

Mitigation Talks

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From Series Editor's Desk

The key outcome of the climate negotiations in Doha, Qatar (COP 18), were the Kyoto Protocol's second commitment period and the decision pursuant to the ADP, viz. agreement to identify and to explore in 2013 options for a range of actions that can close the pre-2020 ambition gap and agreement to consider elements for a draft negotiating text by 2015. The future negotiations under the ADP will take place under two work-streams. The work stream 1 focuses to explore the scope, structure and design of the 2015 agreement ensuring application of the principles of the Convention to the ADP and suggest ways to define and reflect undertakings by the Parties. The Work-stream 2 focuses on enhancement of mitigation ambitions while ensuring application of the principle of the Convention. The work under the ADP is to progress through a series of workshops beginning in 2013. The unresolved issues under the AWG-LCAs, will be further discussed through deliberations on: (a) The work program on long-term finance, (b) The GCF board governing instrument, (c) The work program on developed country Parties' mitigation particularly focusing on common elements for measuring progress and comparability of efforts, (d) The work program on nationally appropriate mitigation actions (NAMAs) by developing country Parties, (e) The work program for frameworks and approaches for cost effective mitigation, focusing on its scope and modalities, (f) Linkages between TEC, CTCN and other institutional arrangement for technology development and transfer. How these deliberations will evolve and conclude will be crucial for the shape that the post-2020 climate regime would take, especially in the context of mitigation.

While negotiations go on, this issue focuses on the practical experiences while designing and implementing NAMAs and has relevance for both, international design and national decision-making. The first article focuses on the prototype of NAMA registry and emphasizes the importance of match-making role of the registry and the need to focus on the nature of support available. The second article builds a case for securing support for implementation of international NAMAs and argues for a phased approach. The next article highlights the role of national development banks in financing NAMAs. The first article in perspective section synthesizes the policy frameworks of existing and emerging mechanisms for mitigation actions and their contribution to sustainable development making a case for high sustainable development benefits from NAMAs. Second article highlights the key learnings from CDM for NAMAs. The third article highlights the role NAMAs can play and the design to facilitate transformation in transport sector. Another article highlights its relevance in the agriculture sector dwelling on a case study from Peru. Other articles focus on NAMA readiness in Krgystan; and in Vietnam through practical experiences in designing NAMAs in the national context. The last article elaborates on the Danish experience of supporting the Vietnamese Energy Efficiency Programme through fast track finance.

Neha Pahuja

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NAMAs, International Support, and Appropriateness: Reflections from COP 18

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The term NAMA, coined in COP 13 in Bali, has been promoted and publicized as a promising instrument for mitigation in the future climate regime owing to its role in providing a structure to mitigation actions, those being currently undertaken and planned for future by developing countries to embark on a low carbon future. This article aims to address in brief the ongoing discussions in negotiations and further emphasize on the emerging understanding on various facets of NAMAs support, implicit from the current research being undertaken across the world. The article raises some important issues in terms of “appropriateness” of the support by highlighting insights from the NAMA registry prototype and the present “research deficit” on the issue.

Emerging issues in negotiations

Discussions and decisions on the key building blocks of NAMAs have moved quite slowly in international negotiations. The recently concluded COP 18 also followed suit. With the closure of the AWG-LCA, further deliberations on NAMAs were directed to the Subsidiary Body for Implementation (SBI) in Doha.

The key focus areas for the future include:

- finance, technology, and capacity building needs;
- support available and provided;
- access modalities, and;
- experience gained on the above grounds, including under the NAMA registry.

While the COP decision expects deployment of a final prototype of NAMA registry by April 2013; and based on the experiences of the prototype, a fully functional registry by the next COP, the “experience gained” in this regard is lopsided. The prototype registry, as it stands today, has no submissions on support by Annex I Parties. On the other hand, there are eleven proposals seeking support for design

and implementation of NAMAs (UNFCCC, 2012). Consistent with Article 12.4 para 4 of the convention, the need for structuring the arrangement of support was felt post Bali and a register was suggested for recording actions and facilitating support for NAMAs¹. Since then, the match-making function has been presented as the key utility of the registry.

In the corridors and evolving research

Outside the negotiation sessions in Doha, however, there was growing consensus that registry’s role might be reduced to just being a repository of developing country actions. Interestingly, while there is an evident discomfort to commit anything in a formal manner through the registry, bilateral and multilateral support for NAMAs, which is largely for “NAMA readiness” (as it is popularly called) instead of NAMA implementation, has been flowing in (Ecofys, 2012). It is noteworthy that most of the support is being provided under the fast track financing obligation of Annex I Parties, which has ended in 2012 (Ecofys, 2012). The fate of support 2013 onwards is still to be seen.

While the current initiatives target largely NAMA proposal development, awareness raising, and capacity enhancement, the cost of implementation of actions would be much higher. This is clearly visible in the proposals already uploaded on the prototype registry² (refer Box 1 for details). With lack of clarity on support, and delay in agreements of the modalities and procedures of multilateral support disbursement, there is a risk that several “appropriate” NAMA proposals might not see light of day. It also, somewhat, blurs the distinction between support for NAMA development from intellectual/research exercises being conducted on the various facets of NAMAs that have a wide ranging focus as illustrated in Figure 1.

Further, worth noticing is the emerging trend of bilateral NAMA support. Climate pundits are predicting

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¹ For further reading on NAMA registry, refer Tewari R., 2012, “*Evolution of the NAMA Registry: A Precautionary Note*”, Mitigation Talks, vol. 3, issue 1-3.

² Notably, support requested for in most proposals is for a percentage of the total cost of implementation of the action.

Box 1 Support requirements from NAMA proposals submitted to the prototype NAMA registry (as on January 2013)

Country	Proposal	Support requested in US Dollars (unless written otherwise in-text)		
		Financial support	Technical support	Capacity building support
Submissions requesting support for NAMA preparation				
Federal Democratic Republic of Ethiopia	Interurban Electric Rail NAMA	400,000	0	100,000
Mali	NAMA in renewable energy and energy efficiency	40,000	200,000	600,000
	NAMA in forestry	40,000	60,000	100,000
Uruguay	Sustainable production with low-emission technologies in agriculture and agro-industry production chains	625,000	0	0
	Sustainable Housing Programme	300,000	0	50,000
	High Integration Programme of Wind Energy	500,000	50,000	200,000*
Submissions requesting support for NAMA implementation				
Chile	Implementation of a National Forestry and Climate Change Strategy, including the development and implementation of a			
	Platform for the Generation and Trading of Forest Carbon Credits	7,750,000	0	0
	Expanding self-supply renewable energy systems (SSRES) in Chile	15,000,000	0	1,500,000
Cook Islands	First introduction of Photovoltaic Solar Energy in the national electrical grid	550,000 New Zealand Dollars	0	0
Indonesia	Sustainable Urban Transport Initiative	300,000,000	20,000,000	10,000,000
Uruguay	First introduction of Photovoltaic Solar Energy in the national electrical grid	2,000,000#	0	0

The submission is unclear on the total financial support requirements

*Includes cost of capacity building and publications and have been stated together here for convenience

Source: Author's own compilation from Prototype NAMA registry (as on January 2013)

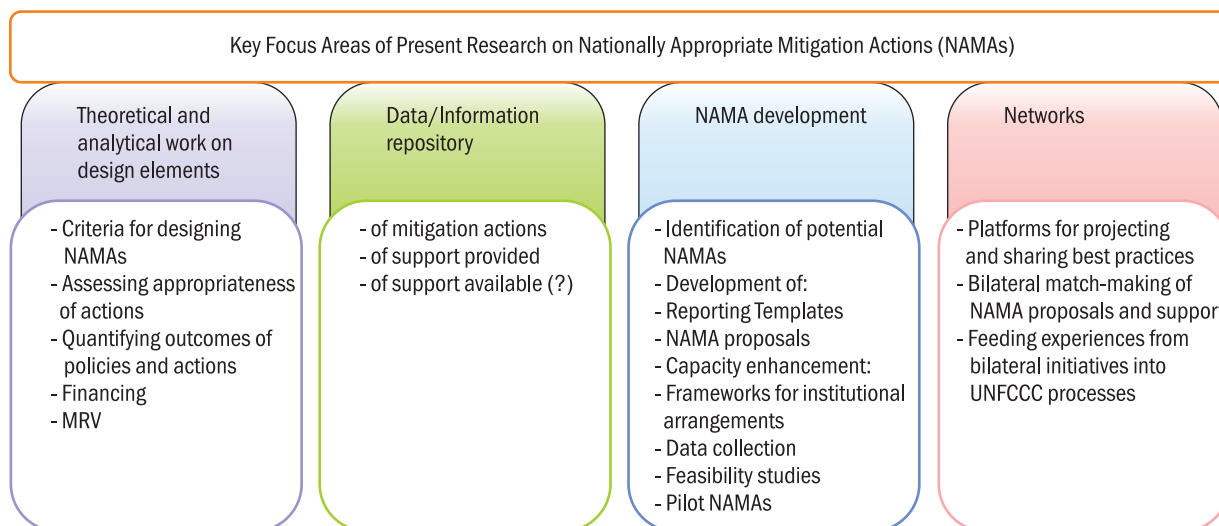


Figure 1 Focus areas of various research exercises currently underway across the globe on different aspects of NAMAs³

³ Source: Author's own compilation.

that the availability of support for near to intermediate term would largely be agreed bilaterally between host countries and donors. This is evident in the various NAMA readiness initiatives like the GIZ's BMU supported German-Mexican NAMA programme⁴ (GIZ, 2013). In such situations, maintaining the virtue of "appropriateness" of mitigation actions (based on national circumstances and national priorities) and meeting donor expectations and requirements can turn out be a delicately balanced exercise for host countries. Further, in future, as the awareness and interest in undertaking NAMAs grows, attractiveness of a proposal to donors might overpower the need and urgency of an action in a country. It might also lead to a skewed distribution of support for certain sectors, certain regions, and certain countries within a region. Nature and implications of bilateral support would be a topic that requires further research.

Research deficit

There is no doubt about the role of international support in bringing about the transformative changes in developing countries through NAMAs. However, a careful examination would be required to understand the nature and scope of support. Further, an important question is that of access. How does a NAMA proposal access the support? There is lack of clarity given that the registry does not have any submission for support as yet! Also, as the registry evolves it should be noted that the process is simple, given that complexities of CDM did not help many countries. Another issue is what kind of and extent of support is appropriate? There is, thus, a need to define the "appropriateness" of support. A registry with several financing proposals to choose from would help. Thus, the objective of match-making is important.

Conclusions

In conclusion, while the enthusiasm with which NAMAs are being received is encouraging, the essential role of support provision for transformative changes needs to get a serious response from the global community. The match-making role of the registry is essential to ensure an appropriate and fair channel

for support provision. In the absence of this role, it serves no purpose given that mitigation actions are to be reported (and hence, internationally recognized) in the Biennial Update Reports and National Communications of developing countries. Intellectual exercises to develop a deeper understanding of bilateral support and its implications and tailor-made financing models that can enable implementation and hence, bring about transformational change are needed to fill up the current research deficit on NAMA support and help develop experiential evidence that can assist the UNFCCC on the issue in future.

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⁴ For further reading, refer to: <http://www.conavi.gob.mx/viviendasustentable>

A Phased Approach to Internationally Supported NAMAs

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To make Nationally Appropriate Mitigation Actions (NAMAs) a useful instrument towards meeting the goal of holding the increase in global average temperature below 2°C (UNFCCC, 2012a), it is important to secure support for their implementation. There is a broad agreement that NAMAs can be supported either unilaterally (u-NAMA) by the host country themselves or internationally (i-NAMA), wherein support from developed countries in terms of finance, technology, and capacity building (UNFCCC, 2008: 1b (ii) of 1/CP.13) can be matched with the NAMAs being proposed (Linnér and Pahuja, 2012). Of the different types of possible support, adequate financial support is most crucial for the NAMA instrument to become established (Morel and Delbos, 2012).

However, all of the above is well known. Further, developed countries have agreed to jointly mobilize USD 100 billion annually towards climate action in developing countries, starting in 2020 (UNFCCC, 2012a). But, linking the discourses on NAMAs to agreements on finance reveals some pertinent questions: How do we make sense of i-NAMAs in the context of broader UNFCCC agreements on financing climate action in developing countries? How can financial support be approached to enhance the chances of NAMAs to effectively contribute towards achieving the objective of the UNFCCC while meeting the domestic priorities of developing countries? And what will be the role of the Green Climate Fund (GCF) in supporting NAMAs?

