A "Successful" Nationally Appropriate Mitigation Action (NAMA) is a bankable NAMA

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ABSTRACT

National Appropriate Mitigation Actions (NAMAs) have gained a reputation as an effective tool for mitigating emissions in developing nations while supporting their economic growth. These actions, an outgrowth of earlier similar initiatives, have been rising in popularity in the last few years. There are currently 17 NAMAs in implementation out of 178 in development and 31 feasibility studies (numbers as of October 2016) and that number is constantly growing. As more and more countries get involved, it is important to examine what criteria comprise a "successful" NAMA. Successful in this context means one that is successful in attracting the investors and technical supporters it needs to get implemented while effectively mitigating emissions (the main inherent goal of a NAMA). The mitigation question though need not be addressed as by definition when implemented all NAMAs do effectively mitigate emissions. With the vast majority of NAMAs still not implemented, this question is difficult to answer. Additionally, NAMAs are viewed differently by different entities such as supporting organisations and financiers. The definition of NAMAs provided by the

UNFCCC itself includes several criteria that must be met by a project in order to be considered a NAMA. However, these criteria are not necessarily related to a NAMA's success but refer more to environmental, social or economic development. So what criteria actually influence the acquisition of successful NAMA support? This paper examines this question through key player interviews, surveys, analysis of NAMAs in implementation, and case study analysis. I examine different criteria influencing NAMAs as well as those comprising a NAMA; both inherent in the NAMA definition such as the potential for mitigation and others such as the role of financing and supporting organisations. The purpose is to determine what in essence allows NAMAs to be deemed attractive enough to financiers and all supporting

bodies that they can finally make it to the implementation stage without compromising their goals. By following the patterns revealed through this research, rating both the importance of inherent criteria to NAMAs definition and the rest of the criteria addressed in NAMA proposals, and then comparing these two groups, a trend emerges, one that very likely holds the key to effective NAMA implementation. The problem lies in a struggle for the initiatives to leverage private finance due to the fact that they are not always structured or presented as 'bankable': i.e. initiatives that generate adequate levels of revenues with a strong level of certainty. When it comes to financing, the bottom line always prevails and that is that an attractive return on investment is a requirement for investors. The principles of economics remain the same even in green economies. To ensure successful funding of NAMAs, the public sector would be wise to promote NAMAs that guarantee attractive risk/return ratios for the private investor.

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CHAPTER 1: INTRODUCTION

In the fight against global warming, developing countries have long been overlooked partially due to a belief that they did not have the capacity to take effective action, at least without a detrimental impact on their economies (Heller et al, 2003). But mitigation everywhere including in low income countries is essential if we are to meet the 2 degree target. Matthews et al. (2008) have found that human-induced climate warming will continue for many centuries, even after atmospheric CO_2 levels are stabilized therefore to hold climate constant at a given global temperature requires near-zero future carbon emissions. However, ireversibility of past changes does not mean that further warming is unavoidable (Matthews et al, 2013). It only means we have to get results faster.

Developing countries if properly guided and incentivized hold great potential for reducing the world's GHG emissions. Lacy (2012) featured the McKinsey abatement curve, which charts total reduction potential per measure versus the euro per ton of CO_2 abated. The curve, estimated global GHG emissions of 70 Giga tons CO_2e per year in 2030to find that 38 Giga tons could be abated cost-efficiently with 67% of this GHG abatement potential located in developing countries. In figure 1, this concept is illustrated by a chart that illustrates the business-as-usual emissions in 2030 of developed and developing nations in comparison with their abatement potential (Lacy et al. 2012).

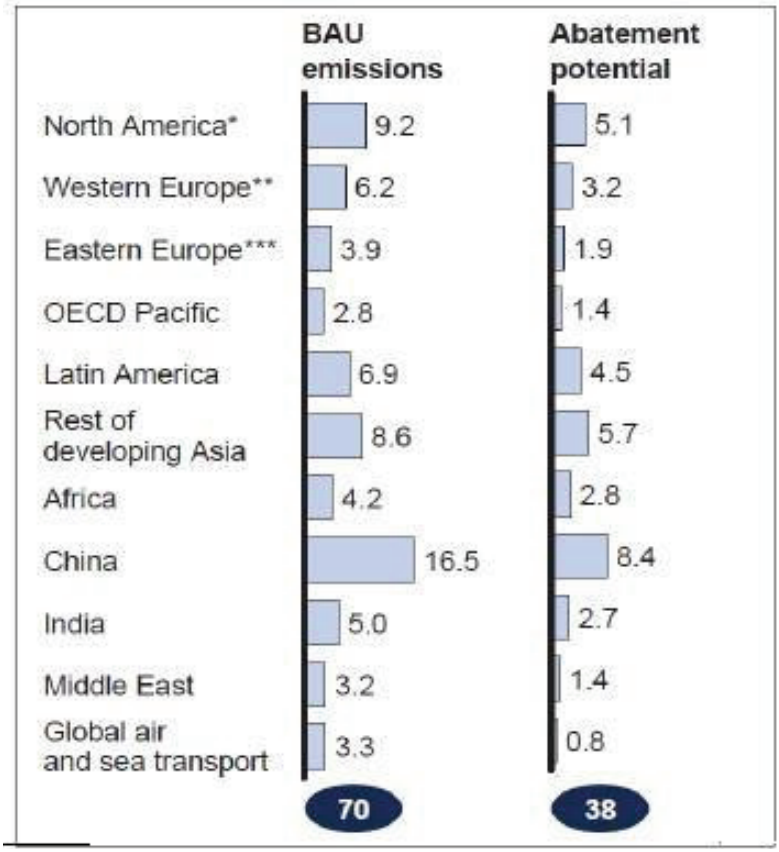


Figure 1, courtesy of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH (Lacy et al. 2012), illustrates the significant abatement potential that developing nations have to offer. China alone offers more of an abatement potential (8.4) than North America and Western Europe combined (8.3).

According to Spence (2009), without appropriate mitigation in developing nations, the current global average per capita emissions of 4.8 tons of CO_2 per year could increase to 8.7 tons per person in just 50 years. Additionally it is estimated that developing countries would reach current dangerous developed country levels of per capita emissions in the range 10 to 11 tons per person. The Intergovernmental Panel on Climate Change (IPCC) has estimated a reasonably safe level of CO_2 emissions of only 2.3 tons per person globally. This number is half the current per capita average and almost one fourth the

estimated average to be reached in 50 years without mitigation. This means that by midcentury we would be at around four times the safe level.

Spence (2009) graphed the shares of total CO_2 emissions illustrated here in Figure 2. The figure indicates that shares of rapidly growing countries are substantial. Those of developed countries, although also substantial do fall over time. However, the proportion of total emissions that comes from developing nations continues to rise for decades (Spence 2009).

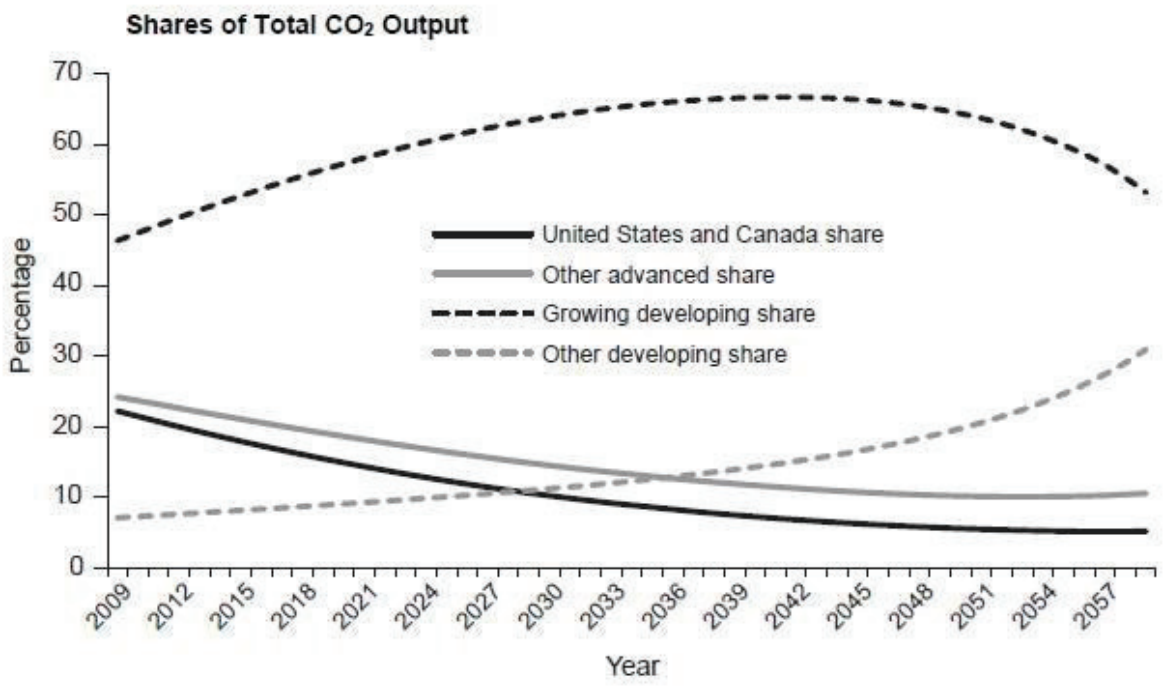


Figure 2, courtesy of Spence (2009), charts the proportion of total CO_2 emissions of developed and developing nations. All developing nations' emissions rise for a couple of decades. Those of rapidly developing nations fall again in a couple of decades but at that time the rest of the developing world's emissions begin to reach critical levels.

Halsnaes (1996) used the IPCC review on climate change mitigation bottom-up studies for developing countries (IPCC, 1996, Chapter 9) to study expected general international development trends in greenhouse gas emissions. He concluded that even though greenhouse gas emissions from developing countries will increase in the future due to

economic development imperatives, there is an important cost-efficient potential for emission reductions. Using two case studies, Zimbabwe and Venezuela, he concluded that climate mitigation and economic welfare progress could definitely be achieved simultaneously (Halsnaes 1996).

Anderson (2011) emphasised the danger of ignoring climate effects on poverty even though to this day they remain inadequately understood. He points out that poverty reduction strategies do not currently actively or efficiently support climate resilience. Therefore, ensuring effective development in the face of climate change, i.e. development that both supports the social and economic evolution of countries as well as their environmental protection, would require supporting nationally derived policies and initiatives that specifically target the most climate vulnerable poor while concurrently achieving economic poverty reduction (Anderson 2011). Finally, Gignac et al (2015) have devised a contraction and convergence (C&C) framework that refers to the division of a global carbon budget among nations that ensures that total emissions are kept below a level consistent with 2 °C. The framework would also cater to the principle of attaining equal per capita CO_2 emissions within the coming decades. The framework takes into account historical differences in responsibility for climate warming that are measured via a cumulative carbon debt that adds to the potential utility of C&C and further emphasises the importance of mitigation in developing nations.

History of efforts to support mitigation in developing nations

These initiatives, ever increasing in popularity, provide the foundation behind tools available today for tackling climate change and poverty reduction simultaneously in developing nations. There is the Sustainable Development – Policies and Measures (SDPAM), a precursor to NAMAs, the Clean Development Mechanism (CDM), Reducing Emissions from Deforestation and Forest Degradation (REDD+) and NAMAs. The REDD+ refers exclusively to forest management in developing forest-rich nations (Phelps et al. 2010). The SD-PAM is considered a precursor and twin program of NAMAs

(Roman 2012) while the CDM, although also a predecessor, offers a completely different approach to climate mitigation in developing nations.

SD-PAMs can be candidates for both NAMAs and CDM (Maroun et al. 2012, Winkler et al.

2002).

Making these tools work effectively is complicated. Schipper et al. 2006 foresaw the complications that would be related to implementing a successful response to climate change while meeting the Millennium Development Goals. They argued that current policy responses to address these issues were redundant or, at worst, conflicting. The causes for this failure were attributed to a lack of interaction and institutional overlap among the communities of practice as well as differences in language, method and political relevance. Individual research on each of the before mentioned tools has often brought up similar concerns.

REDD+

Phelps et al(2010) argued that despite efforts to promote community involvement in REDD+ (24), financing and criteria for REDD+ may undermine decentralization. Other studies pointed out the issues arising from already-existing formal forest management requirements in developing nations that are at least as demanding as those of industrialised countries (Kanowski et al. 2011). A 2006 to 2008 study from the Center for International Forestry Research (CIFOR) on forest tenure reforms in Asia, Africa and Latin America found that due to obstacles in moving from statutory rights to implementation, it was unlikely that national policies under REDD+ could perform better than already implemented local policies without binding agreements to protect local rights Larson, (2011). Other studies pointed out complications related to the fact that REDD+ is the first and largest experiment in payments for ecosystem services Corbera,

(2012) while others tackled the tool's legal issues particularly relating to transparency in norms and decision-making (Lyster, R. (2011)).

SD-PAMs

Then there are the SD-PAMs, precursors to the NAMAs. Case studies showed that, despite some potential issues such as geopolitical, related to Chinese interpretation of national sovereignty, (Wang, (2012)), SD-PAMs offered benefits both for local sustainable development (Winkler et al. 2007) and their potential to play a vital role in promoting the changes in socio-technical systems necessary to mitigate climate change (Román, et al. (2012)). What SD-PAMs ultimately brought is the recognition that carbon emission mitigation was not so much about reducing emissions but more about creating new changing development paths to avoid emissions that would lead to global warming (Román et al. (2012)).

CDM

Although created with much excitement the CDM proved to be disappointing. Studies revealed that most CDMs were unlikely to fulfill the Kyoto Protocol's objectives of delivering greenhouse gas emission reduction while contributing to sustainable development (Sutter, C., & Parreño, J. C. (2007)). In addition, the CDM has encountered many obstacles to implementation. CDM projects were found to be particularly prone to having considerable costs of baseline development, project registration, verification and certification (Michaelowa, A., & Jotzo, F. (2005). Still CDMs are considered the precursors to NAMAs and the two are often compared with NAMAs being considered the superior more flexible more promising option. Concerning actual emissions reductions, NAMAs have been publicized as the more promising of the two. They are estimated to have a GHG reduction potential for the years 2012 to 2020 of more than 40,000 $MtCO_2eq$ compared to just 500 $MtCO_2eq$ from the years 2005 to 2011 for the CDM, NAMAs leading competitor and its predecessor. (GIZ, 2011) Mitigation tools and comparisons are further developed in the literature review.

