

NAMAs in the refrigeration, air conditioning and foam sectors. A technical handbook.



On behalf of



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# **Proklima**

Proklima is a programme of the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH. Since 2008 Proklima has been working successfully on behalf of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) under its International Climate Initiative (ICI) to promote ozone-and climate friendly technologies.

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# The International Climate Initiative

Since 2008, the International Climate Initiative (ICI) of the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) has been financing climate and biodiversity projects in developing and newly industrialising economies, as well as in countries in transition. Based on a decision taken by the German Parliament (Bundestag), a sum of EUR 120 million is available for use by the initiative annually. The ICI is a key element of Germany's implementation of fast start financing. The Energy and Climate Fund launched by the German Government in 2011 is a further source of funding for international climate protection projects, and for activities to conserve biodiversity. Part of that funding is deployed through the ICI. That fund is replenished from the auctioning of emission permits. This innovative source makes Germany well-prepared to deliver long-term financing for climate and biodiversity projects worldwide.

The ICI is active in four areas: Mitigating green-house gas emissions, adapting to the impacts of climate change, conserving natural carbon sinks with a focus on reducing emissions from deforestation and forest degradation (REDD+), as well as conserving biological diversity.

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# **Executive Summary**

For the implementation of a nationally appropriate mitigation action (NAMA) in the refrigeration, air conditioning and foam (RAC&F) sectors, five core building blocks are recommended.

The general and specific outcomes of a NAMA are defined in a strategic implementation plan. This plan is based on a good understanding of the targeted sector, its industries, the current and future emissions, the technology status, technical options and the current and future regulatory framework. Ideally, the sector and its elements are analysed in a sector study.

It is recommended that NAMAs in the RAC&F sectors or their subsectors are carried out in phases of about five years. Several phases combined can form a roadmap (cf. module 6). The time frame of the NAMA to be defined includes milestones, such as emission mitigation milestones, results and resource framework. The annual work plan includes all activities to be carried out in a specific year as well as an overview of all activities and years of the NAMA.

The implementation of the NAMA also follows clear and transparent governance. Government authorities are coordinated with a predominantly governmental NAMA steering group. It is advisable that the steering group is chaired by the leading ministry or its representative in the management implementation team. The implementation management team reports to an inter-ministerial steering group, and is responsible for carrying out the NAMA on a daily basis. It can be supported through an expert group consisting of national or international experts. The implementation management team and the expert group consult with industry and its associations. It is recommended to hold a first stakeholder workshop at the beginning of the NAMA, where the overall strategy of the NAMA is presented, and input of the stakeholders, including the industry, is sought.

The first step concerning NAMA funding and financing is the identification of the NAMA funding requirements. Funding requirements can then be met through national public and private sources or through international financing, as in the case of a supported NAMA. The NAMA registry supports the matchmaking of the country seeking financial support and international donors. This module explains the main elements of a NAMA design document as a tool for requesting international financing support through the registry.

Finally, the measurement, reporting and verification (MRV) tracks the achievement of milestones and the progress of the tasks set out in the timetable, milestone and resource plans. The MRV tracks the progress of the implementation against the set targets, in particular the emission reduction targets.

The recommended steps for the implementation of a RAC&F NAMA serve as a general guidance. The approach of NAMAs allows flexibility for responsible government entities in organising the different recommended building blocks for implementation.

# 1. Introduction

Until today, most support initiatives by developed countries have focused on the preparation of NAMA proposals and the creation of enabling environments for NAMA implementation, which is also referred to as "NAMA readiness". However, few NAMAs have entered into implementation so far.

There is an extensive experience within the framework of the Montreal Protocol in carrying out sector emissions mitigation actions with the focus on ozone depleting substances (ODS). Currently nearly all developing countries are implementing such strategies, mainly related to the refrigeration and air conditioning sector, focused on the phase-out of hydrochlorofluorocarbons (HCFC).

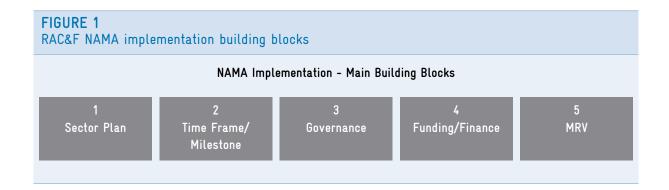
The suggested methodology for carrying out a NAMA in the RAC&F sectors builds on the experiences gained under the Montreal Protocol. At the same time, key elements for carrying out NAMAs in the framework provided by the United Nations Framework Convention on Climate Change (UNFCCC) are integrated, such as the NAMA registry. The implementation plan to finance NAMAs considers the requirements of international donors.