To answer these questions, we streamline and develop the argument for a phased approach to i-NAMAs that was first suggested in the report *Financing Nationally Appropriate Mitigation Actions: A Phased Approach* (Upadhyaya, Friman, and Linnér, 2012). We start by a brief outline of agreements on financial support. More importantly, we develop a scenario of how this support, on the one hand, is allocated between adaptation and mitigation, and on

the other hand, stem from public as well as private sources. Finally, we place i-NAMAs in this scenario to argue for a phased approach in which mitigation and adaptation compete for public and private money allocated through the GCF.

Financing climate action in developing countries

COP-16 decided that the GCF should “support projects, programmes, policies and other activities in developing country Parties” (UNFCCC, 2011: §102, 1/CP.16). The COP has further requested the GCF Board “to balance the allocation of the Green Climate Fund resources between adaptation and mitigation activities” (UNFCCC, 2012b: §8, 3/CP.17). From our view, interactions between the GCF and NAMAs should therefore be anticipated and prepared for, which calls for further clarity on what essentially is a NAMA and what should be the priority of the GCF. Currently, the reference point for NAMAs is very broad. Many developing countries have also made it clear that support is crucial to provide NAMAs with economies of scale. Given the lacklustre mitigation pledges by developed countries, the financial needs for mitigation actions in developing countries increases. To shift to a pathway that limits greenhouse gas concentrations to 450 ppm CO₂ equivalents with around a 50% chance of meeting the 2 °C target, Sterk, Luhmann, and Mersmann (2011) demonstrate that incremental investment needs for mitigation in developing countries will total roughly USD 200 billion as of 2020. Morel and Delbos (2012) also make a strong case for the inadequacy of USD 100 billion to support developing countries.

Furthermore, NAMAs are expected to be in “context of sustainable development” (UNFCCC, 2008). The phrase “nationally appropriate” also indicates that NAMAs should address concerns other than mitigation (Linnér and Pahuja, 2012). According to a weak interpretation of the “context of sustainable development”, NAMAs should not have adverse

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impacts on sustainable development; according to a stronger reading, they should, in fact, promote sustainable development co-benefits. The preferred route will have profound consequences for funding needs and the nature of the available funding.

If these assessments hold true — and depending on how sustainable development co-benefits are approached — we can expect strong competition between objectives for access to the limited sources of climate financing.

A finance scenario for climate action

We assume that financing will increase gradually in the medium term, from the USD 10 billion a year between 2010–2012 to eventually reaching a minimum of USD 100 billion a year by 2020. The mobilization of USD 100 billion annually, as indicated by most developed countries, will include both private and public sources of finance. In the scenario that we imagine for this exercise, the sources of funds in 2020 would be equally divided between public and private sources.

Further Sterk, Luhmann, and Mersmann (2011) foresee that the need for adaptation in developing countries will be roughly USD 50 billion by 2020. However, private financing is unlikely to cover any or a noticeable proportion of this need (Buchner et al. 2011). If half of the long-term finance is earmarked for adaptation projects, as is assumed here to signify a “balanced allocation” as demanded of the GCF Board by COP, this would translate into public money being prioritized towards adaptation.

This allows us to tentatively propose a finance scenario for climate action, in which i-NAMAs

can be situated, based on four factors: (i) finance for mitigation in developing countries will come from multiple sources; (ii) in absence of ambitious emission reduction targets, the need for adaptation finance will increase; (iii) without new business models, adaptation will continue to be dependent on public sources of finance; and (iv) only a handful of developing countries have the necessary regulatory framework to attract private finance and to take on mitigation action in short to medium term.

Taking these four factors into account, we propose that financial support of i-NAMA can be divided into three periods: the short-term phase (2013–2015), the medium-term phase (2016–2019), and the long-term pledged financing phase (after 2019). Furthermore, adaptation will be prioritized by public funds made available by donors and will be increasingly prioritized and may even need to address loss and damage requirements, if emission reduction targets are not ambitious enough. This understanding opens the door to a phased approach to NAMAs (Figure 1) that underscores the importance of spending public money in the short- to medium-term on lowering transaction costs and establishing the required institutional setups and subsequently identifying and erasing barriers to private investment in the long term.

A phased approach to financial support of i-NAMAs

The following suggests a phased approach in which making NAMAs receptive to an increased flow of private investment in the long term begins after the end of the fast start finance period (2012) and before long-term finance (after 2019) starts operating. Very

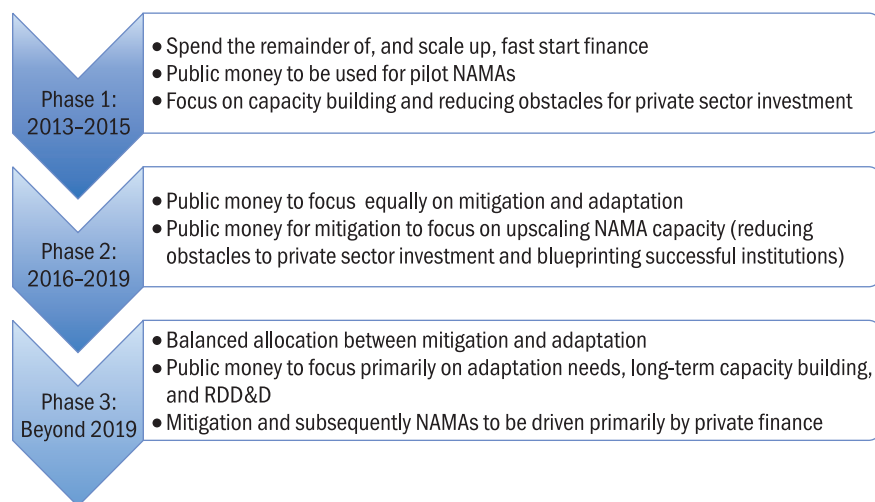


Figure 1 Implementation of i-NAMAs and availability of finance: A phased approach

few concrete pledges have been made for finance in the mid-term (2013–2019), but several states have indicated that mid-term finance will be characterized by an increase in public and private money from USD 10 billion annually in 2012 to a minimum of USD 100 billion annually as of 2020.

Phase 1 (2013–2015)

The period 2013–2015 will be marked by insufficient clarity on NAMAs in the UNFCCC. Developing a phased approach to NAMAs must, therefore, be carefully attuned to the development of international negotiations. For this reason, it is advisable to focus on capacity building in the time period 2013–2015.

In the first phase, public finance needs to be channelled to support pilot NAMAs. Piloting NAMAs should focus on meeting the dual objectives of (i) building capacity to feed practical experience regarding institutional set up into the UNFCCC negotiations and (ii) identifying and incentivizing private investment without offsets. Offsets have so far been a controversial alternative to starting mitigation in developing countries, so it seems more favourable to find avenues that leverage private investment without offsets.

Pilot projects should be aligned with the emerging regulatory circumstances fostered by the UNFCCC. It is important to keep the pilot NAMAs close to the negotiating context so that the experience so gained remains relevant to the negotiations. It is also important to prevent a gap from being formed between the emerging implemented NAMAs and the final regulatory framework expected from COP-21 in late 2015.

Phase 2 (2016–2019)

By the end of 2015, we assume that the UNFCCC will have delivered more clarity regarding the overarching framework and NAMA implementation. This follows from the UNFCCC requirement, under the Durban Platform, to finalize a new agreement by 2015 to come into effect from 2020 (UNFCCC, 2012b). Spending public money on NAMAs in the second phase (2016–2019) should, therefore, focus on aligning existing institutions developed in the first phase with the final agreed-on outcome expected of COP-21, and on scaling-up best practices developed in the first phase. It is important that the second phase prepares the prompt start of NAMAs in the implementation phase after 2019, that the public money spent in the first and second phases successfully finance the institution

building in developing countries, and that obstacles to private investment in NAMA implementation be identified and addressed. Public funding should also be incentivized to target long-term, high-risk projects with the potential to bring systemic change in favour of low-carbon energy use, such as Research, Development, Demonstration and Deployment (RDD&D) or large-scale, low-carbon infrastructure investments, which will be more difficult to finance privately.

Phase 3 (after 2019)

By 2020, long-term NAMA finance should be a reality as part of implementing the new agreement. If we assume that long-term financing will be spent in a 1:1 ratio on mitigation and adaptation, and that the private sector will continue to display little interest in investing in adaptation, then all the public money that goes into long-term finance will likely be consumed by adaptation needs.

In the third phase, mitigation and subsequently NAMA implementation must, therefore, be driven by private finance or by an increased will in developed countries to mobilize more public money to target long-term and risky investments with potentially high impact. Readiness for NAMA implementation should already have been established in phases 1 and 2 of NAMA development. In these phases, public funding should have covered the costs of establishing the necessary infrastructure for NAMAs, so that NAMA finance from 2020 onwards can flow from private sources into concrete NAMA proposals for implementation.

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The Role of National Development Banks in Supporting Financing for Climate Change Mitigation

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Introduction

This note will analyse whether National Public Development Banks (NDB) are able to scale up long-term private sector investments in large scale climate change mitigation activities (Nationally Appropriate Mitigation Actions or NAMAs) through the mobilization and intermediation of public (national and international) resources and the creation of an enabling environment for low-carbon investments. While until recently, little attention has been given to NDBs, awareness is growing on their unique role¹ in catalysing private

sector investments for climate change mitigation projects. This note will argue that where NDBs have a long tradition and experience, these institutions seem to understand better than many other local public and private sector players the conditions for long-term investment on the ground and promote sector-wide mitigation approaches / NAMAs. Their public nature, providing legitimacy in the institutional landscape; their long experience in financing investment projects and programmes; their strong engagement with the private sector; their familiarity with the use and results of a variety of financial and non-financial

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¹ This growing awareness is confirmed by the recent establishment of the International Development Finance Club (IDFC), a new network of renowned national and sub-regional development banks with total assets of more than USD 2.1 trillion, and total green finance commitments of about USD 89 billion in 2011 (Ecofys, 2012). The members of the Club established climate financing as the central focus of their 2012 development agenda. For more information see <http://www.idfc.org/>. In addition, the World Federation of Development Financing Institutions (WFDFI) issued the Karlsruhe Declaration in late 2011, a set of statements to the Rio+20 indicating that the WFDFI will “continue to use, through its member-institutions, their finance and investment resources and skills as levers to promote and pursue sustainable finances policies, practices and programs to alleviate the effects of climate change and other environmental and social problems.” For more information see <http://www.wfdi.org.ph/>.

instruments; and their deep understanding of specific sectors and local circumstances suggest that NDBs have the natural capacity and competency to play an important role in supporting the financing of climate change mitigation projects and programmes.

Support the creation of an enabling investment environment for climate change mitigation programmes

NDBs are a form of government intervention in the financial system, which aims at addressing market failures in the provision of financial services. They aim at providing finance to market segments that are not well served by domestic financial systems due to existing market failures on the supply and demand side for financing. NDBs tend to focus their action on programmes that support projects that generate limited revenues, are perceived as having high risks or require long lead times, with the aim of crowding in financing for these projects from private sector financial intermediaries. In order to do this, NDBs provide finance; offer risk transfer instruments; intermediate foreign and local, public, and private reimbursable and non-reimbursable concessional resources; and provide developmental services, such as research, advocacy, technical assistance, and training (Smallridge D and de Olloqui F, 2011).

NDBs, working together with potential investors in priority sectors, policy-makers, providers of specialized technical services, and technologies and local financial intermediaries, are able to overcome important information and coordination failures that are preventing the financing of low-carbon investments in those sectors. Apart from inducing, collecting, and disseminating knowledge, and coordinating the efforts of relevant public and private sector actors to structure the demand for and supply of investment financing for climate change mitigation projects and programmes, NDBs can structure pilot programmes to finance the adoption of new, low-carbon technologies, exerting a powerful demonstration effect in their respective local credit markets. As financial intermediaries' perceptions of high risks on mitigation projects are reduced, and investors' returns are met, additional low-carbon investments by project promoters are likely to follow suit. Furthermore, as the risks and private returns of these projects become clear to local financial intermediaries, their appetite to finance this type of projects increases, leading to additional investments with declining support from NDBs.

Provide different financial instruments to leverage / scale up private sector investments

Public finance from NDBs can be used to leverage private sector investments, contributing directly to the incremental cost of implementing low carbon policies through two main activities:

- Increasing the “demand” side for investments and finance in climate-friendly projects by addressing sector- and country-specific constraints, promoting an appropriate and stable enabling environment for investment, building awareness and capacity to analyse and structure climate-related interventions, as well as bringing projects and companies to a state of investment-readiness, all of which will ultimately results in measurable environment benefits; and
- Providing the necessary incentives to mobilize the “supply” of climate-friendly investments from the private sector, by offering financial instruments at adequate terms and conditions for this type of projects and by supporting private investors and Local Financial Institutions (LFIs) in understanding and tackling the specific investment and financial barriers that prevent private actors to engage in “green” and climate resilient projects.