Here come NAMAs

First introduced in Bali in 2007, NAMAs were touted as a promising tool, operated by the secretariat of the UN Framework Convention on Climate Change (UNFCCC), which would support low-income countries in curbing their emissions without hindering their growth. This would allow developing nations to tackle climate change without suffering economically. NAMAs provide a means to address both climate change and national development strategies by designing public sector interventions that mobilise private participation in low-carbon development (Bratasida 2008).

NAMA submissions consist of concept notes and proposals that address the different stages that will need to be undertaken by all successful NAMAs:

1. Assessment of the technical and political context in a country
2. Identification and selection of mitigation options
3. Detailed NAMA development
4. Implementation and monitoring
5. Reporting and verification (MRV). (namadatabase.org)

NAMAs may include any actions proposed by a country's governments, but are currently classified into three general funding classes:
1. unilateral: actions are financed and implemented locally
2. supported: actions receive international financial and/or technical support;
3. credited: actions generate offset credits that can be sold on the carbon market.
(namadatabase.org)

NAMAs cover a wide variety of sectors, industries and regions, as illustrated in Figure 3, but one thing they all hold in common is that they all seek support, both technical and financial. This is why determining the criteria for successful NAMAs (i.e. successful in this paper is defined as attracting the support needed to be implemented) is important to the development of this important mitigation tool. Answering the question; what attracts

support for actions, is in essence determining how to achieve the first step of building a NAMA that will get implemented. The second is looking at whether the NAMAs that do receive adequate support and reach implementation are the ones most able to benefit the country in terms of development and the world in terms of mitigation potential. Choosing NAMAs that succeed in the long-run is key to ensuring these tools continue to prosper long after the initial excitement has faded (Linner et al.
2012, Bockel, L., Gentien, A., Tinlot, M., & Bromhead, M. (2010).).

As of October 2016, the NAMA Database has information on 178 NAMAs in 60 countries. The NAMA Database includes activities categorized under one of two phases of development. For inclusion in the database, NAMAs must meet the following criteria. NAMA under development - Activity described as a NAMA and with intention to seek financing, capacity-building or technology-transfer support under UNFCCC agreements. - Specific mitigation objective given within specific sector(s). - Activity has government backing. NAMA under implementation - Meets criteria for NAMA under development. - The activity has a clear proponent and a clear set of activities across a defined timeline. - Cost estimates and support needs are specified. - GHG mitigation and co-benefit impacts are specified. - Some support has been received to implement the actions contained in the proposal. Feasibility studies describing potential NAMAs, that do not yet have official government backing, are also included in the NAMA Database. However, these feasibility studies are excluded from the statistics presented in this report.

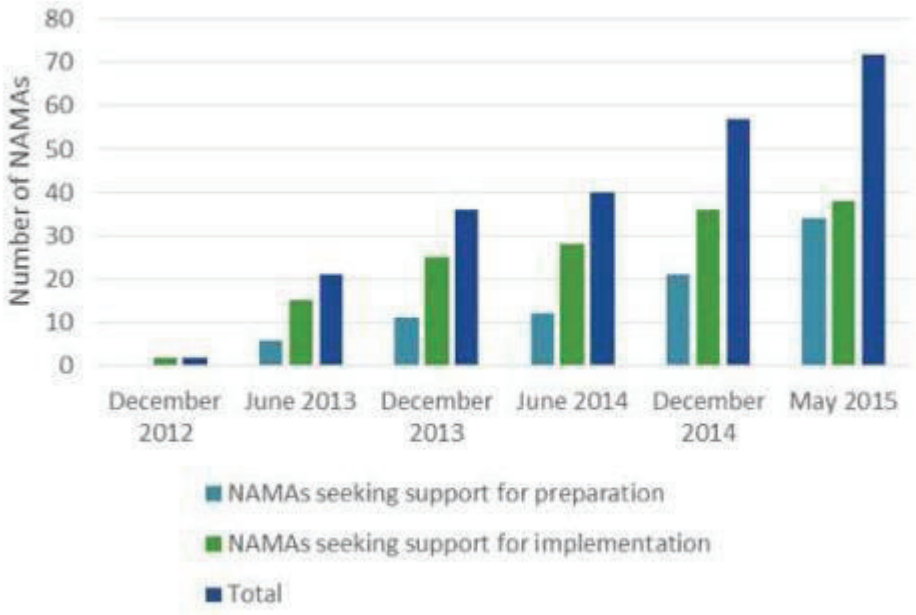


Figure 1: NAMAs submitted to the UNFCCC NAMA Registry

Figure 3 shows NAMA growth from 2012 to May 2015, courtesy of Ecofys' NAMA Annual Status Mid-year 2015 update report

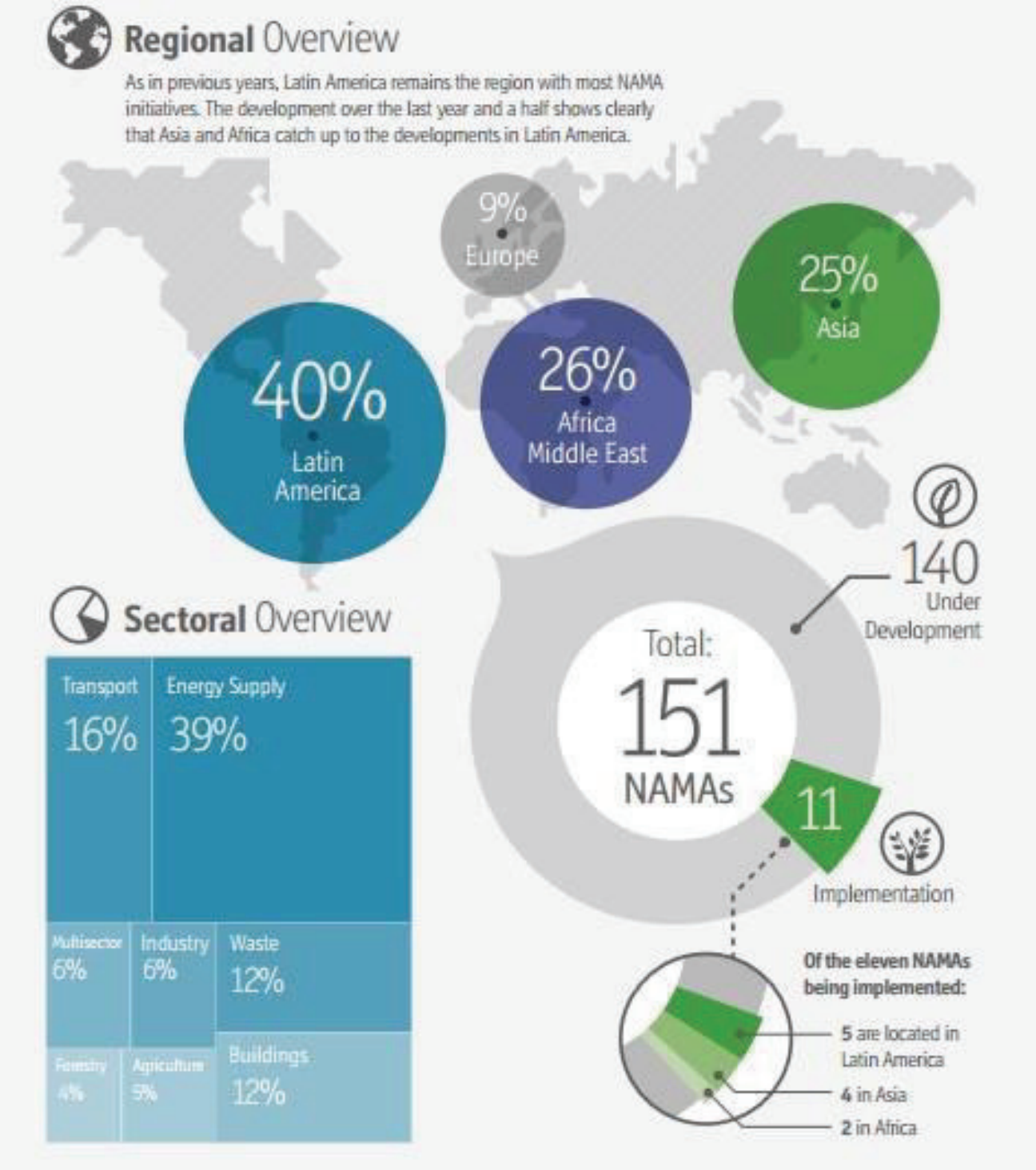


Figure 4 is courtesy of Ecofys' NAMA Annual Status Mid-year 2015 update report and represents regional, sectoral and stage categories for NAMAs

The limited number of NAMAs in implementation stage (17 out of 178) suggests that financial investment is clearly not meeting NAMA interest. The challenge to resolving this issue lies in mobilizing climate finance particularly private finance. Domestic public finance tends to be already provided by the developing nation. There are also sources such as the NAMA Facility, a collaboration between the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) and the Department of Energy and Climate Change (DECC) of the United Kingdom (UK), and the Spanish NAMA Platform, supported by technical expertise from Spain's ministries, that are exclusive to NAMAs and support from sources targeting all lowemissions development. These include a variety of supporting institutions such as: multilateral financing institutions (Development Bank, World Bank), local governments (Germany through International Climate Initiative) and regional initiatives.

NAMA financing currently

According to UNEP Technical University of Denmark (DTU) NAMA Pipeline Analysis and Database, in November of 2015, NAMAs were requesting a total of $7.8 billion of support. Unfortunately, only $136,57 million offered of which the vast majority ($120 million) was from the NAMA Facility. The remaining $17 million (less than 2% of support requested) came from the Global Environment Facility (GEF), Japan, Austria, and Australia. A table below illustrates the exact amounts offered by each country.

A third round of finance was organised by the NAMA Facility that closed in July 2015 will provide funding of up $95 million to some of the 42 submitted support project outlines.

Support offered	From	MUS$
ODA for Climate Change Measures	Japan	0,96
NAMA Facility	UK & Germany	120,41
Austrian NAMA Initiative	Austria	1,94
UNDP MDG Carbon	Australia	0,13
Global Environmental Facility (GEF)	GEF	13,13
Total		**136,57**

Source: NAMA Pipeline Analysis and Database, UNEP DTU

Figure 5, courtesy of the NAMA Pipeline Analysis and Database, UNEP DTU, illustrates were the current support for NAMAs has been coming from

The Private sector

An instrumental issue in the discussion on financing NAMAs is the role of the private sector. This is more complicated than for carbon market mechanisms such as the CDM Due to the national component of NAMAs there is the implication that the developing country government will take the lead in the execution of NAMAs and in most NAMA submissions governments do indeed play a leading role. However, given the scale of investments required for NAMAs and the limited amount of public sector funds, private sector investments have an important role in meeting mitigation targets (AGF, 2010).

Research objectives

NAMAs have the potential to become a crucial instrument in closing the emissions gap while ensuring the economic sustenance of developing nations. Addressing the issue of how to attract the financial support requested by applicant countries will be critical to NAMAs future success but also overall to developing future criteria for successful NAMAs; in other words NAMAs that attract both technical and financial support and achieve their intended results. To do that the question of what attracts financing must be resolved. What are the NAMA criteria that made the projects attractive to financiers? What is influencing the decisions of financiers when looking for NAMAs to support?

CHAPTER 2: LITERATURE REVIEW

Supporting mitigation in developing countries

According to the Fourth Assessment report of the International Panel on Climate Change, a significant reduction in global emissions is necessary to avoid temperatures that could rise by 4 degrees Celsius and even 6 degrees Celsius by 2100. To achieve such a reduction, significant change is needed on many levels.

But to achieve such a change economics must play an important role (Green et al. 2007). So far measures established to target GHG emissions on a global scale have not been successful. According to Glemarec (2010), that is partially because of a widespread view that climate change negotiations and efforts should focus on the largest greenhouse gas emitting countries.

This attitude has not only hindered the success of climate mitigation attempts, it has also resulted in a failure to provide equitable access to climate finance to developing countries that if left unchecked will have severe political, financial, and climate consequences. To avoid these dire consequences, low-income and emerging countries need to be given the proper assistance required to build markets that can attract private investment capable of addressing climate change. In fact, according to Glemarec (2010), a mitigation approach for low-income countries that also supports them economically is the key to creating low-carbon societies able to mitigate the coming climate change effects.

The table in Figure 6, courtesy of Neuhoff et al. (2009), outlines different support mechanisms that are available for use by the public sector to stimulate private sector engagement in climate mitigation. Upon studying these options, the authors found that “the

expected increase in support over time created a strong incentive for developing countries to pursue and accelerate low-carbon development strategies, so as to create the capacity to absorb the support and to qualify for further support" (Neuhoff et al. 2009).

Tailored financial support was touted as key in assisting developing countries to fund the investment necessary to shift sectors to low-carbon growth pathways, and furthermore, create a framework that would shift the overall investment strategy to mitigation- friendly options (Neuhoff et al. 2009). The SD-PAM proposal, in which developing countries could achieve climate mitigation goals as side effects of sustainable development plans, was one of the first initiatives that was based on 'common but differentiated responsibilities' principles and is considered a precursor to NAMAs. SD-PAMS can qualify as NAMAs (Maroun et al. 2012) but also be good candidates for investment under the CDM (Winkler et al. 2002).

According to Upadhyaya (2012), both CDM and NAMAs are effective tools for achieving effective climate change with supported economic/ social growth in developing nations assisted by developed nations. The CDM , defined in the Kyoto Protocol (IPCC, 2007),), is a mechanism that provides support for emissions reduction projects which generate Certified Emission Reduction units to be traded in emissions trading schemes.