This module provides guidance on designing an implementation strategy and plan. This serves firstly to support developing countries in planning and carrying out their implementation activities and secondly to support developing countries in their efforts to attract donors for funding the implementation efforts.

# 2. Methodology

The approach in this handbook suggests that the implementation of a specific NAMA in the RAC&F sectors is comprised of five key building blocks (Figure 1) below. This chapter outlines the key elements of each building block.

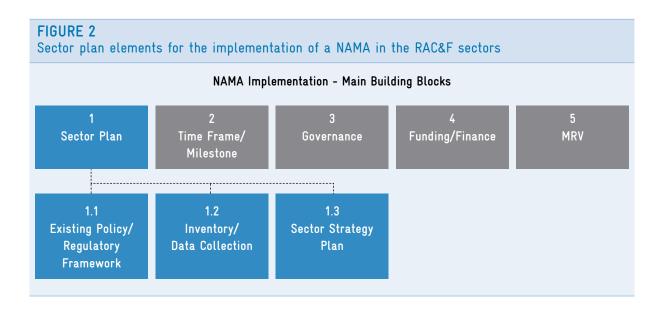
The approach particularly follows the requirements set out by donors for supported NAMAs such as the joint NAMA facility by Germany and the United Kingdom (UK Government, 2013) and the requirements for the submission of a NAMA to the NAMA registry of the UNFCCC. The specific elements are based on the experience from HCFC phase out management plans (HPMP) in the RAC&F sectors under the requirements of the Multilateral Fund (MLF) of the Montreal Protocol.



# 2.1 Sector plan and study

The sector plan aims at providing recommendations for the implementation. The strategy is ideally based on pragmatic, achievable, technically and financially feasible implementation options. To develop the sector plan, the strategy and the implementation recommendations, it is suggested to follow three steps as illustrated in Figure 2:

- 1. Comprehensive understanding of the relevant policy and regulatory framework in the sector,
- 2. Inventory and data collection and industry survey for the projection of the baseline emissions,
- 3. A sector strategy plan.



#### Policy regulatory framework

NAMAs are policy instruments to enable emission reductions. The analysis of the existing policy and regulatory sector framework is an essential starting point for defining an appropriate NAMA strategy. The NAMA aims at altering the existing policy and regulatory framework in order to

- Allow for the removal of barriers to transform the sector towards a low carbon pathway,
- Reduce or ban high global warming potential (GWP) emission sources.

For NAMAs in the RAC&F sectors, this includes addressing both direct emissions deriving from leaked refrigerants or foam blowing agents and indirect emissions related to fossil fuel energy consumption. Regulations and standards will serve to tax or restrict high-GWP refrigerants and provide bonuses for low-GWP refrigerants. Eventually, all high-GWP refrigerants need to be phased out. Regarding energy consumption, measures such as mandatory minimum energy standards and top runner programmes are recommended. Module 8.1 provides a detailed discussion on the relevant policy and regulatory framework.

The NAMA implementation plan also needs to identify which government entity takes the lead on addressing the intended policy or regulation changes to transform the sector. Next to the lead government entity, other government entities and relevant stakeholders involved in the assessment of the regulatory framework should be identified with a description of their roles with regard to the regulatory and policy environment.

For the implementation of the HPMPs under the MLF, governments are requested to establish a government project management office. This office is the central coordinating entity with all other government authorities and ministries for the required regulatory or legal changes. For the effective implementation of NAMAs in the RAC&F sectors, a similar approach could be taken.

The assessment of the regulatory and policy framework particularly needs to consider the removal of relevant barriers:

- Financial barriers, such as high upfront costs,
- Institutional barriers, such as standards contradicting technical options,
- Economic barriers, such as externalities (costs that are not included in market prices),
- Technical barriers, such as availability of components,
- Information barriers, such as limited awareness of options,
- · Capacity barriers, such as lack of skilled labour.

A complete picture of the specific barriers is necessary to find appropriate solutions, together with the relevant stakeholders. Module 3 gives a systematic description of barriers and possible ways to overcome them.