NDBs have the capacity, mandate, and instruments to stimulate the demand for and catalyse the supply of financing for projects to mitigate climate change. As such, they have a vital part to play in working with both sides of the financing—the lender and the borrower—in promoting greater investment in mitigation projects.

From the demand side of financing, or pre-investment phase, NDBs play a crucial role in stimulating the demand for financial services by addressing non-financial gaps through training and advisory services for potential investors, developers, and providers of technical services, for instance. Also, NDBs can work with developers to structure projects such that they are not only bankable, but also accountable in terms of reductions in GHG emissions. There are many ways NDBs can stimulate demand through education, technical support, and awareness.

From the supply side of finance, or financial structuring, NDBs can provide financial instruments that facilitate the involvement of LFIs in climate change mitigation projects and programmes, ultimately leading to further growth in private financial resources as LFIs gain more knowledge and understanding on the real risks, barriers, and returns of climate change mitigation projects.

Mobilize international climate finance resources and blending those resources with other national and international sources of funding

Apart from being able to leverage private sector investments with their own resources, NDBs have access to long-term sources of international finance as well as to non-reimbursable resources for development purposes. In a number of countries, NDBs are the main financial players with access not only to long-term hard currency loans at relatively favourable rates and conditions for the financing of long-term investment projects, but also to grants and non-reimbursable technical assistance resources. Indeed, Multilateral Development Banks (MDBs), bilateral Development Finance Institutions (DFIs), and foreign Export Credit Agencies (ECAs) often use NDBs as financial intermediaries for long-term hard currency loans as well as for the allocation and disbursement of development grants. They can also blend market and concessional resources from different actors.

NDBs offer a good opportunity to overcome some of the barriers for the implementation of international climate finance, as they are uniquely positioned to act as effective intermediaries for climate finance because of their knowledge, abilities, financial instruments, and connections to stimulate the demand for climate investments by the private sector. Their experience with financial instruments tailored to the specific sector and national circumstances can achieve leveraging of private investments. Their deep knowledge about specific sectors and local conditions translates into a greater ability in providing technical assistance to structure/plan climate-related projects and programmes.

In addition, NDBs can easily blend their own resources with international climate finance and other national and international development resources to achieve the leveraging of private investments to the scale levels needed.

Promote long-term sectorial programmes

In order to move to the scale of investments needed to address climate change, there is the need to move from “project by project” financing approach to a more programmatic / sectorial approach (AGF, 2010). While there is an increased attempt to promote mitigation programmatic approaches with climate finance, a number of challenges are being identified that need to be overcome (Climate Focus, 2011):

- Programmatic / sectorial programmes need policy backing from governments and clear incentive setting for private sector project promoters and investors to be interested in participating in the programmes.
- Programmatic / sectorial approaches require strong coordination between various actors (governments, project promoters, investors) and may often have important coordination and transaction costs (to ensure proper design, monitoring, and evaluation of the programme as a whole) that are not easily borne by actors. In short, coordinating entities that have access to various actors and can provide for the necessary technical backstopping are an important element of success.
- The demonstration on how each project of the programme results in environmental benefits (GHG emissions reductions in the case of climate change mitigation projects) requires specific methodologies and monitoring and evaluation systems. While the bundling of projects would be expected to reduce individual costs for each project through the adoption of common standards and sampling, the assessment of overall programme impact and coordination on the proper application of methodologies is often perceived as a cost / risk for project developers to participate in a programme.

NDBs have various characteristics that can play a key role in supporting programmatic approaches. They are mandated by their respective governments to provide long-term financing to sectors that promote a country’s economic development and growth, particularly to sectors of the economy that are under-served by private sector sources of finance. Also, they can aggregate small-scale projects by adopting a portfolio approach when assessing the credit risk and streamlining the application process to minimize transaction costs, thus, encouraging LFIs to participate. Finally, they can develop strategies, which can include project incubators and innovative and catalytic financial instruments that can demonstrate to the private financial sector the potential profitability within these areas.

Conclusion

NDBs can support governments in putting in place different elements to design and finance sector-wide mitigation actions. As shown above, NDBs:

- Have a development mandate: NDBs are mandated by their respective governments to provide long-

term financing to sectors that promote a country's economic development and growth, particularly to projects or sectors of the economy (or state-of-the-art technologies) that are underserved by private sources of finance.

- Are a public sector entity and hence, can interact with different government agencies and can administer non-reimbursable budgetary resources granted by those public sector actors to support national or subnational priority programmes, including climate change mitigation investment projects promoted by private sector actors. Moreover, NDBs have the ability to influence policy directly, bringing relevant inputs to policy-makers about impacts and implementation of various policy options because of their involvement and interaction with the financial and non-financial private sectors.
- Are in the business of financing and risk taking, particularly in support of long-term investments. Indeed, NDBs are first and foremost financial institutions, often under the same bank supervision rules in their countries as commercial banks.
- Are mobilizers: It is typically not in the nature of NDBs to compete. They are expected to complement and not "crowd out" private financial intermediaries, but rather "crowd" them "in" by providing appropriate financial and non-financial instruments in order to engage and coordinate action between different players.
- Are project structures: The NDB can play a role to promote market development through the provision of additional resources, such as technical assistance and training to project developers, small and medium-sized enterprises (SMEs), and others to create the demand for financing by helping to develop and structure projects and programmes. They also can create financing packages with terms and conditions that are adequate (and appealing) enough to satisfy local project developers' needs, taking into account local market specificities.
- Can aggregate projects by adopting a portfolio approach when assessing the credit risk and streamlining the application process to minimize transaction costs, thus, encouraging LFIs to participate.
- Have potential to access and blend their resources with long-term sources of local and international investment financing, as well as with non-reimbursable resources for development purposes. In a number of countries, NDBs are the main

financial player with access not only to long-term hard currency borrowings at relatively favourable rates and conditions for the financing of long-term investment projects, but also to grants and non-reimbursable technical assistance resources.

- Finally, and most importantly in the context of NAMAs, can easily establish the connection with all of the relevant public and private sector actors that need to be involved in designing sector-wide mitigation approaches and financing them.

While NDBs have different focus areas and are in different stages of engagement in promoting mitigation programmes, their skill set and toolbox of instruments can address a number of shortcomings in the current climate finance architecture. NDBs are uniquely positioned to act as effective intermediaries for climate finance because of their knowledge, abilities, financial instruments, and connections to stimulate the demand for climate investments by the private sector. Indeed, their deep knowledge about specific sectors and local conditions translates into a greater ability in providing technical assistance to structure/plan climate-related projects and programmes. Moreover, their experience with financial instruments tailored to the specific sector and national circumstances can achieve leverage and scale by blending international and national climate finance resources with their own resources and the resources of other national financial actors and private sector promoters.

Yet, the challenge is large and NDBs cannot alone be responsible for providing the correct incentives. Governments need to complement NDBs and provide resources for technical assistance to promote market development as well as grants to generate financial instruments and risk transfer products that stimulate the demand and supply of financing at adequate terms and conditions for climate change mitigation projects. In addition, as a pre-condition to be able to create an enabling environment for investments in mitigation, climate change considerations need to be mainstreamed at all levels of NDBs. National low-carbon development strategies and clear, long-term, and coordinated policies as well as good coordination between different actors at the national level are critical in this context. Governments need also to ensure that NDBs are a central part of the policy design and development planning process. This requires a clear mandate from the government as well as from the NDB Boards.

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NAMAs for Sustainable Development

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Introduction

Sustainable development (SD) provides the context for Nationally Appropriate Mitigation Actions (NAMAs) by developing countries. A leading principle for SD by developing countries is the right to develop. This calls for an integrated approach to mainstream climate change mitigation within frameworks of national development planning. For developing countries with no mitigation targets, national SD objectives are a key driver for NAMAs, and GHG reductions represent a positive externality. This is a reversal of priorities compared to the Clean Development Mechanism (CDM), where demand for GHG reductions drives projects and SD co-benefits are secondary benefits, not priced in the compliance market. For Annex-1 countries supporting NAMAs, the primary focus is GHG reductions at the cheapest price to achieve the global mitigation effort cost-effectively. In order to bridge this divide, there is a need to realize that NAMAs' SD impacts are equally important as their GHG reductions. This represents a new challenge on how to assess and

promote NAMAs SD benefits. New frameworks for monitoring, reporting, and verification (MRV) of NAMAs progress and results are needed, both for SD objectives and GHG reductions and can motivate Parties to enhance cooperation.

To inform the development of new approaches for SD assessment of NAMAs, it is relevant to look at the policy frameworks of existing and emerging mechanisms for mitigation actions and how they contribute to SD. The CDM represents about 10 years of experience with institutional development of Designated National Authorities that approve CDM projects' contribution to national sustainable development. The emerging mechanisms include Low Carbon Development Strategies (LCDS), reducing emissions from deforestation and degradation plus conservation (REDD+), New Market Mechanisms (NMM) and units of GHG reductions to be traded under a Framework of Various Approaches (FVA), possibly including the crediting of NAMAs. For an overview of policy frameworks including Doha outcomes, see Table 1.

Table 1 Comparison of policy frameworks for mitigation actions and their contribution to SD in developing countries

Framework	Aim for GHG reductions	SD objectives	MRV of SD impacts	Finance for SD benefits	Institutional set-up
CDM	Offsetting mechanism to assist Annex-I countries with their achievement of emission reduction targets	Assist non-Annex I countries with the achievement of sustainable development	A letter of approval (LoA) by the Designated National Authorities (DNA) of a host country is required to document that a Clean Development Mechanism (CDM) project contributes to a national definition of sustainable development (SD) A voluntary tool for declaration of SD co-benefits applicable to all projects in all countries was approved by CDM EB70, in Doha, November 2012	Market driven A niche exists for certificates of CDM SD co-benefits such as the Gold Standard, the Climate Community and Biodiversity Standard (CCBA), and the Crown Standard (Thailand), which puts a premium on credits with verified SD co-benefits	DNAs of host countries are mandated to approve a CDM project's contribution to a national definition of SD CDM EB is mandated to highlight SD co-benefits of projects and programmes through SD tool
LCDS	The aim of a LCDS is to mainstream climate mitigation actions into development planning to achieve emission reductions below a BAU-scenario	A low-carbon development strategy is indispensable to SD	The LCDS may provide a coherent framework for the identification and MRV of NAMAs and their SD benefits and impacts. No requirements, yet, exist.	Financing for the SD benefits to come from host countries Strong national ownership and stringent MRV of GHG reductions and co-benefits are likely to attract international support for mitigation actions	National government institutions will take a lead. The need for cross-sectoral integration and involvement of sub-national levels speaks for a National Climate Change Unit*

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Table 1 Contd...

Framework	Aim for GHG reductions	SD objectives	MRV of SD impacts	Finance for SD benefits	Institutional set-up
NAMAs	A net contribution to the global mitigation effort IPCC AR4 recommends a deviation from the BAU-scenario by 2020 of -15% -30% to stay below 2oC	NAMAs shall contribute to SD	Mitigation actions shall be MRV'ed Supported actions are subject to domestic and international MRV Unilateral actions are subject to domestic MRV in accordance with international guidelines Actions and results can be measured by SD indicators and emission reductions Biennial Update Reports (BURs) to include information on NAMAs, support, and the approach to domestic MRV. The BURs will be subject to a process of international consultation and analysis (ICA)	A prototype for a registry to match actions and support is established and will be fully functional by end of 2013 Financing for the SD benefits is likely to come from host countries Strong national ownership and stringent MRV of GHG reductions and co-benefits are likely to attract international support for mitigation actions	International registry by UNFCCC Secretariat National Focal Point can submit NAMAs to registry: - NAMA approver (one) - NAMA editors (many) National MRV – by who and how?
REDD+	A net contribution to the global mitigation effort Deforestation and forest degradation account for about 20% of global emissions of GHGs	Non-carbon benefits or co-benefits of REDD+ activities is the terminology for positive SD impacts benefitting local communities and indigenous people	The results of REDD' actions shall be fully MRV'ed. Safeguards to promote benefits and avoid negative impacts have been agreed. SBSTA shall work on methodological issues related to non-carbon benefits	Payment for non-carbon benefits is a controversial issue. Developed countries argue for payment for GHG reductions only and to use REDD+ for offsetting Developing countries argue for ways to incentivize non-carbon benefits and oppose offsetting	The idea of an REDD+ Committee to coordinate technical and financial support was proposed in Doha by developing countries
NMM	Increased mitigation ambition through an off-set mechanism to assist countries with emission reduction targets to cost-effectively achieve their targets	A possible element of the NMM is to promote SD	There are no requirements for MRV of SD co-benefits. A NMM must meet standards that deliver real, permanent, additional, and verified mitigation outcomes, avoid double counting of effort, and achieve a net decrease and/or avoidance of GHG emissions	Market driven Internalizing payment for SD co-benefits in the price for units of emission reductions requires that the co-benefits are MRV'ed and certified	The NMM shall work under guidance by the COP. The UNFCCC shall play a regulator role to set common global standards for the environmental integrity of the mechanism
FVA	Enhance the cost-effectiveness of and promote mitigation actions through a framework for a global carbon market, linking national emissions trading schemes	There are no decisions, nor guidance on the framework's relationship to SD	There are no requirements for MRV of SD co-benefits The various approaches must meet standards that deliver real, permanent, additional and verified mitigation outcomes, avoid double counting of effort, and achieve a net decrease and/or avoidance of GHG emissions	Market and non-market mechanisms to be considered Internalizing payment for SD co-benefits in the price of units of emission reductions requires that they are MRV'ed and certified	A FVA shall work under the authority and guidance by the COP. The role of UNFCCC institutions is weak, as some countries do not want strong regulation above the national level

Note: * A technology mechanism was established in Cancun with an aim to support technology development and transfer for mitigation and adaptation. It consists of an UNFCCC-based Technology Executive Committee (TEC) and a "Climate Technology Centre and Network" (CTC&N) to be hosted by UNEP. The centre and network may contribute with technical assistance that can help develop an LCDS.