	Public Finance Mechanism	**Direct support**	**Indirect support**	
		International to project	*International to national*	*National to project*
Contribution to investment and operation	**Up-front grant** - Standard Technical assistance grants - 'Smart' grants	GEF grants Other bilateral and multilateral DFIs	ODA	Investment support
	Funding during operation	Offset mechanisms (CDM) WB support	Grant linked to continuous delivery (finance +regulatory stability)	*Incremental payment to renewable *Removal of energy subsidies * Carbon tax/cap and trade scheme
Facilitating access to finance	**Provision of equity** - Private equity - Venture capital	ADB Clean Energy PE fund	n/a	Carbon Trust VC fund
	Provision of debt - Loans - Credit lines	IFIs e.g. EBRD, IFC	IMF and WB loans	
	Risk coverage - Full or partial guarantee - Policy to cover specific causes of non performance or all - Other financial products	MIGA political risk insurance	WB/IFC Partial Credit and Partial Risk Guarantees	Export credit agency guarantees

Figure 6, from (Neuhoff et al. 2009), uses the categorisation of potential support to present examples of how support falls into different groups. International support can either be targeted directly to specific projects or back national efforts of support provision.

NAMAs: a superior option

However, of the two, NAMAs are seen as the more flexible comprehensive option. Even more so than the CDM, argues Upadhyaya, NAMAs are better placed to meet both emission mitigation and economic targets across a wide and varied regional distribution especially in the long-run. In examining the CDM, Keeler et al. (2008) found that international agreements were more likely to succeed if they targeted the needs and selfinterest of individual host countries. Their proposal found that poor countries

performed better when the resource-providing countries were held accountable for results and emphasised environmental and development needs simultaneously (Keeler et al. 2008).

Furthermore, the CDM has encountered many obstacles including but not limited to; local opposition, lack of adequate criteria to assess the impact of actions (Bongardt et al. 2009), the large transaction costs of establishing additionality and issues pertaining to the fact that emission increases were not penalized (Burniaux *et al*. 2009).

In analysing financial support, Winkler et al (2009) found that in providing support to lowincome nations, developing countries may have to exceed the IPCC ranges of financing and that a political agreement on the question of 'who pays' is fundamental (Winkler et al. 2009). Pendleton (2009) argued that with developing countries in the UN negotiations calling for excessive amounts of financial support, the more realistic approach would be to base estimates of future financing of mitigation in developing countries on plans for NAMAs (Pendleton 2009). But how can such support be achieved for such a variety of initiatives each with unique geographical, technical, economical and societal complications. A more flexible comprehensive approach to support, especially financing, is needed one that can attract funding to a diverse set of nations and even more diverse set of projects. But how does this more-flexible NAMA support work?

The importance of support

The concept of what criteria determine a successful NAMAs, i.e. defined for this paper as NAMAS that attract the support needed to be implemented, has not been tackled before. However, the importance of securing commitment from domestic stakeholders has been clearly emphasised. Often when starting a NAMA development process, stakeholders have a habit of focusing on the technical issues whereas support should be secured first (Jung et al. 2010).

To evaluate the best criteria for securing support, one can look at work on effective NAMA development. Van Tilburg et al. (2011) emphasise the need for developing NAMA proposals where each stakeholder is involved at the right level. Different groups of stakeholders that need to be addressed when constructing NAMAS are outlined:

- *Government technical team: Identification of opportunities, fact finding and checking, policy design, impact assessment, design of MRV system, implementation.*
- *Government decision makers: Prioritizing and selecting NAMAs to develop, liaising with potential support providers, agreeing on finance and MRV conditions, buy-in and commitment for implementation.*
- *Private sector: Information, potential identification of opportunities for the attention of government, identification of barriers to implementation and financing structure, buy-in for implementation, implementation.*
- *Support providers: Selecting NAMAs to support, negotiating finance and MRV conditions, funding.*
- *Civil society: Information, identification of barriers to implementation and sustainable development impact, buy-in and advocacy.* (Terms and definitions are from Van Tilburg et al. 2011)

The interaction between these groups is one key to answering the question of which NAMAs are most likely to attract support and under what terms? The authors also emphasize the importance of identifying opportunities for mitigation actions that can be successfully packaged as potential NAMAs. This process would include a preliminary assessment of costs and benefits, and practicality of implementation. This step is vital for buy-in later on in the development process and the first set of criteria to look at when assessing the potential success of a NAMA.

How do countries decide which actions need support?

This is a confusing subject indeed making the task of determining what actions succeed in getting support even more complicated. According to Jung et al. (2010), there are no harmonized criteria to indicate what NAMAs receive support. What the authors ultimately recommend is having the receiving and providing countries decide for themselves, which actions need international support and which do not.

There are questions that can help determine certain criteria such as which actions are most cost efficient or which deliver the most mitigation potential. However, unfortunately, even profitable well-designed measures often need to overcome obstacles such as the difference in invested interests from the parties providing certain services and the parties requiring them. Weak institutional capacities are also an example of detrimental obstacles. In the end the question of where should climate finance be allocated is a highly political and political questions are always riddled with complications. Sarkar (2010) argues that even with adequate liquidity and access to modern technologies in developing nations, it is often the institutional issues, such as liaising with government bodies and bypassing complicated already established local regulations that can be problematic to the project's demands, that become a key obstacle to financing and implementing robust programs (Sarkar et al. 2010).

Attracting financing

In Copenhagen, developed countries made an ambitious pledge to provide US$ 30 billion fast start finance for NAMAs by 2012, while mobilizing an additional US$ 100 billion annually by 2020 (Van Tilburg et al. 2012). However, a consensus was also expressed that donor Annex I countries will need to be clear and transparent about the criteria for fundable NAMA proposals while establishing a balance between donor driven criteria and needs of developing countries. This set the responsibility for moving forward with financing on developed donor countries (Van Tilburg et al. 2012).

Two key factors for further efforts were raised during Copenhagen:

1. The need for raising awareness with governments of NAMA applicants on how to create conditions for the private sector to start investing in mitigation actions
2. The need for trustworthy signals to private sector investors to demonstrate why supported NAMAs could be an interesting investment opportunity, despite substantial differences with carbon markets. In this regard, successful pilot NAMAs that engage the private sector would serve as vital examples.

When evaluating NAMAs that have received financing, it is important to consider how these two factors played a role. Logic would dictate that the ability to contribute to meet these further efforts would be a key in procuring financing.

Available Financing

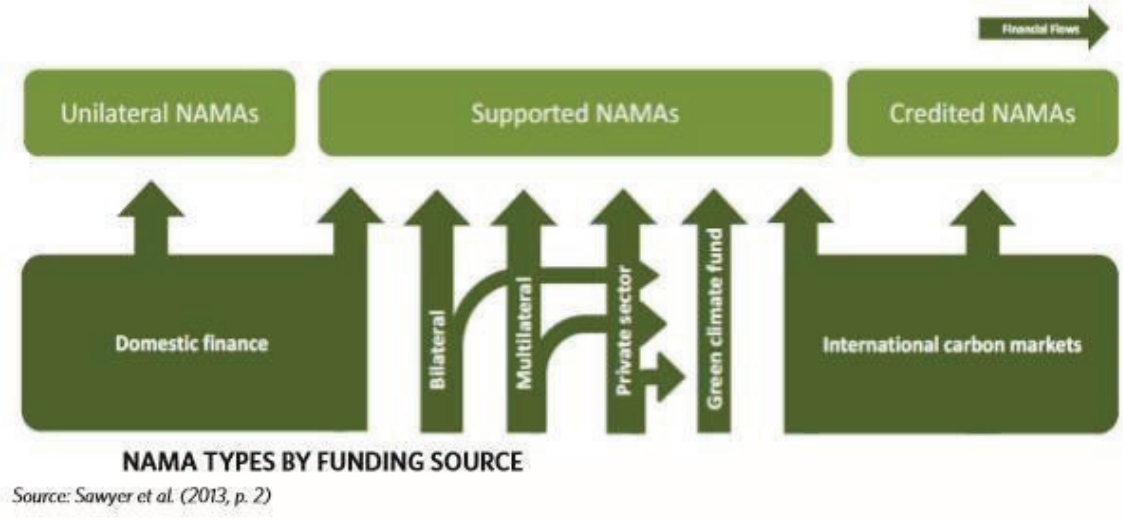


Figure 7, courtesy of Sawyer et al. (2013) illustrates the NAMA types according to their sources of funding from unilateral to credited

It should be noted that Paris Agreement of December 2015 did not explicitly mention NAMAs however it did further emphasize the need for international climate finance, sustainable development and measurement, reporting and verification (MRV).

Understanding how NAMAs are evaluated

The purpose of MRV (measuring, reporting and verifying) is to determine what a country is doing not only on an absolute basis but also comparatively to others (Breidenich and Bodansky 2009). Different MRV provisions are bound to have different implications regarding the capacity needed to implement them. Additionally, those implications are bound to evolve according to actions (see illustration below) (Ellis and Moarif 2009). Therefore, when considering the success of NAMAs in attracting support it is important to also determine how the MRV process is handled (if such information can be deducted). Key questions to ask include: what can be measured, reported and verified (emission reductions, emission levels, energy savings)? Who will be responsible for undertaking the verification? Can the results be made compatible with carbon markets?

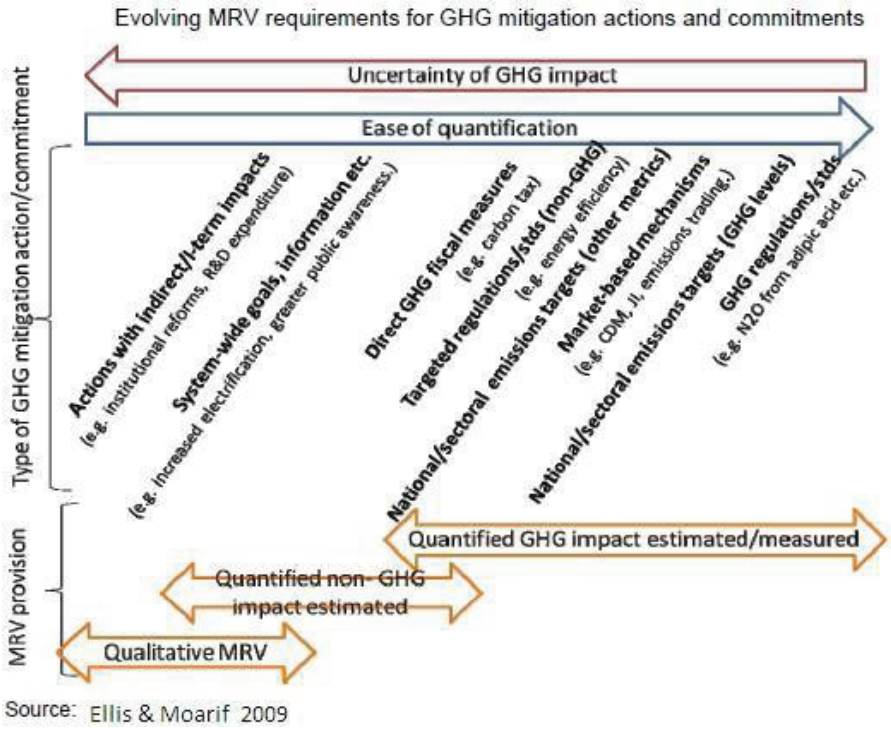


Figure 8, from (Ellis and Moarif 2009), illustrates the vast complexity and diversity of evolving MRV requirements for GHG mitigation actions and commitments.

NAMAs cover a wide variety of sectors, industries and regions, but one thing they all hold in common is that they all seek support, both technical and financial. This is why determining the criteria for successful NAMAs (i.e. successful in attracting support) is

important to the development of this important mitigation tool. Answering the question; what attracts support for actions, is in essence determining how to achieve the first step of building a NAMA that will get implemented.

NAMA success

There is a significant amount of information available on what criteria are important to determining NAMA success today and the answers tend to be a variety of elements with no particular focus on one sector and no clarification of one bottom-line criteria. Jung et al. (2010) focus on the importance of securing commitment from domestic stakeholders. The authors argue that often when starting a NAMA development process, stakeholders have a habit of focusing on the technical issues whereas support should be secured first. Van Tilburg et al. (2011) emphasise the need for developing NAMA proposals where each stakeholder is involved at the right level. Different groups of stakeholders that need to be addressed when constructing NAMAS are outlined with a focus on government teams, the private sector, support providers and civil society. Although potential barriers to implementation and financial structure are discussed, they are not labelled a priority but a criteria equal to many more including MRV conditions and advocacy.

Others such as Sarkar et al. (2010) argue that it is often the institutional issues that become a key obstacle to financing and implementing robust programs. The importance of the private sector is also emphasised such as with Tilburg (2012) who argues that NAMAs should be public sector interventions that use public funds to leverage larger private sector investments, bankability is not stated as the bottom line. Dr. Soren Lutken argues that the financial engineering of NAMAs is not a North-South exercise with a center stage Green Climate Fund that administers NorthSouth divide, but rather a "nationally driven NAMA development process that brings in a multitude of financial actors- with the developing countries' own finance in a central role". (Lütken, S. E., 2014)

There has also been literature on the architecture of financing NAMAs as well as on developing financeable NAMAs (Solutions, D. I. 2013, Sawyer, D.et al. 2013, Sharma, S.

& Desgain, D. (2013), World Business Council on Sustainable Development 2013). Other literature covers the economics of NAMAs on everything from transfer designs (GainzaCarmenates, R., et al. 2010) to their impact (Kanitkar et al, 2015, Gagnon-Lebrun, F. &

Barrigh, J. 2013). In the latest Ecofys Annual report on NAMAs for November 2014, NAMA financing was designated as one of the key areas where more progress was needed, in particularly the lack of NAMA funding successes.

Figure 9 is courtesy of Ecofys' NAMA Annual Status report of November 2014 and indicates where most progress is needed in terms of NAMA development.

Magnoni, S. (2009) in "Review of the CDM and Other Existing and Proposed Financial Mechanisms to Transfer Funds from North to South for Mitigation and Adaptation Actions." argues that economic literature suggests that significantly impressive amounts of monetary flows are needed for mitigation and adaptation measures to tackle climate

change. He recommends more significant pledges from governments but more importantly the inclusion of market-based mechanisms and private sector involvement as fundraising sources. In regards to this he also analyses the strengths and weaknesses of NAMAs as illustrated in the table below. Despite weakness, NAMAs seem predisposed to attract private sector interest.

