very difficult to attract investors and funding. This would need to be considered when designing a NAMA.

Further reading:

- UNEP Risø (2011): [Low Carbon Development Strategies: A Primer on Framing Nationally Appropriate Mitigation Actions \(NAMAs\) in Developing Countries](#). The UNEP Risø Primer sets out basic principles and proposes some possible elements useful in the process of preparing a national LCDS and NAMAs, as well as providing a template for NAMA articulation.

4.2. HOW TO IDENTIFY NAMAS

Most economic activity generates greenhouse gas emissions and, therefore, is the starting point for the identification of areas of activity to which the addition of emissions-reduction considerations could benefit an already defined objective.

The starting point for NAMA identification would be the development plan of a country, including a stocktaking of current economic sectoral conditions and trends, as well as expectations of growth in the activity in these sectors. As already noted, NAMAs aim to deliver the same goods, services and benefits while emitting lower levels of GHGs. It may be the case that such an agenda, a NAMA agenda, may also inspire the revision of current objectives. For instance, perhaps one objective has been to add the power-production capacity needed to meet growing demand. An energy-efficiency agenda presented as an alternative to this

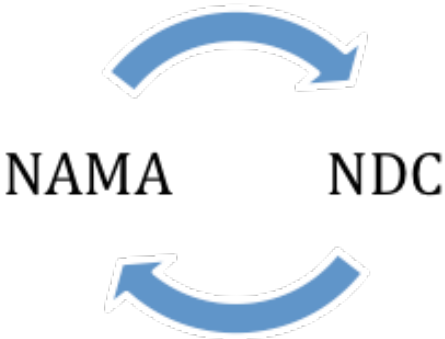
would challenge the need for capacity expansion: instead of investing in, say, 1000 MW of coal-fired power production capacity, a program of support for energy efficiency in industry and households could save an equivalent quantity. This is an example of a possible NAMA inspiring a change of objective.

As another, smaller-scale example, many companies have conducted campaigns with their employees, asking them to help identify areas in which energy is being wasted; others have ordered external energy audits to be performed for the same purpose. Rather than a change of objective, these initiatives show who might be involved. In both of these examples, at both the macro- and micro-levels, the overall objective of maintaining energy availability has not changed. Only the way to achieve the objective has been opened up to alternatives.

A NAMA, then, may be identified and established as part of the national decision-making process (top-down), or it may emerge, for example, from a particular industry in which there has been a call for a new sector standard or a new program (bottom-up). The expectation, however, is that most NAMAs emerge as government-led campaigns, initiatives or policies that induce the private sector to act. The NDC identification process, which has been led by government at the highest level, supports this expectation, ensuring that the mitigation objectives and options identified have national political anchoring. Conversely, NAMAs without such anchoring are less feasible. Therefore, NAMA stakeholders should consider the incorporation of NAMA options into the NDC updating process as the most viable avenues of development.

The process of NDC preparation is one of identifying and prioritizing opportunities for emission reductions. Some countries take as their starting point the political aim of reducing national emissions to a certain level which needs to be translated into measures to achieve it. Others take a bottom-up approach and start with the identification of a set of measures that are packaged into an NDC. No matter which approach is adopted, the identification and prioritization process now rather belongs at the NDC level. If NDCs and related NAMAs are about alternative development pathways, it is natural for sector ministries and sub-national agencies to take on the responsibility for identifying, costing and planning alternative actions in the form of NAMAs: the Ministry of Energy will focus on energy sources, the Ministry of Agriculture on livestock, and so on. This is in contrast to earlier processes of NAMA identification without an NDC context, where most of the responsibility for the process was typically anchored in the national Ministry of Environment or NAMA focal point. While the Ministry of Environment remains responsible for communicating NAMAs at the international level through already established procedures, the NDC lends additional legitimacy to this communication by sharing responsibility with the line ministries.

In reality, however, the difference may only be that the NDC has been established as an overall context that underscores the necessity of the NAMA. The identification and development of ideas may still originate from the practical mitigation action level, where practitioners are likely sources of inspiration for identifying mitigation options. This process may be illustrated as follows:



Obviously, there are many other sources of information for the identification of mitigation options. Initiatives that are already being implemented and that are known to reduce GHG emissions and findings from work related to, for example, Technical Needs Assessments (TNAs), National Communications or LEDS or actions such as GEF projects or CDM Programs of Activity (PoAs) are all relevant places to look for the identification of mitigation actions. To facilitate the NAMA identification process, the following documents may provide useful information on national strategies and their mitigation potential:

- NDCs;
- National development strategies, such as poverty reduction strategies;
- National Communications, in particular their sections on national GHG inventories and mitigation assessments;⁹
- National climate-change strategies or policy papers;
- Relevant sector-specific policies and related background information (e.g. growth and trends analyses);
- Specific laws and regulations that influence financial flows within a sector;
- National investment policies, etc.; and
- TNAs and Technology Action Plans (TAPs).

Analyzing this documentation will inform the NAMA identification and prioritization process by revealing the range of policies, programs or project activities that are aligned with national development plans and that hold out the promise to reduce GHG emissions if implementation modalities are altered. Essential information in completing such analyses is contained in:

- the current budget;
- existing or planned relevant domestic policies and their prime objectives;
- emission baseline establishment and future emissions and mitigation scenarios; and
- potential barriers to the full implementation of the proposed NAMA, including important stakeholders.

NAMAs may be related horizontally as well as vertically. For example, the areas of urban planning and transport would typically constitute a horizontal relationship, since they would involve the same stakeholders at approximately the same time, but in two separate sectors. Vertically related NAMAs, on the other hand, would typically exist in the same sector, but involve either different levels of government, such as national and local, or different links in a value chain. For example, a nationally imposed waste-heat recovery requirement for the cement sector would be vertically related to a locally imposed building

⁹ In the future, BURs and national inventory reports could also be valuable sources of information.

code that establishes carbon footprint standards for cement in local public buildings. Enforcing the former inevitably supports the achievement of the latter. The BRT system and the electric buses mentioned earlier also constitute a vertically integrated activity, where the BRT system constitutes the overall system and the buses the vertically integrated choice of technology. Horizontal and vertical relationships are not a formal classification of NAMAs. However, when identifying NAMAs, it is worthwhile considering whether or not emissions reduction potentials could be significantly enhanced if a (horizontal) broadening or (vertical) deepening of the scope of intervention were to be adopted.

4.3. HOW TO PRIORITIZE NAMAS

Prioritizing NAMAs is ultimately a domestic political decision based on several factors, economic (e.g. costs), political (e.g. the interests of different groups of stakeholders), social and others. Where an NDC is present, the identification of opportunities to reduce emissions and their prioritization will likely already be determined by the NDC itself, especially if the country has followed a bottom-up approach in developing its NDC. Where the NDC already prioritizes focus areas, sectors or subsectors, the NAMA level identifies and prioritizes the implementation modalities, i.e. specific measures and actions. Prioritization will be required whenever several alternative modalities have been identified for a single intervention to reduce emissions (for example, different technologies) or different financial mechanisms. Tools and methods, including stakeholder consultations, can provide input and clarity on the trade-offs and insights into the feasibility of different options. This means that ideally, i.e. if the NDC contains a sufficient level of detail, an important part of the prioritization process has already been undertaken once the NAMA is being defined. With the introduction, and thorough development, of the NDC, the NAMA developers therefore no longer need to concern themselves with choosing between different sectors. Instead, they will be faced with concrete challenges as to which instruments will most efficiently achieve the results expected in response to the NDC.

If tools are employed at the NDC level to prioritize among interventions in different sectors, it would be logical to employ the same (or at least a similar) tool when prioritizing among different modalities for implementation at the NAMA level. The selection criteria used obviously reflect the level at which the tool is employed: prioritization spanning different economic sectors will use broader, more generic selection criteria, whereas the choice of implementation modalities for a given sub-sector activity will use much more specific ones. Each criterion listed in Table 1 below may therefore be applied several times with varied depth, and possibly by different groups of stakeholders throughout the different phases of the NDC and NAMA prioritization processes.

Measures are defined as instruments, policies or actions that are introduced or enhanced by the NAMA. Measures may have direct or indirect effects on GHG mitigation, and they may require supplementary actions in order for them to result in mitigation. For example, the introduction of energy efficiency standards will not trigger energy efficiency improvements if the standards are not enforced; similarly, the introduction of a subsidy scheme for renewable energy will not trigger renewable energy projects if the national electricity utility is not providing access to its electricity grid. Such issues are also part of barrier analysis and risk assessment, but equally inform the prioritization. A well-informed prioritization of options cannot succeed unless concrete decisions regarding instruments and implementation modalities have been made.

Table 1. Criteria for prioritization throughout the NDC and NAMA process

Criterion	Comment
Sustainable Development Benefits	<p>Materiality of benefits for the host country, such as: savings in household energy bills</p> <ul style="list-style-type: none"> • general improvements in public health • job creation • reduction of congestion • reduced air/water/soil pollution • improved training and education options
Relation between national policy and NDCs, as well as existing programs and initiatives	<p>NAMAs should be related to NDCs and national climate policies. Consider:</p> <ul style="list-style-type: none"> • the national capacity to implement the NAMA • compatibility with priority sectors of national development plans • probability of broad political consensus • potential for widespread implementation/replication • stakeholder level of support and opinions • positive impacts on other sector policies
Potential GHG mitigation	GHG emissions reduction potential
Financing	<p>The financing model of the NAMA may determine its attractiveness:</p> <ul style="list-style-type: none"> • sustainability of the financing model and its linkage to the national budget • compatibility with acceptable modes of implementation • attraction for international financiers • attractiveness for private sector to engage in • possibility of generating additional income from the initiative, or reducing costs in other sectors • bankability/financial sustainability
Transformation	<p>The long-term emissions reduction effect may be influenced by:</p> <ul style="list-style-type: none"> • the degree of permanence due to the nature of the proposed change • the prospect of influencing the behavior of central stakeholders • the degree to which cash flows are altered
National economy considerations	<p>The NDC choice of sectors and the NAMA choice of implementation modality:</p> <ul style="list-style-type: none"> • promotes national industry • benefits existing national suppliers or enables the development of new national industry • shifts technology to substitute imports • supports national technology development • offers capacity-building and training
Others	<p>access to data in support of MRV</p> <ul style="list-style-type: none"> • social acceptability • access to required technologies • businesses co-benefits such as competitive edge, securing future market shares, liability management, etc.

A variety of decision-making support tools exist for prioritization processes:

Multi-criteria decision analysis (MCDA) is a collection of formal approaches that are used to take explicit account of multiple criteria that matter with regard to a specific decision. It is increasingly the tool of choice in decision processes faced with multiple metrics, or diverse and sometimes conflicting priorities. For a number of reasons MCDA has been suggested as being particularly well-suited to planning for climate change. The reasons cited include that: (i) it allows the integrated treatment of socio-economic, ecological, institutional and ethical perspectives; (ii) it can take into account issues such as morbidity and mortality, equity, environmental damage, catastrophic risks and uncertainty; and (iii) its application is not limited to areas that can be described fully through monetary values.¹⁰

Cost-benefit analysis (CBA) is a methodology used to quantify the costs and benefits of a project over a certain period of time to determine whether the project is worth implementing (or continuing). CBA has become commonplace for most public policy decisions with potentially large economic impacts. It estimates the net present value of the project by comparing the amount invested today with the present value of the future benefits associated with the investment, suggesting that a project should be undertaken if the net present value is positive and higher than that of other, alternative options. CBA is often conducted for the project of interest and its possible alternative(s) with a view to obtaining comparable estimates that can inform a final decision concerning the project. Its appeal lies exactly in the comparability of the estimates of costs and benefits, as they are all expressed in monetary terms, as well as the notion that all perspectives are measured against the same yardstick, thus providing an assessment that reflects the best interests of society as a whole. But also questions would be asked along the lines of: 'Whose costs and benefits do we count, and how do we distribute them?' and 'Over what time-frame are costs and benefits to be counted?'

Life-cycle analysis (LCA) is an analytical technique that is used to determine the environmental, economic and social impacts of a product, from its manufacture to its end-of-life. LCA complements other decision support tools by providing a measure of environmental performance and risk. It provides a measure of environmental impacts by quantifying all material and energy inputs (resources, energy, and raw materials) and outputs (emissions to air, land and water, solid waste generation, and waste water) at each of these stages. LCA can support choices to use environmentally sound materials (e.g., a product design that pollutes less along its entire life cycle), or to invest in innovative technologies. Similarly, LCA can help decision-makers identify the advantages of different processing methods based on their environmental impacts, for example, to determine the most suitable waste treatment alternatives between recycling (material recovery) or energy recovery through incineration. It also offers the possibility of assessing upstream and downstream trade-offs regarding environmental impacts, human health and resource consumption. Life-cycle analysis has been used in agriculture, waste management, food processing, eco-design of home appliances and the garment industry, among many other sectors.

Cost-effectiveness analysis (CEA) can offer guidance on which of several alternative policies or projects to select if a selection is necessary. By extension, CEA can rank any set of policies, all of which might be undertaken, when it has been decided that at least some of them must be undertaken. This makes CEA particularly suitable for selecting between different modalities of NAMA implementation.

10 More information on multi-criteria decision analysis and other decision support tools is available in 'Decision-support tools for climate change mitigation planning' (UNEP DTU Partnership).

Strategic Environmental Assessment (SEA) is similar to Environmental Impact Assessment (EIA), but it operates at a higher decision-making level. SEA is used to assess entire programs of investments or policies, rather than individual projects or policies. The goal is to identify synergies between individual policies and projects and to evaluate alternatives in a more comprehensive manner. In SEA, however, issues of time, cost and non-environmental costs and benefits do not figure prominently.

These tools are not interchangeable, although they are sometimes thought to be. Questions must be formulated with care in order to determine which technique is most suitable as a decision-making tool. On the other hand, it may sometimes be useful to apply more than one in order to analyze different aspects of a given decision.

In traditional emissions-reduction planning, Marginal Abatement Cost (MAC) curves are a popular tool for obtaining information on abatement costs and potentials for a set of mitigation activities. However, MAC may have less to say about a NAMA if the latter originates in the NDC, since its emissions reduction options are considered in a particular context rather than as an economy-wide, cost-efficient emissions reduction effort. Obviously, the calculation of the costs associated with the choice of lower emission alternatives should be calculated, but this does not translate into a MAC calculation exercise per se.

NAMAs that result from scaling up existing initiatives may capitalize on pre-existing operating frameworks and well-established financing mechanisms unless the NAMA specifically targets a change to such frameworks and mechanisms. Up-scaling options may also exist in relation to GEF activities or CDM PoAs. A specific example of a scaled-up program under a NAMA is the sustainable housing NAMA in Mexico supported by the NAMA Facility (see <http://www.nama-facility.org/projects/mexico.html>). The aim of the NAMA is to supplement on-going initiatives for energy-efficient housing as set out in Mexico's Special Climate Change Program and operated by a leading national mortgage provider. The NAMA's two objectives are to extend the basic efficiency standards to the entire new housing market in Mexico and to upgrade efficiency standards to more ambitious levels.

Further reading:

- [Developing Financeable NAMAs A Practitioner's Guide](#), by International Institute for Sustainable Development (IISD), 2013.
- UNEP DTU Partnership (2021): [Valuation of climate change mitigation co-benefits as well as decision-support tools for climate change mitigation planning](#).
- UNDP (2010): [How-to Guide, Low-Emission Development Strategies and Nationally Appropriate Mitigation Actions: Eastern Europe and CIS](#).
- GIZ (2016): [NAMA Tool, Steps for Moving a NAMA from Idea towards Implementation](#). The NAMA tool provides developers and implementers of NAMAs with brief step-by-step instructions on how to develop a NAMA. The tool helps users navigate the relevant information, instruments and publications available.

How to Structure NAMA Financing

The previous chapters have stressed that action on mitigation is about finding and implementing low GHG emission alternatives to economic activities. This also applies to finance: action on mitigation should seek to redirect existing sources of finance to fund alternatives that are less carbon-intensive and to leverage additional sources to cover the extra costs of cleaner economies. As such, financing NAMAs commonly does not imply leveraging the totality of its costs. For example, actions like energy efficiency that result in savings higher than their costs ‘pay for themselves’; also, actions which seek to replace a planned investment with a cleaner one need only leverage any costs additional to those estimated for the original plan (or incremental costs, see below). NAMA financing needs to be evaluated on a case by case basis, but in the context of implementing NDCs, governments are likely to develop a package of NAMAs with varying net costs and sources. Therefore, NDCs offer an opportunity to consider costs from a broader perspective.

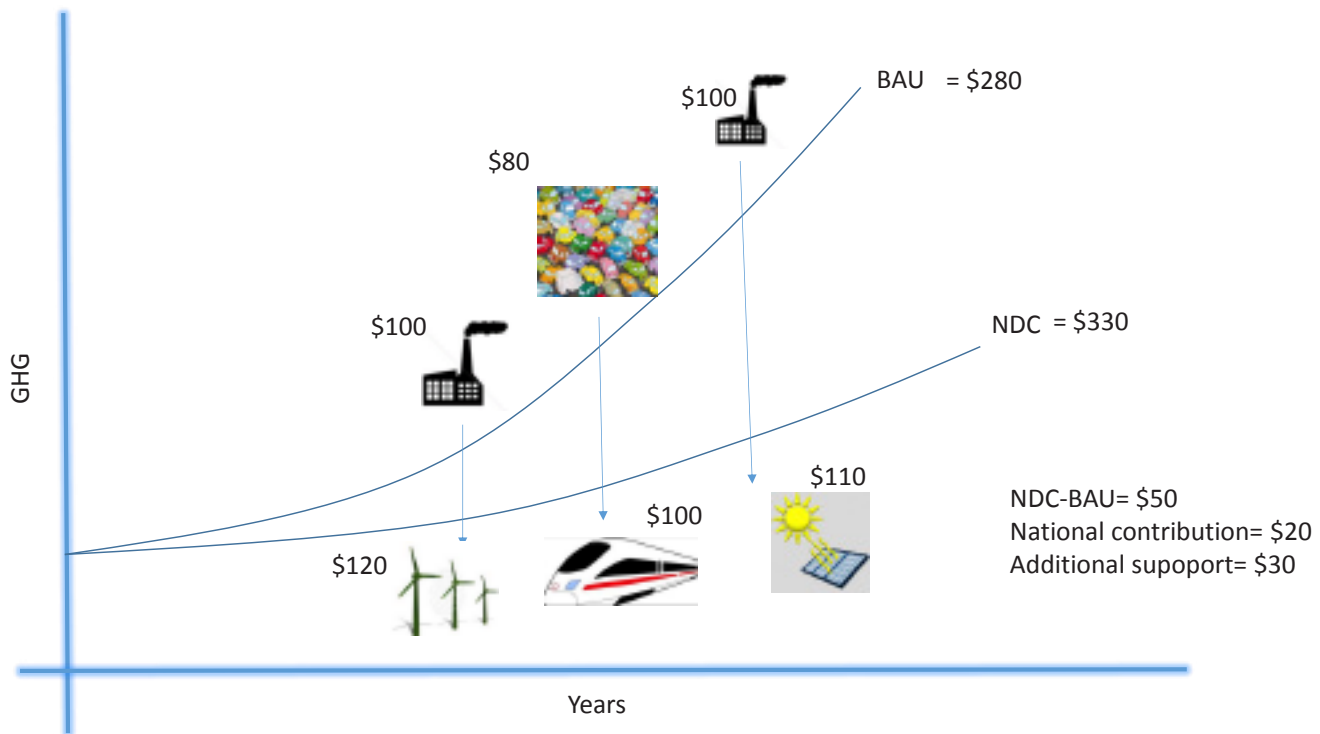
The financing of NAMAs is central to NAMA implementation and should be considered at the earliest stages of NAMA planning and development. Failing to do so is probably the most prominent reason for a growing pipeline of NAMA proposals that lack financing for implementation. In general, any financier would participate on the basis of a solid financial structure that can guarantee that the funds are spent efficiently determined on the basis of a set of financial parameters. Many NAMA concepts, however, seem to assume that financing is to be attracted on the basis of a number of non-financial parameters, many of which are covered in other chapters of this Guide. These are certainly important, but not at the expense of solid finances.