Clean Development Mechanism

The CDM is defined in Article 12 of the Kyoto Protocol and has the dual objective to assist non-Annex 1 countries with the achievement of sustainable development and Annex-1 countries with the cost-effective achievement of their emission reduction targets. It was not until 2001 in the Marrakech Accords that the modalities and procedures for operating the CDM were agreed upon. In the prior negotiations, developing countries argued that an international standard for SD would impinge on their national sovereignty. The responsibility for achieving SD was hence delegated to host countries Designated National Authorities. Critique has been raised that the CDM is not significantly contributing to SD (Olsen, 2007; Corbera & Jover, 2012) and that positive impacts may be improved (TERI, 2012). Responding to such a critique, the CMP-7 in Durban, 2011, requested the Executive Board of the CDM to: 'develop appropriate voluntary measures to highlight the co-benefits brought about by the clean development mechanism project activities and programmes of activities, while maintaining the prerogative of Parties to define their sustainable development criteria' (Decision 8/CMP-7). At its 70th meeting in Doha, the Executive Board approved a voluntary SD tool and the CMP-8 in Doha requested the tool to be evaluated by the end of 2013 in time for CMP-9 (CMP-8, 2012). A study commissioned by the independent Policy Dialogue on the CDM finds that CDM is the only climate mechanism that offers an innovative solution to the challenge of how to incorporate SD considerations into emission mitigation activities (TERI, 2012).

Low-carbon Development Strategies

The notion of a Low-carbon Development Strategy (LCDS) was first introduced in the Copenhagen Accord (2/CP.15, paragraph 2) as a framework to describe countries contribution to the global mitigation effort and indicate specific NAMAs to realize this contribution. In the Cancun Agreements, the idea of a LCDS is further developed referring to the importance of national development priorities and differentiating the use of a LCDS to be mandatory in developed countries and voluntary in developing countries (1/CP.16, paragraphs 45 & 46). Similar to the NAMA concept, there is no international definition of an LCDS. The aim of the LCDS is to mainstream climate mitigation actions into development planning to promote a sustainable development pathway. Elements of an LCDS are

likely to include the identification of national options and prioritized actions for low-carbon development in the mid- and long-term, sector-specific options, and a roadmap on how to implement these actions (Lütken et al., 2011). As such an LCDS can provide a coherent framework to measure, report, and verify (MRV) NAMAs' SD and climate benefits towards a transformational change to a low-carbon development pathway. However, the development of an LCDS is voluntary and NAMAs may or may not be framed in this context.

Nationally Appropriate Mitigation Actions

Nationally Appropriate Mitigation Actions (NAMAs) by developing countries were first introduced in the Bali Action Plan (2007) as follows:

Nationally appropriate mitigation actions by developing country Parties in the context of sustainable development, supported and enabled by technology, financing and capacity-building, in a measurable, reportable and verifiable manner. (1/CP.13, paragraph 1 (b) (II))

The policy framework for NAMAs has since then developed through COP-decisions. To match actions with support, the Cancun Agreements established an international registry for NAMAs to record and regularly update information provided by Parties (1/CP.16, paragraph 53). In Durban, the COP requested the Secretariat to make a prototype of a registry and in Doha it was decided that the registry shall be fully functional at the latest two months before COP-19 (2013). The final registry will be set up with no mandatory fields (UNFCCC, 2012). This means that the substance of what a NAMA is continues to develop bottom-up, driven by developing countries. It also indicates that the Registry will not be used as a tool for MRV of NAMAs. In Durban, the COP asked Parties to use Biennial Update Reports (BURs) to update their national inventories and report basic information on mitigation actions including NAMAs, support received, and their approach to domestic MRV. The Subsidiary Body for Scientific and Technological Advice (SBSTA) was requested to develop guidelines for domestic MRV of unilateral NAMAs that shall be voluntary, general, and build upon existing domestic systems with an aim to develop draft guidelines by COP-19 in Warsaw (FCCC/SBSTA/2012/L.24). The BURs will be subject to a process of International Consultation and Analysis (ICA) by a team of

technical experts (composition to be decided), which shall serve as a proxy for verifying that information in the BURs is transparent, facilitating sharing of views in respect of national sovereignty, and resulting in a summary report. There are currently no international guidelines for MRV of supported NAMAs. Actual practices for MRV of supported NAMAs are, therefore, likely to be agreed bilaterally by the host country and the funding institutions' different requirements (Hänsel et al., 2012).

Reducing Emissions from Deforestation and Forest Degradation Plus Conservation

Reducing Emissions from Deforestation and Forest Degradation Plus (REDD+) in developing countries was first introduced in the negotiations at COP-11 with an aim to help achieve the ultimate objective of the Convention. Negotiations have since progressed well under the BAP mandate. The co-benefits of forest mitigation actions, such as biodiversity, ecosystem services, and adaptation, may exceed the value of carbon benefits (World Bank, 2011). Yet, there is no mandatory requirement for MRV of non-carbon benefits and impacts. Under the Cancun Agreements, guidance was developed that REDD+ activities shall be undertaken in-line with national development priorities, be consistent with Parties' national sustainable development needs and goals, and contribute to reducing poverty. To enhance social and environmental benefits and avoid negative impacts of REDD+ actions seven safeguard measures were agreed (1/CP.16, Appendix 1) and countries are in the process of developing national Safeguard Information Systems. In Doha, controversies arose over the issues of national versus international verification of results-based actions and whether payments should include non-carbon benefits or only carbon-benefits (Sterk, 2012). Ways to incentivize non-carbon benefits was included in the final text on a work programme going forward and SBSTA was requested to address methodological issues related to non-carbon benefits.

New Market Mechanisms and Framework for Various Approaches

To maintain and build upon existing flexibility mechanisms under the Kyoto Protocol, particularly the CDM, a new market mechanism (NMM) was defined in the Cancun Agreements (2/CP.17, paragraph 83). A NMM has been negotiated under the heading of 'Various Approaches' including market

and non-market mechanisms to enhance the cost-effectiveness of and promote mitigation actions. In Doha, the final text describes a NMM as a separate issue from a framework on various approaches, though Parties diverge as to whether the NMM is under the FVA or a separate issue (Sterk et al., 2012). The key issue is what role the UNFCCC should play — as a global regulator to safeguard the environmental integrity of a NMM or a looser role to facilitate the exchange of information regarding various national standards for emissions trading and accounting. The Doha agreement requests the SBSTA to conduct a work programme to elaborate the modalities and procedures for a NMM. The work programme considers that a possible element of the NMM is to promote sustainable development. There is no mentioning of requirements for MRV of co-benefits related to NMM units. MRV requirements rather focus on safeguarding the environmental integrity of units to meet standards that deliver 'real, permanent, additional and verified mitigation outcomes, avoid double counting of effort, and achieve a net decrease and/or avoidance of GHG emissions' (Draft decision/CP.18).

Comparison of mitigation policy frameworks to promote SD in developing countries

The strengths and weaknesses of policy frameworks with regard to how they promote SD are assessed in Table 2. Synergies and scope for cross-fertilizations is identified with an aim to inform the development of an approach to assess and promote NAMAs impacts for transformational change towards sustainable development.

The CDM is the only well-established mechanism and hence represents the most experience and institutional capacity of developing countries to assess and promote the SD co-benefits of projects. The development of an SD tool at the international level represents an exciting opportunity to highlight SD co-benefits in a comparable way across projects. It provides investors with an opportunity to better internalize the SD co-benefits in the price of Certified Emission Reductions (CERs) similar to how voluntary certification works to promote a high contribution to SD. Unfortunately, the demand for CERs is very weak with current prices below 1 Euro per ton/ $\text{CO}_{2\text{eq}}$, which makes it difficult to assess the full potential of the SD tool by the end of 2013. The SD tool and experience from CDM can, however, inform the development of a 'NAMA SD tool' to

Table 2 Comparison of policy frameworks' strengths and weaknesses to assess and promote SD

Policy framework	Strengths	Weaknesses
CDM	<ul style="list-style-type: none"> DNA's capacity to assess CDM projects' contribution to national SD An international SD tool to highlight the co-benefits of projects and programmes 	<ul style="list-style-type: none"> A project approach, little scope for transformational change No requirements for monitoring and verification of SD impacts No safeguards against negative impacts on SD
LCDS	<ul style="list-style-type: none"> National policy frameworks can lead and track transformational change towards low-carbon sustainable development 	<ul style="list-style-type: none"> Domestic systems for MRV of SD and GHG data are at best emerging, otherwise weak or non-existing
NAMAs	Strong focus on MRV of SD objectives and local co-benefits is emerging	<ul style="list-style-type: none"> Guidelines and approaches to assess and promote SD objectives and co-benefits of NAMAs are not yet developed
REDD+	<ul style="list-style-type: none"> International safeguards Safeguard Information Systems are developing nationally 	<ul style="list-style-type: none"> No agreement on payment for the non-carbon benefits
NMM/FVA	<ul style="list-style-type: none"> A possible role of NMMs is to promote SD 	<ul style="list-style-type: none"> No requirements to MRV SD impacts in neither NMMs and FVA Lack of focus and importance attached to SD impacts in both

capture local co-benefits for SD as well as the larger changes for country-wide transformations towards low-carbon and sustainable societies.

REDD+ has come the furthest among the emerging mitigation frameworks towards development of methodologies for assessment and internalizing non-carbon benefits as well as development of national institutions to ensure safeguards and stakeholder involvement in REDD+ actions. Synergies and scope for cross-fertilization with NAMAs should be identified to ensure coherence among policy areas.

The policy mandate for a LCDS to play an indispensable role for SD is strong and the potential for integration of NAMAs into national development frameworks makes LCDS a key mechanism for long-lasting transformational changes. Assessment of SD objectives and impacts need to be nationally appropriate and be carried out by domestic systems for MRV. Guidance and support from the international level such as sustainability assessment methodologies and formats to submit information to the registry can enhance learning among countries and strengthen support for mitigation actions with the most GHG reduction and SD impacts.

A NMM and the FVA are the least focused on the potential contribution of market mechanisms to sustainable development. UNFCCC institutions shall regulate to safeguard the environmental integrity of a NMM. So far, however, these discussions have not included much attention to the social integrity of the mechanism. Learning from CDM experience there is

a risk, the market will not be informed about the best options for SD in the absence of MRV requirements for SD co-benefits. To inform the market and internalize the SD co-benefits in the price of units of GHG reductions, a UNFCCC regulator could certify how mitigation actions are contributing to SD.

Conclusion

To promote NAMAs contribution to SD in developing countries, a new approach to assess the SD co-benefits and transformational changes towards low-carbon development is needed. Learning from CDM experience, REDD+ and LCDS an integrated approach can be developed to assess and promote the role of NAMAs for sustainable development. An integrated approach should consider SD objectives from the strategic planning and design stage of NAMAs and incorporate stakeholder involvement and safeguards throughout the action cycle including the MRV of SD impacts, stakeholder involvement and safeguards against negative impacts. Coordination across the policy areas can facilitate mutual learning, coherence in institutional mandates, and may enhance the opportunity for NMMs and a FVA to contribute to SD.

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The NAMA Partnership (www.namapartnership.org) is coordinated by the UNFCCC Secretariat and was launched in Doha on 5 December 2012. The UNEP Risø Centre together with UNDP is leading a

working group on NAMAs in the context of national development. Regional workshops will be organized in 2013 to explore the role of NAMAs for sustainable development.