Registry of NAMAs: Strengths and weaknesses

REGISTRY OF NAMAs	
STRENGTHS	**WEAKNESSES**
Strong engagement of the private sector	Private sector vs. government?
Commercial viability of mitigation actions improved	Voluntary based: avoid compulsory targets?[11]
Active participation and ownership from developing countries	Long time before a transparent MRV mechanism is created in LDCs
Truly global trading system	No prioritization of most vulnerable countries
Contribution to adaptation	Unpredictability of sources
Accessibility: policy- vs. project-based approach	

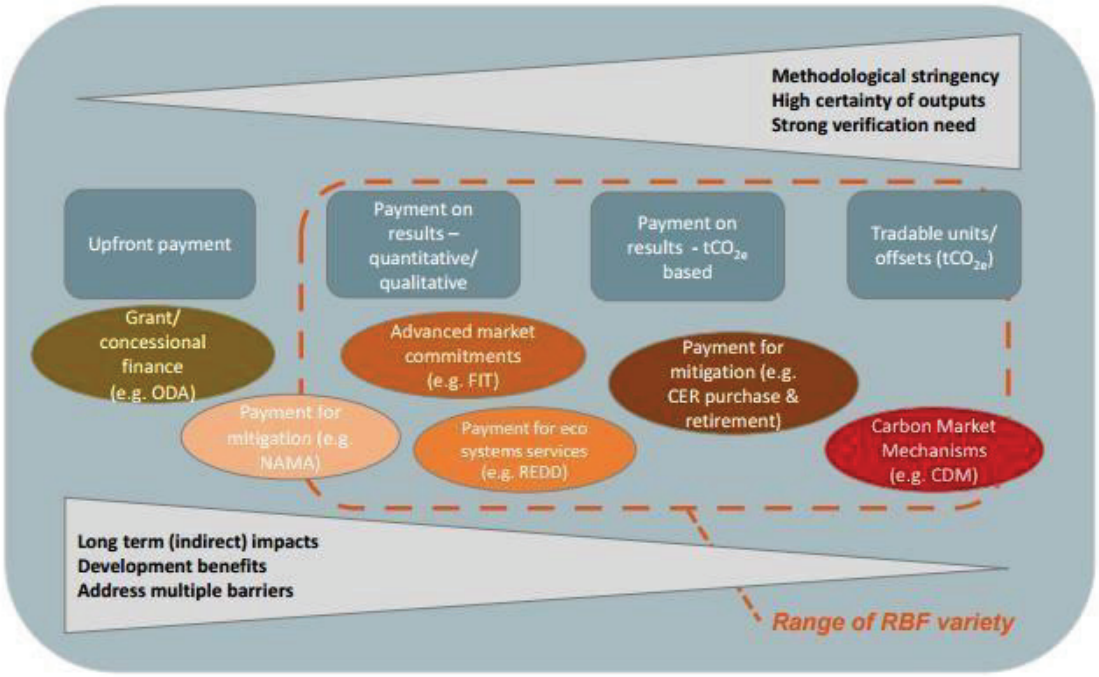
Figure 10 is courtesy of Magnoni S. 2009 and delineates the strengths and weakness of NAMAs.

Private sector interest is denoted as a strength.

Stewart et al. (2009) in **"**Climate finance for limiting emissions and promoting green development: Mechanisms, regulation and governance." argued one step further stating that carbon markets themselves must be structured by government intervention to leverage private capital. This available capital could help achieve meaningful greater emissions decreases through the power of an open market as illustrated by the current market for Certified Emissions Reduction (CER) credits from the CDM.

Warnecke, C. et al, (2015) in "Connecting the dots" discuss Results-based financing (RBF) in terms of climate change adaptation, "a modality of dispersing finance for projects or interventions conditional to the verified achievement of predefined objectives."

Already practiced in various areas of climate policy, including carbon and climate finance, this financial modality is already an important part of various mechanisms, such as the CDM and certain NAMAs. Results-based financing is interesting due to its potential to combine carbon market and non-market climate finance, as opposed to their current parallel existence. The figure below illustrated the range of RBF variety in various approaches to climate finance and policy.



Upfront and ex post payment approaches in climate policy

Figure 11 is courtesy of Warnecke C. et al. (2015) illustrates the range of RBF possibilities approaches in climate financing

Lefevre, B. et al. in "Transport Readiness for Climate Finance: A framework to access climate finance. The volume of annual transport climate finance is difficult to estimate" graphed a summary of what different transport climate finance vehicles can fund is shown as seen in the table below. The NAMA Facility was the one to meet the most recepient, action and type of support requested showing a greater flexibility for NAMAs.

Features and criteria of largest climate/environmental funds and private sector firms supporting financing low-carbon transport

	CTF	GEF	GCCA	ICI	Japan's FSF	NAMA Facility	Private
Recipient Status							
National Government	X	X	X	X	X	X	X
Regional Government	X	X		X		X	X
Local Government		X		X		X	X
Private Sector		X		X		X	X
Actions Supported							
Concepts & Planning	X	X	X	X		X	
Capital Investment	X	X		X	X	X	X
Operations & Maintenance	X	X			X	X	X
Technology Transfer	X	X		X	X	X	
Capacity Building	X	X	X	X		X	
Types Of Support							
Grants	X	X	X	X	X	X	
Debt	X				X	X	X
Technical Assistance		X	X		X	X	

Source: GIZ, 2013, "Accessing Climate Finance for Transport," SUTP Technical Document #5.
CTF: Clean Technology Fund / GEF: Global Environment Facility / GCCA: Global Climate Change Alliance / ICI: International Climate Initiative / FSF: Fast-Start Finance / NAMA: Nationally Appropriate Mitigation Action.

Figure 12 is courtesy of Levefre B. et al. and illustrates how NAMAs meet the criteria of different types of support, recipients and actions

Pachauri, R. K. et al. (2014) in "Synthesis Report. Contribution of Working Groups I, II and III to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change" found that whereas developing countries tend to favor bottom-up approaches, such as NAMAs, over topdown approaches.

The GEF: The Global Environment Facility

Established in October of 1991 as a $1 billion pilot program in the World Bank to promote environmental sustainable development, the GEF would provide new and additional grants and concessional funding to cover the "incremental" or additional costs associated

with transforming a project with national benefits into one with global environmental benefits with the United Nations Development Programme, the United Nations Environment Program, and the World Bank implementing its projects.

At the 1992 Rio Earth Summit, the GEF was moved out of the World Bank system and transformed into a permanent, separate institution in order to increase the involvement of developing countries in the decision-making process and implementation of the projects. The GEF then became the financial mechanism for the UN Convention on Biological Diversity and the UNFCCC, responsible for NAMAs. The World Bank returned in 1994 and has continued to serve as the Trustee of the GEF Trust Fund.

Today, the GEF is currently one of the largest suppliers of climate support to developing nations. The GEF has a large range regarding projects that qualify as emission mitigating developments in fields including energy, transport, and land use. In 2009/2010, the GEF disbursed about $300mn (Buchner et al. 2011) and although GEF funding in the past has largely been disbursed as grants, recently the use of non-grant instruments has also been encouraged (GEF, 2008).

CHAPTER 3: METHODOLOGY

The methodology for my research consisted of the following six steps;

1. A survey to rate the importance of different NAMA criteria in attracting NAMA support
2. A questionnaire interview on the same topic
3. An analysis of NAMAs in implementation using the interview survey
4. Research on lessons learned and case studies from NAMA development and implementation as well as NAMAs in implementation
5. An analysis of the progress of the Ecofys annual reports on NAMAs from 2012 to 2014
6. An evaluation of the role of bankability in climate finance in developing nations overall.

Parts 1 and 2: Initial survey to establish context and questionnaire interview

The survey

A survey and questionnaire interview was submitted by email to seven organisations involved in
NAMA development. Responses were also sent back through email on the original survey form. These organisations were supporters, financiers and researchers on NAMAs. The survey asked industry experts to rate from 1 to 5 the importance of a number of criteria to a NAMAs ability to attract support. Each interviewee responded on behalf of his organisation and not as a personal opinion.

Interviewees

The organisations participating fall into three categories of roles regarding NAMAS.

These are support of NAMAs (providing guidance, technical support and so forth), research on NAMAs and financing (providing capital). Below are the organisations interviewed as well as the role they play regarding NAMAs. It should be noted that the **UNFCCC** also acts as the manager of the NAMA registry.

UNEP DTU (Support/Research)

UNEP DTU Partnership (formerly known as the UNEP Risø Centre (URC)) is a leading international research and advisory institution on energy, climate and sustainable development. As a United Nations Environment Programme (UNEP) Collaborating Centre, UNEP DTU

Partnership is an active participant in both the planning and implementation of UNEP's Climate Change Strategy and Energy Programme. Through in-depth research, policy analysis, and capacity building activities, the Partnership assists developing countries in a transition towards more low carbon development paths, and supports integration of climate-resilience in national development.

United Nations Framework Convention on Climate Change (Support –Managing organisation of NAMA registry)

The United Nations Framework Convention on Climate Change is the name of the United Nations Secretariat charged with supporting the operation of the UNFCCC Convention, an international environmental treaty that is also currently considered the only international climate policy venue with broad legitimacy. The Convention was negotiated at the United Nations Conference on Environment and Development (UNCED) that was held in Rio de Janeiro from 3 to 14 June 1992. The objective of the treaty is to "stabilize greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system".

Inter-American Development Bank (Financing)

The Inter-American Development Bank (IADB or IDB or BID) is the largest source of development financing for Latin America and the Caribbean. Established in 1959, the IDB supports Latin American and Caribbean economic development, social development and

regional integration by lending to governments and government agencies, including State corporations.

International Institute for Sustainable Development (IISD) (Support/Research) The International Institute for Sustainable Development is an independent, non-profit and nongovernmental research organization founded in Canada in 1990. IISD champions sustainable development around the world through innovation, partnerships, research and communications.

Center for Clean Air Policy (CCAP) (Support/Research)

Since 1985, the Center for Clean Air Policy (CCAP) is the only independent, nonprofit think tank working exclusively on leader in climate and air quality policy issues at the local, U.S. national and international levels. Headquartered in Washington, D.C., CCAP helps policymakers around the world develop, promote and implement innovative, market-based solutions to major climate, air quality and energy problems that balance both environmental and economic interests.

The GovNAMAs project (Research)

Launched by the Centre for Climate Science and Policy Research (CSPR) the GovNAMAs project (i.e. *Governing NAMAs: Matching design and support for low carbon trajectories (GovNAMAs)*) explores how Nationally Appropriate Mitigation Actions (NAMAs) by developing countries can be mobilized to meet both developed and developing countries expectations of a future climate regime. The project specifically aims to assess how NAMAs can be designed to meet the dual goals of: 1) attracting international funding that contributes to development in the host country; and 2) spurring innovation and diffusion of technology that mitigate climate change. The project draws upon global governance studies and innovation theory to address incentives structures related to the support of NAMAs. The study will also survey potential public NAMAfunders for their NAMA-preferences.

KPMG (Support)

KPMG is one of the largest professional services companies in the world and one of the Big Four auditors. KPMG uses the firm's experience in policy development and in

financing and implementing infrastructure projects, to work with governments across the globe to design and put into action green growth strategies that stimulate private sector coinvestment. KPMG members also work with corporates to turn the green growth agenda into competitive advantage. Specific, to NAMAs, KPMG works with the public sector to: 1.Identify and priorities opportunities for nationally appropriate mitigation actions (NAMA) and 2.Raise finance for implementation of green growth strategies including NAMAs.

Criteria used in survey

The criteria rated in the survey by representatives of the previous organizations were as follows. It should be noted that the survey featured criteria inherent in the definition of a NAMA as well as external to it. This has been indicated as such on the right of the table.

A project's potential for attracting future investment in the country	External to NAMA definition
A project's estimated emissions reductions	Inherent to NAMA definition
Project's ability to apply for carbon markets	External to NAMA definition
Local regulation already implemented to support the project	External to NAMA definition
Social and economic **co**-benefits of a project	Inherent to NAMA definition

Existing need for the project locally	Inherent to NAMA definition
An international organization already providing technical support	External to NAMA definition

The questionnaire

Following the survey, interviewees were also asked to answer the following questions according to their role in NAMA development:

- Supporting, implementing and research organisations were asked: What criteria have succeeded in getting NAMAs the proper support (both financial and technical) so far? What is influencing financiers and supporters when making their decisions?
- Investing organisations were essentially asked the same question but directed more at their actual activities: As financiers, what where the NAMA criteria that made the projects attractive enough for you to invest in? What is influencing your decisions as financiers when looking for NAMAS to support?

Confidentiality regarding interviews and lessons learned

Most interviewers asked to remain anonymous and a significant amount of the information shared from lessons learned sessions (private and often unofficial sessions where industry experts share the trends and insights they have concluded from their experience in case studies and actual NAMA implementations and deduce from their shared knowledge advice on how to improve processes going forward – these lessons are often used in Ecofys reports) was not put on official reports. Due to the relatively new and undefined nature of NAMAs a lot of current commentary and analysis is based on early information and experts may feel uncomfortable making absolute statements this early. In order, to get the most honest replies, I respected my interviewees' wishes to remain anonymous

and have only quoted the organisations they were representing. This was also practical as interviewees were indeed providing answers on behalf of their organisation and not in their capacity as individual experts.

Part 3: Rating NAMAs in Implementation according to criteria in Survey

The next step was to evaluate the NAMAs in implementation (see box below for the difference between under development and implementation) according to the same criteria given to the interviewees. I submitted the same analysis used in my questionnaire exploring how each criteria was addressed by them. Each criteria whose level of importance was rated by my interviewees was applied to the NAMAs. I searched the proposals to see to what degree each criteria is met and addressed (i.e.

As described by Ecofys here are the differences between NAMAs under development and those in implementation.

NAMA under development - Activity described as a NAMA and with intention to seek financing, capacitybuilding or technology-transfer support under UNFCCC agreements. - Specific mitigation objective given within specific sector(s). - Activity has government backing.