Financing takes place at the implementation level, i.e. at the operational NAMA level, not at the NDC level. NDCs may provide very general cost indications, but they do not give details of financing modalities for those sector interventions that they foresee. Concrete financial structuring happens at the NAMA level, where current investment and operational budgets are linked to the concrete implementation of actions.



Photo Credit: UN Photo/John Isaac

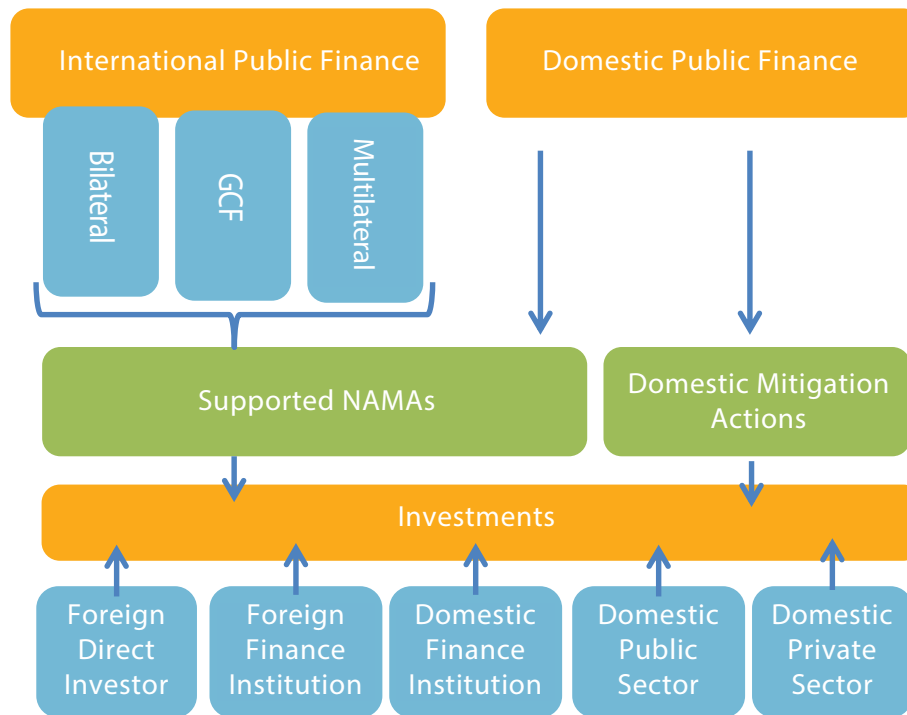
Figure 3. Incremental costs of different investment alternatives



Because NAMAs are practically always adjustments to existing aspects of life as it is being lived, they take place in an environment that is already populated by people (stakeholders) and money (cash flows). People (and business and public-sector entities) spend money in a certain manner because their environment and circumstances offer the opportunity, or induce a preference to do so. That means that money is already being spent by people, business and public-sector entities, but is being spent on the high-emission alternative, whereas the NAMA would be about using that same amount, and possibly a little more, on a low-emission alternative. This was labeled ‘incremental costs’ by the GEF at the beginning of the 1990s and is a good conceptualization, although often difficult in practice. From Figure 3 it is apparent that a public budget is already being spent (or, at the very least, has been allocated) on high-emission assets in power production and transport. It is this budget that needs to be redirected towards the lower emissions alternative, illustrated by wind, solar and public transport. The financial structuring of a NAMA should therefore in most cases be in addition to national budgets that still need to be involved, it should not replace it. In the example in Figure 3, the starting point for funding the NDC scenario and its three NAMAs is not the total costs of this scenario (\$330) but the additional costs of lowering emissions (the NDC costs minus the BAU costs, or \$50). It is assumed that both the BAU and the NDC scenarios deliver the same social goods and services. Not all mitigation actions are applied to an existing funding initiative, but they are always related to an existing economic activity. In some cases, incremental costs can be considered the same as the total costs of the action, but rarely if ever the total cost of the economic activity.

For that reason, one of the most important bodies of information when considering the development of NAMA financing is the current national budget. Current financing lines are essential information, in part because they illustrate the current priorities of sectors or subsectors, and also because they reveal allocations or priorities that work to contradict the purposes of emissions reductions. With budgetary information at hand, the financial structuring of a NAMA becomes much more reliable, which in turn makes the evaluation of financing needs from third parties better informed.

Figure 4. NAMA financing



Source: inspired by UNEP Risø (2013)

In other cases, it is the private sector, or even households, that need to shift their choices away from the high emissions alternative. Here too the principle applies, namely of how much would the private sector need to pay in addition to what it is already paying – that is, of course, if there is an additional cost at all (see section 5.5.) – and what does it take to bring the private sector to make that better choice? Also here, the public sector must be instrumental in order to either promote or impose the change. Promotion succeeds through incentives that suggest, but do not prescribe, a given low-emissions choice. Promotional schemes are relatively uncontroversial, but commonly very expensive (and therefore may become controversial anyway). Changes in consumption patterns can also be imposed through regulation that restricts high-emission products from the market (e.g. setting standards for fuel consumption in transportation or the energy consumption of appliances). Such regulation, and particularly its enforcement, may be more difficult, but often comes at no or limited economic cost to the regulator. The entire cost (except for the cost of enforcement) is carried by the private sector. In practice, a combination of the two approaches (incentivizing and a regulation to restrict high-emitting products) is often the most efficient way forward.

Figure 4 provides a look at the sources of financing for NAMAs.

5.1. THE FINANCIAL POINT OF DEPARTURE: THE CURRENT BUDGET

Although most administrative bodies tend to have a relatively good understanding of their own sector's budget, analyzing a typical national budget, even at the sector level, can be a challenge. Potential NAMA developers may find it difficult to obtain a precise picture of a sector's operations from the budget alone. And when it comes to assessing the current climate finance, or identifying subsector financing relevant to emissions reductions, most likely even the administration will find it hard to do so.

To assist in budget analysis relevant to public climate expenditure, UNDP and the Overseas Development Institute (ODI) introduced the Climate Public Expenditure and Institutional Review (CPEIR) in 2012, which builds on approaches adopted in recent years to undertaking a Public Environmental Expenditure Review, or PEER.¹¹ Besides providing insights into current public financial flows related to climate change, the CPEIR has strong potential to become a starting point for longer-term, government-led stakeholder dialogues.

PEER and CPEIR offer guidance on how to examine public expenditure on climate-change actions in the three main strands of policy and institutional and budgetary analysis.¹² The CPEIR analysis meets the following objectives:

- it provides a better understanding of the formulation of climate-change policy and its links to expenditure through national strategies and action plans;
- it improves understanding of the roles, responsibilities and interactions of the institutions involved in managing the response to climate change; and
- it quantifies climate change-related expenditures in the national budget and through other funding channels, thus providing a baseline for future analysis.

There is no internationally recognized definition of climate expenditure and thus no clear delimitation of such spending. A climate expenditure review must include budget allocations for both mitigation and adaptation, although in the context of NAMAs only mitigation-related budget elements are relevant. The review should reflect the balance between capital and recurrent spending, and between central government and local expenditure. The role played by the Ministry of Finance in responding to climate change is of particular importance because potential new flows of climate finance might become available through enhanced international support. Local government institutions and other administrative bodies at the sub-national level are also key when analyzing institutions responsible for implementing the budget. Last but not least are the roles played by the profit and non-profit sectors, which in many countries are essential stakeholders in climate-change policies and practices. Their motivations need to be understood and their structures and capacity limitations taken into account when looking at budgeting and re-budgeting in order to increase the effectiveness of available (climate) financing.

When examining the current institutional structure of the budget, the motivations behind this structure should also be considered, since these may represent barriers that are difficult to overcome. The most pertinent emissions reduction options exist in the strategic energy sector, where structures of ownership may be more political than economic in kind. For a number of political reasons, private-sector actors are rarely granted free access to this area – in some cases, no access at all. Private-sector investment is therefore not always the right route for accessing additional climate financing.

5.2. TYPES AND SOURCES OF FINANCING

There are two dimensions along which financing is defined: funding is either public or private; and funding is either domestic or international. Differentiating sources in this way is particularly useful when determining the order in which sources of finance are to be leveraged. The 'right order of leveraging'¹³ follows the logic that the public sector should come first in order to encourage private-sector investment. The national private

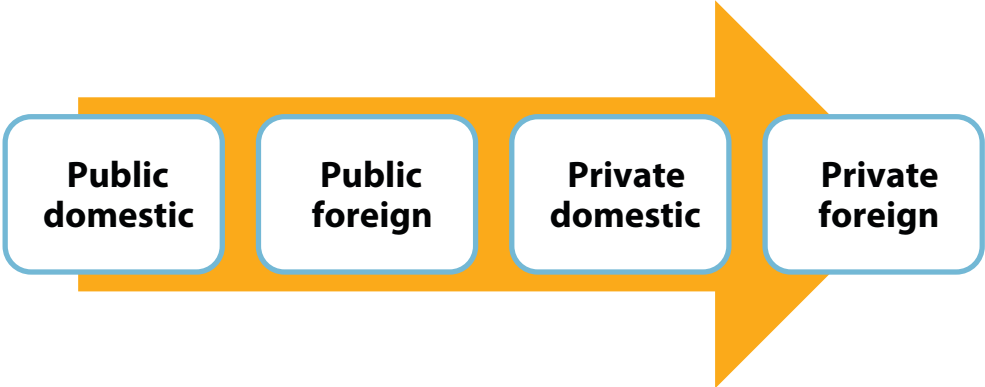
11 Swanson and Lunde (2003); Lawson and Bird (2008).

12 UNDP/ODI (August 2012).

13 Lütken (2014).

sector, however, will rarely have any leveraging power over a foreign donor, which means that, for NAMAs where international financial participation is expected, the national public sector should start its leveraging effort by presenting its strategies and national funding commitments to international donors before it starts deploying its national financing capacity with the aim of securing private-sector involvement. This order of leveraging is shown by the arrows in the chart below. While this is a balancing act – since equally important is the demonstration of national initiative and exploiting national momentum without waiting for international donor decision processes (thus sometimes switching public foreign and private domestic in Figure 5) – the bottom line is that funding from the national budget will help attract international donor funding.

Figure 5. The order of leveraging



(Lütken (2014))

This underscores the importance of the current national budget as the starting point for NAMA financing considerations. Within this, another essential aspect to evaluate is the flexibility of current budget lines, taking into account the array of financial instruments that are at the national government’s disposal. Box 3 provides insights from Chile, where it can be seen that the national budget is the starting point for most of that country’s NAMAs.



Photo Credit: UN Photo/Mark Garten

BOX 3. UNDP LECB INSIGHTS ON NAMA FINANCING IN CHILE

When financing NAMAs, LECB Program countries mostly plan to rely on an integrated finance mix, a blend of public and private domestic financing and external aid. Chile provides the following insights with regard to financing their NAMAs:

The Chile transport NAMA (Green Zone) applies a modular approach so that financing can take place at different stages of the project. For this NAMA, 30% of funding comes from municipalities (domestic) and 70% from the International Climate Initiative (Germany), the Swiss and Canadian governments, and the World Bank (international funding) as a mixture of grants and loans.

For the forestry NAMA, 37% of funding is provided by the Chilean government, and there is also funding from the Forest Carbon Partnership Facility of the World Bank. It is planned to present this NAMA to the GEF for additional funding.

An energy NAMA (Concentrated Solar Power) will apply for funds from the Clean Technology Fund, Inter-American Development Bank (IDB), IDB grant, GEF and IFC, as well as bilateral support and the private sector.

An off-grid renewable energy NAMA and an on-grid renewable energy NAMA will receive seed funding through the Chilean government.

In the case of the Ministry of Energy, some funds come from the CORFO fund (Corporation for the Promotion of Production).

Table 2 provides an overview of some common financing instruments that are relevant for NAMA developers. For the financing of many NAMAs, it will be necessary to employ a mix of these instruments in order to establish the most efficient financial structure.¹⁴ Most importantly, an assessment should be made regarding which of the instruments may be introduced for deployment by means of already allocated budget, i.e. is there any flexibility in the way in which the already allocated national budget is deployed? This is particularly relevant for budget lines that are used or disbursed through local government.

Knowing which instruments may be structured through the current national budget helps determine what kind of financing will be needed to complete a financing package, and what kinds of institution would be the most logical counterpart for providing that financing.

14 UNEP Risø Centre (2012)

Table 2. Financing instruments

Instrument	Characteristics	Typical providers
Equity	Investments made directly in projects or operating assets by investors who assume a portion of ownership relative to their provision of capital.	Private companies, individuals, venture funds, publicly funded venture funds (hybrids), pension funds.
Subordinated debt	Sometimes called 'mezzanine financing' or 'junior debt', i.e. debt that can be converted into equity in case of (risk of) default. May be regarded as a hybrid of debt and equity.	Private venture funds and publicly funded venture funds (hybrids).
First-loss	A tranche of finance that, in the event of a default, takes the first loss, before other tranches. Can be structured in different ways: as EQUITY by taking the most junior equity position in the overall capital structure; as GRANTS provided for the express purpose of covering a set amount of first-loss; as GUARANTEES to cover a set amount of first-loss; or as SUBORDINATED DEBT in a distribution waterfall, with various levels of debt seniority.	Guarantee/insurance institutions and publicly funded venture funds (hybrids).
Loans	Traditional debt financing on standard terms (market rate and tenor), commonly provided by banks, including development banks.	Banks, development banks, publicly funded venture funds (hybrids), pension funds.
Soft loans	Loans on favorable terms (below market price) with low interest rates, long maturities and possible grace periods. A subset of soft loans is mixed credits which, according to OECD rules, must contain at least a 35% grant element.	Bilateral donors (through commercial banks), multilateral development banks.
Bonds	A debt investment in which an investor lends money to an entity (corporate or governmental) that borrows the funds for a defined period of time at a fixed interest rate. The bond (i.e., the debt) may be traded at an exchange and bought by anyone.	Financial arrangers such as banks and credit institutions, large corporations, governments.
Dedicated credit lines	Lines of credit (debt finance) for investing in projects that meet specified criteria, e.g. related to climate change. Credit lines are typically established by development banks or less commonly by public entities (government agencies) and channeled through a private-sector bank or financial institution for the financing of (most often) private-sector initiatives.	Multilateral and bilateral development banks.
Risk cover instruments, guarantees	Several instruments provided by either the public or the private sector, most often in the form of insurance against certain events. Governments will typically provide political (policy) guarantees, and government agencies may insure such guarantees; private-sector entities may provide technical (technology) risk cover. Guarantees (except government guarantees) are paid for much like an insurance policy.	Export credit agencies, insurance companies, banks, governments, technology suppliers.

Instrument	Characteristics	Typical providers
Project Finance	Financing structured around a project's own operating cash flows and assets, without requiring additional financial guarantees by the project sponsors. Loans in a project finance structure are also called 'non-recourse' lending. Project finance depends essentially on the structuring of the risk through risk-cover instruments.	All of the above.
Grant	Provision of funds without expectation of repayment, using government budget allocations, and/or international financial institution/donor funds. An example would be funds provided to pay the up-front costs of measures/projects.	Bilateral donors, philanthropic funds.
Blending mechanisms	Blending facilities use grants to create a blend of debt and guarantee instruments from a number of financial institutions in order to provide a package of finance with attractive terms to meet project finance needs.	E.g. the Green Climate Fund (GCF) has signaled its intention of providing a wide variety of financial instruments.

The institutions that make these instruments available are many, although only a very few will specifically state that they provide 'NAMA financing' (the sole exception being the NAMA Facility). Instead, they provide financial products among which the majority are known and tested and which are readily applicable to NAMA implementation. The blending of instruments is likely to be the most efficient option for NAMA financing, as indicated in Table 2.

The next question is what to finance. Incremental costs have been defined by the GEF as the difference between the costs of baseline development and the costs incurred in a project or policy scenario. Specifically, GEF defines incremental costs as 'additional costs associated with transforming a project with national benefits into one with global environmental benefits.¹⁵ For instance, in order to meet national power-generation goals, a country might decide on an option which, though more expensive – such as solar energy versus conventional fossil-fuel technology – produces global benefits in addition to providing local sustainable development and co-benefits such as lower air pollution. The lifetime cost difference between the two options is the incremental cost.

However, even in the simplest cases, decisions about what to include and what not to include in calculations means that results often depend on economic modelling. One approach is to carefully assess current financing for the existing activity, structure the financing model, line up the other possible financial instruments as efficiently as possible respecting national principle constraints (such as ownership structures in the energy sector), and then calculate the lowest cost option to obtain financing for the change desired in the activity. This may or may not result in the GEF definition of the incremental cost of the change.

15 GEF (2011) http://www.thegef.org/gef/policy/incremental_costs

BOX 4. FINANCING THE MEXICAN SUSTAINABLE HOUSING NAMA

The Mexican Sustainable Housing NAMA aims to expand existing GHG mitigation measures in the residential sector, such as with the Hipoteca Verde (“Green Mortgage”) and Ésta es tu casa (“This is your house”) initiatives. These two initiatives offer supplemental loans that support homeowners in financing energy-efficient appliances in new homes. The housing NAMA concept aims to increase the overall number of energy-efficient homes built and to improve their energy performance. As part of the NAMA design, three performance benchmarks (on a ‘whole-house’ basis) have been formulated, with different levels of ambition to be achieved for residential buildings (beyond current standards). The standards are called “EcoCasa 1 and 2” and “Passive House”. Depending on the climatic zone in which the house is located, a certain combination of technical measures (insulation, ventilation, etc.) will yield the desired performance.

To estimate the financing needs of the NAMA, five packages were established, consisting of a distinct number of homes to be built under the different standards and with the additional technical measures. See below.