The paper is written in the personal capacity of the author but reflects ongoing discussions and analytical work in UNEP Risø's Low Carbon Development Programme (www.uneprisoe.org) and may inform discussions under the NAMA Partnership.

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Lessons from CDM for a Second-generation Mechanism

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The Clean Development Mechanism (CDM) under the Kyoto Protocol is the first of its kind carbon market instrument which advanced following a 'learning by doing' pattern. The CDM had several drawbacks in the way it was conceptualized and the way it evolved. This article highlights some of the drawbacks such as disproportionate regional and sectoral distribution, inability to capture country-specific emissions profile and unique mitigation potential in each, coupled with complex process and high transaction cost. Drawing the key learnings from CDM, the article further suggests, NAMAs to evolve as a second-generation mechanism in order to strengthen the global goal of climate change mitigation.

One of the widely discussed issues under CDM is the *uneven regional distribution of projects* — 93% of all issued credits were captured by five large economies: China, India, South Korea, Brazil, and Mexico.¹ Countries in Africa, however, received less than 3% of the market share with even no registered projects in few of the countries. A major chunk of investments under CDM flew into the countries which were perceived as less risky, had favourable investment climate, and were infrastructurally sound. The mechanism left the market to fragment and be biased towards the more attractive economies. Therefore, certain countries with potential emission reduction opportunities lacked buyers for their CERs and were constrained from developing their carbon markets.

Moreover, different kinds of CDM projects are associated with different return per unit investment ratio. For example, fuel switching can lead to 0.06 of a credit per dollar invested, while a dollar invested in renewable electricity generation leads to 0.002–0.004 credits per year in addition to revenue generated related to electricity. In the market-oriented framework of CDM, most of the investments went

to the sectors with large economic gains (revenue per unit investment). Consequently, *creation of sectoral hubs* emerged as an outcome. Major focus of project developers was on Industry (HFC, methane projects), Renewables (generated CERs in addition to electricity-related revenue), and projects related to Fuel Switch, while neglecting penetration in sectors such as buildings, agriculture, forestry, and transport despite their enormous emission reduction potential, ranging from 1.1 to 4.6 GtCOe.²

In addition, difficulty in monitoring, lack of appropriate methodology, missed opportunities due to unidentified methodology,³ restriction on type of projects (like only A&R projects are allowed under CDM), scale of projects, gestation period of returns, higher transaction costs, and project-specific nature of CDM were some of the factors which led to the discouraged response in some sectors.

With the primary objective of CDM to provide low-cost emission reduction opportunities in developing countries while simultaneously contributing to the sustainable development goals, the mechanism was expected to generate *developmental co-benefits along with emission reduction*. Ironically, *CDM completely surpassed Least Developed Countries (LDCs) which had fewer emission reduction opportunities along with large developmental scope*. Studies show that investments flowing into small-scale CDM projects are often insufficient to cover the high CDM transaction costs. Thus, the 'developmental co-benefit aspect' within CDM was eventually sidelined due to large-scale motivation of the market players to gain economically.

A second-generation mechanism with a common goal of emission reduction but unique pathways to achieve that goal will be required to scale up mitigation actions in developing countries. The new mechanism should be able to provide an opportunity to overcome the drawbacks of CDM highlighted above and provide

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¹ CDC Climat Research, '10 Lessons from 10 Years of the CDM', *Climate Report: Research on the Economics of Climate Change*, October 2012.

² *Emission Gap Report 2012*, UNEP, November 2012.

³ A methodology is specific to a type of project. It contains the precise criteria and parameters to assess if a project complies with the general CDM guidelines and to quantify the amount of emissions reductions.

an equal opportunity to all developing countries to grow.

NAMAs: A second-generation mechanism

Since some of the economies in the world are still at an early stage of development, the new mechanism should be designed in a flexible manner to be able to incorporate for the wide economic dispersion among countries. Wide range of assistance should be made available to the countries in the form technical, capacity building, and financial support, which the host countries would be allowed to choose from consistent with their needs. For example, in the case of NAMAs, a range of financial schemes is available to countries seeking support which are in the form of grants, loan (sovereign), loan (private), concessional loan, debt swap, equity, guarantee, FDI, and others.⁴ In addition, a registry is being created to fill the gap between the support provided and support required. The NAMA prototype registry in UNFCCC, which became functional in late November 2012 has received submissions from the countries in Latin America and Africa, namely, Uruguay, Ethiopia, Chile, Mali, Indonesia, and Cook Islands. The submissions have been made to the support categories under ‘NAMA Seeking Support for Implementation’, ‘NAMA Seeking Support for Preparation’, ‘Other NAMAs for Recognition’, while no submission has been made till date to the ‘Information on Support for NAMAs’. The process of keeping registry would facilitate suitable match-making between countries and reduce the search costs of developing countries, given suitable information are provided on both the ends.

Given the narrow emission base of few countries, scaling up of mitigation activities is essential. This is necessary for two reasons:

- Countries with large potential for small-scale projects, could bundle them up to attain substantial amount of emission reductions.
- Project-based actions identify abatement opportunities only in a specific project such as HCF, while lowering the opportunities to scale up. Hence, flexible actions such as NAMAs when implemented across sectors, policy, programmes or projects would help diversify actions in a specific sector.

The flexibility to scale up NAMAs would help capture a large share of abatement potential in a given country by capturing the *uniqueness in national emission profiles* of different countries that must be kept in mind⁵ while designing actions (Figure 1).

For instance, while energy-related emissions dominate the emission profile in China and South Korea, energy efficiency and low-carbon energy sources might be the suitable mitigation options for them. Likewise, Brazil’s efforts may well be inclined more towards forestry and agriculture, and Mexico’s in transportation, thereby making emission reductions in these sectors as indispensable. Therefore, the ‘one-size-fits-all’ attitude under CDM needs to be reformed while designing new generation mechanisms so that the potential sectors for mitigation are accommodated to the fullest in a country. NAMAs can, therefore, play an important role as they are driven by host country’s circumstances which would help to diversify actions by capturing a country’s unique emission profile, thereby aligning emission reduction actions in accordance with available sector potential to mitigate and prevent preferential treatment of certain sectors. The new mechanisms should likely be the voluntary mitigation actions coordinated by the government. This would help remove imperfections of the markets which do not sufficiently cater to equity and development. An action should be prioritized and justified in accordance with a country’s national circumstances.⁶ Indicators of development would

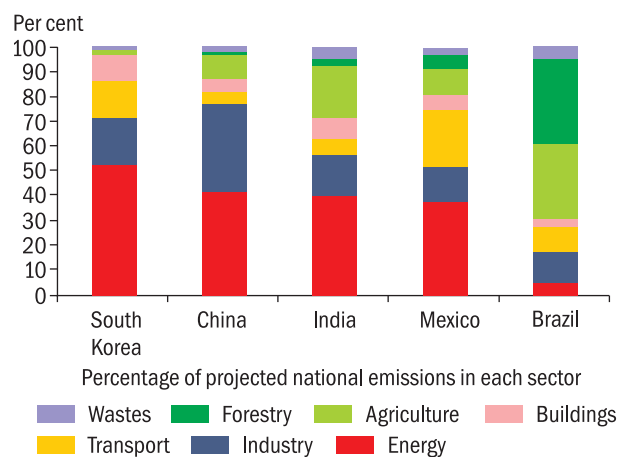


Figure 1 Percentage of projected national emission profile of countries

⁴ See http://unfccc.int/cooperation_support/nama/items/6945.php

⁵ *Emission Gap Report 2012*, UNEP, November 2012.

⁶ NAMAs, in broad sense are being conceptualized as strategic, long-term, transformational measures which allow for comprehensive ‘packages’ of actions, policies, and programmes to take the country on the path of low-carbon development.

vary among different countries depending upon the country context. With the prime objective of emission reduction, a facilitative tool for prioritization of actions to qualify as a NAMA must be undertaken. This would help countries divert resources towards actions that are imperative. On similar lines, many countries propose to include the indicators relating to gender equality, biodiversity, and adaptation issues⁷ as a part of Measurement, Reporting and Verification MRV process.

A 'standardized approach' should be taken for easy comparisons and monitoring. The methodology and MRV should be kept simple with simple access modalities.

⁷ UNFCCC NAMA registry http://unfccc.int/cooperation_support/nama/items/6945.php (External Support for Implementation, Submission by Chile).

⁸ CDM Watch, 'NAMAs and NMM: What Are the Concerns'.

Key Remarks

It is well understood that CDM is going to be unmistakably a part of New Market Mechanisms. When NMM, CDM, and NAMAs co-exist, there is a strong tendency for double counting of emission reduction projects and double counting of financial support. Additional risks are added by bilateral NMM on top of international NMM. Within this multiplicity of mechanisms, a robust MRV framework should be developed which would take into consideration the double counting of projects within its ambit. UNEP estimates that double counting could reduce emission reduction efforts by 1.3 GT per year as of 2020,⁸ if not accounted for appropriately.

NAMAs: A Fresh Start for the Transport* Sector after the CDM Debacle

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The contribution of the transport sector towards dangerous climate change is significant (23% of energy-related CO₂ or 15% of all CO₂ emissions¹) and is expected to continue growing fast, especially in the developing world. In Asia, CO₂ emissions from road transport grew at an annual rate of 10% in the period 2002–2010 while Gross Domestic Product increased only with 9% on an annualized base.² Transport-related greenhouse gas (GHG) emissions are both from passenger and freight transport with freight transport emissions growing most rapidly.

The growth in transport-related GHG emissions in the developing world is driven by population growth, continued rapid urbanization, and the much-needed economic development in support of poverty alleviation. Motorized transport has become more affordable for large sectors of society, especially the urban salaried communities. This is often seen as a demonstration of development, and is true to a point. The challenge today for policy makers is now how to ensure continued improved access to goods and services, which is needed for developmental reasons, in ways that avoids the negative effects of motorized

* The term transport in this article refers to land transport rather than aviation or maritime as these sectors are being treated separately within the UNFCCC process.

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¹ See <http://www.internationaltransportforum.org/Pub/pdf/10GHGTrends.pdf>.

² Clean Air Asia. 2012. "Accessing Asia". Available at http://cleanairinitiative.org/portal/sites/default/files/documents/Accessing_Asia_2012_Edition_MAIN_REPORT_0.pdf (last date of access: 31 January 2012).

transport. Managing the environmental — carbon and air quality — footprint of the transport sector will have to go hand in hand with controlling congestion, improving road safety, and keeping access affordable for all segments of society.

Transport and the UNFCCC process to date

So far, transport and climate change policy under the United Framework Convention on Climate Change (UNFCCC) has not been a happy marriage. The world was a different place when the Kyoto Protocol called primarily on the developed world to reduce its emissions. Transport was seen as sub-sector of energy and this was the main focus of mitigation actions. In addition, transport emissions in the developed world were growing at a much more modest rate than in the developing world³ and they were seen as less being a problem in any significant way.

Efforts in the developing world (non-Annex 1 countries) on reducing transport-related CO₂ emissions in the last decade was mainly via interventions in the transport sector whose main objective was other than climate change mitigation. This includes the introduction of fuel economy standards in China, which was done mainly for energy security reasons, and improvements in bus- and rail-based public transport in a large range of cities and countries to improve access and reduce congestion.

Transport and the Clean Development Mechanism

Clean Development Mechanism (CDM) was not designed for transport and transport is not well-suited for the CDM process. The CDM has now been in existence for about 16 years and there have been useful learnings from the successes and failures of this mechanism. In terms of success, there are 6,641 CDM projects but a total of less than 1% of them are transport related.

Transport in particular has struggled with proving robust methodologies and transport projects all suffer from high up-front transaction costs. A key barrier in transport projects is how to comply with the rules about additionally. The UNFCCC's additionality tool has grown increasingly complex and robust over time.

Transport has caught on somehow in recent times; from a total of 47 transport CDM projects, nearly half have been registered since December 2011 (for approximately 1,492,617 tCO₂e) while five registered projects have been removed from the list in recent months, showing on-going challenges.

Progress on transport and climate change

However, the future for transport under the UNFCCC is brighter than it was. The 2007 Bali Action Plan (BAP) helped broaden the exclusive focus on mitigation efforts in Annex 1 countries by acknowledging and recognizing the mitigation efforts being made by the developing world. Nationally Appropriate Mitigation Actions (NAMA) were introduced to enable the developing world to be recognized for their contributions towards global mitigation efforts. Despite the lack of detailed guidance on NAMAs, the possibility of gaining both recognition for their mitigation efforts and possible finance has given enough impetus for several non-Annex 1 countries to work on preparing transport NAMAs.