NAMA under implementation - Meets criteria for NAMA under development. - The activity has a clear proponent and a clear set of activities across a defined timeline. - Cost estimates and support needs are specified. - GHG mitigation and co-benefit impacts are specified. - Some support has been received to implement the actions contained in the proposal.

what importance it is given) ranging from 1 to 5 just like in the questionnaire given to interviewees. When a criteria is not at all addressed I rate it as a number 1 and mark it as NA (not available). When a criteria is very specifically addressed and given adequate proof that it could be met it gets the highest rating of 5. The rest are rated from 2 to 4 depending on how well they are addressed. Next to each criteria rating I provide the direct text from the NAMA proposal that explains my rating. When a criteria is addressed several times in a proposal, all references are provided. When a criteria is not at all addressed, a NA appears and the criteria is given the lowest rating of 1.

"History shows that where ethics and economics come in conflict, victory is always with economics. Vested interests have never been known to have willingly divested themselves unless there was sufficient force to compel them."

B. R. Ambedkar

Indian jurist, economist, politician and social reformer

CHAPTER 4: RESULTS OF SURVEYS, INTERVIEWS AND ANALYSIS OF NAMAS IN IMPLEMENTATION

Part 1: Survey Review

Considering that NAMAs are meant to be tools for environmental and economic development, it is natural therefore to assume that a variety of criteria would influence which action would receive support. How do we begin combing through all these criteria to see which one is the most impactful? The first step in this analysis was to create a survey with the most commonly stated influencing criteria and submit it to industry experts to evaluate which ones were more important.

This initial survey, as explained in more detail in the methodology, asked industry experts from seven organisations ranging from financiers to supporters to research and implementation bodies to rate from 1 to 5 the importance of a number of criteria to a NAMAs ability to attract support. Each interviewee responded on behalf of his organisation and not as a personal opinion. The criteria were set to cover a variety of elements including criteria inherent in the definition of a NAMA such as co-benefits and emission reductions as well as external factors such as attractiveness to international investors. The aim of the exercise was to determine what external criterial could rate as highly if not higher than 'definition' criteria. As such, the results would point in the direction of the most important criteria to ensuring NAMAs attracted their requested support.

The results showed that elements surrounding financing were almost as important as cobenefits (4.8), existing local need for the project (4.5) and emission mitigations (4.3)

(elements inherent in in the NAMA definition). A project's potential for attracting future investment (3.6) was more important than the support of an international organisation (2.5) as well as effective local regulation (3.4). The questionnaire also revealed that a project's ability to apply for carbon markets had the least impact on its attractiveness (1.4) indicating that NAMAs would likely not rely on future compatible carbon market implementation to seek out financing.

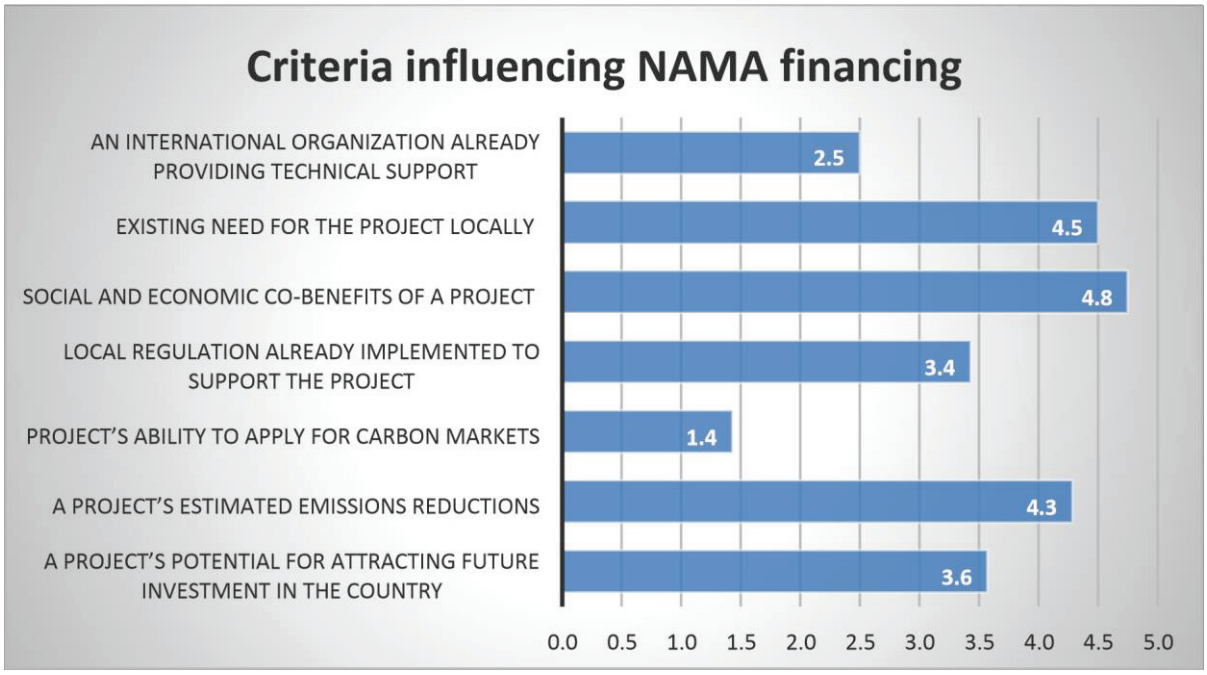


Figure 13 Chart of Criteria influencing NAMA financing created according to responses to the survey

Part 2: Review of Interviews

The same organisations that responded to the survey were given a deeper answer-based questionnaire to fill out.

Supporting, implementing and research organisations were asked the following questions: What criteria have succeeded in getting NAMAs the proper support (both financial and technical) so far? What is influencing financiers and supporters when making their decisions?

The financing organisation was essentially asked the same question but directed more at their actual activities: As financiers, what where the NAMA criteria that made the projects attractive to you enough to invest in? What is influencing your decisions as financiers when looking for NAMAS to support?

Although each organisation had a different point of focus, there seemed to be one pattern that was clear in all response, the concept of bankability was either very important or even expressed as a defining criteria.

CCAP pointed to many elements that could influence general NAMA support and clarified

CCAP's proposal criteria:

"The potential to transform a specific sector, the ease with which it can be implemented, as well as the impact that their funds will have in environmental, social and development conditions. In some cases existing relations with a country or geopolitical reasons could have an effect too."

"CCAP's proposal includes six criteria: demonstration of political support from the host country, achievement of significant emission reductions in the near- and long-term, promotion of sustainable development, inclusion of sectoral or national emissions reductions, coupling of policies and financial instruments to reduce barriers to low-carbon development, and catalyzing of additional investments in mitigation actions (including private investment)"

However, when asked specifically about financing pertaining to NAMAs the answer showed a focus on the importance of funding:

"The consensus between many organizations developing NAMAs dictates that these should have important mitigation potential and include transformational

policy reforms as well as a sound and well developed financial mechanism that is able to leverage private funding when implemented."

The GovNAMAs project first pointed to an apparent problem in the financing of NAMAs. As opposed to there being clear criteria set for NAMAs, it seems it is the funders who are actually setting their own criteria for what kind of projects they'd like to fund.

"Since there are very few NAMAs that have attracted support, it can be claimed that the existing criteria are actually hindering the uptake of NAMAs. But that is not also the case as NAMAs are being proposed by developing countries. These proposals have come out of the domestic processes with expectation of, but without any guarantee of, financial or technical support.

The main problem from my perspective is that at the moment there is no single criteria for NAMAs and every funder seem to be proposing their own respective criteria which makes it difficult to figure out who is providing, what, how much, to whom and when?"

In fact, The GovNAMAs project went so far as to state that funders and criteria developers are the same entity:

The fact is that funders and criteria developers seem to be the same entity. For ex: NAMA Facility is funded by Germany and UK who also decide both the general as well as the ambition criteria of NAMA Facility.

But the most interesting question was what would the UNFCCC as the managing body for the NAMA registry state? Although, the secretariat indicated that private investors had very specific and exclusive criteria of interest while funding agencies had their own specific albeit broader criteria to meet conforming to the type of financing they would consider offering.

"The world of financers and supporters is quite varied and is difficult to answer this question for all of them. Private investors focus only and strictly on returns and financial sustainability, public sources have additional criteria as described above.

For public sources it is mostly a combination of political and technical factors. On the technical side, funding agencies have different weights to different criteria but the most important ones are alignment with national policies, ambition and potential reduction of the action, sustainability/bankability of the investment, overall quality of the proposal and conformity with the agency's principles and guidelines.

Large funding agencies, like banks, have in addition broader criteria depending on whether it's a loan or a grant and relates to the absorption capacity, debt situation, safeguards and others."

KPMG were even clearer in their statements clearly indicating that private sector support relied above all on financing and sound economics, in other words bankability:

"When it comes to private sector supporters then the robustness of the financing plan and the depth of economic analysis will be the most important
factors"

The IAD, as a financing organisation, gave a response that indicated the bank saw financing as

"central " to their approval process and furthermore had strict and well-defined criteria for the financial mechanism they would consider adequate. Their statements were very much in line with what The GovNAMAs project and KPMG had to say on financing institutions, particularly private ones:

"A central element in our assessment of a NAMA is the evaluation of the financial mechanism that is proposed for the implementation of the NAMA.

The financial mechanism should be well structured, and demonstrate that it would allow to leverage sufficient investments in the mitigation actions selected in the NAMA, through the combination of adequate financial

incentives and risk transfer mechanisms (such as guarantee mechanisms,

insurance, etc.). The entity that will implement the financial mechanism should have the experience and adequate profile to manage the proposed financial

mechanism/financial instrument. This would require that the NAMA has clear institutional arrangements for its implementation and that the roles of each participant in the NAMA are well defined.

To access climate finance resources, it will also be important to demonstrate the additionality of the proposed actions and provide incremental cost

reasoning. The cost effectiveness of the proposed measures is also important, and the measures should be financially viable/bankable as well as technically

feasible. "

The analysis of these interviews pointed toward a revelation that although other characteristics such as emissions reductions rated highly in the survey, bankability was discussed more often and in general cited more regularly as both being the reason for a project being hindered as well as the most sought after form of support requested by NAMAs. From the interviews it also seemed that other financing criteria rated highly in the survey, such as attracting investment into the country, were mentioned as secondary criteria and described more as an outcome of a project's bankability rather than a force

within themselves for determining a project's success. The primary focus of all the interviewees was a project's bankability. This was either expressed openly as the most important criteria (KPMG) or was the only focus of the reply even if not expressed as "the most important criteria" (UNFCCC).

Part 3: Applying the Survey to NAMAs in Implementation

The survey was applied to all 17 NAMAs currently successfully in implementation. All NAMAs are waiting to be implemented and the assumption is that all of them will be eventually. Although no NAMAs have been rejected (all proposals could be implemented at any point) and therefore cannot be counted as NOT successful, the implemented ones are the only ones that can be clearly counted as successful (the rest may never be implemented and eventually cancelled). The key is to look at the NAMAs who are actually successful in finally being implemented. They are therefore the only ones I evaluated.

Below are the ratings of each criteria as well as the exact quotes taken from the official NAMA proposals to justify each rating. Where no information was made available the criteria received a rating of 1 and was described as "not addressed".

1. Adaptive Sustainable Forest Management in Borjomi-Bakuriani Forest District

Country: Georgia

Sector	Forestry

Focus area *(no data)*

Proponent(s) *National Forestry Agency of the Ministry of Environment and Natural Resources Protection of Georgia*

A project's potential for attracting future investment in the country 5 The improvement of forest management practices is expected to contribute to a long-term increment in biomass.
A project's estimated emissions reductions 1 Not addressed
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 5
Proponent: National Forestry Agency of the Ministry of Environment and Natural Resources Protection of Georgia
Social and economic co-benefits of a project 4 improve the livelihood of people by supporting the sustainable development of forest ecosystems in Georgia
Existing need for the project locally 4 The restoration of 45.000 hectares of forest
An international organization already providing technical support 1 None

2. Nationally Appropriate Mitigation Actions for Low-carbon Urban Development in Kazakhstan

Kazakhstan

Sector	Buildings, Waste, Transport, Energy
Focus area	Renewable energy (biomass), Energy efficiency
Proponent(s)	Government of Kazakhstan

A project's potential for attracting future investment in the country 5 The projects states specifically that it will: Support the creation and strengthening of institutional structures that will allow public and private sector investments in identified infrastructure and technical assistance (Component 2)
A project's estimated emissions reductions 1 Not addressed
Project's ability to apply for carbon markets 1 Not addressed

Local regulation already implemented to support the project 5 Provide facilitation of financing of urban NAMA through creation of a dedicated fund (Component 3) Proponent: Government of Kazakhstan
Social and economic co-benefits of a project 3 improving urban services and the quality of life of citizens in Kazakh towns and cities.
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 UNDP-GEF was providing both technical and financial support

3. Expanding self-supply renewable energy systems in Chile

Chile

Sector	Energy
Focus area	Renewable energy (unspecified)
Proponent(s)	Ministry of Environment; Economic Development Agency (CORFO); International Cooperation Agency (AGCI); Ministry of Energy; Centre for Innovation and Promotion of Sustainable Energy (CIFES)

A project's potential for attracting future investment in the country 5

Fuel industry development and growth

Raise awareness and demand for renewable energy projects

A project's estimated emissions reductions 5

Cumulative GHG reductions: 2 $MtCO_2eq$

Project's ability to apply for carbon markets 1

Not addressed

Local regulation already implemented to support the project 4

The project has been developed to remove barriers and incentivize the incorporation of decentralized renewable energy systems in private and public infrastructure in the short term. To counter the lack of incentives and experience among project investors and financial institutions in financing these energy systems, the NAMA Support Project will provide cofinancing for feasibility studies, for investment grants to set up these systems, and for training and advisory services to improve the financial sector's understanding of such systems. Furthermore, a guarantee fund will be set up in order to support the provision of loans by financial institutions.

Social and economic co-benefits of a project 4

Social: Creation of jobs through renewable energy projects financed by the NAMA

Economic: Reductions in energy usage and costs and improvement of energy security at the national level.

Existing need for the project locally 1 Not addressed
An international organization already providing technical support 4 GIZ

4. Low-carbon end-use sectors in Azerbaijan

Azerbaijan

Sector	Buildings, Transport, Energy
Focus area	*(no data)*
Proponent(s)	*UNDP, SOCAR, (national oil company of Azerbaijan), GEF*

A project's potential for attracting future investment in the country 5 The specific objective of the project is to support SOCAR in the development and implementation of selected programmatic NAMAs in the low-carbon end-use sectors, where
pilot investments will be directed into low energy and low carbon technologies that are so far missing on a large scale on the Azeri market.