Packages				Financing Need			Benefits
Financial packages	Scale of the package	Content of the package		Subsidies to homeowners, USD million		Total incremental construction cost, USD million	Emission reductions over thirty years, tCO ₂
		Mainstream roll-out	Passive House pilot	Mainstream roll-out	Passive House pilot		
Package 1	Large scale (27,000 homes)	EcoCasas 1 and 2, 40 and 70m ²	30 buildings of 40m ²	49	0,2	165	1,711,000
Package 2	Mid-size (13,800 homes)	EcoCasas 1 and 2, 40 and 70m ²	30 buildings of 40m ²	25	0,2	84	866,000
Package 3	Small scale (5,200 homes)	EcoCasas 1 and 2, 40 and 70m ²	30 buildings of 70m ²	9	0,3	27	311,000
Package 4	Multi-family (14,940 apartments)	EcoCasas 1 and 2, 40 and 70m ²	780 verticals, 40 and 70m ²	27	3	94	865,000
Package 5	Passive House pilot (890 homes)	890 Mexican Passive Houses (different types)		–	6	12	87,000

Source: CONAVI, SEMARNAT (2011)

additional measures for each case, from EcoCasa 1 to Passive House. The first estimate reflects the costs that would be incurred if the enhanced building standards were introduced immediately. This presumes that Passive House components such as efficient windows and ventilation units with heat recovery are not offered on the Mexican market from the start of the NAMA and are thus fairly expensive. The incremental costs should be expected to decrease over time per house/per standard, as an increasing number of components will be manufactured in Mexico.

Financing needs are split into three categories: subsidies to home-owners, bridging loans to developers in the form of soft loans, and support required for the implementation of a Passive House pilot. The financing needs indicated in the table cover only some of the additional investment costs. The financing gap will be covered by the homeowners and/or the Mexican government. These estimates do not include the operational costs of the NAMA (supportive actions), which are financed by the NAMA Facility. The total incremental cost of construction is stated to be the equivalent of the amount of soft loans that the house developers would require in the form of bridging finance in order to build the houses to higher energy efficiency standards. However, in this calculation the savings made by the households following the improved energy efficiency are not included. Taking these savings into consideration, and calculating their net present value for as long as the discount rate makes it reasonable, may well reveal that the project comes at no incremental cost at all.

By their nature, the bridging loans are short-term, and the developers will be able to repay them as soon as the house is sold on the market. Given the quick construction cycle in Mexico, these loans are expected to be repaid within a period of six months. This creates the opportunity for a revolving fund for bridging finance. Such a revolving fund may be a blend of commercial funds and government grants aimed at creating soft conditions for lending.

Box 4 looks at some of the financing characteristics of the sustainable housing NAMA in Mexico.

5.3. THE FINANCING VALUE CHAIN

Sources of financing are not the only financing aspects that contribute to leveraging capacity: financing instruments can also be more or less efficient with respect to raising funds. It is often said that the private sector will have to 'contribute' significantly if the 'well below 2°C' mitigation challenge is to be met. But since the private sector will only invest capital on the basis of profitability, the financial engineering of NAMAs should be seen as an exercise in bringing about such profitability for the private sector at the lowest possible cost to the public sector. In terms of financing, therefore, the private financial sector is the last to be brought on board. Its participation typically takes the form of investment capital, either as equity or as project or balance sheet loans. But it practically never takes the form of 'contributions'.

The instruments shown in Table 2 are roughly the types of financial instruments that would be available for NAMA financing. The finance sector will be the 'go-between,' whether in the form of purely private financing (commercial banks), public financial institutions operating in the private sector for motives of profit (hybrid institutions) or public financing in the form of national or international development banks. Few instruments, and a small part of the financing, will be channeled directly from a developed country government to the developing country government. The NAMA Facility is one of the very few grant financing vehicles, but

grants are generally few and far between. A 2012 study of development financing indicated that grants make up only 3% of the total, while loans and concessional loans make up more than 90%.¹⁶ The initial activities of the Green Climate Fund seem to reinforce this balance, only offering loan financing for mitigation activities in its first round of funding decisions.

When considering financial instruments, it is essential to involve existing sources of finance as much as possible, as well as to increase the mileage of funding already available. Using the 'financial value chain' is therefore necessary. Probably the most efficient way to increase the mileage of climate-related financing is to move further up an already existing leveraging chain, so the leveraging effect cascades down through the existing system. An example of this would be to bolster the guarantees of an already established support system such as the export credit system. The basic idea is to increase the value of scarce public (national and international) climate finance:

1. The least efficient way to deploy financing is to use it for the direct purchase of assets: \$100 will buy exactly \$100 worth of assets.
2. Next in efficiency is using partial support (a grant) to purchase the assets: \$100 spent as a 25% grant would bring in about \$400 worth of assets.
3. Better still is to use \$100 to support financing through a concessional loan, which might bring the borrower \$1,000 to \$2,000 worth of investment. This approach, however, would only increase the mileage of the original \$100 if it were offered for a partial loan, with the rest coming from the existing loan market.
4. A step further up the value chain would be loan guarantees, which would stretch the \$100 even further, since not all the debt would be secured.
5. Reinsurance of sovereign guarantees would probably rate the highest in a value chain. Here, in theory, the original \$100 could increase in value by a factor of fifty or more.

However, no one instrument is likely to make up an entire NAMA financing package: several instruments are likely to be necessary, not only for cash flows related to the activity itself (increasing revenues), but also to address the financing (reducing financing costs). Since these various instruments will come from different levels of the financing value chain, the resulting overall level of leveraging may well be reduced to a factor of ten or twenty.

Leveraging succeeds in two dimensions: to increase the scale of the activity in the short term, and to extend the initiative so that it becomes a permanent financial structure (with reference to the permanence requirement for transformation). Both must be taken into consideration at the outset in structuring the financing model. While short-term scale-up is commonly secured through different financial partners providing loans (with donor grants and private equity in smaller proportions), permanence is secured either through cash flows that support the operation of low emission assets or enforced regulation that imposes the purchase of a more climate-friendly asset or product on, typically, the private sector and/or households. Only public recurrent spending – or public regulation – can secure such long-term operations, and therefore the national regulator, as well as the national public budget, are inevitable participants in a financial leveraging exercise.

16 UNEP Risø Centre (2012).

5.4. THE NAMA FINANCING PROPOSAL

Ideally, potential financiers or financial advisers should be involved at the earliest stage, after the first outline of a financing model has been created. Identifying a central financial institution that can provide advice on the structuring of the finance is essential. This central institution or financial adviser may play the role of financing ‘aggregator’¹⁷ based on its understanding of the functions of various financial instruments. The aggregator acts as a neutral financial adviser or a ‘financial engineer’ with a potential interest in eventually becoming involved in the implementation of the NAMA.

Financing and investment criteria as applied by potential financial partners in implementing the NAMA must constitute a central guiding factor in NAMA development. This is particularly important in preparatory work supported by ‘finance readiness’ programs. Traditionally, these programs consider other factors to be vital, assuming that, if sustainable development benefits, MRV and mitigation potential are sufficiently appealing, NAMAs will ‘attract’ interest from as yet unidentified financiers. However helpful these qualities may be, they are not central for the financiers, who will (have to) consider the sustainability of the financing plan (security for loan repayment), rate of return (if a private investor) and risks related to assumptions. It is essential, therefore, that these programs help NAMA developers bring these financial criteria to the forefront of NAMA development.

An initial draft of a financial proposal or framework for an envisaged NAMA should therefore include detailed information about proposed measures and costs, including what specific financial instruments are foreseen, how they are supposed to be implemented and to what degree they will be used. This draft serves partly to inform the government about the current plans for the financial basis of the NAMA in order to obtain approval and actual implementation, but it also serves to involve other financiers further with different roles in the financial plan, led or supported by the aggregator. The draft should also provide information for financiers and donors, to be used in bilateral talks or shared via the UNFCCC NAMA Registry once the NAMA proposal is uploaded. The financial proposal may be in a format similar to those prepared for other programs seeking financing or support, but in the early stages it will be less concise in terms of amounts and structures. These will become more concrete as the financing plan develops. Ultimately, financiers and investors will wish to ascertain the potential earnings on their investments. For private-sector entities attracted by the NAMA framework conditions, this means the rate of return. The financing plan should be tailored to respond to such requirements.

A mature NAMA financing proposal should at least consist of the following elements:

- **Cost-benefit overview:** the total costs of implementation (if possible, by illustrating alternative scenarios) of the planned measure(s) and indication of the direct benefits of the measure(s), including emissions reduction and other benefits.
- **Financial instruments:** information on the potential financial instruments to be used and the conditions that must be met in order to do so. This includes the financing of other NAMA elements.
- **Governance:** identification of a domestic authority or a trustee that serves as the communications partner. If there is a financial aggregator, this should also be identified. These are the stakeholders involved in structuring the NAMA financing, which may also be capable of facilitating the implementation process.

17 Lütken (2014)

- Major risks and barriers: identification of likely obstacles that may threaten cash flows and delay or hinder the implementation and successful operation of the NAMA.
- MRV system: this is necessary documentation that helps to justify involvement in climate financing and is discussed in greater detail in Chapter 7.
- Domestic and international support: financing that is provided through the national budget should be highlighted. Additional financial instruments sought from other sources should be described, if possible, providing alternative approaches.

Figure 6. Possible financing streams, instruments and actors for NAMAs. Source: Lütken (2014)

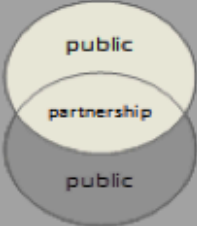
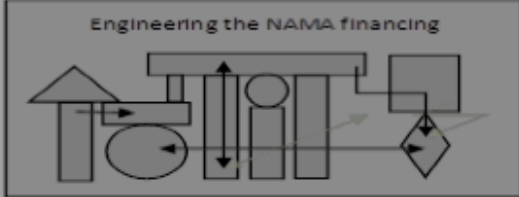

 PUBLIC SECTOR SOURCING INSTRUMENTS	 PUBLIC SECTOR OPERATIONAL INSTRUMENTS	 PRIVATE SECTOR FINANCING INSTRUMENTS
Environmental Fiscal Reform	Grants	Equity
Loans	Purchase contracts for goods	First-loss (mezzanine, junior debt)
Soft loans	Purchase contracts for services	
Bonds	Additional payments (e.g. feed-in tariffs)	Loans
Dedicated credit lines	Public procurement guidelines	Bonds
Risk cover, guarantees	Tax credits, reductions/exemptions	Risk cover, guarantees
Grants	Variable or accelerated depreciations	Project Finance
	Removing subsidies	Grants
	Loan schemes	
	Guarantee schemes	

Figure 6 provides an overview of NAMA financing streams, instruments and actors, the left column illustrating the sources of financing, and the center column listing possible ways to deploy the financing in different financial instruments in order to promote the private-sector investments illustrated in the right column. As shown, the private sector has a number of financing instruments at its disposal already, which normally need no duplication if the financial sourcing (left column) and the instruments chosen (center column) are sufficiently attractive. Sometimes, however, instruments in the right column may also be needed in order to make the financial package come together. Equity grants, for instance, have proved effective on occasion.

5.5. INVOLVING THE PRIVATE SECTOR

The involvement of the private sector has increasingly become a standard phrase in NAMA development and design, often with reference to the shortage of public funds. Essentially, every individual is private and causes emissions either through own purchases or through consumption facilitated by the public sector. In essence, therefore, there is no difference: The private sector can be required to invest in low-emission

alternatives, or the public sector may undertake such investments, but will have to tax the private sector in order to raise the finance. The private sector, however, is unlikely to 'contribute' voluntarily at scale. On the other hand, it is likely to participate in response to regulation if the regulation is applied evenly (creating a level playing field) or to incentives that make the low carbon investment compete favorably with the high-emission alternatives. In that way it becomes the public sector's, and the NAMA designers', responsibility, through the design of policies, frameworks, mechanisms and instruments, to ensure that the private sector is being involved and its investment and financing capacity activated in support of emissions reduction.

Private-sector finance is diverse. Table 2 presents a typology of finance and its suppliers without emphasizing that private-sector banks are likely to become the main lenders for NAMAs, whether the borrower is a private- or public-sector entity. The private financing that is mainly thought of, however, is the equity listed at the top in Table 2. And that investment, which will engage other types of finance along the way, is driven by the profit motive. Therefore, to the extent that private-sector involvement is sought, the financing of NAMAs is about establishing the most cost-efficient blend of Table 2 instruments to make the private sector invest in the assets or operations that the NAMA developer desires.

Below are some financial points to consider when attempting to involve the private sector in a NAMA:

- A situation of low return (or no return) on an investment can be improved by various measures, including direct subsidies, investment tax breaks, the grant component of concessional loans, and enhanced funding during operation (through FiTs or carbon markets). The cost-efficiency principle gives preference to instruments higher up the financing value chain.
- High risk can be lowered by risk guarantees or insurance schemes (and usually not by increasing returns).
- High transaction costs can be lowered through the standardization and aggregation of activities.

Probably the easiest way to ensure the participation of the private sector is to make sure that investment in high-emission alternatives becomes difficult or impossible. Standards or import restrictions that raise the energy-efficiency requirements of air conditioners or other appliances, for instance, directly influence the private sectors' investments.

5.6. KEY ISSUES WHEN APPROACHING THE FIRST FINANCIER

The potential aggregator¹⁸ should be provided with preliminary information on the envisaged NAMA and its financial characteristics. Either a NAMA concept note or a more elaborate proposal can be used for this. Some key things to consider with respect to this possible financier include:

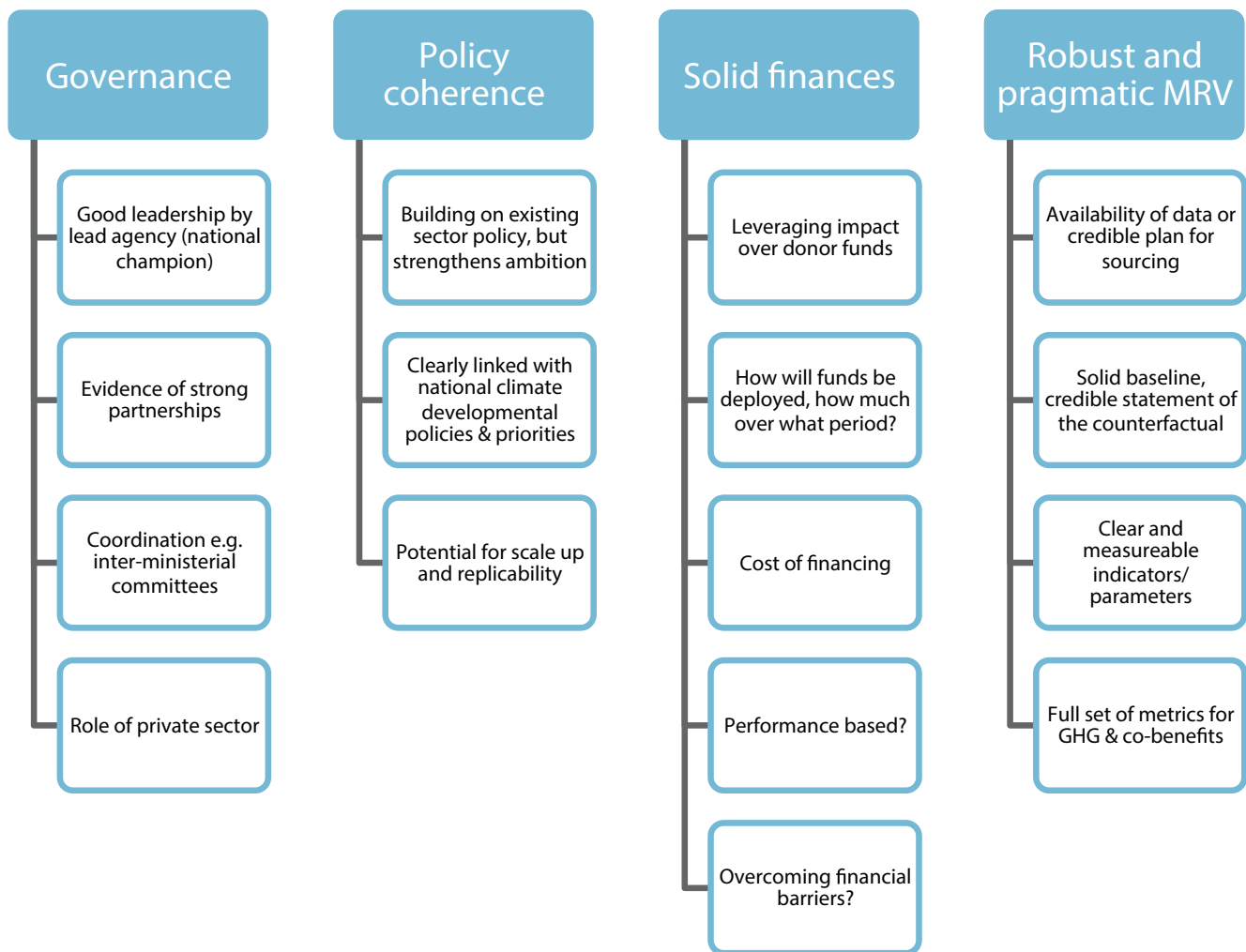
- the relevance of the substance of the NAMA to the objectives of the financier;
- the financier's potential involvement relative to the total investment and compared to other financing obtained or sought (e.g. applicable portions of the current national public budget);

¹⁸ The identity of the aggregator should be determined by the nature of the intended financing model. In many cases a hybrid institution (a publicly-supported financing institution operating on the private-sector principle of profit) would be ideal, due to its familiarity with both public and private investment drivers and conditions.

- economic and financial viability; the overall maturity of the NAMA proposal;
- ownership on the part of the national government;
- the experience and capacity of the proposing entity;
- the solidity of the NAMA management plan. Are the proposed plans for implementation and operation, including the MRV system, adequate?
- the level of ambition – the estimated amount of GHG reductions that will be achieved and the NAMA’s potential for transformational change in terms of development; and
- the cost of achieving GHG emissions reduction

Figure 7 provides an example of the salient points in an approach to one potential NAMA financier.

Figure 7. Criteria for Nordic Environmental Finance Corporation (NEFCO) as a potential NAMA financier. Source: Adapted from NEFCO (2012)



Further reading:

- UNEP DTU Partnership (2014): [Financing Nationally Appropriate Mitigation Action: a primer on the financial engineering of NAMAs.](#)
- UNDP(2011), [Catalysing Climate Finance.](#)
- OECD/IEA (2014), [Financing Climate Change Action.](#)
- ECN/Ecofys (2012), [Financing Supported NAMAs \(Nationally Appropriate Mitigation Actions\): discussion paper.](#)
- Finance in Motion/CPI (2014), [Green Finance, Successes and Challenges: A Landscape Overview.](#)
- UNEP Risø Centre/GEF(2012), [Accessing International Financing for Climate Change Mitigation: A Guidebook for Developing Countries.](#)
- Other good lists of potential sources for funding NAMAs can be found in GIZ's Technical Assistance Source Book for Practitioners, as well as in a Final Report of the Bridging the Gap Initiative

The NAMA Development Process

There is no pre-defined process for developing a NAMA, although the process typically begins with identifying, within a given NDC or development plan, an option for embarking on a lower GHG emissions alternative and then determining whether or not this alternative emissions reduction path is viable. Transforming a NAMA from idea into practice can be a time-consuming process, but as more and more countries accept the challenge of using NAMAs to lower GHG emissions, the experience pool continues to grow. More than 150 NAMAs are known to be under preparation or implementation, and in the first submission of NDCs, 43 countries specifically mention NAMAs as one example of implementation modalities. Countries that have pioneered NAMAs to date have adopted different yet comparable approaches to NAMA development. Box 5 provides a glimpse of some of their experiences.