# Inventory and data collection

As a best practice NAMA approach, a comprehensive collection of all relevant sector data takes place prior to implementation. The most relevant data are:

- Sector emissions data (cf. module 1),
- Value chain information on private sector companies involved at the various stages of the value chain (i.e. manufacturers of equipment, products, operators, end users and service companies),
- Assessment of nationally and internationally available and nationally deployable low-GWP technical options (cf. module 3).

A pre-condition for successful implementation of a NAMA in the RAC&F sector is the creation of reliable baseline emissions data. Baseline emissions data are established on the basis of an emissions inventory covering both direct and indirect emissions. The recommended approach, as described in detail in module 1, is an emissions inventory based on a Tier 2 vintage bottom up stock model.

The vintage bottom up stock model also forms the basis for estimating the emission reduction potential in consideration of low-GWP technical options. The methodologies for defining business-as-usual (BAU) emission scenarios, the emission reduction potential and cost estimates are explained in previous modules:

- Estimate greenhouse gas (GHG) emission reduction potential by identified GHG mitigation measures in the NAMA sector (cf. module 1, 5),
- Set NAMA targets considering the possibility of realisation of identified GHG mitigation measures in the NAMA sector (cf. modules 3, 4, and 5).

#### Sector strategy plan

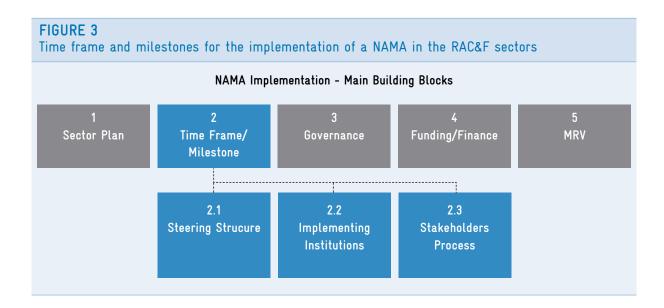
The data collection will be used to compile a comprehensive sector plan. The sector plan also needs to consider inputs from the stakeholder process, in particular industry consultations, as outlined in chapter 2.3. The sector plan needs to consider the overall climate strategy of the country. Ideally the RAC&F sector or subsector approaches are integrated into the national climate plan and harmonised within a multi-sector approach. The sector strategy plan should also be subject to stakeholder consultations.

# 2.2 Time frame and milestones

Similar to the HPMPs under the Montreal Protocol it is recommended to implement a NAMA in phases covering a time period of about five years. Several subsequent phases would then comply with the overall roadmap target as suggested in module 6.

The three elements regarding the planning and tracking of progress for each phase of about five years are illustrated in Figure 3:

- 1. Time frame and milestone plan,
- 2. Results and resource framework,
- 3. Annual work plans.



# Time frame and milestone plan

The time frame and milestone plan indicates the periods over which the main activities will be carried out. It is suggested to define time indicators for each year on a quarterly or half yearly basis.

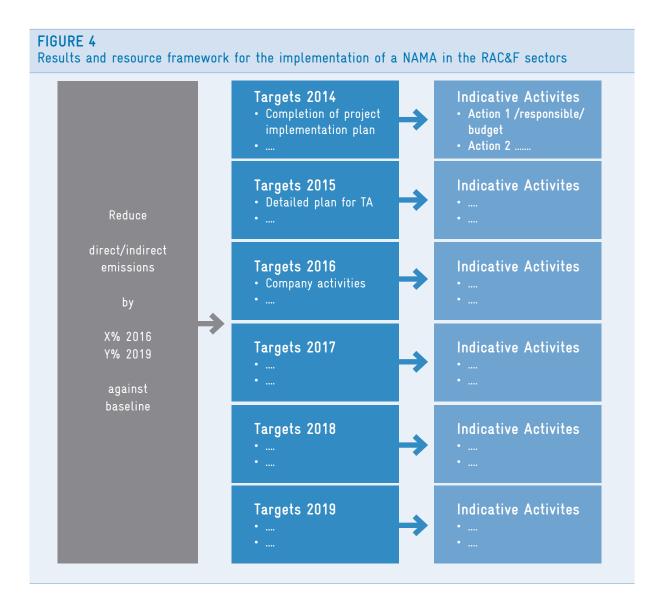
Table 1 illustrates a time frame and milestone plan that gives an overview over the planned implementation activities. It provides information on major activities including project management, monitoring, and implementation of a management information system, activities regarding policy, regulations and standards, the technical support programme and awareness and training activities. In addition, the table should include more details on specific activities with companies, specifically end users, on the planned mitigation actions in the selected sectors and subsectors.