A project's estimated emissions reductions 1 not addressed
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 1 Not addressed
Social and economic co-benefits of a project 1 Not addressed
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 UNDP

5. Burkina Faso Biomass Energy NAMA Support

Burkina Faso

Sector	Energy
Focus area	Renewable energy (biomass)
Proponent(s)	Ministry of Environment and Sustainable Development

A project's potential for attracting future investment in the country 5 The main objective of the NAMA Support Project is to make biomass energy commercially viable.
A project's estimated emissions reductions 5 The sector accounts for 84 per cent of energy consumption in Burkina Faso. The NAMA Support Project has the potential to achieve 41 per cent of the national emission reduction target.
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Environment and Sustainable Development
Social and economic co-benefits of a project 4 More stable supply chains and continuous, more affordable energy access. The majority of the target group is women.
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 SNV Netherlands Development Organisation

6. Integrated Waste Management in China

China

Sector	Waste
Focus area	*(no data)*
Proponent(s)	*Ministry of Housing and Urban-Rural Development, China Association of Urban Environmental Sanitation (CAUES)*

A project's potential for attracting future investment in the country 5 It intends to: Capitalize significant Chinese investments going into the waste sector by adding best available practices for integrated waste management in three pilot cities
A project's estimated emissions reductions 5 Cumulative GHG reductions: 0.82 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 1 Not addressed
Social and economic co-benefits of a project 4 Social: * food safety due to the reduced feeding of unhygienic waste to livestock

Economic: * integration of “waste pickers” as qualified waste sector workers
Existing need for the project locally 5 Ministry of Housing and Urban-Rural Development, China Association of Urban Environmental Sanitation (CAUES)
An international organization already providing technical support 1 Not addressed

7. NAMA for sustainable housing in Mexico

Mexico

Sector	Buildings
Focus area *(no data)*	
Proponent(s)	*Mexican National Agency of Housing (CONAVI), Mexican Secretariat of the Environment and Natural Resources (SEMARNAT)*

A project’s potential for attracting future investment in the country 1 Not addressed

A project's estimated emissions reductions 5
Cumulative GHG reductions: 16 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Mexican National Agency of Housing (CONAVI), Mexican Secretariat of the Environment and Natural Resources (SEMARNAT)
Social and economic co-benefits of a project 4 The target group is new buildings, primarily for low-income families.
Existing need for the project locally 4 The target group is new buildings, primarily for low-income families.
An international organization already providing technical support 5 GIZ

8. NAMA for the domestic refrigeration sector in Colombia

Columbia

Sector	Industry, Waste
Focus area	Energy efficiency

Proponent(s)
Ministry of Environment and Sustainable Development Ministry of Mines and Energy

A project's potential for attracting future investment in the country 5 Colombia to gain international recognition as a frontrunner.
A project's estimated emissions reductions 5 Cumulative GHG reductions: 16.8 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Environment and Sustainable Development, Ministry of Mines and Energy
Social and economic co-benefits of a project 3 Economic: * Reduced energy costs for households Qualification and certification of local technicians Raise sustainable competitiveness of producers National savings on energy
Existing need for the project locally 1 Not addressed

An international organization already providing technical support 1 Not addressed

9. NAMAs in the Costa Rican coffee sector

Costa Rica

Sector	Agriculture
Focus area	*(no data)*
Proponent(s)	*Ministry of Agriculture and Livestock (MAG)*

A project's potential for attracting future investment in the country 5 Ecological competitiveness regionally and internationally.
A project's estimated emissions reductions 5 The aggregate emission reduction potential amounts to 1.85 million tons CO_2e over 20 years. Emission reductions of 250,000 tons CO_2e are directly attributable to the NAMA Support Project.
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Agriculture and Livestock
Social and economic co-benefits of a project 4

The project will contribute to the empowerment of farmers and millers to develop sustainable livelihoods, will maintain employment for up to 150,000 jobs during the harvest period and may create a positive impact on the standard of living of more than 400,000 people.
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 GIZ

10. Plan Solaire Tunisia NAMA

Tunisia

Sector	Energy
Focus area	Renewable energy (solar), Renewable energy (wind), Renewable energy (biomass), Energy efficiency
Proponent(s)	Tunisian Ministry of Environment and Sustainable Development

A project's potential for attracting future investment in the country 5 Promoting the coordination of financing instruments and tools with public and private entities in order to allow better access to economic resources and financing for projects. Developing a vibrant renewable energy supply chain in Tunisia that will generate green jobs.

A project's estimated emissions reductions 5 Cumulative GHG reductions: 30.5 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Tunisian Ministry of Environment and Sustainable Development
Social and economic co-benefits of a project 4 Increasing social equality and reducing energy poverty, through increased access to quality and affordable energy services, especially in the (sub-national) regions.
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Ecofys

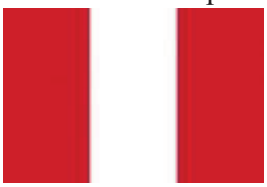
11. Sustainable Urban Transport Initiative

Indonesia

Sector	Transport
Focus area	*(no data)*
Proponent(s)	*Ministry of Transport*

A project's potential for attracting future investment in the country 1 Not addressed
A project's estimated emissions reductions 5 Cumulative GHG reductions: 5 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Transport
Social and economic co-benefits of a project 2 Cleaner transportation systems in cities improve local air quality and decrease noise emissions from transport.
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 5 GIZ

12. Sustainable Urban Transport



NAMA

Peru

Proponent(s) Ministry of Transport and Communications (MTC), Ministry of Environment (MINAM)	**Sector**	Transport
	Focus area	*(no data)*

A project's potential for attracting future investment in the country 5 Support to local governments to strengthen sustainable urban transport: Implementation of a Sustainable Urban Transport Policy and Programme that support secondary cities in the planning, financing and implementation of sustainable urban transport measures.
A project's estimated emissions reductions 5 Cumulative GHG reductions: 5.6 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Transport and Communications (MTC), Ministry of Environment (MINAM)
Social and economic co-benefits of a project 5 Social: * High decrease in travel times

Reduced health costs and stress Reduced injuries Social inclusion of people of vulnerable groups Economic: * Reduced life cycle costs of vehicles Increased competitiveness of cities job creation
Existing need for the project locally 1 Not addressed
An international organization already providing technical support 1 Not addressed

13. Tajikistan Forestry NAMA

Tajikistan

Sector	Forestry		
Focus area	*(no data)*	**Proponent(s)**	Ministry of Economic Development and Trade (MEDT),

	Agency of Forestry under the Government of the Republic of Tajikistan (GoT)

A project's potential for attracting future investment in the country 5 Leverage public and private finance.
A project's estimated emissions reductions 5 The NAMA Support Project will sequester 2.01 million tonnes CO_2 by 2030 (154,700 tonnes CO2 per year) and could be significantly scaled up across the country.
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the Ministry of Economic Development and Trade (MEDT), Agency of Forestry under the Government of the Republic of Tajikistan (GoT)
Social and economic co-benefits of a project 3 Economic: A likely major additional benefit is the creation of new jobs and incomes for local inhabitants.
Existing need for the project locally 5 It will address the systemic barriers affecting the implementation of forestry sector reform.
An international organization already providing technical support 5 Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, KfW Entwicklungsbank

14. Thailand Refrigeration and Air Conditioning NAMA

Thailand

Sector	Energy
Focus area	Energy efficiency
Proponent(s)	Ministry of Natural Resources and Environment (MNRE) - Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Energy

A project's potential for attracting future investment in the country 3 Manufacturers will be able to produce technically advanced, sustainable and competitive products for the domestic and export markets.
A project's estimated emissions reductions 5 The equivalent annual reduction by 2030 is 6.4 per cent or 46 million tonnes CO_2 eq
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the ministry of Natural Resources and Environment (MNRE) - Office of Natural Resources and Environmental Policy and Planning (ONEP), Ministry of Energy
Social and economic co-benefits of a project 2

Economic:	Key stakeholders benefit from and support this reform: Manufacturers will be able to produce technically advanced, sustainable and competitive products for the domestic and export markets. This will entail new jobs and training for technicians in the jobs and training for technicians in the service sector, while consumers will receive lower energy and refrigerant bills.
Existing need for the project locally 1 Not addressed	
An international organization already providing technical support 5 SNV Netherlands Development Organisation	

15. Transit-oriented development

Columbia

Sector Buildings, Transport		
Focus area *(no data)*	**Proponent(s)**	FINDETER Financiera del Desarrollo, CIUDAT

A project's potential for attracting future investment in the country 1
Not addressed
A project's estimated emissions reductions 5 Cumulative GHG reductions: 3.6 $MtCO_2eq$
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4 Proponent is the FINDETER Financiera del Desarrollo, CIUDAT
Social and economic co-benefits of a project 5 The NAMA will also generate co-benefits in the areas of quality-of-life, economic development, social equity, preservation of natural habitat, reduced risk, and energy independence. Individuals will enjoy better neighborhoods, lower costs of transportation and less pollution. Businesses will see new markets and employees within easy access. Governments will see economic benefits from reduced infrastructure costs per capita and increased revenues per unit area.
Existing need for the project locally 4 The goal of this NAMA is to trigger transformational change of the urban template of Colombian cities and continue providing long-term, low-carbon results for years to come by constructing long lasting infrastructure and buildings that will lock in efficient land use and travel patterns. These new patterns will require less transport energy for households and businesses to achieve their daily tasks, because destinations and origins are brought closer together and non-motorized and transit modes are easier to use.

An international organization already providing technical support 5

Center for Clean Air Policy

16. Transport NAMA on BRT

Kenya

Sector Transport

Focus *(no data)* **area**

Proponent(s) Ministry of Transport and Infrastructure (MOTI) / NaMATA (Nairobi Metropolitain Area Transport Authority) Kenya Urban Road Authority

A project's potential for attracting future investment in the country 1

Not addressed

A project's estimated emissions reductions 5

Cumulative GHG reductions: 0.36 $MtCO_2eq$

Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 4
Proponent is the Ministry of Transport and Infrastructure (MOTI) / NaMATA (Nairobi port Authority) Kenya Urban Road Authorit
Social and economic co-benefits of a project 2 Reducing congestion time and reducing noise pollution
Existing need for the project locally 5 Nairobi's current transportation system relies on individual transport and shared taxis (matatus). Transport related CO_2 emissions have doubled over the last ten years from 2.3 Mt in 2003 to 4.6 Mt in 2013. Congestion and travel times are increasing and so is noise and air pollution. This affects personal mobility and consequently economic and social development along with worsening health issues and challenges to meet Kenya's GHG reduction targets.
An international organization already providing technical support 5 GIZ

17. Unilateral NAMA: Sustainable road-based freight transport
    Colombia

Columbia

Sector	Transport		
Focus area	*(no data)*	**Proponent(s)**	Ministry of Transport, Colombia

A project's potential for attracting future investment in the country 5 Accelerate the renovation of the cargo vehicle fleet with the aim to improve economic competitiveness.

A project's estimated emissions reductions 5 Expected mitigation impact in CO_2 eq 0.52 Mt/y
Project's ability to apply for carbon markets 1 Not addressed
Local regulation already implemented to support the project 5 Proponent is the Ministry of Transport, Colombia
Social and economic co-benefits of a project 4 Social: Road safety: 150 fatal accidents, 715 serious accidents and 4,000 simple accidents less in the first year Economic: Diesel consumption reductions: 93 million gallons in the first year
Existing need for the project locally 1 Not addressed

An international organization already providing technical support 1 Not addressed

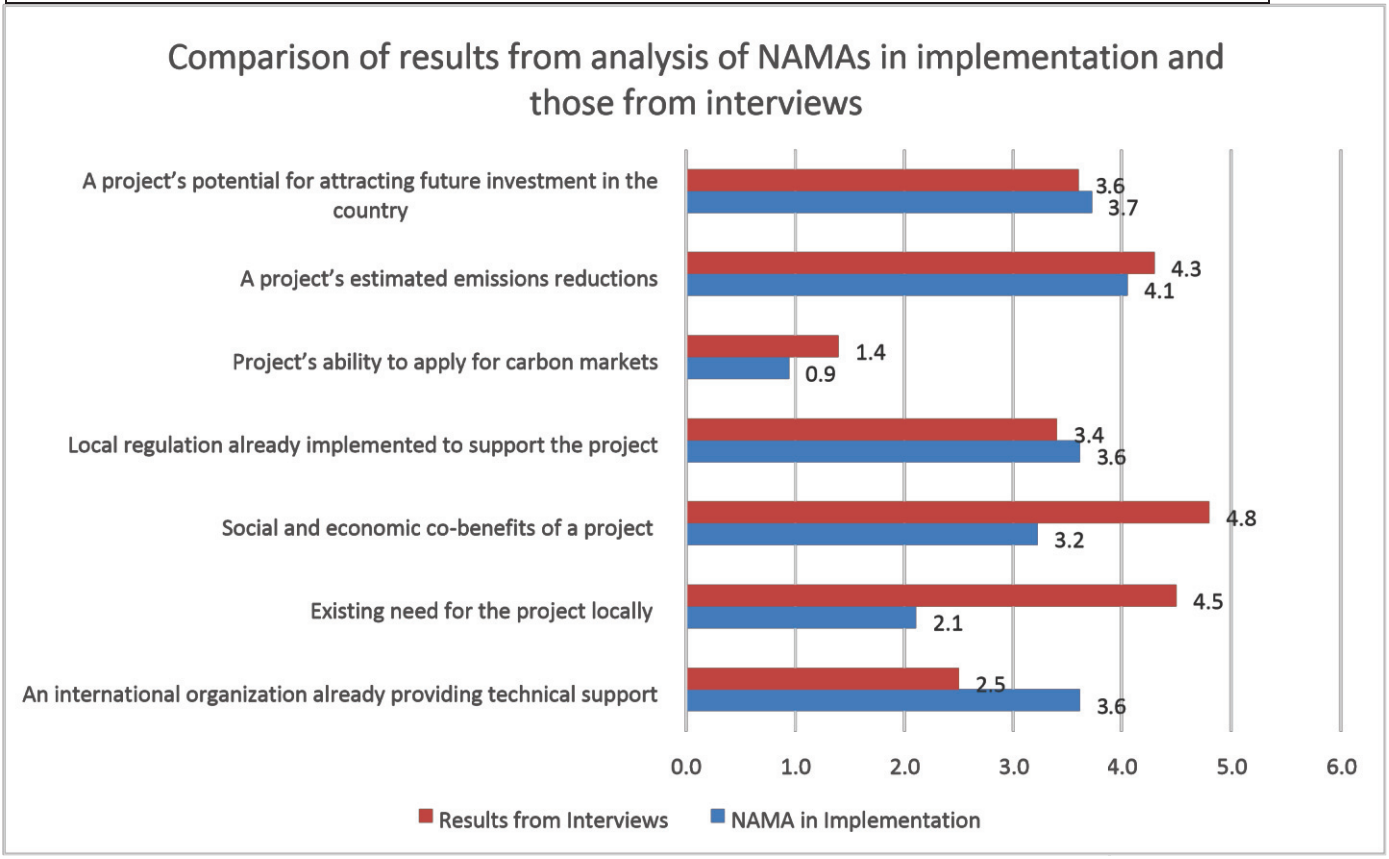


Figure 14 is a chart showing the survey results found from interviews compared to those produced by the analysis of proposal of NAMAs in implementation

The results in this case showed that elements surrounding financing where the most important after emission mitigations (4.1) (the main inherent goal of NAMAs) and more important than all other elements inherent in in the NAMA definition such as local regulation (3.6). A project's potential for attracting investment (3.7) was more important than even the existing local need for the project (2.1) and a project's social and economic co-benefits (3.2). The support of an international organisation (3.6) was deemed almost as important as attracting financing. The questionnaire also revealed that a project's ability to

apply for carbon markets had the least impact on its attractiveness (1) just as seen in the interview analysis.