BOX 5. INSIGHTS ON PROCESSES FOR NAMA DEVELOPMENT

As part of UNDP's technical support programs for NAMA development, a number of countries have completed their NAMA development processes. When asked about their experiences, participating countries such as Vanuatu, Gambia, Namibia and the Lao PDR described a few key challenges and opportunities.

Countries mentioned that strong inter- and intra-institutional coordination is critical during the NAMA development process in order to strengthen institutional capacities which can further be used for the development of other governmental programs.

Countries emphasized the importance of fully aligning the NAMA objectives with the national development goals and targets which would allow them to build on and incorporate existing national programs into the NAMA framework.

Countries also emphasized the importance of linking mitigation with sustainable development benefits early during the NAMA formulation stage. Tools that allow the sustainable development impacts of NAMAs, such as the UNDP Sustainable Development Tool, to be tracked were considered useful in this regard.

The biggest challenge, however, remains for all countries to access climate finance for NAMA implementation. Countries stated that inclusive consultation meetings also involving potential financiers and the private sector are necessary throughout the NAMA development process. Existing nationally and internationally funded programs can build a good foundation for NAMA finance.

The experiences listed in Box 5 point to shortcomings in the financial design of NAMAs. It has become increasingly clear that the approach to financing has been relatively under-informed or the attention paid to it insufficient or too late. The task of financial structuring must be taken on board from the beginning, based on a clear understanding of the demands from those institutions that are intended to participate in the financing of implementation. NAMAs that have comprehensive stakeholder consultation, solid MRV systems, significant co-benefits, a focus on gender issues and strong buy-in by government have been assumed to 'attract' financing. These are certainly qualities of NAMAs that donors appreciate, to the extent that donor financing is foreseen. However, they are not sufficient if the financial structure is not adequate. The NAMA Facility, for instance, demands clear phasing-out plans, which demonstrate the sustainability of the financial instruments put in place. Perpetual grant financing is not an option, no matter how many of the highly valued co-benefits are achieved, for two reasons: donor-based grant funding is always temporary and never certain beyond the first allocation, and it is inherently difficult to substantiate national commitment without a national commitment to participate in the financing. Therefore, drawing up a NAMA without detailed and early attention to the financial structuring aspect may well be a waste of time. Unfortunately, this has been the case for many stalled NAMA proposals that have emerged from 'finance readiness' programs with insufficient attention to finance.

6.1 THE STARTING POINT FOR NAMA DEVELOPMENT

Before NAMA development can begin, it is necessary to clarify the NAMA's linkage to the NDC and national development plans. First of all there is the element of timing: a look at already planned investments may reveal the immediate risk of locking in emissions over the very long term, for example, through planned investments in coal-based energy supply. Such investments have long life times, maybe forty to fifty years, which may well compromise future NDC development unless this is addressed in the design phase. This need not take the form of a total technology shift, which may not be feasible if the planning is advanced, but it could consist of design shifts that allow, for example, co-generation or prepare for co-firing with less carbon-intensive fuels like biomass. Guiding such considerations would also be where major emissions are expected or where assessments about growth indicate areas where significant future emissions might be avoided. These are overall issues of prioritization, which should ideally happen at the NDC preparation level, but might in practice spill over into the NAMA development process.

While the NDC provides the context, the focus areas and possibly the mandate for NAMA development, the NDC is likely to be silent on exactly who are supposed to be the 'change agents', that is, which stakeholders are foreseen as undertaking actual investments in and/or operating physical assets with a lower emissions profile than in business as usual scenarios. While this identification is usually relatively apparent, calculating the business case for private corporate investors, the net cost (or profit) over a given period of time for a household investment or the strain on public-sector finances in different targeted public-sector entities is less straightforward. Nonetheless this is the inevitable point of departure for figuring out what kind of financial instrument from which source and at what level is needed for the sustainable implementation of the NAMA.

Even though NAMA development is obviously not only about determining the cost (or profit) or structuring the finance, it is a matter of fact that only a few if any NAMAs materialize unless the financing comes together and the stakeholders can see themselves in the roles, including the role of economic agent, that are intended for them. In Figure 6 in the previous chapter, this means that the starting point is to the right, that is, identifying the kinds of economic involvement that is expected from the private-sector stakeholder or 'change agent' – the dialogue with these stakeholders focusing on 'what would it take for you to make

the kind of investment that we would like to see?’ In ‘Derisking Renewable Energy Investment (DREI)’,¹⁹UNDP introduces a framework to assist policymakers in developing countries to promote investment in renewable energy cost-effectively. The DREI framework systematically identifies the barriers and associated risks which can hold back private-sector investment in renewable energy. It then assists policymakers to put in place packages of targeted public interventions to address these risks. Each public intervention acts in one of three ways: either reducing, transferring or compensating for risk. The overall aim is cost-effectively to achieve a risk-return profile that catalyzes private-sector investment at scale. In that respect it combines instruments that were listed in Figure 5.

It should be emphasized that this NAMA development process is not linear, but consists of steps and actions that are iterative and that test different options with different stakeholders in order ultimately to arrive at a NAMA proposal that coincides with political, economic, social and technical realities. Specific elements in the development phase may include:

detailing and designing policy and other interventions to address barriers and budgeting the instruments that support NAMA implementation;

- continuing to involve financial and other stakeholders;
- defining the responsibilities of the actors involved;
- projecting baseline GHG emissions and mitigation levels;
- formalising MRV mechanisms and other evaluation tools; and
- drafting or structuring the national (political) approval process,

All of the above may be revisited several times over the development of the NAMA.

6.2. STAKEHOLDER ENGAGEMENT

The conceptualization and implementation of the stakeholder engagement strategy will depend on a variety of factors, including national economic and development characteristics, the nature of the country’s institutional framework, and the position and expertise of the national NAMA focal point. While bilateral or international financial stakeholders will look for evidence during a thorough stakeholder engagement process, this process may be particularly cumbersome. The goal is to mitigate the risk that a NAMA is shipwrecked because stakeholders were not brought on board or their commitment dropped off.

NAMA development should be fully integrated with current national policy development processes and requires strong commitment and support from key national stakeholders. Stakeholders already become inherent at the NDC level, both those who are comfortable with the current state of affairs and those who would benefit from the change that may be brought about through NAMA implementation. Stakeholders and their positions are crucial to the development process, and the NAMA stakeholder engagement strategy

19 http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment.html

and its diligent application may well determine the success or failure of the NAMA. In order to navigate the development process, the positions of key stakeholders and decision-makers, and not least the scope of their influence, must be well understood. This includes potential beneficiaries as well as those that stand to lose from the adoption of low carbon pathways.

A fair representation of all the key stakeholders in the process of establishing a NAMA provides the opportunity to identify, reflect on and integrate both supporting and opposing views. Careful consideration is needed for stakeholder inclusion, as it is for determining the particular means whereby each one should be approached. A successful NAMA is one from which stakeholders can readily draw the political and social capital that induces them to fast-track its development and implementation. A non-exhaustive list of stakeholders under a NAMA could include:

- Government: ministries responsible for regulation or (co-)funding of the proposed policies and/or measures, e.g., ministries of environment, economy, finance, energy, resources, transport or industry. Other relevant governmental institutions, such as an Environmental Protection Agency or an energy regulator. Potentially regional and local governments and/or political parties.
- Public sector: representatives of state utilities, relevant municipalities or chambers of commerce, as well as public banks or investment promotion agencies.
- Private sector: industry associations, pertinent companies (domestic and international branches), private utilities, private banks and other businesses with relevant interests in the NAMA measures.
- Non-governmental organizations (NGOs) and civil society: from various areas such as environment, development, trade unions, human and gender rights, indigenous or religious groups and other civil-society representatives.
- The academic community: research institutions, universities and think tanks, as well as technical experts and advisers.
- Institutions providing domestic or international finance and support: institutions providing financial, technical or capacity-building support, including domestic or multilateral development banks, international development agencies and bilateral agencies. Observers from regional institutions or partner countries.

It should be emphasized, as already indicated in Chapter 5 on Finance, that the last on the list, the institutions intended to become financial partners to the government for NAMA implementation, should also be involved at an early stage to include advice on the financial implementation modalities that are regarded as more or less appropriate. These stakeholders are shown in the left column of Figure 5.

Adding these to the group of stakeholders, it becomes obvious that the process, as stated, must be iterative in order ultimately to balance all the interests involved in implementation, as well as to assess and decide deliberately which stakeholders will lose from the changes achieved through the NAMA.

BOX 6. STAKEHOLDER ENGAGEMENT FOR NAMA DEVELOPMENT IN NAMIBIA

The Ministry of Environment and Tourism involved a range of stakeholders in the development of its electrification NAMA during its development. The list below illustrates the variety of stakeholders that influenced the design process of the electrification NAMA:

The Ministry of Mines and Energy, the Ministry of Finance, the City of Windhoek, Windhoek City Council and the National Planning Commission;

The Namibia Energy Institute, the Electricity Control Board, the Renewable Energy Association of Namibia and the national Environmental Investment Fund;

The Utility/Electricity Provider NamPower Renewable Energy and Erongo Regional Electricity Distributor; and

Amusha Consultancy, the Namibian Engineering Corporation Ltd. and SolTec (all private sector)

Box 6 provides some insights into stakeholder involvement in Namibia, where a NAMA proposal for rural electrification has been completed.



Photo Credit: UN Photo/John Isaac

6.3. BARRIERS

The reason why NAMAs do not happen by themselves is essentially because of one or more barriers to their realization. NAMA development can be seen as a process of first barrier identification and then barrier elimination and/or navigation, although the latter is not always the solution (see example below). In simple terms, a NAMA is likely to materialize once the barriers have been sufficiently reduced and a situation where the lower emissions alternative becomes the preferred investment option is established. Barriers come in different shapes and sizes, as noted below:

Information/ knowledge barriers

- Lack of awareness/knowledge/access to knowledge
- Lack of skilled labor

Economic/ financial barriers

- High upfront and/or transaction costs
- General investment climate / limited access to capital
- Split incentives (e.g. between owners and users)
- Vested (economic) interests in the status quo

Market barriers

- Technical and technological compatibility barriers
- Small project sizes
- Monopolies / limited access to markets
- Availability of technologies and services

Regulatory barriers

- Protracted or non-transparent permitting processes
- Unclear institutional responsibilities and processes
- Limited access to highly regulated markets
- Competing allocation of resources (e.g., subsidies for conventional technologies)

(NB: some of the barriers above could be listed under more than one heading).

Often, an important barrier is the lack of any appetite for creating winners and losers and disrupting the current state of affairs. While such considerations are omnipresent in policy-making, they are not always conducive to the goal of emissions reduction. A careful barrier analysis is an essential exercise in order to identify the targets of the NAMA and the relevant instruments with which to achieve concrete mitigation actions. They can be sorted following two simple parameters, the first being its distance from actual mitigation action, the second the extent to which it can be influenced or eliminated. For example, the question is sometimes raised of whether a general change in university curricula that increases awareness of climate change mitigation can be considered a NAMA. Although in the long term it may well help establish a more conducive environment for such actions, the initiatives' distance from mitigation action is considerable and therefore may not be regarded as a relevant mitigation action on its own by many. The second dimension – how effectively the barrier can be addressed – may be illustrated by, for example, a NAMA that focuses on increasing the renewable energy supply while wind resources in the country are limited. This constitutes a barrier that cannot be influenced.

The NAMA Facility regards barrier analysis as central to the evaluation of NAMA proposals: unless the real barriers are identified and specifically addressed, the chances of achieving a permanent change are limited and the risks of falling back to the starting point once the NAMA Facility's involvement is over are significant. In that context, avoiding barriers that are sensitive is not always a good solution. For instance, if the central barrier to the adoption of solar water heating at scale is low-cost electric water heaters and subsidized electricity, a grant program for solar water heating does not address the barrier or does so inefficiently. The grant would be temporary, and the situation would return to the starting point once the grant runs out. A tax on electric water heaters, on the other hand, could address new purchases of water-heating equipment (and would have a tendency to become permanent), but it can only address the question of current installations if combined with a reduction of electricity subsidies.



Photo Credit: UN Photo/Ray Whitt

6.4. IMPLEMENTATION RISKS

While the barrier analysis and the strategy with which to address them play out at the NAMA development stage, risks may materialize during implementation. However, identifying the sources of implementation risks, as well as strategies with which to address them, is obviously relevant during development. The usual approach to risk management follows the hierarchy ‘avoid, mitigate, manage’, meaning that the design of the NAMA should first navigate around as many relevant risks as possible and then mitigate what is left, for example, by distributing the risk to other stakeholders that are in a better position to address them or if possible take out insurance, and ultimately manage whatever may be left after the two first exercises are completed as efficiently as possible.

Risk analysis is more specific than just ‘the risk that the government will not implement the NAMA anyway’ or that ‘the NAMA does not receive funding from the NAMA Facility’. Risks are pinned down to separate risk elements that are addressed separately, one by one. In order for the overall risk of non-implementation (the first risk above) to become concrete and (possibly) manageable, it is necessary to ask ‘why?’. If the answer is that the government did not obtain financing from the NAMA Facility, the task is to eliminate that risk or reduce it to a minimum, as well as to work on different financial plans, each of which will have their own risk scenarios to be addressed.

Obviously, many risks are related to the instruments identified as the best available options to address the barriers that have been uncovered. The risk is that the instruments do not work as expected and the stakeholders do not react as agreed, or that the government refrains from enforcing its own new regulations or is not able to influence other administrative entities to fill their roles as intended. Also, these risks can and should be broken down into their elements. For instance, local authorities may not enforce national regulations for a reason that has already been identified as a barrier. How can this risk be mitigated?

In most cases, risk mitigation measures should be concrete. Sometimes less specific measures are proposed, such as ‘increasing the level of information’ in different ways (marketing, promotion, training, workshops, demonstration, etc.). Such measures have little credibility as concrete risk mitigation: if the public sector runs information campaigns targeted at preventing break-ins it will not reduce your insurance premiums, whereas putting in a steel door just might. Normally, the result of a risk materializing is that the flow of funds either does not happen or does not have the intended effect. Often, therefore, risk mitigation will be linked to redrafting the implementation modalities.

6.5. OBJECTIVES OF NAMA DOCUMENTATION

In the earliest stages of NAMA development, documentation will be the only evidence stakeholders have of the NAMA’s nature, composition and progress. In these early stages, NAMA documentation is also the best means for developers themselves to clarify and formalize the NAMA’s concepts, possible directions, prioritization, costs, risks, financial alternatives and so on.

The development and promotion of a NAMA requires systematic representation of information and robust documentation. A standardized NAMA Design Template, which provides a concise description of the essential components of a NAMA, is presented in Annex 2. The NAMA Facility uses its own format for NAMA Support Project Outlines; the GCF has its own format, and other programs use their own standards as well. A systematic representation of information improves understanding and provides clarity to stakeholders,

not least the essential first financier or ‘aggregator’ mentioned in Chapter 5, as well as those within the policy area that the NAMA will affect. The information included in the NAMA Design Template must:

- enable the NAMA coordinator to provide a well-structured vision of all the key aspects of the proposed NAMA in a logical and coherent manner;
- inform NAMA financiers (whether domestic or international) sufficiently for them to understand the relevance of their role and responsibilities, and enable them to assess the benefits and risks; and
- facilitate understanding by the host government and other relevant authorities (national and/or local) of the actions, costs and benefits associated with the proposed NAMA and how it aligns with or alters current policies, regulations and development goals.

Box 7 provides a list of the currently available NAMA templates.

BOX 7. NAMA TEMPLATES

UNFCCC NAMA Registry:
NAMAs Seeking
Support for Preparation,
Implementation, and
Recognition

For submitting a NAMA seeking support for preparation:
http://unfccc.int/cooperation_support/nama/items/6948.php
For submitting a NAMA seeking support for implementation:
http://unfccc.int/cooperation_support/nama/items/6982.php
Other NAMAs for Recognition:
http://unfccc.int/cooperation_support/nama/items/6949.php
Further information on the registry can be found here:
http://mitigationpartnership.net/sites/default/files/info_note_on_the_registry.pdf

UNEP DTU Partnership -
NAMAs Information Note
(NINO) template

This is a template for NAMA concepts and ideas at different stages, which also aims to feed the information into the UNEP Risø Centre NAMA Pipeline Database.
<http://namapipeline.org/>

The NAMA Facility

The NAMA Facility’s application formats during calls for proposals can be found on the following website:
<http://www.nama-facility.org/call-for-projects/documentsforcalls.html>

UNDP

The UNDP word-format NAMA document template provides the key elements of a NAMA document. <http://www.undp.org/content/undp/en/home/librarypage/environment-energy/mdg-carbon/mdg-carbon-nama-template.html>

6.6. ELEMENTS OF NAMA DOCUMENTATION

Concrete NAMA development is likely to originate in an NDC. However, as soon as the NAMA development process involves financing partners, the NAMA will become subject to due diligence processes, the thoroughness of which will vary from financing counterpart to financing counterpart. The information provided will therefore in all likelihood need to be supported by documentation or evidence, much in the same manner as Designated Operational Entities have required evidence of CDM project development. Box 8 provides descriptions of the various types of information needed when completing the NAMA Design Template for submission to the NAMA Registry. A full Design Template can be found in Annex 2.

BOX 8. NAMA DESIGN TEMPLATE INFORMATION ITEMS

There is no standard NAMA proposal template, nor a general template for proposals that is commonly used by all relevant financing partners. NAMA developers must familiarize themselves with the formal requirements of each of the targeted financiers in order to make sure that the requirements for information are complied with. The following items are NAMA-related headings that are also appropriate for most relevant financiers. They are also used in the UNDP NAMA design template.

Executive Summary

A summary of the overall objectives of the NAMA, the proposed instruments to achieve the objectives, central stakeholders and 'change agents', financial plan, emission reduction potential, sustainable development impacts, institutional coordination structure and implementation modality, MRV approach and implementation plan.

Sectoral Background

A brief description of the sectoral background and existing financing and support instruments.

Policy Environment

An overview of the existing institutions that are active in the sector, both public and private actors. The strategic and regulatory framework, links to the country's NDC, and existing policy gaps and barriers.

NAMA Baseline and Targets

Describes the alignment of the NAMA objectives with national strategies and shows how transformational change can be achieved. It also describes the NAMA's GHG and sustainable development baseline and the overall NAMA targets.

NAMA Interventions

An overview of the actions implemented under the NAMA framework to achieve a sectoral change. If applicable, this section details private-sector involvement and an approval process for the inclusion of new interventions over time. Ownership and operational structures are described.

NAMA Implementation Structure

Details of the NAMA coordination and implementation structure and the NAMA institutions involved in the implementation.