TABLE 1 Time frame/Milestone plan												
	2014		2015		2016		2017		2018		2019	
Project management	H1	H2	H1	H2	H1	H2	Н1	H2	H1	H2	H1	H2
Finalisation of overall implementation plan												
Project implementation and coordination												
Monitoring												
Monitoring project implementation												
Verification of milestone targets												
Management Information System												
Development of Management Information System												
Implementation and enforcement												
Policy and regulation actions												
Development related policies and regulations												
Implementation and enforcement												
Technical standards and enforcements												
Development of technical standards												
Implementation and enforcement												
Technical support programme												
Providing technical support to participating enterprises												
Awareness and training												
Promoting awareness and training activities												
Company/end user activities												

<sup>1</sup> The time frame and milestone plan has been developed according to the model established for the HCFC Phase Out Plans (HPMP) under the Montreal Protocol, see example for China on page 6 (http://www.undp.org/content/dam/undp/documents/projects/CHN/00063099/PRODOC.pdf)

# Results and resource framework

The results and resource framework provides an overview of the targets of the NAMA for its entire period of implementation, as illustrated in Figure 4. For each implementation year, the direct and indirect emission reduction targets are shown for the main activities. The responsible implementing actor and the related budget item should be shown for each activity.



# Annual work plan

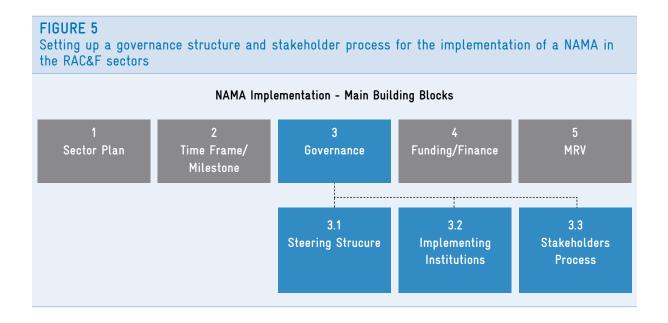
The annual work plan (Table 2) shows all implementation activities, the responsible parties to carry out the activities, the source of funds, a budget line description and spending plan over the years.

TABLE 2 Annual work plan									
	Responsible party	Source of funds	Budget description	Year					
				2014	2015	2016	2017	2018	2019
Activity 1									
Activity 2									
Activity 3									
Activity 4									
Activity 5									
Activity 6									
Activity 7									

# 2.3 Governance and stakeholder process

A sound NAMA implementation is based on a clear and transparent governance structure and stakeholder process. The main elements for establishing these are outlined in Figure 5:

- 1. NAMA project steering structure including the nomination of a leading government entity,
- 2. Nomination of a national management and implementation team. This team can be supported, in particular in the case of an internationally supported NAMA, by an international implementation agency,
- 3. A well defined stakeholder process, including the identification of all relevant stakeholders, their roles and a defined process allowing for transparent interaction with the stakeholders.



# NAMA governance and steering

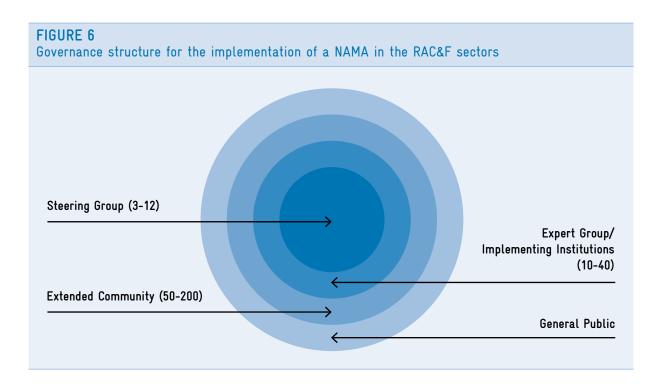
It is a characteristic of the NAMA instrument to build on strong governmental involvement for implementation. The nomination of a government entity with the capacity, standing and financial resources to carry out the implementation of the NAMA is a key success factor. This entity ideally also chairs the steering structure of the project. The steering structure includes all relevant government entities for the implementation, but it should not include more than 10 to 12 members. It is advisable that the national NAMA focal point and the focal point for the overarching national climate strategy are also members of the steering group.