Although the results from the analysis were overall similar to those from the interviews, key differences were noted in social and economic co-benefits, the existing need for the project locally which was surprisingly low and the need for international technical support. All however were lower than a project's potential for attracting investment. What this indicates is that interviewees assumed that all the above mentioned criteria would be more important for implementation than they actually were. In the end the NAMAs implemented did not rate as a high as interviewers would expect them to (in order to get implemented) in terms of social and economic co-benefits and the existing need for the project locally. Yet despite that they were indeed implemented. The criteria that interviewees expected the NAMAs to rate high in in order to ensure implementation that the implemented NAMAs did actually rate high in was the project's potential to attract investment. This points to the well-known fact in economics that financiers look for projects that will bring them positive return of investments.

"My adversary is the world of finance."

Francois Hollande

President of the French Republic

CHAPTER 5: DISCUSSION

So far the surveys, questionnaires and NAMA analysis have consistently pointed to bankability as the most dominant criteria for NAMA implementation. What does the industry however have to say on the matter? In this chapter, I take a look at the conclusions coming out of research being done on NAMAs three different sources:

1. **Review of lessons learned** 2. **Review of case studies and current NAMAS** 3. **Review of Ecofys status reports**

Lessons Learned

Lessons learned are private and often unofficial sessions where industry experts share the trends and insights they have concluded from their experience in case studies and actual NAMA implementations and deduce from their shared knowledge advice on to improve processes going forward. The information from lessons learned sessions is often released as unofficial notes from the meetings. The lessons learned from an unofficial report prepared by Jiro Ogahara at the SB40 Side event (the 40th session of the Subsidiary Bodies of the Implementation of the UNFCCC) revealed the importance of NAMAs being bankable as well as the difficulties in achieving that. Although lessons learned can also be

found online at times, I received the majority of the documents from an internship I did at the UNFCCC.

Dr. Karsten Sach, Ministry of Environment of Germany, (BMUB) stated:

> *"From the design (stage) it has to be something that can be bankable. As financers, we need security. But of course, there is room for improvement in relation to see how can we engage new sources of financing such as the private sector."*

At a UNFCCC side event brief in Bonn, Germany held on June 11 2014 (Röser, Fet al, 2014), the importance of NAMAs appealing to funders was once again brought to light by Stephen King'uyu of the Government of Kenya:

> *"The NAMA concept is very promising, but we don't see enough implementation support materializing. Assuming that finance is available, this raises questions on whether proposals are of sufficient quality and if they match funders' preferences. We need to work together to match these expectations and make sure that NAMA finance starts flowing at scale."*

In interviews with practitioners, Tilburg 2012 repeatedly found that NAMAs should be public sector interventions that use public funds to leverage larger private sector investments. The premise is that supported NAMAs can create an investment climate and incentive structure that would be attractive for private sector actors without the added benefit of selling carbon credit as generated under the CDM.

Review of published case studies

Lutken et al (2013) in their report Guidance for NAMA Design-building on country experiences revealed that NAMA experience so far had proved the importance of financing not only overall but also to be considered at the "earliest" stage:

> *"Financing of NAMAs is of key importance in the planning process and should be considered at the earliest stages of NAMA development. NAMAs will tend to be revisions of current policies within current budgets, rather than the creation of entirely new ones. Therefore, familiarity with the national budget is crucial to the way in which NAMA financing comes together.*

The Chilean case study by (Sanhueza et al. 2014) stated that a main problem to implementing their NAMA projects was that no framework existed to support NAMA financial support. The purpose of this study was to describe the progressive involvement of the country in mitigation and assess whether the present responses by Chile were sufficient in relation to the signals stemming from the United Nations Framework Convention on Climate Change. The study emphasised that financing information was nearly non-existent.

Meanwhile, the Peru case study (Zevallos, P. et al. 2014), a study that sought to understand how mitigation actions were undertaken in Peru by analysing the country's most advanced nationally appropriate mitigation action (NAMA) – the efficient lighting NAMA, revealed similar concerns with government policy frameworks that failed in providing support to secure funding:

> *"Many policies and regulations have been created in the preceding 10 years to promote and support energy efficiency actions and programmes. None, however, were specifically designed to provide funding or help the projects to obtain funding from private or international sources."*

In addition of the few successful NAMAs in implementation, the most notable ones were the ones who managed to leverage private finance in intelligent financial mechanisms that were significantly attractive to the private sector. The Chile - Self-supply Renewable Energy provided just such a financial mechanism and was one of the first NAMAs to be implemented:

> *"The financial mechanism of the NAMA for self-supply renewable energy in Chile is centered around a guarantee fund and associated preferential loan scheme. The guarantee reserve, funded by an international donor, will cover the majority share of any loan defaults. This enables development banks and commercial financial institutions to capitalize a loan programme for renewable energy projects with attractive conditions for participants. A relatively small injection of public finance to populate the guarantee fund thus allows for around ten times the volume of investment in renewable energy technologies by the private sector." (Hänsel, G. et al, 2015)*

Review of Current NAMAs

Existing NAMA proposals analysis: the case of Chile's success

The objective of the Concentrating solar power (CSP) NAMA in Chile, a loan from the Clean Technology Fund (CTF) and the Inter-American Development Bank (IDB) with the IDB providing technical support, is to reduce emissions by fostering self-supply renewable energy projects by constructing a single CSP plant in the north of the country. The hopes is that deployment of this project would allow the Chilean solar industry to learn and gain capacity in executing solar technologies so they can be scaled up more

rapidly in the future. CSP is particularly of interest in the northern region of the country because energy storage can help better meet the particular demand profile of customers on that grid.

Rationale behind financing

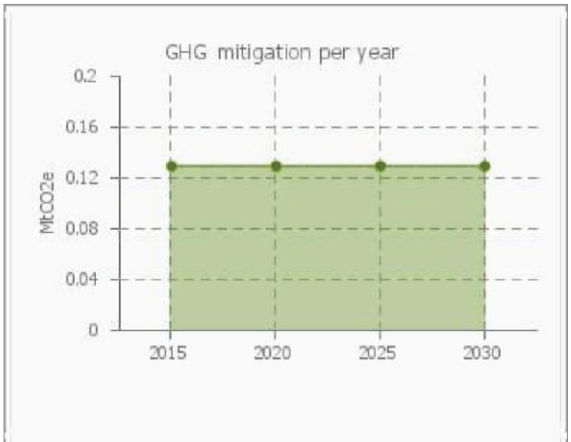
The CTF Trust Fund Committee reviewed the investment plan for Chile in a comprehensive report from April of 2012. In discussing the rationale behind financing, economic concerns of economics were very visible throughout the report, particularly the fear of crowding-out effect. The crowding out effect is an economic theory stipulating that rises in public sector spending drive down or even eliminate private sector spending.

The report also emphasized the importance of choosing projects that were attractive and approved by the private sector. "The private sector in Chile is not just the basis for economic growth; it also provides 100% of the energy generation and transmission in the country." In addition, the report emphasized the need for projects with good risk-return ratios:

> *"CTF co-financing interventions have the potential to reinforce the market pull, diminishing the risk return imbalances through partial credit guarantees or off-setting the incremental costs faced by early entrants. Also, CTF can strengthen the resources and capacities through*
>
> *technical assistance to*
>
> *ESCOS, CORFO and the industry. As a result, CTF co-financing would have a crowding-in effect, because it encourages investors to undertake projects that*
>
> *otherwise would not happen."*

CSP NAMA in Chile

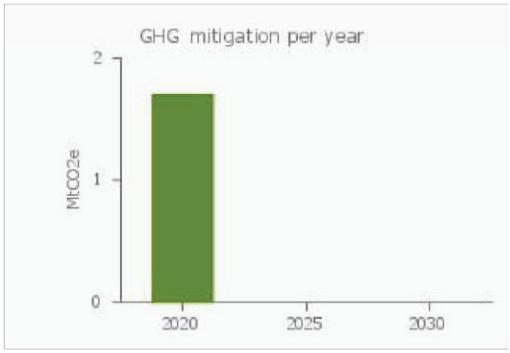
The CSP NAMA in Chile is fully funded at US$ 486 million through a loan from the Clean Technology Fund (CTF) and the Inter-American Development Bank (IDB) with the IDB also providing technical support.



Cumulative GHG reductions: 2.586 $MtCO_2eq$

Expanding self-supply renewable energy systems in Chile

The objective of the NAMA is to reduce emissions by fostering self-supply renewable energy projects and contribute to the long-term development of the renewable energy industry in Chile.



Cumulative GHG reductions: 13.6 $MtCo_2eq$

Figure 15 is from nama-database.org from the CSP NAMA in Chile featuring the project's criteria

Review of the successful NAMA for sustainable housing Mexico

Objective

The goal of the NAMA Support Project is to implement the New Housing NAMA designed to promote cost effective energy-efficient building concepts across the

Facts

NAMA Facility funding volume:
€ 14 million

Project duration:
2013 - 2019

Responsible ministries:
Ministry of Environment and Natural Resources (SEMARNAT), Ministry of Agrarian, Territorial and Urban Development (SEDATU)

Delivery organisation:
Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH, Kreditanstalt für Wiederaufbau (KfW)

Implementing partners:
National Housing Commission (CONAVI), Sociedad Hipotecaria Federal (SHF)

Status:
under implementation

housing sector with a particular focus on low-income housing. The NAMA Support Project supports the implentation of the NAMA by:

1. Promoting the penetration of basic efficiency standards in the new housing market in Mexico by means of technical assistance to large public housing financiers and housing developers and; financial incentives and project-related technical support for small and medium sized developers and financial intermediaries.
2. Promoting the upgrading of energy efficiency standards to superior levels.

Support achieved through a high level of investor- attractive flexibility was provided

According to Conavi et al. (2012), a 'NAMA Fund' was set up as the initial recipient of donor funds, whether as soft loans or as grants and addressed both the supply and demand side, providing bridge loans for housing developers as well as support for home buyers in the form of subsidies and supplemental mortgage finance. Donors wishing to provide indirect support could provide funding directly to the Mexican government or through bilateral cooperation sources. The NAMAs packages (figure below) indicate the high level of flexibility regarding scaling the level (# of units) and type (Eco Casa 1, Eco Casa 2, and Passive House) of support provided to donors. The donors are also given the option to direct their donations towards both direct and/or indirect measures, as per their requirements and preferences.

Examples of financial packages for subsidies to home owners (grants from donors)

Packages				Financing Need			Benefits
Financial packages	Scale of the package	Content of the package		Subsidies to Home-owners, USD million		Total incremental construction cost USD million	Emission reductions over 30 yrs lifetime, tCO_2
		Mainstream roll-out	Passive House Pilot	Mainstream roll-out	Passive House Pilot		
Package 1	Large Scale (27,000 homes)	EcoCasas 1 & 2, 40 and 70m²	30 buildings of 40m²	49	0,2	165	1,711,000
Package 2	Mid-Size (13,800 homes)	EcoCasas 1 & 2, 40 and 70m²	30 buildings of 40m²	25	0,2	84	866,000
Package 3	Small Scale (5,200 homes)	EcoCasas 1 & 2, 40 and 70m²	30 buildings of 70m²	9	0,3	27	311,000
Package 4	Multi-Family (14,940 apartments)	EcoCasas 1 &2, 40 and 70m²	780 verticals, 40 and 70m²	27	3	94	865,000
Package 5	Passive House Pilot (890 homes)	890 Mexican Passive Houses (different types)		-	6	12	87,000

Source: IzN Friedrichsdorf

Figure 16 is courtesy of Conavi et al. (2012) and represents the different financial packages offered to home owners of the Mexico NAMA

In addition, investment costs were also calculated through an incremental cost estimation reflecting the additional measures for each case, from Eco Casa 1 to Passive House. Two scenarios were provided a first estimate, 'current costs' reflects the costs that would be incurred if the enhanced building standards were instituted immediately, and a second more realistic

'future (investment) costs' scenario built on the assumption that once energy-efficient building had become common in Mexico the costs of energy-efficient components would be reduced. (Buchner, B et al. 2011)

Financial requirements of the NAMA's "the Green Mortgage"

Wehner, S. et al. (2010) in their paper entitled "Supported NAMA Design Concept for Energy-

Efficiency Measures in the Mexican Residential Building Sector. *Point Carbon Global*

Advisory Services." calculated the different financial needs over time for the baseline rollout, broader participation scenarios and a technology upscaling scenario as well as the combination of technology up-scaling and broader participation with saturation of "Green Mortgages" by 2020, while also estimating the financial requirements for supportive actions. An example of one scenario is provided in the figure below.