NAMA Capacity Building

An overview of comprehensive NAMA capacity-building measures to overcome the identified barriers, to raise awareness among stakeholders, and to strengthen institutions, banks and the private sector to achieve transformative change.

Cost and Finance

Description of the costs of the interventions and national and international public and private finance contributions for NAMA implementation.

MRV

Description of the core indicators to measure impact and the systems that will retrieve and store the data for documentation. Following the basic principles for MRV (see following chapter).

Quantifying the Impact of NAMAs: Measuring, Reporting and Verifying Emissions Reduction

7

Project and policy implementation is usually accompanied by monitoring and evaluation procedures in order ensure that objectives are achieved and funds are used appropriately. Monitoring and evaluation is not synonymous with Measurement, Reporting and Verification (MRV), which may be inherited from the Clean Development Mechanism and indicates a precise measurement of emissions reduction that can be reported as well as verified. While the CDM required such precision due to the off-setting of emissions affiliated with it, the NAMA does not entail such off-setting, and the less rigid Monitoring and Evaluation (M&E) concept may therefore well be more appropriate for NAMA implementation. The NAMA Facility, for instance, uses M&E and not MRV. Nevertheless, MRV is the adopted term in UNFCCC decisions pertaining to both NDCs and NAMAs and is therefore also the term used in the following. The Paris Agreement stipulates the development of MRV requirements, including for NDCs, as part of a transparency framework ‘build[ing] upon and eventually supersede[ing] the measurement, reporting and verification system established by decision 1/CP.16’.

MRV is an essential component of NAMAs. MRV of implementation and deliverables provides key information with which to assess the success of the activity, identify failings and address them, and generate knowledge to be replicated elsewhere. At the same time, this process generates confidence among the actors, in particular financiers, that their resources are being used as expected and will deliver what has been promised. At a broader level, MRV supports the national development and mitigation agenda by generating information for policy-makers, the public and the international sources of finance. Finally, from an international perspective, MRV enables countries to demonstrate that they are meeting their goals, and it is also a channel for identifying and addressing national-level issues that may prevent them from doing so.

MRV is not a new concept and has been widely used in many contexts at the national and international levels to ensure transparency and help in the effective implementation of a given activity.²⁰ In simple terms with regard to the implementation of NAMAs, it is defined as:

M easurement	collect relevant information on progress and impacts
R eporting	present the measured information in a transparent and standardized manner
V erification	assess the completeness, consistency and reliability of the reported information through an independent process.

The terms ‘monitoring’ and ‘measurement’ are often used interchangeably in the MRV literature, but there is a difference between them that it is important to understand. Monitoring is a management function (using Monitoring & Evaluation or M&E frameworks) that entails a review of implementation with regard to the planned objectives and goals, whereas measurement is an operational function for recording facts

20 UNEP Risø Centre (2012).

that will enable monitoring. In this guide the term ‘measurement’ is used, since in the MRV context this is an operational function of recording information and data, which in turn can be used by national and international authorities to monitor the implementation of mitigation actions.

Measurement enables assessment of the implementation of plans, the achievement of objectives and goals and the taking of any necessary corrective steps. Reporting and verification ensure the communication of consistent and reliable information to the appropriate authorities in order to facilitate assessment. Governments typically use MRV to measure a number of economic, social and environmental indicators and thus enable objective assessments of progress in meeting national development goals, as well as the effectiveness of policies, programs and regulations.

Governments also use MRV as a tool for providing accountability to their constituents. An important aspect of accountability is documentation of the benefits of the actual policies and actions being deployed and the cost-effectiveness of the measures. Such documentation provides governments, budget departments, funding agencies and implementation bodies with the information needed to make objective decisions, as well as feedback to improve decision-making and implementation strategies. MRV of mitigation actions is also an important tool that countries can use to track their own progress in deviating from BAU scenarios, moving towards a low-emission development path and achieving sustainable development goals. Sometimes, therefore, establishing a baseline scenario is necessary in order to measure such progress.

7.1. WHAT TO MEASURE?

Although MRV is considered a fundamental requirement for NAMAs, there is limited formal guidance as to its organization and output. There are, however, two primary measurement parameters: a) progress in implementation; and b) results achieved, including GHG emissions, sustainable development and transformational impacts.

From a national perspective, a number of parameters other than those concerning emissions reduction are of interest. Sustainable development impacts are central and serve as indicators in tracking the progress of NAMA implementation. Transformational impacts indicate the process of system change from high-carbon lock-in to low-carbon and sustainable development. Therefore, MRV should not only be able to estimate the impacts on GHG emissions; it should also monitor those development parameters that in many cases are the drivers of the initiative. Investors may focus on other parameters as well.

Measuring or recording information on progress is carried out in most projects and programs, often by defining milestones that need to be reached. The challenge lies in defining and measuring data that document the impacts. The specific data to be measured in order to estimate impacts will be determined by the activities to be implemented under a NAMA and its goals and objectives. The approach to measurement (level of precision, frequency, storage and archiving, etc.) should follow existing national guidelines, but it will also be influenced by the requirements of entities that are providing support, including financial support, for NAMA implementation. These national measurement guidelines are likely to be among the requirements of national policy-makers for monitoring and periodically evaluating climate policy implementation, as well as international reporting on NAMAs.

The following good practices should be taken into account when designing a measurement methodology:

Accuracy. Measurement should be as accurate as the NAMA budget will allow and aligned with the use of measurement results in evaluating outcomes and impacts. Accuracy trade-offs should be accompanied by increased conservatism in making estimates and judgements. Further, accuracy should be determined by taking into account the significance of the outcomes or impacts.

Completeness. The measurement methodology should cover information related to all the effects of the activities included in a NAMA. Some of the outcomes or impacts, such as reductions in GHG emissions, will be calculated based on measured data. In such cases, the documented methodology should clearly outline the process and procedures for calculating the emissions reduction as well as other measured data used for the calculation.

Conservatism. Measurements should be made so as to err on the side of the conservative reporting of outcomes and impacts. The measurement methodology should expressly identify the uncertainty in measurements and include procedures for choosing conservative values.

Consistency. Reporting information should be consistent between different types of projects or programs and different periods of time for the same project or program.

Comparability. The level of accuracy, especially for GHG emissions reduction calculations, should be comparable across NAMAs. To enable comparability, the NAMA implementer should use standardized methodologies.

Transparency. All data and methodologies used should be clearly explained and appropriately documented in the report, so that anyone can verify their accuracy. Reporting should include all relevant information to enable readers to come to the same conclusions as the report and replicate the impact results arrived at in the report.

The data or information to be measured depends on the nature and the goals or objectives of the NAMA. Measurement is usually simpler for NAMAs oriented toward technical measuring – for example, a NAMA designed to increase power generation by 10% by using renewable energy. Though on the surface it may seem difficult to measure the impacts of policy-based NAMAs, the key to doing so is to clearly define the success parameters for achieving NAMA objectives. For example, in the case of a NAMA that implements a FiT to increase the use of renewable energy (RE), the goal is not only to increase the capacity for RE generation, but also to design a policy that promotes the use of RE. The challenge in establishing measurement parameters for policy NAMAs, then, has to do with establishing causality between the activity and its impacts. Table 3 provides examples of the types of information that are measured for technical measurement-oriented NAMAs versus policy NAMAs in the energy sector.



Photo Credit: UN Photo/Martine Perret

Table 3. Parameters for measuring impacts of NAMAs in the energy sector

Type of NAMA	Measuring parameters
Project-oriented NAMA	<p>GHG emissions: RE-based power generation capacity installed Carbon emissions factor of grid (type of fuel, fuel consumption, carbon emissions factor, etc.)</p> <p>Sustainable development impacts: Employment created, income generated, access to power provided Emissions of local pollutants (SO_x, NO_x, particulate matter, etc.)</p>
Policy-oriented NAMA	<p>GHG emissions: Enactment of regulation and legislation (e.g. FiT) RE-based power generation capacity installed through FiT Reduction in cost of RE generation</p> <p>Sustainable development impacts: Employment created, income generated, access to power provided Emissions of local pollutants (SO_x, NO_x, particulate matter, etc.)</p>

7.2. CHALLENGES TO ESTABLISHING BASELINE EMISSIONS PROJECTIONS

When countries identify and communicate their NDCs, they usually do so in relative terms as an emissions trajectory that deviates from business as usual, or the ‘baseline’. This deviation can be relative as a specific emissions reduction value (e.g., X tons of CO₂ by year Y), or it may be doubly relative as a deviation from another relation, for example, between emissions and GDP (known as emission intensity), emissions per capita or emissions per GWh of electricity generation. The Paris Agreement stipulates further work on guidelines for baseline setting in order to support comparability of values.

The NAMA is the instrument that must secure these deviations from the baseline in the form of concrete mitigation action, as without the NAMA they will not happen. In most cases, however, NAMAs will have impacts beyond emissions reduction. To quantify the impact of the NAMA, current guidance stipulates that a corresponding baseline scenario must be established for all those parameters for which an impact assessment is desired (for example, economic ones such as wealth generation, development ones such as employment, or environmental ones such as GHG emissions reduction). Because emissions reduction is rarely the most prominent driver of an initiative, these additional parameters are important to signal development in dimensions closer to the real drivers of the initiative. For example, if a transport project does not deliver transport benefits, but only emissions reduction, it is unlikely to continue. These considerations are less prominent at the NDC level, which mainly concerns itself with emissions. However, NAMAs are still likely to be evaluated on their contribution to the NDC’s emissions reduction target: the greater the contribution, the more attractive from an emissions reduction perspective, but not necessarily from other considerations.

The baseline scenario is that in which all parameters, including GHG emissions, continue as they would have done in the absence of the NAMA. Such baselines are inherently difficult to establish and support with solid evidence concerning boundaries, scope, sector, current financial flows, technology base and value chain. It is essential that such difficulties do not become a hindrance to NAMA development. It is better to refrain from drafting an ill-founded baseline than to present arguments that are unsubstantiated and that reflect badly on other elements of the NAMA.

Usually, the main challenge in establishing baseline emissions lies in the availability of data. Data may either not exist or be incomplete or outdated. Rectifying such shortcomings may require technical capacity-building and/or national or international technical assistance. Building the data set should be seen in conjunction with the future demand for data acquisition and maintenance, ensuring that once data has been established for the baseline scenario, it can be accessed regularly as part of the MRV system.

Data should be aligned with the national GHG inventory, using the inventory as the data source if it is viable or, alternatively, adding more detail to the inventory by upgrading data acquisition as part of the NAMA. If there are no existing data, standards or methodologies, baseline emissions may be estimated using simple assumptions as long as they are transparently documented and published. The following steps are useful for baseline establishment:

1. Check the availability of models. For broader measures such as sector-wide NAMAs, computational general equilibrium (CGE) models would be appropriate. Policies covering the energy sector are preferably evaluated by applying a dedicated energy model such as MARKAL. Policies aimed at changing household behavior are preferably evaluated through randomized control trials. If no model seems to cover the effects of the NAMA, check whether a CDM methodology is available or if other approaches have been used by entities such as GEF. A NAMA with impacts in several areas may combine methodologies.
2. If no specific methodology is available, apply a linear extrapolation of the trends of key variables over a period of several years, ideally a decade. In case of inconsistency in a trend, identify the parameters that lead to trend inconsistencies and adjust the baseline projection if possible.
3. If data availability is limited, identify the data needed and the relevant stakeholders who could provide it. Consider future data collection possibilities when establishing the baseline data and avoid complex data acquisition procedures that may challenge future measurement (see Chapter 7 for more detail). In situations in which data or data acquisition systems are generally absent, consider whether or not conservative estimates could work, or if a standardized baseline will help to replace the lack of concrete data. A summary of the protocols and standards for determining baseline emissions and emissions reduced is provided in Annex 3. Further guidance may evolve from the NDC work flows.

Generally, the choice of a specific baseline approach and methodology also determines how emission reductions are calculated. The calculation of the emissions reduction resulting from the NAMA must be consistent with the underlying baseline calculations. Estimates of indirect emissions reduction or increases may be less straightforward and may be left as estimates, in addition to the direct emissions reductions that were specifically calculated. Some measures have long time lags between their implementation and the impact of emissions reduction. Generally, the effects of potential leakage (mainly outside the boundary), rebound effects (mainly inside the boundary) and general equilibrium feedback should be considered and estimated if possible.

BOX 9. EXAMPLE FOR BASELINE SETTING AND PROJECTIONS FOR GHG REDUCTIONS: THE TRANSPORT DEMAND MANAGEMENT NAMA IN BEIJING

Basics on GHG Emissions Calculation

GHG emissions in the transport sector may be calculated using either a bottom-up or a top-down approach, or these approaches may be combined, depending on the availability of data.

The bottom-up approach derives emissions from travel activity, corresponding fuel consumption and conversion factors. Different travel activities, depending on parameters such as vehicle category and road gradient, have to be defined. Each trip has a specific fuel consumption that translates into a certain amount of emissions using IPCC or other documented conversion factors. This approach requires an extensive amount of data, but if followed, it allows, for example, which particular trips account for the major share of emissions in a given area to be determined.

In 2004 in Beijing, a transport model representing travel demand for a typical weekday was developed using the PTV Vision transport planning software suite, drawing on city-wide travel behavior surveys from 2000 and 2005. The model was later recalibrated based on a comprehensive 2010 travel survey. Comprising 1,911 traffic analysis zones, the model includes most types of roads (from minor arterials to major roads), more than seven hundred bus transit lines and eight subway lines. The application of the model follows traditional modelling algorithms and is separated in sequential, linear and independent fashion into four elements: trip generation, trip distribution, modal split and trip assignment. The first three elements define the demand model. This procedure, often called synthetic modelling, quantifies all movements in the study area. The fourth element is the supply side, defined by the public transport and highway networks. Assignment is the process by means of which travel demand is allocated to the networks to illustrate traffic and passenger flows on routes.

Applying the bottom-up approach in Beijing requires extensive data collection. As China has not released a national emission factor database, the European 'Guidebook of Emission Factors for Road Transport' (HBEFA) approach was used, due to its advanced methodology and comparable driving cycles between China and Europe. The HBEFA provides the emission factors of all current vehicle categories for a wide variety of traffic activities.

Data on traffic activity is also required. The amount of traffic – how many people travel through a certain part of the city at a certain time of the day, for example – can be derived from the transport model. However, specific traffic activities have to be analyzed using GPS tracking. In this process, approximately 1,000 hours of real-world GPS-based second-by-second driving behavior data is recorded. If traffic activities unique to Beijing can be identified, emission factors from the HBEFA have to be localized. As a last step, the GHG emissions data, including Beijing-specific emission factors, will be integrated into the travel demand model.

Further information and details are available at [Transport Demand Management in Beijing](#).

In the energy sector, energy and GHG emissions modelling are often carried out in order to understand, plan and devise strategies based on analyses of resource use patterns, the balancing of energy needs against demand, the mapping of alternative energy solutions, and so on. Based on the outcome of such an energy model, it is possible to estimate the emission-level trajectories for different development scenarios at both the country and sectorial levels. The International Atomic Energy Agency (IAEA) has developed an energy model known as MESSAGE²¹ (Model for Energy Supply System Alternatives and their General Environmental Impacts), which has been used for planning energy development in more than eighty countries. Other relevant models are MARKAL, EMP and HERMES. See the tools and standards in Annex 3.

In other sectors, or in the absence of energy and GHG emissions models, methodologies from the public sector may be used for baseline emissions estimates. Most countries are likely to resort to using IPCC default values, but obviously, specific relevant local emission factors and corresponding activity data should be used if available. As an alternative, methodologies approved for the CDM may be useful in estimating the baseline emissions, project emissions, leakage emissions and emissions reduction in the public sector. The major limitation of CDM methodologies is their focus on estimating baseline emissions and emissions reduction from a single project activity, which may not be directly applicable and appropriate for establishing the baseline scenario for all the activities proposed under a NAMA.

7.3. EVALUATION OF SUSTAINABLE DEVELOPMENT BENEFITS

NAMAs may result in, and are likely to be driven by, social benefits in addition to GHG reduction. Although referred to as co-benefits, the benefits that result from a NAMA in addition to the GHG emissions reduction are most often the 'real' benefit of an action, while the emissions reduction aspect is the 'global benefit' of the action (referring to the GEF terminology of turning a project with local benefits into a project with global benefits, i.e. emissions reduction). 'Co-benefits' generally pertain to the substance of the initiative, such as energy access, water conservation, improved traffic flows or more efficient farming. Many of these central outcomes of the NAMA may be termed 'sustainable development benefits', while some indirect benefits, such as positive health impacts, reduced pollution or job creation, are indirect and hence more appropriate for the 'co-benefit' label.

When developing the evaluation framework for sustainable development benefits, inspiration may be found in UNDP's Nationally Appropriate Mitigation Action (NAMA) Sustainable Development Tool²² or the UNEP DTU Partnership's Framework for Measuring Sustainable Development (SD) in Nationally Appropriate Mitigation Actions (NAMAs)²³. Indicators and measurable parameters for potential sustainable development benefits and linkages to the SDGs are shown in Table 4.

21 More information is available at IAEA Tools and Methodologies for Energy System Planning and Nuclear Energy System Assessments.

22 <http://www.undp.org/content/undp/en/home/librarypage/environment-energy/mdg-carbon/NAMA-sustainable-development-evaluation-tool.html>

23 http://www.unepdtu.org//media/Sites/NAMApartnership/Publications%20Pdfs/Sustainable%20Development/NAMA%20SD%20Framework_web.ashx?la=da.

Table 4. Sustainable development benefits and their links to the Sustainable Development Goals

Domain	Indicator	Relevance to SDG and targets
Environment	Air pollution/quality	Goal 11, Target 11.6
	Water pollution/quality	Goal 6, Target 6.6 Goal 11, Target 11.6 Goal 12, Target 12.4
	Soil pollution/quality	Goal 2, Target 2.4 Goal 11, Target 11.6 Goal 12, Target 12.4
	Others (noise/visibility)	Goal 11, Target 11.6
	Biodiversity and ecosystem balance	Goal 14, all targets Goal 15, all targets
	Climate change adaptation and mitigation	Goal 13, all targets
Social	Health	Goal 3, All Targets
	Livelihood of poor, poverty alleviation, peace	Goal 1, All targets Goal 2, Target 2.1 Goal 16, Target 16.1
	Affordability of electricity	Goal 7, Targets 7.1
	Access to sanitation and clean drinking water	Goal 6, Targets 6.1, 6.2, 6.4, 6.5
	Food security (access to land and sustainable agriculture)	Goal 2, all Targets Goal 12, Target 12.3
	Quality of employment	Goal 8, Targets 8.2, 8.3, 8.5, 8.6, 8.7, 8.8
	Time savings/time availability due to project	Goal 1
No child labor	Goal 8, Target 8.6	
Growth and development	Access to clean and sustainable energy	Goal 7, Targets 7.1, 7.2, 7.3
	Education	Goal 4, All targets
	Empowerment of women	Goal 4, Targets 4.3, 4.6 Goal 5, All targets
	Access to sustainable technology	Goal 4, Target 4.3 Goal 7, Targets 7a, 7b Goal 9, Target 9b
	Energy security	Goal 7, Target 7.1, 7.2, 7.3
	Capacity-building	Goal 4, Target 4.3, 4.5 Goal 6, Target 6.a
	Equality (quality of jobs given, job condition for men/women)	Goal 4, Targets 4.1, 4.2, 4.3, 4.7 Goal 5, All targets Goal 10, Target 10.4

Domain	Indicator	Relevance to SDG and targets
Economic	Income generation/expenditure reduction/balance of payments	Goal 8, Targets 8.1, 8.2, 8.3, 8.4 Goal 10, Target 10.1
	Asset accumulation and investments	Goal 7, Targets 7a, 7b Goal 9, All targets Goal 17
	Job creation (number of men and women employed)	Goal 8, All targets
Institutional	Policy and planning	Goal 16- Target 16.8, 16.10. Goal 17- Target -17.10, 17.11, 17.13
	Laws and regulation	Goal 16- Target 16.8, 16.10. Goal 17- Target -17.10, 17.11, 17.13

Sustainable development indicators can be found in national development priorities that have been established in development plans and sector strategies and in the Sustainable Development Goals (SDGs).