As suggested in chapter 2.1, a lead government entity, ideally on the ministerial level, is nominated with legislative power or power to trigger legislative changes. This entity would be accountable for the overall management of the NAMA, including financial, time and resource management for the implementation. For the RAC&F sectors, it could be the government entities responsible for the implementation of the HPMP under the Montreal Protocol. These entities are already very familiar with the industry, its stakeholders, and sector specific mitigation approaches. A challenge here is that a NAMA for the RAC&F sectors also needs to cover indirect emissions, and that policy and regulatory changes regarding these indirect emissions will be required as well.

#### Implementing institutions

The second level below the steering group, as illustrated in Figure 6, is formed by the implementation management team. This team will report to the steering group. The implementation management team should consist of experts from the relevant ministries or government agencies.

Participation of leading industry experts or national or international implementing agencies can also be considered. If national or international implementation agencies are to be employed, they should already have experience in the RAC&F sectors, such as experience with HPMP implementation, hydrofluorocarbon (HFC) inventories, policy advice for and implementation of demonstration or pilot projects with relevance for the subsector.



#### **BOX 1**

## Roles and responsibilities of the members and participating institutions

The roles and responsibilities of the members and participating institutions in the implementation management team should be defined:

- Description of involved institutions, roles and responsibilities, such as government bodies, climate
  change or the National Ozone Units, industry associations, academic institutions, consultants and other
  stakeholders (modules 1, 8.1, and 9),
- · Map of communication flows or organisational chart of the governance structure,
- · A detailed time plan, schedule and milestones for individual actions,
- Description of the role and responsibilities of a partner agency and other cooperating implementing agencies or private sector and public entities have to be described for the NAMA proposal.

#### Stakeholder process

Stakeholders are those actors who are affected by the NAMA in a positive or negative way. This is underlined by the UNFCCC: "For the government, having a fair and equal representation of all major stakeholders in the process of establishing a NAMA ensures the opportunity to identify, reflect and integrate supportive and opposing views into the NAMA development" (UNFCCC, 2012). The engagement of the stakeholders is relevant for the acceptance of the NAMA.

Identifying and communicating the benefits and co-benefits to the various stakeholders is indispensable in order to get the wide acceptance of the NAMA strategy from key industry stakeholders such as RAC&F industry associations, key manufacturers, end-users of RAC equipment, distributors and the service sector. For the participation of the private sector it is important to first analyse the business models of the involved private actors including the specific risks and opportunities.

Industry associations play a key role as interface between the government and individual companies. Communication through these associations instead of individual companies is important to ensure that a competitive level is maintained. Still, the identification of specific companies can be considered in some cases, for example where a demonstration of alternative technologies with front running companies is suitable to break the ice and allow for an easier transformation of an industry sector.

Formally informing and involving stakeholders throughout the planning and implementation ensures their participation and acceptance of the NAMA. Therefore, a formal process should transparently lay out how stakeholders can be engaged. At least the following steps should be considered:

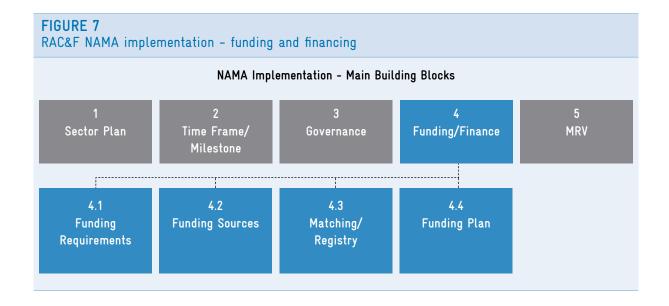
- Workshop I: Initial industry consultation,
- Workshop II: Final review of implementation sector plan (see chapter 2.1) through a second stakeholder consultation.

In addition, stakeholders will be involved according to the time frame and milestone plan as outlined in chapter 2.2.

TABLE 3 Important stakeholders for the implementation of a NAMA in the RAC&F sectors					
Category	Stakeholders				
Public stakeholders (governmental bodies)	Ministry of Industry, Ministry of Environment NAMA Focal Point National Ozone Unit				
Public stakeholders	Refrigeration and Air Conditioning Associations Foam Manufacturing Associations RAC&F Manufacturing Industry End-users of RAC&F equipment (e.g. retail sector)				
Non-governmental organisations (NGOs)	International NGOs (e.g Greenpeace, EIA, WWF) National NGOs				
Consultants, Academia, Research institutes	UNEP, UNIDO, UNDP, Worldbank, GIZ, AFD, etc.				
Commercial Refrigeration	Refrigeration Technology Centres, Engineering Institutes, etc.				