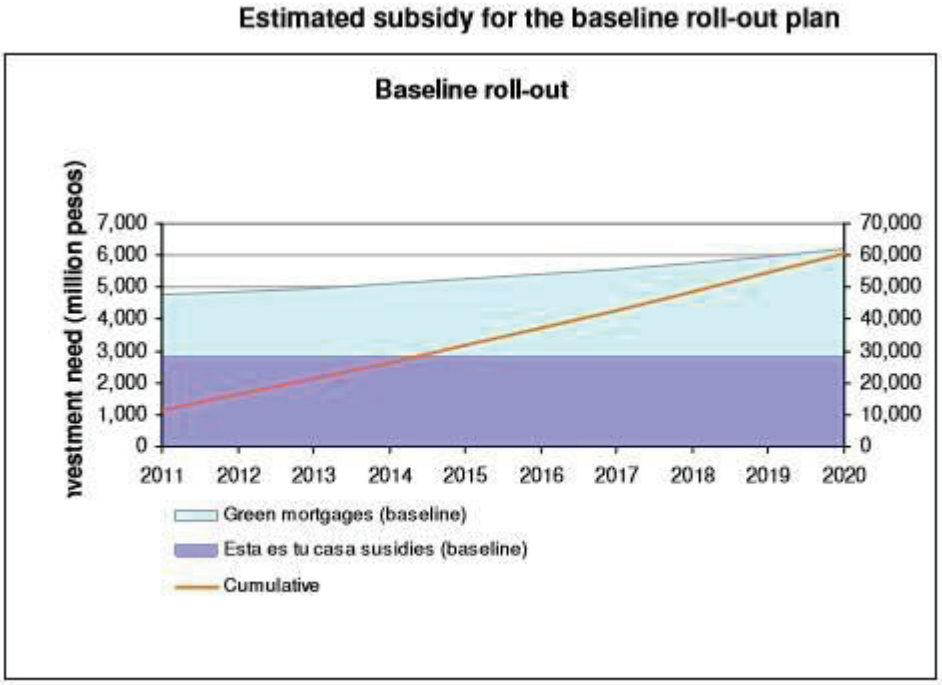


Figure 17 is courtesy of Wehner et al. (2010) and charts one of the possible baseline rollout plans for the Mexico NAMA

In the end all scenarios proved to be attractive to investors effectively utilising a variety of combinations of mortgages, subsidies and additional support.

A contribution to Mexico's economy that keeps on giving

This NAMA firstly took advantage that Mexico's emerging economy would be capable and eager to offer substantial co-financing. The NAMA offered the promise of notable subsidy savings representing a substantial incentive for the government to consider generous co-funding. The Mexican government provides a large amount of subsidies to

assure rigorous urban development and seeks complementary international funds to improve the energy demand of units. The NAMA featured an attractive financing scheme for public funding with a 'NAMA Fund' as the initial recipient of donor funds and a contribution made by the Mexican government. A graph below illustrates the financing mechanism surrounding the NAMA fund.

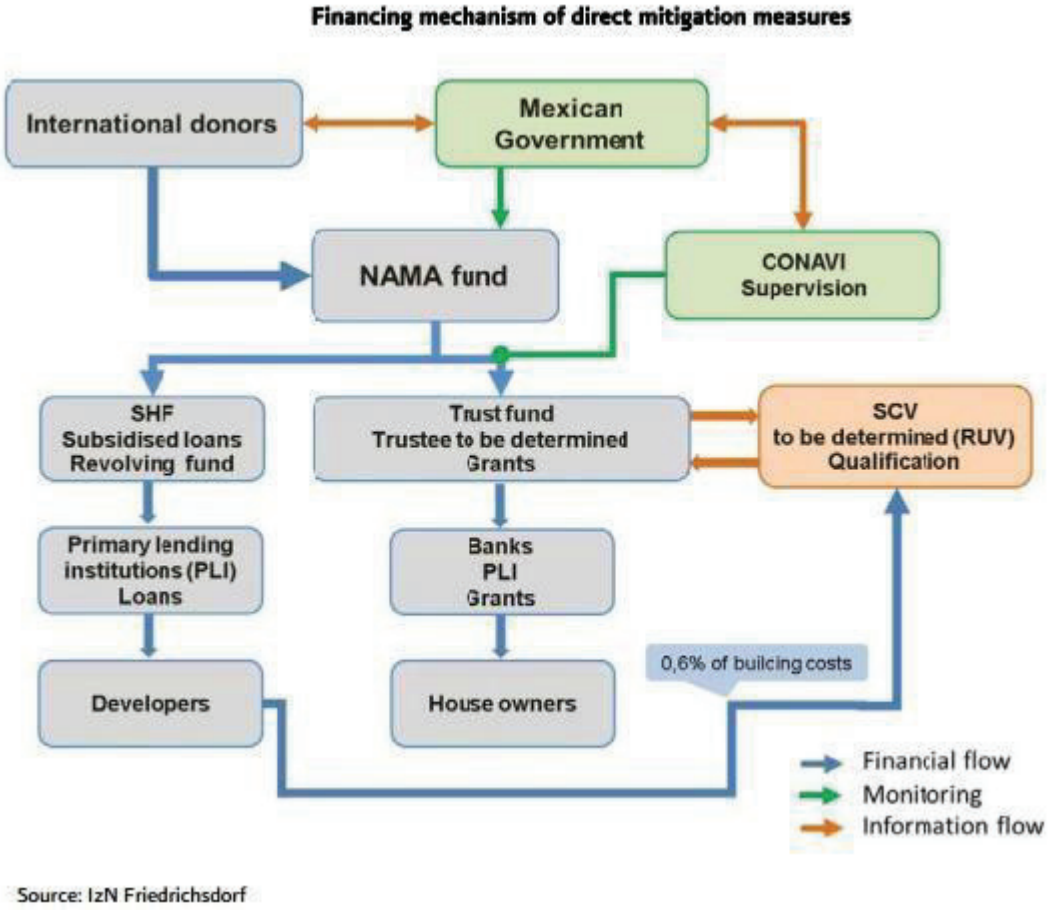


Figure 18 is courtesy of IZN Friedrichsdorf and illustrates the financing mechanism surrounded Mexico's NAMA Fund. The figure also delineates the Mexican government's role in financing.

Evolution of Ecofys Annual Status Reports from 2012- 2014

The NAMA database is a leading source of information on Nationally Appropriate Mitigation Actions (NAMAs) being developed worldwide, designed, implemented and run by Ecofys. The organization tracks NAMA activities on the ground through an open wiki platform that is ideal to promote much-needed collaboration and knowledge sharing. Drawing information from publically-available sources, Ecofys synthesizes the knowledge that has been submitted to official channels, like the UNFCCC NAMA registry. The site is used to help navigate and comprehend the diversity of NAMAs being developed and to learn from other initiatives. Data is made available without any cost and in open data standards to promote further use and research. The Ecofys Status Report on Nationally Appropriate Mitigation Actions (NAMAs) tracks the development of these NAMA activities and their support mechanisms worldwide.

Analysis of these Status Reports and the conclusions drawn throughout the years can provide key insights into how financing developed and what still needs to be addressed. From the first report produced in 2012 to the most recent in November of 2014, we notice an increased focus on financing and some realizations of the problems facing this crucial sector.

2012

The May 2012 report had no guidance on financing NAMAs but indicated that the topic was indeed becoming of interest:

"Financing and implementation is increasingly moving into the centre of attention as more and more developing countries are presenting proposals for NAMAs to seek international support. Future editions of the NAMA Status Report will expand upon this starting point. "

2013

By 2013, the report started to indicate that funding issues were becoming present in implementing NAMAs:

> *There are early signs of scepticism amongst some developing countries, who may feel that they have committed resources and effort to the concept of NAMAs, but cannot see examples of funding. There may even be a risk that the success of the NAMA concept relies too heavily on the NAMA Facility, which can support only a small number of NAMAs due to limited funding available.*

The report also pointed out the need to find additional sources of funding and indicated that NAMA funders *"*apply their own rules and guidelines" and that "engaging the private sector in NAMAs remains challenging" as the "benefits" of engagement in NAMA development were not clear to the private sector:

> *"Further effort is required to make the benefits of engagement in NAMA development clear to the private sector. Concrete examples of successful public-private sector collaborations in the development and implementation of NAMAs are needed."*

'Availability of Finance and Technology Support' was considered the most important issue to be resolved by both developed- and developing-country respondents.

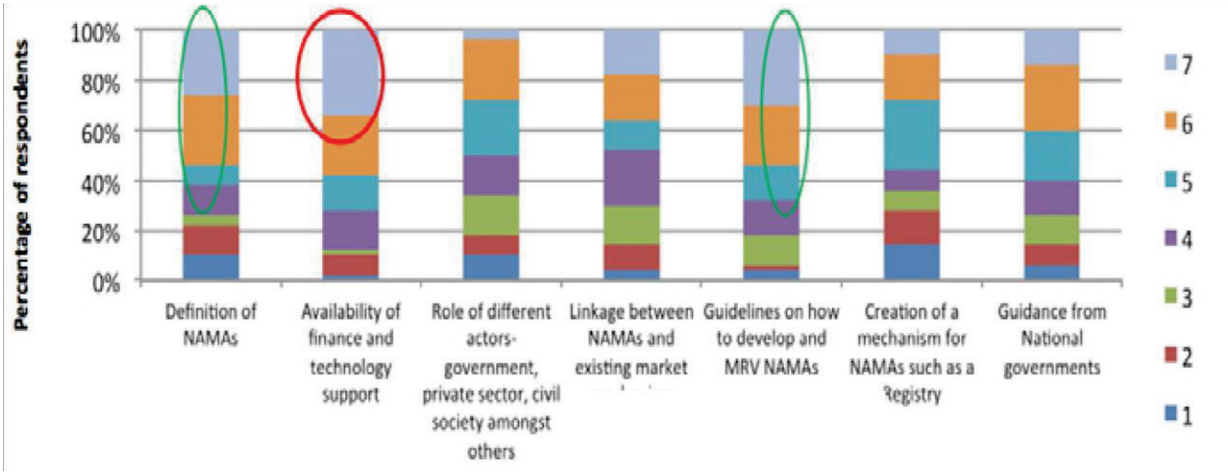


Figure 19: Issues important to operationalise a NAMA registry: summary of response - 7 indicating most important and 1 indicating least important

Although it seems analysts had not made the connection yet, evidence was emerging that funders needed to find projects more attractive, i.e. bankable, in order to get involved.

2014

By November of 2014, the report indicated that bankability of NAMAs was key to getting these projects support and getting them implemented. The annual report now had a chapter entitled "It's about the finance, stupid" quoting Dr. Soren Lutken's book.

> *"No Nationally Appropriate Mitigation Action (NAMA) will materialize without financial support. But the financing of NAMAs is too often treated as an afterthought and not considered at the beginning of the NAMA development process. Over the coming year, the focus on financing needs to shift towards requirements for a healthy and sustainable financial structure and not least towards the most efficient financing instruments. This is far from current practice."*

In addition, the report also emphasised the importance of attractive risk/return ratios for NAMA projects:

"Adding banking partners to the equation is essential, because the banks – and not the private investors – provide the bulk of the financing, but only if they trust the private investors to be able to run a profitable business. This entails acceptable risk/return ratios, which may be difficult to achieve in many prospective NAMA host countries. Risk cover, therefore, is an essential intervention area for national and international."

"We need to revise our economic thinking to give full value to our natural resources. This revised economics will stabilize both the theory and the practice of free-market capitalism. It will provide business and public policy with a powerful new tool for economic development, profitability, and the promotion of the public good."

Paul Hawken

The Ecology of Commerce: A Declaration of Sustainability

CHAPTER 6: CONCLUSION

Nationally Appropriate Mitigation Actions are set to be an important tool for mitigation in developing nations that has garnered a lot of interest as a potentially very effective tool both environmentally and economically. However, currently less than 10% (17 NAMAs in implementation stage against 178 in development stage) of the support requested by developing nations for NAMA development and implementation has been provided. While this is changing very slowly, a steady but sluggishly increasing number of financing institutions are offering support for NAMAs, this pace is clearly not on par with the enthusiasm surrounding NAMA development. The problem is that since NAMAs are largely government-driven policy actions, they struggle to leverage private finance.

To change this limitation, developing nations must start providing 'bankable' NAMAs; i.e. initiatives that generate adequate levels of revenues with a strong levels of certainty. Why would bankability be the defining factor for NAMAs? If one studies financing for climate change adaptation in developing nations the answer becomes clear. Without bankable projects that can attract investors the money for making the necessary developmental changes simply does not exist. The Advisory Group on Climate Change Financing 2010 Report of the Secretary-General's High-level Advisory Group on Climate Change Financing states:

"Developing countries often stress the importance of the public support or grant element of climate finance whereas many developed country representatives stress the fact that public money is scarce and the importance

of "leveraging" private sector investments."

Just as Lutken (2013) pointed out, in the end, it comes down to economics and in projects that means attractive risk return profiles. There is much research to support this notion. Kennedy et al. (2012) indicate that developing nation governments can encourage private investment low carbon emission infrastructure development by providing projects with attractive risk-return profiles; i.e. bankable projects. Additional research supports the notion that high return-risk is a requirement for attracting private investment since private funders only consider a project attractive if it has the potential for profit generation (Limaye & Zhu, 2012). After all, it comes down to common sense. Funders view projects as investments not charity cases. As such, if NAMAs are to be successful in developing the climate friendly infrastructure the world so desperately needs, they will have to prove that they are doing it with a high reward-risk ratio or at the very least a balanced one.

In the end, when it comes to financing it would be wise to remember that the principles of economics remain the same even in green economies. To ensure successful funding of NAMAs, the public sector must provide an environment that secures attractive risk/return ratios for the private investor. Governments can create an attractive investment environment through creation of legislations and regulations which reduce investment risks and helps promote the successful implementation of now "bankable" NAMAs. This is the most defining criteria to determine whether a NAMA gets the necessary support to be implemented or not. A "successful NAMA" is a bankable NAMA or as Dr. Soren Lutken said: *"It's about the finance stupid."*

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