7.4. THE NAMA MEASUREMENT METHODOLOGY AND PLAN

Presently there are no international or national guidelines for developing measurement methodologies for NAMAs. Experience from other GHG reduction programs or actions, in particular the CDM, may be revisited, and guidance may emerge from work both on the NDC and on the ‘mechanism to contribute to the mitigation of greenhouse gas emissions and support sustainable development’ as defined by Article 6 of the Paris Agreement.



Photo Credit: UN Photo/Lucien Rajaonina

BOX 10. PRACTICAL EXAMPLE OF IMPLEMENTING A MEASUREMENT PLAN FOR A RENEWABLE ENERGY NAMA IN THE LAO PDR

The NAMA MRV covers both GHG emissions reduction and sustainable development benefits. The MRV framework for GHG emissions reduction builds on the CDM and includes:

1. System boundary definition. The system boundary encompasses significant anthropogenic GHG emissions by sources under the control of the project participant that are reasonably attributable to the NAMA intervention.
2. Baseline scenario. The baseline scenario is the scenario for a NAMA activity that reasonably represents the anthropogenic emissions by sources of GHG that would occur in the absence of the proposed NAMA intervention.
3. NAMA actions This scenario refers to mini-grids and the related anthropogenic emissions by sources of GHG that occur due to the actions.
4. Emission reduction calculation. The GHG emissions reduction achieved by the actions is the difference between the baseline emissions and the project emissions using the UNFCCC's 'Small-scale Methodology AMS-III.BL: integrated methodology for electrification of communities' (UNFCCC, 2015).

The AMS-III.BL methodology is simplified for the MRV NAMA mini-grid intervention as follows:

Transmission and distribution losses are neglected. The mini-grids are characterized by the short distances between the source of electricity generation and the consumers of the electricity. Thus grid losses are minor and will be neglected.

Consumers are classified into two types. There are only consumers who were not connected to the national/regional grid or a mini-grid before the NAMA intervention with two different consumption levels (less than 500 kWh/y and more than 500 kWh/y).

Measuring consumption by Type 2 consumers. The electricity consumption of Type 2 consumers (i.e. 500-1,000 kWh per year) can be measured using electricity meters or can be estimated, e.g. by multiplying installed capacity by average periodic hours of usage.

The baseline emissions scenario is determined by the type of consumer. Consumers are classified into two types:

Type 1 – consumers who were not connected to a national/regional grid or a mini-grid before the NAMA intervention and who consume less than 500 kWh per year;

Type 2 – consumers who were not connected to a national/regional grid or a mini-grid before the NAMA intervention and who consume more than 500 kWh per year.

The NAMA implementer will provide an ex-ante estimate of the number of consumers falling into each type, based on business plans or other similar project documents. The estimates of consumers by type will be documented transparently. During NAMA implementation, the exact number of consumers by type will be recorded as part of the monitoring.

Each electricity generation system in the mini-grid needs to be equipped with a calibrated electricity meter to monitor the generated electricity supplied to consumers connected to the mini-grid over the year.

The project activity emissions scenario is represented by a mini-grid comprising electricity generation system(s) based on renewable sources only or a combination of renewable sources and fossil fuel sources (hybrid mini-grid). The electricity generated by renewable energy systems, which can be based on hydro, solar or wind as sources, causes no greenhouse gas emissions. Thus the project emissions are considered to be zero. Fossil-fuel systems are allowed, but the share of electricity from renewable energies must be at least 75 per cent.

Measurement and monitoring. As all the electricity generated by the energy generation systems will be consumed by consumers connected to the mini-grid, the generation site needs to be monitored using calibrated electricity meters. Each consumer type 2 with annual consumption of more than 1,000 kWh needs to be equipped with an electricity meter. It is also recommended but not mandatory to equip consumers of type 2 consuming less than 1,000 kWh, i.e. 500-1000 kWh/ year with a calibrated electricity meter. The estimates of consumption by types 1 and 2 consumers not equipped with an electricity meter are to be transparently documented. Each consumer of either type connected to the mini-grid needs to be recorded on a centralized register.

Reporting. The NAMA Coordinating Authority will regularly produce reports on achieved GHG emission reductions due to NAMA interventions. The reports should include:

- a description of the method of calculation used to quantify GHG emissions
- the measurement method applied and the parameters monitored
- the characteristics of the measurement instrument (type, installation date, identification, calibration)
- the values of the monitored parameters, including supporting evidence (measurement records)
- the identification of any uncertainty or variability associated with quantifying GHG emissions.

MRV for NAMAs should be aligned with UNFCCC requirements, which are to be elaborated by the Subsidiary Body for Scientific and Technological Advice (SBSTA) of the UNFCCC. Systems should be robust, and procedures for tracking the effective implementation of mitigation actions and measuring their impacts should be clear and transparent. However, the system should not be a burden or a barrier to the implementation of the NAMA. A NAMA MRV approach should consider the circumstances of the NAMA host country and strike a suitable balance between cost, integrity and UNFCCC requirements. MRV systems can (and some should) improve over time. Box 11 outlines some UNDP LECB insights on designing MRV systems.

Domestic MRV systems that reflect national circumstances and priorities are expected, while international oversight aligned with the ICA process can be required by the international partners involved in them (international MRV). The latter is likely to be accompanied by the tracking of financial and technical support.

To measure the progress of a NAMA, key parameters and data for estimating specific impacts need to be identified. The identification of key parameters should take into account direct and indirect impacts, as well as the causality of impacts. Measurements of GHG data and the impacts of emissions reduction are defined by the baseline. To support the MRV of a NAMA, a plan that includes the following details should be developed:

- frequency of measurement and reporting of parameters;
- responsibilities of the different actors with regard to measurement and reporting;
- assumptions and default values applied and sources of the values;
- sources of measured parameters; and
- description of the data storage and archiving plan.

Box 10 gives a relatively clear example of how to set up this type of measurement system from a NAMA in the Lao PDR.

7.5. ASSESSMENT OF TRANSFORMATIONAL CHANGE IMPACTS

A particular challenge is to assess the transformational impacts. NAMAs are often associated with transformational change, but as noted in Chapter 2, 'NAMAs do not need to be transformational in order to be NAMAs'. Nevertheless, in some contexts, essentially for NAMA financiers, it is of interest to be able to distinguish ordinary change from transformational change. Both the Green Climate Fund and the NAMA Facility have a mandate to support a paradigm shift to low carbon development, and both have developed funding criteria to assess the potential for transformational impacts in proposals. On the basis of a literature review, and in addition to the criteria outlined in Chapter 2 (permanence, abruptness and scale), the Wuppertal Institute/UNEP DTU Partnership²⁴ suggest that transformational change through NAMAs is a change that:

'1) disrupts established high-carbon pathways, contributes to sustainable development and sustains the impacts of the change (goal dimension)

2) is triggered by political and civil society reactions to unsustainable practices or the interventions of actors who innovate low carbon development models and actions, connect the innovation to day-to-day practice of economies and societies, and convince other actors to apply the innovation to actively influence the multi-level system to adopt the innovation process (process dimension)

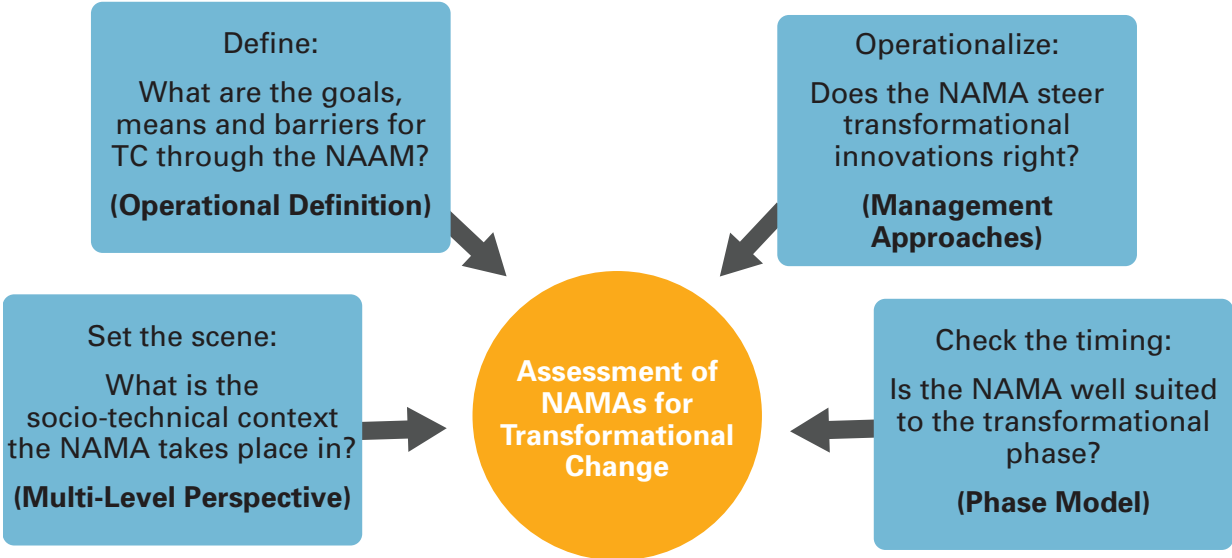
3) overcomes persistent barriers toward the innovated low carbon development model and/or create new barriers which hinder the transformed system to relapse into the former state (low carbon lock-in).'

24 Wuppertal Institute/UNEP DTU Partnership: 'From Theory to Practice: Understanding Transformational Change in NAMAs (2014)'.

In other words, transformational change describes the process and depth of system change beyond the direct GHG and sustainable development impacts of the NAMA. It follows that NAMAs can achieve substantial GHG impacts without being transformational, such as end-of-pipe solutions to destroy industrial HFC and N2O emissions. The operational definition of transformational change in NAMAs targets the goals, means and barriers addressed by the intervention, looking at how NAMAs attempt to govern and design interventions.

In order to identify parameters that may help determine the achievement of transformational change, the UNEP DTU Partnership has introduced a taxonomy of indicators that may serve as inspiration for the choice of the most relevant monitoring parameters. On the basis of this, a new Initiative for Climate Action Transparency (ICAT)²⁵ aims to develop a methodological framework for integrated GHG, sustainable development and transformational change impact assessment to support developing countries in setting up their domestic MRV systems and implementing the transparency framework in Article 13 of the Paris Agreement.

Figure 8. Analytical framework for assessment of transformational change



Source: Transformational change taxonomy, 2016

7.6. ORGANIZING DATA COLLECTION

The most pertinent organizational issue in NAMA implementation may be related to the MRV system, depending on the current state of a given country’s national data collection systems. Data collection systems vary significantly from sector to sector and are influenced primarily by the channels through which data are already being collected or will have to be collected. For instance, energy data may be more easily accessible than waste data because, for the most part, the former is or can be centrally recorded, while the latter is collected at the local level and would have to be organized in a manner that would ensure consistency and allow it to be centrally stored.

25 Initiative for Climate Action Transparency (ICAT): www.climateactiontransparency.org

For purposes of NAMA implementation, institutional arrangements must be established for the MRV system. Although it is often stated that such systems should be aligned with already existing data-collection systems, it is often the case that there are no such systems to align with, and thus also quite often no data upon which a baseline scenario can solidly be based. The NAMA can therefore rather contribute to the establishment of such systems. In that regard, the responsible line ministry would need to communicate MRV output to the designated national focal points, which would also be responsible for communicating, for example, the National Communication or Bi-annual reporting to UNFCCC or any new reporting requirements established post-Paris in the context of NDCs.

There are three broad categories of data sets that are likely to be required and collected:

- Information regarding technical implementation. These data sets will directly contribute towards assessments of GHG emissions reduction.
- Information regarding sustainable development benefits, including capacity-building efforts undertaken (e.g. number of new jobs created, women and young people employed, staff trained, training programs conducted, number of community demonstration projects etc.).
- Donors will usually also require information related to finance, which will be directly provided by the participating financing entities (e.g. loans and grants provided through local banks or financial institutions to private sector and end-consumers). This information may be a specific requirement of international donors.

BOX 11. UNDP INSIGHTS ON AN MRV MANAGEMENT FRAMEWORK

In order to set up a NAMA successfully, a robust MRV management system is important. Here are some key aspects with regards to MRV that have been developed for a transport NAMA in Sri Lanka:

The main responsibility for the MRV system for the Sri Lanka transport NAMA lies with the Ministry of Mahaweli Development and Environment i.e. the NAMA National Focal Point or National NAMA Approver (NA). The database and the compliance system will be set up by the NA. The NA may however delegate some of the tasks to the organizations operating the intervention, i.e. the NAMA Executing Entities (NEEs).

The process flow for the MRV management framework is as follows:

- The monitoring agency, which in the case of the Sri Lanka Transport NAMA is the NA, will collect the data according to the monitoring plan (as part of their approved application), ensuring that they fulfil all related requirements such as record keeping and quality control.
- The NA collects all the data from the various NEEs, combines them in a central monitoring database and summarizes the results in a NAMA monitoring report. This report contains information on GHG emission reductions, progress on the SD indicators, and the financial performance of the NAMA activities.
- The NA also arranges for an external verification entity to verify the annual monitoring report.
- The final monitoring report together with the verification report of the external verifier is submitted to the NAMA donor(s).

Reporting Forms

The NAMA Coordinating Authority (NCA) is responsible for the development of reporting form templates. These forms will include at a minimum the following information:

- details of the technology used;
- details of the NEE, including contact details;
- description of the measuring system;
- data parameters measured;
- default values applied;
- sampling plan details;
- calculation of emissions reductions.

The reporting form template will be provided by the NCA to the NAMA Executing Entities, which will submit the completed forms annually.

It is possible that these require separate data collection systems, but efforts should be made to link them through standard causality: ‘one invested dollar buys a given amount of sustainable development benefits that result in a given amount of emissions reduction’. Other data collection points may be considered in order to verify the causal links and assessments, but resource-constrained NAMA host countries should consider ways of rationalizing collection.

In addition to host-country requirements, verification rules for NAMAs are often based on or influenced by requirements established by the NAMA financiers. Before developing the domestic capacity for verification, it is recommended that some of the existing CDM Designated Operational Entities (DOEs) or ISO 14064 certification bodies with (sector-) relevant experience and a good understanding of local conditions be Investigated.

7.7. REPORTING AND VERIFICATION

Reporting is an important part of MRV and will be governed by the requirements of financiers, domestic policy-makers and international reporting requirements. The good practices listed earlier for entire MRV systems are equally critical for reporting. Two key elements of reporting are: a) reporting regularly; and b) clearly identifying the audience and designing reporting requirements accordingly. The former is particularly important in order to allow for timely evaluation and feedback, so that necessary adjustments can be made to enhance the effectiveness of NAMA implementation.

Verification refers to the process of independently checking the accuracy and reliability of reported information and/or the procedures used to generate that information. Verification is usually, but not always, carried out by an independent third-party reviewer, though in some cases first- and second-party reviews are used. A ‘first-party review’ consists of self-verification, while a ‘second-party review’ is an internal, ‘arms-length’ review. The language and presentation of the verification model chosen should always consider the recipient of the verified information. Verification is an important step towards ensuring the effective use of funds, the transparency of the

activities being undertaken and their impacts. Verification could also play a useful role in quality assurance and quality control (QA/QC) to improve the MRV system over time by providing feedback on measurement methods and procedures and improvements in reporting – in other words, on the verification process itself.

The term ‘evaluation’ is often used as an alternative to ‘verification’. Evaluation, however, implies systematic and objective assessment of an on-going or completed intervention, its design, implementation and results. Verification is a more limited exercise within this, ensuring that the reported information is complete, consistent and reliable. Thus verification is a necessary step in evaluating implementation and the impacts of the intervention, allowing appropriate conclusions to be reached about a NAMA during the operational phase, so that the developer can revise the NAMA, if necessary, in order to ensure its proper implementation. Evaluation, on the other hand, allows the implementer to learn lessons that can be used to design and implement future NAMAs in an improved manner. Evaluation is an integral part of donor-supported activities, such as those sponsored by GEF or bilateral aid agencies. These normally include a mid-term evaluation and an end-of-intervention evaluation.

A clear verification process should be defined that sets out a specific frequency of verification, identifies the entities responsible for verification and makes the method of verification clear. Verification might be achieved purely through a desk review of the reports. Desk reviews could be supported by the use of external data or information and/or interaction with stakeholders. Verification could also be supplemented by site visits. The costs and benefits of any verification system should be taken into account. Verification can be carried out by any institution, including one from civil society. Regardless of the institution, it is important to ensure that the defined standards are maintained. The verification process and who performs it depend on the objectives of the verification and the use of verification outcomes.

Further information:

- UNEP DTU Partnership, ‘[Transformational change for low carbon and sustainable development](#)’, and ‘[Transformational Change Taxonomy: methodological framework for the assessment of transformational change in NAMAs, Version 1](#)’ Olsen, K.H. and Fenhann, J. (eds.): 2015, Copenhagen, p. 108.
- See the UNDPclimate finance options platform’s ‘Indicators of Sustainable Development: Guidelines and Methodologies.’ <http://www.undp.org/content/undp/en/home/librarypage/environment-energy/mdg-carbon/NAMA-sustainable-development-evaluation-tool/>
- Gold Standard Foundation: ‘[Guidance on Sustainability Assessment](#).’ as well as Gold Standard Version 3.0 (2016), which addresses the nexus between climate, energy, food, and water security.
- Center for Clean Air Policy (CCAP)(2012), ‘[MRV of NAMAs: Guidance for selecting sustainable development indicators](#)’.