# 2.4 Funding and Financing

Figure 7 outlines four steps on NAMA funding and financing within the implementation plan.



# Funding requirements

As a first step, the funding and financing for the NAMA implementation requires a detailed assessment of the funding requirements. The submission of a NAMA financing plan based on the financing needs is one of the main components for a NAMA funding request addressed to international donors.

The financing assessment can differentiate between the following budget lines:

- Private sector leverage or incremental cost financing,
- End user leverage or incremental cost financing,
- · Capacity building,
- Project management costs,
- Technical assistance and implementation costs.

# **Funding sources**

Financing can be met through the following funding sources:

- Host country contribution,
  - Private sector co-financing,
  - Government contribution,
- Donor country contribution.

The host country's contribution to the financing includes private sector co-financing and government contribution. The private sector will typically have to cover costs that correspond to the costs of conventional technologies. Governments cover the costs for the removal of barriers and establishing the framework for the introduction of new technologies. The donor country contribution or request for donor funding contribution consequently covers the gap between the funding requirements and the domestically available financing. This typically corresponds to the incremental costs of new technologies and additional measures such as for capacity building. Once the international funding requirements are determined, the submission of the NAMA to international donors as a supported NAMA can take place.

The funding and financing arrangements with the donors then need to confirm the financing of the main implementation components options. The financing plan should transparently detail the origination and use of funds. Developing countries and donor countries are also requested to provide the financing and funding information in their Biennial Update Reports (BUR) as part of their National Communication (NC).

# NAMA registry and NAMA description document

The submission of the NAMA proposal to the UNFCCC registry also serves as one of its key functions the matching of developing countries seeking financial support for their NAMAs and developed countries financing these NAMAs as donors (Climate Funds Update, 2012).

This matching can be considered the most important and fundamental step towards NAMA implementation. Possibilities to finance NAMAs include bilateral financing and multilateral financing. In bilateral financing, typically a developed country supports a developing country. Multilateral financing might be achieved through the Green Climate Fund or the Global Environment Fund (GEF) or financing through regional developing banks like the Asian Development Bank (ADB) or the Inter-American Development Bank (IADB). The financial framework is described in module 8.2. Once the matchmaking has taken place, there should be an agreement on the financing as well as on the MRV. More information about the prototype registry can be found online at the UNFCCC homepage<sup>2</sup>. The official launch of the UNFCCC registry took place 2012 at the COP18 in Doha.

#### BOX 2

#### Preparing a NAMA description document

The prerequisite of the NAMA registry is a NAMA description document summarising the following **general** information:

#### NAMA title,

- · Type of NAMA,
- Objectives and general description (including RAC&F sectors and subsector focus, emission mitigation potential (modules 1, 3)),
- · Contribution to sustainable development (including co-benefits (module 10)),
- Detailed description of measures and activities that will be implemented (including technical options, removal of barriers (module 3, 4)),
- Coordination and management responsibilities (modules 8, 9),
- Implementation plan, structure and roles of key stakeholders (including anticipated time frame for implementation, list of suitable project candidates, manufacturers, end-users, suppliers, companies taking part in demonstration projects, description of industry associations etc.).

In addition to this general information, it should be clearly indicated how the baseline scenario was derived, which is again based on the inventory data.

#### Further key elements are:

- Expected emission reductions that can be achieved with the introduction of the technical options,
- Associated costs,
- · A clear idea of the MRV process and the parameters to be measured,
- · Possible financing options.

The handbook provides guidance on how to derive all the needed information listed above. This information has to be summarised in the description document. So far, there are no fixed standards for the description document. However, there are templates which can be used to shape the description document for the RAC&F sectors.