NAMAs

In contrast to the CDM, where transport was one of the worst performing sectors in terms of number of projects, in the case of NAMAs, transport is one of the best performing sectors.⁴ In February 2013, there were a total of 42 NAMAs and 33 feasibility studies from 30 countries⁵ in the UNFCCC NAMA database (www.nama-database.org) with 19 (22%) being transport related.⁶ Examples of transport NAMAs that have been submitted to UNFCCC for support (in development and implementation) include:

- a project to replace road-based freight transport by a rail-based system in Ethiopia;⁷ and
- a programme to stimulate public transport in multiple cities in Indonesia.⁸

As present, the MRV requirements for NAMAs are still being developed. Over the past few years, considerable experience has been gained in developing MRV procedures that can work for transport.

³ See <http://www.internationaltransportforum.org/Pub/pdf/10GHGTrends.pdf>

⁴ See http://namadatabase.org/index.php/By_sector.

⁵ This is the result of a more rigid classification between feasibility studies and NAMA concepts (Cameron et al, 2012): http://ccap.org/assets/Annual-Status-Report-on-NAMAs_Germany-ICI-20121.pdf

⁶ See http://www.transport2012.org/bridging/ressources/documents/3/1931,Transport-NAMA-Submissions_Overview.pdf

⁷ See http://unfccc.int/files/cooperation_support/nama/application/pdf/nama_preparation-transport.ethiopia.pdf

⁸ See <http://climate-1.iisd.org/news/indonesia-submits-sustainable-transport-nama/>

Important lessons were learned from assessment methodologies that were developed and implemented by the Global Environment Facility⁹ as well as other organizations. It is important to note, however, that this experience has not been formally incorporated in internationally agreed-upon MRV procedures. The German-funded TRANSfer project is contributing to institutionalizing MRV for transport NAMAs and is developing a transport NAMA handbook that is also being integrated into an overall NAMA handbook being prepared by the UNFCCC Secretariat.¹⁰

As for other sectors, there is a need to differentiate between MRV for voluntary NAMAs, supported NAMAs, and credited NAMAs. There is an imminent danger for transport NAMAs that if MRV procedures are guided by the same principles and approaches as the monitoring of CDM projects, then transport NAMAs will die before they can really take off. Keeping CDM methodologies out of transport, NAMA MRV is a pre-requisite for transport NAMAs to prosper.

A specific challenge for transport NAMAs is the co-benefits of low-carbon transport projects, e.g., congestion reduction, energy security, and air pollution reduction or improved road safety. In many cases, these co-benefits drive the decision-making process for low-carbon transport in developing countries rather than climate change. Yet, so far there is no clarity and consensus whether and how these major drivers should be incorporated in MRV of transport projects. By not incorporating these in the NAMA MRV, there is a clear danger that the MRV process becomes marginalized and that it mainly serves as a parallel reporting process to satisfy external stakeholders, and that it is not used for the adjustment of the strategy of the NAMA.

A continued emphasis on incremental costs as one of the main criteria for deciding whether to invest in supported NAMAs may continue to limit funding for climate change mitigation in the transport sector.¹¹ A strict application of the incremental cost criterion could discourage countries from undertaking programmes with high GHG reductions but with (apparently) low or negative incremental costs. In transport, many of the solutions have negative incremental cost — especially, if co-benefits are

quantified and made part of the equation — but have significant upfront transformation costs. As was also recently demonstrated by the International Energy Agency, low-carbon transport systems overall come at a lower cost.¹² Rather than focusing on the incremental costs, NAMA funding could also be used to cover the transformation costs towards lower carbon-oriented transport systems.

Financing efforts

The provision of finance for sustainable, low-carbon transport via NAMAs can stimulate developing countries to increase transport-related mitigation activities. However, it is likely that NAMA financing will be in the range of millions while overall investments from domestic and multilateral sources are in the range of trillions. So, NAMA financing can only be expected to provide a small contribution in terms of the overall financing for projects, especially if they involve transport infrastructure and/or the provision of new services. The discussion is still ongoing on whether NAMA financing should be targeted on specific type of activity, e.g., capacity building or the funding of specific sub-categories of infrastructure like bike paths in an urban transport project, as in the case of GEF funding, or whether NAMA funding can be used as general bridging finance as in the case of CDM.

It will be important, therefore, to consider how NAMA funding can be blended with, or leveraged against, other funding streams to maximize its impact and development finance, i.e., the \$ 175 billion 10-years voluntary commitment for more sustainable transport made by eight multilateral development banks at the Rio+20 Conference¹³ and the Green Climate Fund should be considered, as well as leveraging private sector funding and institutional investors.

Better positioned

The 2011 Durban Agreement calling for a new post-2020 global agreement on climate change provided an additional impetus for the transport community to engage with UNFCCC-related processes. The Durban outcome stipulated that the new climate change agreement is to be based on more ambitious emission

⁹ See <http://www.thegef.org/gef/node/4638>

¹⁰ See <http://www.transferproject.org>

¹¹ See http://www.slocat.net/sites/default/files/cits_report_adb_idb_slocat_july_2010.pdf

¹² See http://www.iea.org/publications/freepublications/publication/TransportInfrastructureInsights_FINAL_WEB.pdf

¹³ See <http://www.unccd2012.org/index.php?page=view&type=1006&menu=153&nr=290>

reduction goals and it calls for increased efforts from all countries. As emissions from land transport in the developing world are the fastest growing sector, it is likely that transport will get a more prominent role in global emission reduction strategies.

In addition, the transport sector itself is much better positioned to engage with the UNFCCC processes than when the Kyoto Protocol was developed and negotiated. There has been significant progress in developing models and methodologies for estimating the reduction potential. Major international organizations such as the International Energy Agency, the International Council on Clean Transportation, and the Institute for Transportation and Development Policy have commenced work on assessing the mitigation potential in the transport sector. This is coupled with specific transport-related emission reduction targets in the developed world (e.g., the European Union 60% reduction by 2050 compared to 1990 levels) and initial emission reduction goals including for the transport sector in certain developing countries such as Indonesia and Mexico. Considerable progress has also been made in the development of GHG impact assessment methodologies for the transport sector.¹⁴

Increasing consensus exists on what constitutes sustainable low-carbon transport. Experts and policy makers in the transport community agree on the need to deploy three linked strategies (**A**void–**S**hift–**I**mprove) as a policy framework. This is a basket of policies and measures that aim to: (i) improve access to jobs, goods, and services while enabling users to **A**void economically unproductive motorized trips by smarter land use and logistics planning; (ii) shift the transport of goods and persons to the most efficient mode which is often public transport, walking or cycling for people and increasing the modal share of rail or inland water transport for freight; and (iii) **I**mprove the efficiency and environmental performance of vehicle and fuel technologies used in transport as well as technologies that bring system-wide efficiencies.

The Bridging the Gap (BtG) Initiative and the Partnership on Sustainable Low Carbon Transport (SLoCaT), both have undertaken a wide range of activities on awareness raising, capacity building, tool development, and policy facilitation related to transport and climate change. This has helped increase

the visibility of land transport in the climate change negotiations and also with non-Annex 1 countries.

Conclusion

The Durban Platform for Enhanced Action (ADP) and the introduction of NAMAs provides significant opportunities for land transport to make a more active contribution to climate change mitigation including in the developing world. However, there are still many outstanding questions on how to develop guidance on NAMAs as well as the requirements for MRV and financing for NAMAs. Now that transport is the largest or second-largest sector in terms of NAMAs, it is important that the transport sector actively contributes to generation of ideas, concepts, and tools to ensure that detailed rules and regulations will work for transport. If the same rigid framework that has been applied to CDM is transferred to NAMAs, there are significant risks that transport will not be able to benefit from the next agreement. It has also been suggested that the Common But Differentiated Responsibility (CBRD) should not only apply to the mitigation efforts by countries but also in the manner that sectors are part of such differentiated mitigation efforts.

BtG-SLoCaT Transport Day

To ensure better integration of transport and to make NAMAs a success for transport, it is important to engage stakeholders. Therefore, BtG and SLoCaT intend to organize a Transport Day at COP in 2013–2015. The transport day will be organized on 17 November 2013 and its objectives are:

- To promote the integration of transport in policy making on climate change mitigation and adaptation under the UNFCCC;
- to demonstrate the contribution that transport can make to mitigation and adaptation, specifically in the context of sustainable development; and
- to ensure that modalities for financing, capacity building, and technology transfer under the UNFCCC are appropriate for the transport sector.

More information can be found on www.transport.2020 and www.slocat.net

¹⁴ For an overview, see <http://www.slocat.net?q=content-stream/187/ghg-assessment-tools>

Testing NAMAs on the Ground: Insights from agricultural waste-to-energy NAMA development

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Ecofys

Agricultural waste-to-energy NAMAs: A brief overview

Nationally Appropriate Mitigation Actions (NAMAs) are an opportunity for developing countries to access climate finance under the United Nations Framework Convention on Climate Change (UNFCCC) for new investments in the agricultural sector. If carefully designed, NAMAs can contribute to sustainable development by simultaneously providing climate change mitigation benefits, food security, and more resilient agricultural systems. Many countries that submitted NAMAs to the UNFCCC following the Copenhagen Accord intend to use this potential — over 40% of the submissions mention mitigation actions in the agricultural sector (UNFCCC, 2011, 2012). These NAMA submissions focus mainly on specific actions, including the establishment of agroforestry systems, the use of improved seed varieties, the restoration of degraded land, or the application of composts.

NAMAs are widely regarded as a mechanism with the potential to achieve transformational change and far-reaching GHG emission reductions (van Tilburg, Hänsel, and de Vit, 2012). At the current stage, NAMAs are predominately pilot activities that are developed based on bottom-up approaches. These initiatives provide valuable insights into the opportunities and challenges of NAMA development and therefore help to better understand how to successfully scale up NAMAs.

Despite interest of developing countries in agricultural NAMAs, few concrete NAMA developmental activities are being undertaken in the sector. In December 2012, the NAMA Database (www.nama-database.org), which tracks NAMA activities around the world, contained 35 NAMAs. The majority of these NAMAs take place in the energy and transport sectors, and only a few are found in agriculture (Figure 1).

The agriculture sector presents a variety of potential NAMA opportunities which not only lead to the reduction of greenhouse gas (GHG) emissions but also reap wider development benefits.

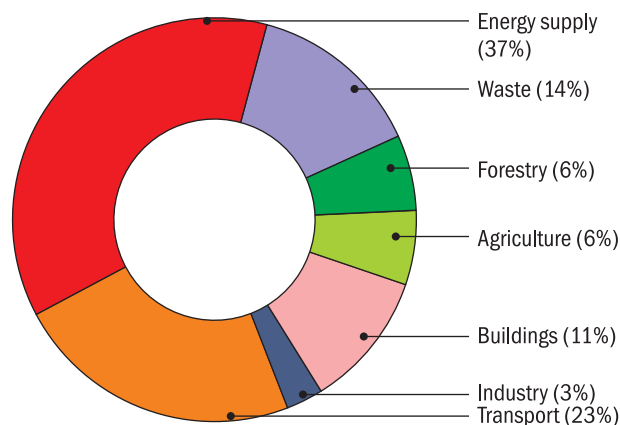


Figure 1 Sectoral distribution of NAMAs

Source: Hänsel and Escalante, 2012

One of these are waste-to-energy NAMAs based on agricultural waste. The production of food and fibre generates biomass waste that has a potential to deliver a wide range of benefits. The global agricultural sector produces about 140 billion metric tonnes of biomass waste every year (UNEP, 2009). If converted to energy, this amount of waste would result in an equivalent of approximately 50 billion tonnes of oil equivalent, and could provide clean energy services to the 1.6 billion people globally that currently do not have access to electricity (UNEP, 2009).

The following section presents a Peruvian agricultural waste-to-energy NAMA that is one of several NAMAs that are currently under development in the country. The waste-to-energy NAMA could serve as an example for other countries to consider, especially those where the agricultural sector is an important part of the economy.

Scaling up waste-to-energy activities in the Peruvian agricultural sector

Agriculture, forestry, and other land uses (AFOLU) contribute approximately 60% (146,783 Gg CO₂eq) of the Peruvian GHG emissions. The total GHG emissions increased by over 20% between 2000 and 2009 (PLANCC, 2012).

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At the end of 2012, Peru started the development of a NAMA programme that aims to scale up agricultural waste-to-energy initiatives at the national level. Several initiatives already exist at the local level but these are often isolated from each other and small in scale. Representatives of the Ministry of Environment (MINAM), the Ministry of Agriculture (MINAG), the Ministry of Energy and Mines (MINEM), and the Ministry of Production (PRODUCE) established the Multisectoral Bioenergy Commission to coordinate and jointly plan bioenergy projects and programmes. The development of the waste-to-energy NAMA was initiated by the MINAM and is planned to be led by the Multisectoral Bioenergy Commission.