NAMA governance

The institutional anchoring of the NAMA may have benefitted significantly from the introduction of the NDC, if not formally, then in substance. NAMAs as concept remain anchored in National Focal Points, which are mainly hosted by ministries of environment in NAMA host countries. It is an acknowledged challenge that on the one hand this ensures understanding and insight by the immediate counterpart, while on the other hand also putting the emissions reduction agenda at risk of being regarded as a matter for the Ministry of Environment only. Obviously, the emissions reduction agenda must also belong to the line ministries in charge of the majority of the emissions, which usually means the ministries of energy, transport and agriculture. Other ministries, like those for urban development, construction or water, may also have significant stakes in the emissions reduction agenda. Central to all considerations, of course, is the Ministry of Finance. With the NDC, the highest level of government have also become concrete stakeholders in the emissions reduction agenda, thus lending the utmost credibility to the national focus areas as identified through the NDC. The NAMA Focal Points should see it as their role to support the mainstreaming of the NAMA and the emissions reduction agenda as a whole in these line ministries. This also includes the support budgets, including international support, that may go into such activities.

It is the prerogative of any NAMA host country to organize its NAMA development and implementation as it sees fit. There are no regulations that determine the identity of the responsible institutions under a NAMA, except that the submission of NAMAs to the UNFCCC Registry must be undertaken by the National NAMA Focal Point.

8.1. INSTITUTIONAL ARRANGEMENTS FOR NAMA DEVELOPMENT

The resource bases of potential NAMA host countries vary considerably, and this determines the resources that can be devoted to NAMA development. Resource-constrained countries may have to resort to engaging donor-funded advisers to expend the often considerable effort needed for the development of concepts, implementation modalities and financing models that go into a NAMA.

While much can be outsourced, the sense of national ownership of the objectives supported by the NAMA cannot. The devotion of time and attention on the part of policy-makers is crucial. It is not sufficient to mandate a ministerial department to develop any NAMA for which it can secure international funding: this does not constitute 'ownership' by the ministry (or other key stakeholders) and is unlikely to produce a successful NAMA. The NDC context, on the other hand, represents a good platform upon which a sign of ownership by a line ministry can be based, for example, by developing a catalogue of ideas for reducing emissions by x% as a response to targets established by the NDC.

Any NAMA developer, including those that are involved in donor funding, should ask themselves whether or not the NAMA they are considering has sufficient political backing to give it a chance of materializing, and if not, what can be done to secure such backing. No one benefits from NAMAs that remain concepts on a shelf. The organization of the NAMA development work may include any amount of external assistance, but the national priority and attention it deserves can only be achieved by engaging national stakeholders. If resources are constrained, they should be devoted to such engagement efforts.

Institutional involvement in successful NAMA development should ideally be broad-based and inclusive. Current experience is that NAMAs are developed primarily by the stakeholders that are likely to be involved in their implementation. In most cases NAMAs have their foundations in national policies and regulations, developed by ministries and agencies and implemented through national or local institutions. It is unlikely that a central national ‘NAMA formulation unit’ could be efficient in handling the conceptualization, stakeholder consultation and formulation of a NAMA unless it is closely linked with the line institutions that are already central to policy formulation and implementation in a given area or sector for NAMA development.

Experience from the Centre for Clean Air Policy’s Mitigation Action Implementation Network (MAIN) program in Asia and Latin America shows that host countries that effectively mobilize multiple ministries in the design of NAMAs and inspire line ministries and agencies to take leadership roles in NAMAs in their sectors have become the leaders in NAMA development.²⁶ Regardless of who takes the lead, however, NAMAs – as with all programs and policies – will require good coordination between a large number of stakeholders, including ministries, private actors and civil society. In the initial stages, however, NAMA development may well benefit from a top-down approach, and further, such processes may benefit from a small supportive NAMA committee or office with tasks such as general guidance for the NAMA development process, administering NAMA registries, collecting and compiling mitigation activities, keeping abreast of international development in the NAMA concept, and financing and mainstreaming NAMAs into all relevant national development policies. The task of such a small supportive committee could well be to support the translation of the NDC into specific NAMAs in collaboration with the relevant line ministry/ies.



Photo Credit: UN Photo/Tom Cheatham, April 2013

26 Helme, N., in NEFCO (2012).

BOX 12. EXAMPLE OF NAMA DEVELOPMENT AND GOVERNANCE FROM INDONESIA

Under Indonesia's National Action Plan on Greenhouse Gas Emissions Reduction (RAN-GRK), the government intends to achieve its national GHG emissions reduction target through the implementation of NAMAs. Due to the close links between development planning and emissions reduction in Indonesia, the two objectives are integrated within a multi-sector approach encompassing several line ministries. Because the formulation and implementation of NAMAs is likely to involve government at the national, regional and provincial levels, the government established a NAMA framework, accepted by all government and non-government stakeholders, to ensure consistency and prevent contradictions.

Within the NAMA framework, the government of Indonesia can identify the most appropriate policies and measures and evaluate the associated impacts on and risks to livelihoods, economy and the environment. This takes place through a central government institution in charge of coordination and communication related to the planning and implementation of national mitigation actions. This is to ensure complete, sustainable implementation of NAMAs, strong ownership by government at all levels, and improved communication and cooperation among ministries, departments and agencies across all levels of government.

Consistent with this national integration of processes between development and emissions reduction, the National Development Planning Agency (BAPPENAS) acts as the national integrator for NAMAs between different ministries (Kementrian) and stakeholders, while the Economic Coordination Ministry (EKUIN) acts as the national coordinator. BAPPENAS determines a NAMA priority list and aggregated mitigation potentials in response to the national emissions reduction target (RAN-GRK).

BAPPENAS faces a number of challenges in the implementation of RAN-GRK. The absence of a national BAU emissions baseline is a challenge to measuring the actual reduction. In turn, establishing the baseline is difficult due to the absence of detailed and accurate sectorial data. Both of these deficits constitute a challenge to the ability of RAN-GRK to set national and sectorial targets. Within the NAMA context, a MRV system that includes data collection mechanisms will have to be established which addresses these data gaps.

Source: GIZ, BAPPENAS (2012)

Box 12 provides some valuable insights on experiences with NAMA governance in Indonesia.

8.2. INSTITUTIONAL ARRANGEMENTS FOR NAMA IMPLEMENTATION

NAMAs, which are usually comprehensive programs and/or policies, will involve a number of institutions and stakeholders in their implementation. However, the institutions involved in NAMA implementation will generally retain their current roles as policy developers and implementers, the difference being new or additional reporting. If the NAMA host country is seeking to involve donors for funding purposes, such funds are likely to be channeled through existing avenues of donor funding, most often the Ministry of Finance or a national development bank, and to flow from there to the line ministry or authority responsible for the NAMA.



Photo Credit: UN Photo/John Isaac

- If the NAMA requires the development of physical infrastructure, contracting takes place through existing and well-known tendering procedures.
- If private-sector entities are investing on the basis of new regulations, such investments will be undertaken outside the budget of the NAMA and may be recorded, but the business and financial structuring of such private-sector responses is not the responsibility of the NAMA governance structure.
- If the NAMA is designed to promote behavioral changes by businesses and individuals, these fall into the domain of the NAMA, and such changes in behavior are to be recorded through the MRV system, but they remain third parties to the NAMA and are not held accountable for any behavior that is not in keeping with NAMA objectives.

In those cases where behavioral changes are expected as a result of hard regulation (e.g. setting a certain standard for buildings or equipment, or disallowing the sale of products that do not comply with a certain standard), the responsibility for implementation would ideally lie with entities that can also enforce its implementation. Unfortunately, it is not always possible to combine the role and responsibility for framing the regulatory requirements with the role of enforcement. In many cases, hard regulation is introduced at the national level, but enforcement inevitably has to happen at the local level. This, for instance, is the case with building codes: a NAMA that would introduce a more efficient building code would need to consider carefully an effective enforcement structure that integrates the different levels of administrative authority in order to have any merit.

It is a purpose unto itself to align the NAMA with domestic policies and processes. Most functions, therefore, should be taken care of through the existing administrative system. Eventually, identifying the most appropriate governance structure may involve a review of the existing legislative and administrative framework to see how NAMA objectives can best be supported. If this is done, it might be found that new NAMA functions are best placed within a new institutional setting. However, institution building for NAMAs must avoid either becoming a barrier to NAMA development and implementation in itself or, even more importantly, turning the NAMA into a separate, non-integrated institutional structure at risk of being marginalized or shut down.

Box 13 offers insights into institutional frameworks for a NAMA in Kenya.

BOX 13. UNDP INSIGHTS INTO AN INSTITUTIONAL FRAMEWORK FOR AN ENERGY NAMA IN KENYA

Kenya has set up its NAMA Focal Point to the UNFCCC in its Ministry of Environment, Natural Resources and Regional Development Authorities. In addition, for its energy-related NAMAs, it has established a separate NAMA Coordinating Authority within the Ministry of Energy and Petroleum (MOEP).

The Rural Electrification Authority (REA, now converted into the National Electricity and Renewable Energy Authority (NERA)) is responsible for all renewable energy activities in Kenya excluding geothermal and large hydro; it is also the designated technical NAMA Implementing Entity, ideally placed to coordinate the activities due to its anchoring to the MOEP. The stated mandate of REA is to accelerate the pace of rural electrification. It has the resources and manpower to undertake the following functions, many of which are essential for implementing NAMAs:

- managing the Rural Electrification Program Fund
- developing and updating the rural electrification master plan
- promoting the use of renewable energy sources, including small-scale hydro, wind, solar, biomass, geothermal, hybrid systems and oil fired components, taking into account the specific needs of certain areas, including the potential for using electricity for irrigation and in support of off-farm income-generating activities.
- implementing and sourcing additional funds for the rural electrification program
- managing the delineation, tendering and awarding of contracts for licenses and permits for rural electrification.

In addition, ERA formulates cooperation arrangements with county governments for the implementation of rural electrification and renewable energy programs, acting as a 'one-stop shop' for information and guidance to investors on renewable energy projects. It incorporates the revitalizing of MOEP's network of 'Energy Centers' to cover all of Kenya's 47 counties with a view to promoting renewable energy use.

In this way, Kenya has established a coherent institutional framework that extends from the international anchoring of NAMAs all the way down to the rural implementation level. This structure has been set up in order to be able to implement a rural electrification NAMA, the purpose of which is to establish favorable conditions for private investment in rural energy supply.

The MRV (Measurement Reporting and Verification) activities will be undertaken by a dedicated MRVcCell established within the REA.

Further reading:

- For further guidance and information see UNEP DTU Partnership, 2014, '[Institutional Aspects of NAMA development and Implementation](#)'.

Annex 1. Toolbox: guidance, sources of information and tools

Theme	Document category	Document title, author, and description	Web link
Green growth	Guidance	Towards a green economy: Pathways to sustainable development and poverty eradication (UNEP, 2011). Discusses the economic and social case for investing 2% of global GDP in greening ten sectors of the economy in order to shift development and unleash public and private capital flows onto a low carbon, resource-efficient path.	http://www.unep.org/greeneconomy/Portals/88/documents/ger/ger_final_dec_2011/Green%20EconomyReport_Final_Dec2011.pdf
Low Emissions Development Strategies (LEDS)	Guidance	Low Carbon Development Strategies: A Primer on Framing Nationally Appropriate Mitigation Actions (NAMAs) in Developing Countries (UNEP, 2011). This primer presents basic principles and proposes possible components of a national LEDS and NAMA preparation process, as well as a template for NAMA articulation.	http://www.unepri.org/media/Sites/Unepri/Pdf/Publications%20%28Pdfs%29/LowCarbonDevelopmentStrategies_NAMAprimer.ashx
	Guidance	Preparing Low-Emission Climate-Resilient Development Strategies (Executive Summary) (UNDP, 2011). This document introduces a five-step approach to the development of low-emission climate-resilient development strategies (LECRDS), based on the experience and information generated by UNDP's work in more than 140 countries over the past decade. It is also serves as the introduction to a series of supporting manuals and guidebooks, including 'Charting a New Carbon Route to Development'.	http://www.undp.org/content/undp/en/home/ourwork/environmentandenergy/focus_areas/climate_strategies/
	Guidance	How-to Guide: Low-emission Development Strategies and Nationally Appropriate Mitigation Actions, Eastern Europe and CIS (UNDP, 2010). This handbook provides a step-wise approach to help policy-makers and technical experts determine opportunities for low-emission development and to design national LEDS or NAMAs in their respective countries. Available in English and Russian.	http://sustainabledevelopment.un.org/content/documents/956041_How%20to%20guide-%20low%20emission%20development%20strategies.pdf
	Country examples	LEDS and low-carbon/climate change strategies from Bangladesh, Brazil, China, Guyana, India, Japan, Indonesia, Mexico, Singapore, South Africa, Thailand, US and UK.	http://ledsgp.org/activities/case-studies

Theme	Document category	Document title, author, and description	Web link
Low Emissions Development Strategies (LEDS)	Information source/country examples	Planning for a Low Carbon Future: Lessons Learned from Seven Country Studies (ESMAP, 2012). This report distills the lessons learned and is intended as a practical guide for government officials, practitioner, and development agencies involved in low-carbon development planning.	http://www.esmap.org/sites/esmap.org/files/ESMAP_LCD-LessonsLearned_2012_0.pdf
	Guidance - general	Nationally Appropriate Mitigation Actions: Key Issues for Consideration (UNDP, 2009). Issues for consideration when identifying NAMAs.	http://www.mitigationpartnership.net/sites/default/files/brm_2009_nationally_appropriate_mitigation_actions_web1.pdf
Nationally Appropriate Mitigation Actions (NAMAs)	Guidance - general	Nationally Appropriate Mitigation Actions: A Technical Assistance Sourcebook for Practitioners (GIZ, 2012). This sourcebook compiles and reviews GIZ's experience in building capacity for mitigation action in Asia and the rest of the world.	http://www.mitigationpartnership.net/giz-2012-nationally-appropriate-mitigation-actions-%E2%80%93-technical-assistance-sourcebook-practitioners
	Guidance - sectoral	Handbook on Renewable Energy Nationally Appropriate Mitigation Actions (NAMAs) for Policy Makers and Project Developers (IRENA, 2012). Includes case studies from Peru, Kenya and Grenada, demonstrating how policies which promote renewable energy can be used in the NAMA framework.	http://www.irena.org/DocumentDownloads/Publications/Handbook_RE_NAMAs.pdf
	Guidance - sectoral	Navigating Transport NAMAs v2.0 (GIZ, 2012). Considers policy identification, MRV, financing and co-benefits for transport NAMAs, with case studies from Colombia, Indonesia, South Africa (in preparation for Mexico, Costa Rica and Chile).	http://www.transferproject.org/index.php/hb
	Guidance general	Mitigation Momentum: Annual Status Report on NAMAs 2015.	http://www.mitigationmomentum.org/downloads/Mitigation_Momentum_Annual_Status_Report_Dec_2015.pdf
	Guidance general	Overseas Environmental Cooperation Center, Japan (OECC). NAMA guidebook: manual for practitioners working with mitigation actions.	http://www.oecc.or.jp/pdf/NAMA+Guidebook_Third+Edition.pdf
Identification of NAMA options	Information source/country examples	Compilation of information on nationally appropriate mitigation actions to be implemented by developing country Parties (UNFCCC, 2011). Compilation of the information on all NAMAs communicated by developing country Parties to date (i.e., all those contained in documents FCCC/AWGLCA/2011/INF.1 and FCCC/AWGLCA/2012/MISC.2 and Add.1, and those communicated by six developing country Parties, which have not previously been included in an official UNFCCC document.)	http://unfccc.int/resource/docs/2013/sbi/eng/inf12r02.pdf

Theme	Document category	Document title, author, and description	Web link
Identification of NAMA options	Information source/country examples	UNFCCC NAMA Registry. Developed at request of the Parties to record NAMAs seeking international support, to facilitate the matching of finance, technology and capacity-building support with these actions, and to recognize other NAMAs.	http://www4.unfccc.int/sites/nama/SitePages/Home.aspx
	Information source/country examples	Ecofys NAMA database. Collection of publicly available information on NAMAs and related activities. Also includes two NAMA templates.	http://www.nama-database.org/index.php/Main_Page
	Information source/country examples	National communications to the UNFCCC, in particular sections on mitigation assessments. (In the future, Biennial Update Reports and national inventory reports could also be valuable sources of information).	http://unfccc.int/national_reports/non-annex_i_natcom/submitted_natcom/items/653.php See also 6th compilation and synthesis of INCs: http://unfccc.int/resource/docs/2005/sbi/eng/18a02.pdf
	Information source/country examples	Technology needs assessments (TNAs) were designed to assist developing countries in identifying and analyzing priority technology needs, which may form the basis for a portfolio of environmentally sustainable technology projects and programs. This site contains the 'Handbook for Conducting Technology Needs Assessments for Climate Change' (UNDP, 2010), country reports and a UNFCCC analysis and synthesis report.	http://unfccc.int/ttclear/templates/rendercms_page?TNA_home See also: http://tech-action.org/
	Information source	National documents, including: <ul style="list-style-type: none"> • National development strategies such as poverty reduction strategies • National climate change strategies/policies • Relevant sector-specific policies and/or strategies, for example, national strategic energy plans, transport sector policies, agriculture and forestry sector policies, national investment policies, etc. 	Country specific
NAMA prioritization	Guidance	Developing Financeable NAMAs: A Practitioner's Guidebook (IISD, 2013). This guidebook offers a Quick Screen methodology to identify NAMA opportunities with the potential for climate financing, and a Deep Screen methodology to analyze and determine the most appropriate development options to meet country-specific needs.	http://www.iisd.org/publications/pub.aspx?pno=2784
	Guidance	Multi-Criteria Analysis for Climate Change. MCA4climate is a major new UNEP initiative providing practical assistance to governments in preparing their climate-change mitigation and adaptation strategies.	http://www.mca4climate.info/report-and-guidance/mca4-climate-report/
NAMA data sources	Information source	Statistical yearbooks National statistics reports for information about population, energy and other factors.	Country-specific

Theme	Document category	Document title, author, and description	Web link
NAMA data sources	Information source	Guidelines for National Greenhouse Gas Inventories (IPCC 1996, 2006) contain, among other valuable information, default values for emissions reduction calculations.	http://www.ipcc-nggip.iges.or.jp/public/gl/invs6a.html http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html
	Information source	Global Forest Resource Assessment (FRA): forestry information, including values for many individual countries.	http://www.fao.org/forestry/fra/en/
	Information source	IRENA Studies on Renewable Energy Potential. More than 10,000 references on renewable energy potential, searchable by country.	https://www.irena.org/potential_studies/index.aspx
	Information source	Climate Tech Wiki. Interactive database offers detailed information on mitigation and adaptation technologies. Collaborative effort of UNDP, UNEP, Renewable Energy & Energy Efficiency Partnership, UNEP Risoe Centre on Energy, Climate and Sustainable Development, NL Agency of the Dutch Ministry of Economic Affairs, Energy Research Centre of the Netherlands and Joint Implementation Network.	http://climatetechwiki.org/
NAMA costing	Country examples	Investment and financial flows assessments. Good source of information for national costs of mitigation actions in a variety of sectors obtained between 2008-11 through a UNDP project that developed a methodology for assessing investment and financial flows.	http://www.undpcc.org/en/financial-analysis/results
	Information source	Operational Guidelines for the Application of the Incremental Cost Principle. Information and guidance on incremental costs from the Global Environment Facility.	http://www.thegef.org/gef/policy/incremental_costs
	Information source/country examples	IRENA Renewable Energy Cost database and country profiles. Brief but comprehensive and up-to-date picture of the situation of renewable energy that includes energy supply, electrical capacity, energy access, policies, targets, investment climate, projects and endowment in renewable energy resources.	https://www.irena.org/menu/index.aspx?mnu=cat&PriMenuID=47&CatID=99
Climate finance	Guidance	Catalysing Climate Finance: A Guidebook on Policy and Financing Options to Support Green, Low-Emission and Climate-Resilient Development (UNDP, 2011). This guidebook is offered as a primer to countries to enable them to improve their assessments of the level and nature of the assistance they will require to catalyze climate capital based on their unique set of national, regional and local circumstances. Available in English, French, Spanish and Russian.	http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/catalyzing-climate-finance/