#### NAMA templates

UNEP Risoe has developed a NAMA idea note template (NINO) which is online available at http://namapipe-line.org/; the template might be used for submission to the UNFCCC<sup>3</sup>. NINO contains all essential information for an activity being proposed as a supported NAMA. The template corresponds to the Project Identification Note (PIN) for the Clean Development Mechanism (CDM), namely providing NAMA developers with a common information platform when discussing actions with possible donors. If the NINO format turns out to be useful in articulating ideas for NAMAs, UNEP Risoe will receive and publish NINOs on www.namapipeline.org, until a formal NAMA registry is launched. Alternatively, elements of the UNFCCC NAMA template as suggested by Wang-Helmreich et al. (2011)<sup>4</sup> can be extracted.

#### The funding plan

The funding plan includes the distribution of the overall budget on the various budget lines as defined above as well as the funding plan over time.

For major recipients of the funding milestone based payments should be agreed upon. Therefore, grants should be paid out in tranches.

<sup>3</sup> available at http://namapipeline.org/

<sup>4</sup> based on Ecofys 2011 and analysis by Wuppertal Institute, 2011

### **2.5 MRV**

The key function of the MRV system is to provide suitable tracking tools to indicate progress against the defined NAMA implementation targets and milestones (cf. chapter 2.2). The achievement of the targeted emission reduction targets is the most important aspect.

For the MRV process it is recommended to establish a committee, consisting of national and international representatives. For the set-up of the MRV process it is advisable to include the relevant stakeholders, covering actors who

- Define the technical details for measurement (measurement),
- Are responsible for communicating relevant parameters (reporting),
- Will control the quality (verifying).

Depending on the degree of support and the specific donor requirements, the verification might be conducted by an independent internationally accredited verification entity. With regard to the measurement, representatives from manufacturing enterprises and industry associations must be involved. In case a local consultant agency has been commissioned to conduct the national inventory, this agency might have the most comprehensive overview about the relevant actors to include in the measurement part. Further details on the MRV process are provided in module 7. Modules 1, 3, 7 and 10 provide further information on suitable indicators and MRV in case of financial and technological assistance and support measures for capacity building and intended co-benefits.

# 3. Practical application

This chapter provides a step-by-step guide for setting up the implementation of a NAMA according to the previously discussed methodology.

### Steps for preparing a NAMA implementation plan:



# Step 1: Establish a sector plan

Develop a comprehensive sector analysis with an analysis of the existing policies and regulations, their gaps, the baseline emissions and available technology options.

The following questions could guide such assessment:

- What are the relevant actors in the subsectors addressed by the NAMA?
- What are relevant existing policies and regulations for the subsectors and in which way do they address the different actors?
- How do the national regulations and policies in your country compare to international best practice policies, what are the differences and gaps?
- For the specific subsectors: Which qualified low-GWP technology alternatives are already deployed in your country or which alternative technologies can be deployed through technology cooperation in a reasonable time frame?
- What penetration levels of alternative technologies can be achieved in which time and what will be the realistic climate impact, i.e. how many emissions can be avoided?
- What barriers exist and how can they be removed, e.g. to compensate the lack of skills through adequate training?

Outline a sector strategy plan. The following questions could guide the establishment of a sector strategy plan:

- What are the key objectives to be reached with the NAMA, e.g. prohibit the use of certain high-GWP HFCs, promote the deployment of low-GWP technology alternatives and/or reach a high penetration?
- Which stakeholders need to be involved? What will be the role of the different stakeholders? Which stakeholders will be the front runners for climate-friendly solutions? How can innovative pathways for low carbon strategies be combined with pioneering market strategies?
- Which technologies should be prohibited, which should be promoted, and how to finance this through taxes and rebates?
- · How can barriers be removed and addressed through laws, regulations and changes of norms and standards?

#### Step 2: Establish a time frame and milestone plan

- Establish a time frame and milestone plan for the entire period of the NAMA implementation.
- Develop a result and resource framework, showing overall and annual targets, responsible implementing actors
  and the respective budgets.
- Create an annual work plan showing all activities, responsible actors, budgets and year.

# Step 3: Establish governance structure and stakeholder process

- Establish appropriate steering structure, including the nomination of a lead government entity.
- Establish an expert and project implementation team and structure.
- Identify relevant stakeholders, their roles and establish a transparent stakeholder process with industry participation and feedback.

# Step 4: Establish the implementation funding and financing plan

- Understand funding needs.
- Identify host and donor country funding sources.
- Seek international matchmaking through NAMA registry (with NAMA description document).
- Define NAMA funding plan.

#### Step 5: Run MRV of implementation activities

- Setup and run MRV process.
- Verify results through an independent (international) accredited verifying entity.

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