The proposed NAMA programme is closely related to two NAMA targets that Peru communicated to the UNFCCC Secretariat in 2010 (UNFCCC, 2011):

- The reduction to zero of the net deforestation of primary and natural forests
- The modification of the current energy grid, so that renewable energy represents at least 33% of the total energy use by 2020

Currently, 60% of the Peruvian rural population (about 6 million people) does not have access to electricity which is one of the lowest rural electrification rates in Latin America. About 84% of rural households use firewood for cooking which is an important driver of deforestation. Using agricultural waste for energy production, especially in rural areas, can therefore contribute to reducing deforestation and avoiding soil erosion.

The Peruvian agricultural sector generates approximately 13.5 million tonnes of biomass waste per year, mainly from sugar cane, maize, rice, cotton, potatoes, coffee, and cacao. Most of this waste is directly burned in the fields, and only a very small percentage is used for energy production. The exploitation of the energy potential of waste biomass can help to achieve the national renewable energy target.

The NAMA framework

Centrepiece of the proposed NAMA programme is a fund, “FondoNAMA”, that seeks to facilitate the access of farmers and agro-industries to capital for covering (up-front) investment costs of technologies and infrastructure for energy generation from agricultural waste (Figure 2). The focus is on self-supply renewable energy systems. Financing will be linked to capacity-building programmes that train beneficiaries of the NAMA in the establishment and maintenance of technologies and infrastructure to ensure their efficient and long-term use.

Since the geographical, socio-economic, and environmental conditions differ a lot throughout the country, financial instruments and capacity building programmes will have to be adapted to the needs of its beneficiaries and the renewable energy generation potential of the respective region. The coastal region (costa) is the most densely populated part of the country where a significant part of the large-scale agricultural production and agro-industries are located. In the Amazon basin (selva), agriculture is smaller in scale, and in the Andean highlands

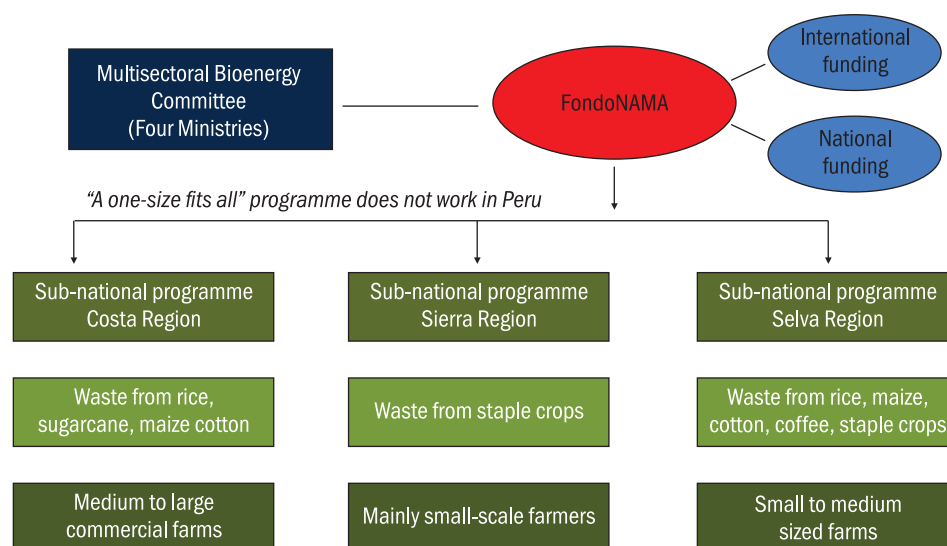


Figure 2 Framework for the Peruvian agricultural waste-to-energy NAMA programme

(sierra), subsistence-based agriculture predominates (FAO, 2010).

Challenges and ways forward

Institutional capacity for NAMA development is currently concentrated in the MINAM. The other ministries that are part of the Multisectorial Bioenergy Commission have been little involved in the preparation and implementation of mitigation actions so far. In particular, the MINAG has prioritized adaptation and resilience-building activities, since the agricultural sector has an essential role for food security, rural livelihoods, and economic development. However, the involvement of each of the four ministries is important for the development of this cross-sectorial NAMA since they have different mandates for action. Aligning NAMA objectives with the development objects of the different ministries can help to build ownership for the initiative. If this is achieved, the NAMA can be seen as an overarching framework that helps to coordinate actions that contribute to compatible sustainable development and climate change mitigation goals.

The agricultural waste-to-energy NAMA programme¹ is currently in an early stage of development. In March 2013, a stakeholder workshop will be held to further define its scope and to prioritize activities of the programme.

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¹ The development of the NAMA is supported by the International Climate Initiative of the German government.

NAMA development in Kyrgyzstan: insides from practical experiences

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The Central Asian Kyrgyz Republic is situated in the high mountain area between the Tian-Shan and the Pamir and belongs to the group of countries with very low carbon intensity of economic activities (0.58 kg CO₂/USD [2000] PPP) as well as per capita (1.33 kg CO₂).¹ This is mainly due to the 30% share of hydropower in the country's total energy supply, and also because of the fact that the country's economy is poorly developed. Thus, mitigation of GHG emissions for Kyrgyzstan is the question of avoiding future increases of carbon intensity while enhancing economic and social development. The country will suffer substantially under such climate change effects due to the melting of the glaciers which are the major source of its water resources. For Kyrgyzstan, water is not only essential for agriculture but is also the key source for electricity generation. Currently, electricity is partly exported and additional hydro-power stations are planned in order to increase such exports in the future. That is why there is widespread awareness among politicians, NGOs, and businesses related to the climate change challenge. Therefore, the Kyrgyz government is discussing a long-term goal to achieve future economic growth without additional increase of energy.² During the Side Event of the Kyrgyz government at Rio+20 Conference in June 2012, Vice Prime minister Otorbayev, underpinned the country's efforts to embark on a low-carbon development path.

In order to support the Kyrgyz government's efforts currently, a concept for a supported NAMA is being developed for raising energy efficiency in local heat supply and overcoming the partly observed undersupply of heat in residential and public buildings, which is a result of insufficient performance of the boiler houses. The bulk of Kyrgyzstan's overall CO₂ emissions results from combustion processes in the industry, including centralized and local

heat generation and distribution. Generation and distribution in general require serious modernization of management and hardware. Local heat is mostly generated from coal which is considered an affordable and long-term available national resource. Thus, the heating sector is one of the most important target sectors for reduction of GHG emissions.

However, the existing legislations — Law No. 137 on 'Energy Efficiency in Buildings' of 2011 which does not include the issue of boiler houses and Law No. 283 on 'Renewable Energies' of 2008 — are not sufficient to tackle this potential. The reason is not only the huge number of relatively small assets with their data difficult and costly to assess, but also the weak economic situation of the boiler houses. The latter is mainly due to the current regulation which focuses on subsidized heat tariffs and to the budget constraints at the state and community/municipality level. Weakly organized accountability and control for the usage of fuels is another factor contributing to heat undersupply of costumers. In addition, today boiler houses are often oversized and situated at large distances away from customers.

The supported NAMA approach is seen as an opportunity to help better organize heat supply and distribution activities through deployment of climate-friendly technologies and thereby making heat supply less carbon intensive while increasing heat comfort simultaneously. The current development of the above mentioned NAMA concept is financially supported by the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety, Germany, and carried out by a consortium under leadership of DIW econ.

Re-organization of the local heating sector consisting of a huge number of small boiler houses, which is a typical heritage of the Soviet Era in most Central Asian countries, is on the institutional reform agenda in Kyrgyzstan. This includes a

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¹ IEA Statistics, data for 2009.

² Energy Program of the Republic of Kyrgyzstan until 2015 (draft)

shift in the ownership of the boiler houses from the state represented by the former State Agency for the communal sphere (Zhykkomunsojus) to municipalities and local administrations. The NAMA aims at combining this institutional reform with low carbon development goals. The reform should be coupled with achieving the target to increasing efficiency of local heat supply from small coal-fired boilers by at least 35% until 2020.

The selection of the mentioned sub-sector of local heating as an important sector for development of a new policy approach with NAMA support was agreed by an inter-ministerial body, the National Committee of Climate Change Consequences of the Kyrgyz Republic, currently reorganized as Coordinating Commission on Climate Change Issues. The backing by an inter-ministerial body is seen as crucial for tackling such a socially and economically sensitive and complicated sector which involves different governmental bodies in decision making. This is especially true under conditions of the described ownership shift. For the NAMA to be successful, ownership and backing by the respective government body is essential.

Small boiler houses (each with less than 10 MW installed capacity) play an important role for GHG mitigation in Kyrgyzstan. They combust 12% of all coal used in the country and supply about 60% of all schools, kindergartens, and hospitals as well as residential buildings in different cities and regions of the country. The NAMA will provide support to create demand for modernization of boiler houses and the respective heat pipelines by providing financial incentives to:

- replacement of existing outdated boilers with low efficiency indicators by modern, highly efficient boilers including more efficient circulation pumps;
- adjustment of the new heat capacities to real demand and, in some cases, installation of the new boiler houses closer to the costumers;
- improving management and accounting by installation of heat metering devices at boiler houses; and
- replacement of existing heat pipelines by modern, pre-insulated pipelines where necessary.

These measures will lead to efficiency improvement of coal combustion at boiler houses and to reduction of heat losses in the respective pipelines. However, a special issue concerning the relation of

efficiency improvement and GHG emission reduction needs to be considered, which might be typical for other countries as well, especially for post-Soviet countries. In fact, currently not all customers are supplied with heat according established standards. As heat supplied is not measured but only calculated, compliant with official standards, huge heat losses in the heat pipeline infrastructure result in undersupply of final customers. That is why not all energy-efficiency measures planned to be implemented by the NAMA will result in GHG reductions and will therefore contribute to avoiding severe social tensions which might arise from weakening heat supply. Thus, the NAMA will also include indirect benefits and transformational changes besides GHG reductions. According to current calculations, the envisaged replacement of boilers will transfer immediately into GHG emission reductions, the estimated considerable reduction of pipeline losses, however, which will be achieved by replacement of leaking old heat pipelines by modern, pre-insulated pipelines, may not lead automatically to GHG emission cuts. But, the envisaged replacement of pipelines will improve heat comfort of final customers. They will finally receive the amount of heat necessary in accordance with standard requirements they already pay for. Additional co-benefits are expected to result in enhancement of the service personal's qualifications and creation of new jobs for the maintenance of modernized boiler houses.

The incentive scheme being developed within the NAMA concept shall consist of a mixture of soft loans and grants offered under certain conditions to the owners of small coal-fired boilers and will help to overcome existing financing restrictions of the involved companies. These conditions still need to be elaborated in more detail, taking into account the economic constraints of the public budgets in Kyrgyzstan and bearing in mind that tariff increases would not be affordable for the majority of private households. As there is no longer state ownership of small boiler houses, the government needs to take responsibility for NAMA implementation and, in addition, needs to provide the respective framework for participation of the respective municipalities and local administrations in the planned incentive scheme. The framework includes requirements towards the owners of small boiler houses, which usually own and manage a portfolio of different boiler houses. The owners might apply for financial support in order to implement the above mentioned measures. Although

the procedure of approval for participation in the modernization programme is not finalized yet, it will require at least the following:

- Documentation of ownership and clear responsibilities for the assets (boilers) included into the application;
- provision of plausible and reliable data for each boiler house on capacities, fuel consumption, heat demand, and structure of customers;
- documentation of current efficiency of each boiler house (no modernization undertaken during the last years); and
- expression of interest and willingness or the Letter of Intent (LoI) of the owner to participate in the NAMA programme and to follow its requirements. The respective LoI shall indicate the following:
 - List of boilers being subject of modernization under the programme indicating the measures being implemented;
 - Readiness to take over the responsibility to organize maintenance service for the newly installed equipment and capacity building of the personnel including also improvement of accountability and control for the usage of fuels; and
 - Readiness to partially finance the modernization of small boiler houses with own administrative and human resources.

Therefore, the NAMA instrument provides the opportunity gaining financial support for improving energy efficiency of several “packages”³ of small boiler houses in a very poor country. The “package” approach allows for inclusion of boilers of different cities and municipalities within a certain time frame and thereby helps to overcome some of the identified barriers. This is especially related to delay in implementation of the ownership-transfer reform

and respective absorption of management capacities. Thus, the NAMA implementation is planned within a time frame of at least 3 or 4 years. Such an approach also takes into consideration existing capability of carrying out modernization. Existing service units for maintenance and repair work need to be trained for implementation of new technologies and their capacities needs to be enlarged additionally in order to successfully implement the programme.