Theme	Document category	Document title, author, and description	Web link
Climate finance	Guidance	Blending Climate Finance through National Climate Funds (UNDP, 2011). This guidebook presents a process for designing and establishing an NCF and provides a simple, robust and transparent method for meaningful stakeholder engagement. In this way, countries are better equipped to manage climate finance and achieve results. Available in English, French, and Spanish.	http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climate-resilient-development/blending-climate-finance-through-national-climate-funds/
	Guidance	Design Options for International Assessment and Review (IAR) and International Consultations and Analysis (ICA) (OECD, 2011). Comprehensive overview of the objectives, scope, frequency, output, and process of ICA and IAR as an operational implementation part of the MRV process. This process is designed to enable countries to manage their own data in order to systematically identify gaps in technology, capacity, and financing, i.e. needs for international support.	http://www.oecd.org/env/cc/49101052.pdf
Measuring, Reporting, and Verification (MRV)	Guidance	Measuring, Reporting, Verifying: A Primer on MRV for Nationally Appropriate Mitigation Actions (UNEP-Risoe, 2011). Brief introduction to MRV developed for UNDP's Carbon Policy 2012 project, which includes lessons learned from current MRV frameworks and considers issues around baselines, quantitative and qualitative metrics, and boundary issues.	http://www.unep-risoe.org/~media/Sites/Unep-risoe/Publications%20%28Pdfs%29/UNEP%20Risoe%20C3%B8%20MRV%20NAMA%20primer.ashx
	Guidance	MRV for Low Carbon Development. Learning from experience in Asia (IGES, 2012). The report provides lessons and experiences obtained in Asia, through a variety of case studies, for the design and implementation of effective MRV systems.	http://pub.iges.or.jp/modules/envirolib/upload/4280/attach/MRVPolicyReport_ENG_web.pdf
	Guidance/ country examples	Climate Public Expenditure and Institutional Review (CPEIR). A potential tool for MRV of finance, CPEIRs review current climate expenditures from domestic and external sources of finance and identify ways in which climate-related expenditure can be tracked through time. The methodology was first tested in Nepal in 2011 and later in Bangladesh, Thailand, Samoa, Cambodia, Indonesia, Timor-Leste and Viet Nam.	http://www.aideffectiveness.org/CPEIR
	Information Source	Elements and Options for National MRV Systems (International Partnership on Mitigation and MRV, 2013). Summarizes key findings from the Partnership's Autumn School on 'MRV – today, tomorrow and the future', which took place in October 2012 in Germany, and provides additional know-how and technical guidance on the design and set-up of domestic MRV systems.	http://mitigationpartnership.net/international-partnership-mitigation-and-mrv-2013-knowledge-product-elements-and-options-national-mrv

Theme	Document category	Document title, author, and description	Web link
Measuring, Reporting, and Verification (MRV)	Guidance	Multi-Stakeholder Decision-Making (UNDP, 2012). This guidebook steers readers through constructing an adaptable and flexible multi-level, multi-sector, multi-stakeholder governance framework, which is an essential tool for governments, practitioners and concerned citizens to successfully develop and negotiate green, low-emission and climate-resilient development strategies.	http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/MultiStakeholder.html
Stakeholder engagement	Guidance	Stakeholder Analysis (Overseas Development Institute, 2009). Guides users through a stakeholder analysis approach.	http://www.odi.org.uk/resources/details.asp?id=5257&title=stakeholder-analysis
	Guidance	Stakeholder Engagement: A Good Practice Handbook for Companies Doing Business in Emerging Markets (IFC, 2007). Key concepts and principles of stakeholder engagement from a business perspective, including the practices that are known to work and the tools to support the delivery of an effective stakeholder engagement plan. Available in multiple languages.	http://www.ifc.org/wps/wcm/connect/topics_ext_content/ifc_external_corporate_site/ifc+sustainability/publications/publications_handbook_stakeholderengagement_wci_1319577185063
	Guidance	Stakeholder Engagement Standard 2011. Guidance developed by the non-profit organization Accountability that applies to all types of stakeholder engagement processes.	http://www.accountability.org/images/content/5/4/542/AA1000SES%202010%20PRINT.pdf
	Guidance	Indicators of Sustainable Development: Guidelines and Methodologies (UN, 2007). Presents the third set of indicators of sustainable development and provides suggestions on how to adapt them to national conditions and priorities.	http://www.un.org/esa/sustdev/natlinfo/indicators/guidelines.pdf
Sustainable development indicators	Guidance	Guidance on Sustainability Assessment (CDM Gold Standard, 2009). Annex on indicators from Toolkit that guides project proponents to successfully implement high-quality mitigation projects that also make measurable positive impacts on sustainable development.	http://www.cdmgoldstandard.org/wp-content/uploads/2011/10/Annex_I.pdf
	Guidance	Institutional Aspects of NAMA development and Implementation presents an overview and analysis of how developing countries may arrange their institutional and organizational structures or enhance their existing ones in order to deal with new developments under the international climate change mitigation regime. The guidance focuses on how to ensure the implementation of NAMAs as vehicles for transformative and long-lasting change.	http://www.unepdtu.org/Newsbase/2014/04/New-Publication-Launched-Institutional-aspects-of-NAMA-development-and-implementation

TOOLS

Theme	Description	Web link
Marginal Abatement Cost Curves	ESMAP MACTool is a software tool which provides a way to build marginal abatement cost curves and calculate break-even carbon prices. It has a user-friendly interface, which guides the user through a simple data entry process, from which it automatically generates output. A beta version is currently available.	http://esmap.org/MACTool
GHG emissions database	The World Resources Institute (WRI) and World Business Council for Sustainable Development (WBCSD) Greenhouse Gas Protocol; also includes registries with company inventories.	http://www.ghgprotocol.org/
Carbon market methodologies	Besides those of the CDM, various voluntary standards and methodologies have evolved, including Gold Standard, Verified Carbon Standard (VCS), the Climate Action Reserve and others.	http://cdm.unfccc.int/methodologies/index.html http://www.cdmgoldstandard.org/ http://www.v-c-s.org/ http://www.climateactionreserve.org/
Investment and financial flows methodology	This 2009 UNDP methodology provides a step-by-step approach to costing mitigation measures within BAU and mitigation scenarios in a way that is fully scaleable from the project to sectoral level. Includes sector-specific guidance. Available in French, Spanish and Russian.	http://www.undpcc.org/en/financial-analysis/methodology
LEDS	Step-by-step approach to designing a LEDES at the US Department of Energy LEDES website.	http://en.openei.org/wiki/Gateway:Low_Emission_Development_Strategies
De-risking renewable energy investments	This report (UNDP, 2013) describes an innovative framework to support policy-makers in quantitatively comparing the impact of different public instrument packages to scale up renewable energy in developing countries. The report presents findings from case studies in four illustrative countries and draws on these results to discuss possible directions for enhancing public interventions to promote renewable energy investment. The framework is accompanied by a financial tool for policy-makers in Microsoft Excel.	http://www.undp.org/content/undp/en/home/librarypage/environment-energy/low_emission_climateresilientdevelopment/derisking-renewable-energy-investment/
NAMA Design	The NAMA tool, developed by GIZ, provides developers and implementers of NAMAs with brief step-by-step instructions on how to develop a NAMA. The tool navigates users to the relevant information, knowledge, instruments and publications available. The process is structured into ten steps. The ten-step approach is designed to supply users with more data and accessible instruments for certain aspects of the NAMA development.	http://mitigationpartnership.net/nama-tool-steps-moving-nama-idea-towards-implementation

NETWORKS

Title	Description	Web link
NAMA Partnership	UNFCCC partnership created to share best practices and knowledge that will aid in the preparation and implementation of NAMAs with the aid of three areas of work: <ul style="list-style-type: none"> • NAMAs in the context of national development • Preparation and implementation of individual NAMAs in different sectors or technologies • Financing 	www.namapartnership.org
International Partnership on Mitigation and MRV	In the framework of the Petersberg Climate Dialogue in May 2010 in Bonn/Germany, the governments of South Africa, South Korea and Germany launched the International Partnership on Mitigation and MRV. The overall aim of the Partnership is to support practical exchange on mitigation-related activities and MRV between developing and developed countries in order to help close the global ambition gap.	http://www.mitigationpartnership.net/
LEDS Global Partnership	The Low Emissions Development Strategies (LEDS) Global Partnership was founded to advance climate-resilient low-emission development through coordination, information exchange and cooperation among programs and countries working to advance low emissions growth. Launched in early 2011, the partnership currently brings together 113 governmental and international institutions through a series of regional and thematic platforms.	http://ledsgp.org/home

Annex 2. NAMA Design Template

NAMA Design Template

Ver. 01.00 Jan2013

A. NAMA SUMMARY

A.1 Executive Summary		
Title of NAMA		

B. INTRODUCTION

B.1 Information of NAMA sectoral scope	
NAMA and its opportunity for transformational change	

C. BACKGROUND TO THE SECTOR

C.1	Provide an overview of the sectoral background in the country
Federal / provincial policies	Name of the policy and year of introduction Implementing department / agency Policy brief Current level of acceptance or compliance Indicate source (web link) of policy document
Federal / provincial regulations	Name of the regulation and year of introduction Implementing department / agency Regulation brief Current level of acceptance or compliance Indicate source (web link) of Regulation document
C.2 Current level of activities (Baseline)	Provide all relevant information and details of the on-going activities for establishing a credible baseline
Sector / Sub-Sector	Provide details of the sector and/or the sub-sector as applicable Please consider referring to sub-sectors as included in the sectorial tables of IPCC Good Practice Guidance and/or the approach applied in National Communications submitted in line with the corresponding manual for Non-Annex 1 countries).
Boundary	Provide the geographical coverage of the NAMA (national / regional / sub-regional / province or state / district)

GHG emissions and sources	List the major sources of GHG emissions and the GHG it is proposed to include in the NAMA	
Target NAMA beneficiaries	List the target beneficiaries under the NAMA e.g. manufacturers, consumers – domestic or industrial or commercial – project developers Provide a quantitative assessment of the size of the beneficiaries under the NAMA	
Inclusion criteria	List the criteria that are likely to be followed in including any beneficiary situated within the NAMA boundary to join NAMA, e.g. size of the activity (MWe or MWth), current efficiency levels, technology etc.	
C.3 Baseline activity and emissions	Provide a brief of the BAU scenario of the sector / sub-sector and latest emissions data set with sources	
Emissions data set	Provide the latest emissions data set for the sector / sub-sector and cite sources. Indicate any limitation on the extent of availability of data	
Emissions archive (historical)	Provide details of past emissions and the trend for the sector / sub-sector under the NAMA	
Agents and projections	Provide a brief analysis of the agents that are influencing emissions developments	
BAU scenario	List the major assumptions and the future outlook (projections) of GHG emission levels / development pattern in the sector / sub-sector under the NAMA in the BAU scenario Provide an outline of influence of any federal or provincial policy or regulations on the above emission projections	
C.4 Barriers	Provide a brief description of the barriers faced by the sector / sub-sector to achieve any or additional GHG emission reductions in their absence	
Barriers	Provide a brief summary of the barriers faced by the sector / sub-sector for achieving GHG emissions reductions. Typical barriers relate to technology, investment, economic viability, lack of knowledge / skills/ training / experience, regulatory, historical failures. The guidance for various barriers can be sourced from CDM (http://cdm.unfccc.int/) Describe how the proposed activities under the NAMA will overcome the barriers for the sector / sub-sector.	
C.5 Proposed activities	List the activities and expected outcomes with a tentative time-schedule under the NAMA	
Proposed activities	Boundary and expected outcomes	Implementation schedule
(a)		
(b)		
(c)		
(Add rows as required)		
C.6 Estimation of annual GHG emission reductions	Provide an approximate estimate of the annual GHG emission reductions anticipated to be achieved under the NAMA from all the proposed activities on a cumulative basis (If the NAMA does not involve implementation of actual GHG mitigation projects, provide an indirect estimate of the GHG emission reductions it is proposed to achieve due to the NAMA activities)	
Annual GHG emission reductions	Attach the assumptions and detailed emission reductions calculations as relevant	

C.7 Overall benefits	Describe the overall expected benefits (both quantitative and qualitative) for the stakeholders from the implementation of the proposed activities under the NAMA in the targeted sector / sub-sector.	
Environmental	List the major environmental benefits it is proposed to achieve in the NAMA	
Economic	List the major economic benefits it is proposed to achieve in the NAMA	
Social	List the major social benefits it is proposed to achieve in the NAMA	
Others	List other major benefits it is proposed to achieve in the NAMA (e.g. technology, transfer of IPR, skills, replication potential to scale GHG mitigation, uptake potential of the national policy / regulation on low carbon due to NAMA etc.)	
C.8 Life time and crediting period	Provide the technically defined life time of the project and the proposed crediting period for the generation of GHG emission reductions. For crediting periods of more than ten years, indicate (if possible) whether the baseline will be adjusted before the start of second crediting period	
Proposed activities	Expected life time (years)	Proposed crediting period (7/10/14/21 yr) (indicate w or w/o baseline adjustment)\
(a)		
(b)		
(c)		
(Add rows as required)		
C.9 Measuring, Reporting & Verification	Provide a brief summary of the MRV concept and approach for the proposed activities under the NAMA	
Measuring	Provide a description of the monitoring methodology and list key monitoring parameters as applicable for the Sector and its applicability for the sub-sector Provide a brief summary of monitoring Infrastructure and competency available / proposed to be deployed	
Reporting	Provide a brief summary of modus operandi on reporting along with the roles and responsibilities of the team	
Verification	Summarize the proposed type of verification, approach, frequency, standards and engagement of third parties, including whether mandated by donor or in accordance with host-country requirements Indicate the extent of anticipated overlapping with other programs like CDM, voluntary projects and also procedures to avoid the double counting of GHG emission reductions	
C.10 Costs (USD)	Provide an estimate of the transaction costs for NAMA development and indicate the means of financing	
Type of activity	Total cost	
NAMA documentation		
Feasibility report		
Implementation		
Operation		
....		

C.11 NAMA Investment and means of finance (USD)	Provide an estimate of the NAMA project activity (fill up the columns as applicable)
NAMA activity	Total cost per NAMA activity
(a)	
(b)	
(c)	
(Add rows as required)	

D. OTHER RELEVANT INFORMATION AND ANNEX

D.1 Other information	Provide details of any other information relevant to the NAMA implementation
D.2 Annex information	List the title of the Annex here
Annex I	Title
Annex II	Title
Annex III	Title

Annex 3. Tools and standards for assessing emissions reductions

Level	Name	Description	Link
GHG emissions accounting standards for policies and actions	GHG Protocol: Mitigation Accounting	The GHG Protocol is developing two new standards: 1) the Policies and Actions Standard, which provides guidance on quantifying the greenhouse gas effects of policies and actions; and 2) the Mitigation Goals Standard, which provides guidance on tracking progress toward national and sub-national GHG reduction goals	http://www.ghgprotocol.org/mitigation-accounting
GHG emissions accounting standards across sectors	Emissions Modelling Platform (EMP)	EMP is a generic term encompassing a variety of models developed in different parts of the world. Information about them can be found at the United States Environmental Protection Agency's (EPA) air-quality management portal	http://www.epa.gov/air/aqmportal/index.htm
	GHG Protocol for Project Accounting: A GreenHouse Gas Protocol Initiative 2005	Provides common GHG project accounting concepts, procedures, and principles	www.ghgprotocol.org/standards/project-protocol
	MARKAL	A generic model tailored by the input for measuring the emissions levels of a specific energy system across all levels, from national to local. Developed by the Energy Technology Systems Analysis Program (ETSAP) of the International Energy Agency	http://www.iea-etsap.org/web/MARKAL.asp#back
	ISO 14064-1:2006 Standards	ISO 14064 consists of three parts, detailing specifications and guidance at the organizational and project levels, and for GHG quantification, monitoring, reporting, validation and verification	http://www.iso.org/iso/home.html
GHG emissions accounting standards for specific sectors	IPCC Guidelines for National Greenhouse Gas Inventories (2006)	Provides guidance and methodologies for different sectors of the economy for estimating GHG emissions to establish national inventories	http://www.ipcc-nggip.iges.or.jp/public/2006gl/index.html

Level	Name	Description	Link
	High-Effective Resolution Modelling Emissions System (HERMES)	An area-specific emissions model developed by the Barcelona Supercomputing Center (BSC-CNS)	http://www.bsc.es/earth-sciences/hermes-emission-model
	Tool for Calculating Greenhouse Gases in Solid Waste Management - Institut für Energie- und Umweltforschung (IFEU)		http://www.ifeu.org/english/index.php?bereich=abf&seite=klimarechner
	Projects Monitoring - GIZ Energising Development Program (EnDev)		http://www.giz.de/themen/en/35969.htm
	Manual for Calculating the GHG Benefits of GEF Projects: Energy Efficiency and Renewable Energy Projects – Global Environment Facility		http://www.thegef.org/gef/sites/thegef.org/files/documents/C.33.Inf_18%20Climate%20Manual.pdf
	Manual for Calculating Greenhouse Gas Benefits for Global Environment Facility Transportation Projects		http://www.thegef.org/gef/GEF_C39_Inf.16_Manual_Greenhouse_Gas_Benefits
	Cool Farm Tool – University of Aberdeen		http://www.coolfarmtool.org/CoolFarmTool
	International Local Government GHG Emissions Analysis Protocol – ICLEI		http://www.unep.org/urban_environment/PDFs/InternationalStd-GHG.pdf
	Manual for Calculating Greenhouse Gas Benefits for GEF Transportation Projects – Institute for Transportation and Development Policy		http://www.thegef.org/gef/sites/thegef.org/files/publication/GEF_CalculatingGHGbenefits_webCD.pdf
	Clean Development Mechanism and Joint Implementation methodologies approved by Executive Board under the UNFCCC	Approved baseline and monitoring methodologies for small-scale and large-scale sectors of the economy	http://cdm.unfccc.int/methodologies/index.html
NAMA Sustainable Development Evaluation Tool		UNDP tool to track the sustainable development impacts of NAMAs	Finance Structure and its Management for a Rural Electrification NAMA

Source: Based on 'Nationally Appropriate Mitigating Actions: A Technical Assistance Source Book for Practitioners' (GIZ 2012)

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