An additional issue, which is currently discussed, is the development of a respective option for monitoring, reporting, and verification (MRV) of implementation of the planned measures. Currently, the only available and reliable indicators for calculation of GHG emissions are the data on coal burned which are processed from bills of the boiler houses coal purchases and the exchanges in stocks. The MRV system to be developed will continue to rely on this data but in addition, will be completed by the output data provided by the new to-be installed metring devices. So far, no experiences exist, hence the implementation of MRV would need to set up a respective training scheme on monitoring and reporting for all owners of small boiler houses as well.

The NAMA concept is a new approach for Kyrgyzstan combining institutional reform with clear energy efficiency and GHG mitigation goals and designing a respective policy which aims to reach a special target by providing investment incentives with new management approaches. The stakeholders are very much eager to reach that goal because they understand that the NAMA approach will help them to improve overall efficiency of their economic activities, improve the environment, and in parallel improve heat supply for the bulk of the small country’s schools, kindergartens, and hospitals. The current German initiative is building capacities and readiness for using this new instrument.

³ Package means the respective number of boiler houses owned by a municipality or local administration.

Towards NAMA-readiness: A case of Vietnam

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The period from 2007 (Bali Action Plan) to 2011 (COP-17 in Durban) has witnessed the emergence and development of a new mitigation mechanism for developing countries—the Nationally Appropriate Mitigation Actions (NAMAs). NAMAs is a new concept in the world over in general and in Vietnam in particular. The Government of Vietnam has been trying to develop and implement NAMAs in order to contribute to global mitigation effort and attract international technical and financial assistance. The four types of NAMA include: (i) GHG emission reduction goal; (ii) strategies; (iii) policies and programmes; and (iv) projects (Roser et al., 2010). According to IMHEN's general assessment, Vietnam has the potential to develop NAMAs for the above-mentioned four types of NAMAs.

Potential NAMAs in Vietnam

Strategies related to climate change mitigation

So far, Vietnam has a number of strategies whose contents promote mitigation activities in Vietnam.

In 2003, Vietnam approved the National Environmental Protection Strategy to 2010 and orientation to 2020,¹ which focuses on promoting the application of clean technologies, clean production, and the use of raw materials and fuels that are less polluting and environmentally friendly.

The Vietnam National Strategy on Climate Change was approved in 2011.² The strategy has 10 tasks for adaptation and mitigation, in which some

tasks related to mitigation including: (i) protecting forest, sustainable development of forest, increasing absorption of greenhouse gas, and biodiversity conservation; (ii) GHG emission mitigation contributes to protect global climate system; (iii) the Vietnam National Action Plan on Climate Change was approved in 2012 to implement the National Strategy on Climate Change. The Action Plan has developed a list of specific projects over 2012–2020 for the implementation of 10 missions of the National Strategy on Climate Change, some of which are on mitigation.

The Green Growth Strategy was approved in 2012,³ of which overall goal is that green growth and low-carbon economy will become the mainstream of sustainable economic development and strengthen social economic development. This strategy commits to investments in long-term mitigations.

GHG emission reduction targets

As a developing country, highly vulnerable to adverse effects of climate change, Vietnam believes that responses to climate change must be in line with the process of sustainable development and towards a low-carbon economy. Though adaptation continues to be a focus and an urgent task, Vietnam has been actively strengthening GHG emission reduction in social and economic development activities, with national resources and in cooperation with international communities.

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¹ See <http://thuvienphapluat.vn/archive/Quyiet-dinh-1216-QD-TTg-nam-2012-phe-duyet-Chien-luoc-Bao-ve-moi-truong-quoc-gia-vb147305.aspx>

² See <http://thuvienphapluat.vn/archive/Quyiet-dinh/Quyiet-dinh-2139-QD-TTg-phe-duyet-Chien-luoc-quoc-gia-bien-doi-khi-hau-vb132631t17.aspx>

³ See <http://thuvienphapluat.vn/archive/Quyiet-dinh-1393-QD-TTg-nam-2012-phe-duyet-Chien-luoc-quoc-gia-tang-truong-xanh-vb148498.aspx>

Vietnam national policies on climate change identify concrete targets to reduce GHG emissions. A specific task of the National Green Growth Strategy is to reduce the intensity of GHG emissions and promote the use of clean and renewable energies. In the period of 2012 to 2020, with international support, Vietnam aims to reduce the intensity of GHG emission by 8 to 10% compared to the base year of 2010; energy consumption per unit of GDP by 1 to 1.5% per year; GHG emission from energy activities by 10% to 20% compared to Business As Usual. To achieve these goals, policy dialogue platform and cooperation mechanism between national policy makers and international donors and organizations are established to assist the Government of Vietnam in formulating and implementing climate change policies and strategies.

Policies and programmes related to climate change mitigation

So far, Vietnam has a number of policies and programmes related to mitigation.

Relevant legal documents

The National Assembly of Vietnam issued a number of environmental protection laws and regulations directly related to mitigation of GHG emissions as the following:

- Petroleum Law (1993) No. 10/2008/QH12 dated 6 July 1993 (amended on 9 June 2000 and 3 June 2008)
- Law on Minerals No. 2/1996/QH9 dated 1 September 1996 (amended on 27 June 2005)
- Water Resources Law No. 08/1998/QH10 dated 20 May 1998
- Law on Forest Protection and Development No. 29/2004/QH11 dated 3 December 2004 (replacing the 1991 Law on Forest Protection and Development)
- Law of Electricity No. 28/2004/QH11 dated 3 December 2004
- Law on Environmental Protection No. 52/2005/QH11 dated 29 November 2005 (Replacing the 1993 Law on Environmental Protection)
- Law on Energy Efficiency No. 50/2010/QH12 dated 28 June 2010

Programmes

In 2006, the government promulgated the National Target Program on Energy Efficiency to raise public awareness, promote research and development of

science and technology, and enforce regulations on energy conservation and efficiency. The Program sets a 3–5% conservation rate for national energy consumption for 2006–2010 and 5–8% for 2011–2015.

In 2008, the government approved the National Target Programme to respond to climate change. Strategic objectives of the NTP-RCC are to assess climate change impacts on sectors and regions in specific periods and to develop feasible action plan to effectively respond to climate change in short-term and long-term periods to ensure sustainable development of Vietnam, to take over opportunities to develop towards a low-carbon economy, and to join international community's effort in mitigating climate change and protecting the climatic system.

Potential of NAMA projects

According to the Second National Communication of Vietnam to UNFCCC (2010), the three focal sectors for GHG mitigation options are agriculture, energy, and Land Use, Land Use Change and Forestry (LULUCF). Twenty-eight mitigation options have been developed and assessed for GHG sources and sinks, including 15 for the energy sector (including transportation), five for agriculture sector, and eight for LULUCF sector. The total mitigation potential for the above-mentioned 28 options is 3,270.7 million tCO₂e, to which energy contributes 192.2million tCO₂e, agriculture 56.5 million tCO₂e, and LULUCF 3,022 million tCO₂e. Mitigation potential uncertainty levels are placed in order of increasing magnitudes, from energy to agriculture to LULUCF.

NAMA-readiness projects in Vietnam

So far there are a number of NAMA-readiness projects in Vietnam, which focus on capacity building on NAMAs and development of guidelines for NAMA and MRV in Vietnam, including:

- Pilot programme for supporting up-scaled mitigation action in Vietnam's cement sector under the Nordic Partnership Initiative:
 - Period: June 2012 – June 2014
 - Implementing agency: Ministry of Construction
- “Vietnam-Japan Capacity-building and Joint Study Project for NAMA in MRV manner” sponsored by the Ministry of Environment (Japan):
 - Period: July 2012 – February 2013
 - Implementing agencies: Institute of Meteorology, Hydrology and Environment

- (Coordinator); Vietnam Environmental Agency; International Cooperation Department; and Department of Meteorology, Hydrology and Climate Change
- Technical guideline on Nationally Appropriate Mitigation Actions (NAMAs) development (*sponsored by UNDP*) [*Finished*]
 - Period: August 2012 – November 2012
 - Implementing agency: Institute of Meteorology, Hydrology and Environment
 - Facilitating Implementation and Readiness for Mitigation (FIRM project) (funded by Government of Denmark)
 - Period: October 2011 – December 2013
 - Implementing agencies: UNEP’s Division of Technology, Industry and Economics (DTIE) in cooperation with UNEP Riso based in Denmark
 - Support for NTP on climate change with a focus on energy and transport (*sponsored by ADB*):
 - Executive agency: The Industrial Safety and Environment Agency (ISEA) of MOIT is acting as Standing Office of the Project Steering Committee
 - Strengthening planning capacity for low-carbon growth in developing Asia (*sponsored by Japan, United Kingdom, and the ADB’s Technical Assistance Special Fund IV*)
 - Period: 15 November 2010 – June 2013
 - Executing agency: ADB
 - Participating countries: Indonesia, Malaysia, Philippines, Thailand, and Vietnam
 - Development of methodology to design NAMAs and assessment, review, and supplementation of the institutional system to support the design and implementation of NAMAs
 - Period: 2012–2013
 - Implementing agency: Department of Meteorology, Hydrology and Climate Change
 - Preparing for Proposal on “Creation of an overarching framework for NAMA and MRV in Vietnam” (*funded by special climate funds [EKF] by the German parliament*)
 - In October 2011, Vietnam submitted an expression of interest to participate in the Partnership Market Readiness (PMR) program, a grant-based, capacity-building trust fund that provides funding and technical assistance for the collective innovation and piloting of market-based instruments for GHG emissions reduction. Currently, Vietnam is finalizing the ToRs for the work underpinning its draft Market Readiness Proposal.

Conclusion

Recently, the Vietnamese agencies have paid greater attention to NAMAs, illustrated by the enthusiastic participation of Vietnam experts in NAMAs workshops and trainings and the development and implementation of several NAMA-readiness projects. However, in order to further develop and implement NAMAs in Vietnam, it is necessary to develop a domestic institutional arrangement for NAMA registry and MRV which is currently lacking. Vietnam should be more proactive in proposing and implementing NAMAs rather than awaiting the official guidance of UNFCCC on MRV for NAMAs of which draft will be available in COP-19.

NAMAs Supported by Fast Start Climate Finance: Danish Support for the Vietnamese Energy Efficiency Programme

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Greenhouse gas (GHG) emissions from Vietnam's energy sector are growing rapidly in tandem with the country's industrialization. In 2000, the energy sector's share of total emissions was 35%. A decade later, it had almost doubled to 67% and is expected to increase further to 90% by 2030. In absolute terms, energy emissions are expected to more than double by 2020 and more than quadruple by 2030, compared with the 2010 level (Vietnam's Second National Communication to UNFCCC).

Vietnam has responded to the growth in GHG emissions by preparing a National Target Programme to Respond to Climate Change (2008), a National Strategy (2011), and National Action Plan (2012) on Climate Change, as well as a National Green Growth Strategy (2012). The goal is to mainstream sustainable development into a national policy while strengthening socioeconomic development. Vietnam has set a climate target for 2020 for reducing emission intensity by 8–10% as compared to the 2010 level, reducing energy consumption per unit of GDP by 1–1.5% per year, and reducing GHG emissions from energy activities by 10–20% compared to the business as usual case. This commitment includes a voluntary reduction of approximately 10%, and an additional 10% reduction with additional international support.

Although these targets have not been formally submitted as NAMAs to the UNFCCC, Vietnam has received international support for NAMA readiness from a range of actors, such as the Nordic governments through NPI (for the cement sector), Japan (MRV training and waste), UNDP, UNEP, and the Asian Development Bank for general institutional support.

The Vietnam Energy Efficiency Programme (VNEEP), which is supported by the Danish government and other international donors, is in line with NAMA definitions as well as the Green growth strategy, and thus, offers a valuable replicable model for other NAMAs in Vietnam and elsewhere. The programme is being implemented under the auspices of the Ministry of Industry and Trade in Vietnam and runs from 2006–2015. Denmark supported the programme from the start via ODA funding of 10 million USD. The focus of the first phase which ran from 2006–2010 was on capacity building, development of a legal framework (the Law on Energy Efficiency and Conservation was adopted), development of a national certification scheme, and training of energy managers and auditors. Focus of Phase 2 (2011–2015) is on promoting the application and implementation of energy-efficiency solutions. Additional Danish support for Phase 2 of the VNEEP programme (11 million US dollars over three years) was agreed in November 2012 and is part of the Danish “fast start climate finance”. Although still a major part of the Danish–Vietnamese cooperation until 2015, the Danish development cooperation and financing is gradually being phased out in Vietnam in line with Vietnam's growing economy and poverty reduction, and at the same time commercial links between Denmark and Vietnam are stepping up. Fast start climate finance comes in as a way to bridge this gap and to support the transition of the Vietnamese economy on to a low-carbon development path. This, in combination with the needs and priorities of Vietnam, the mitigation potential and the long-term, solid relations between the two countries, has

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motivated the choice of this programme for Danish fast start finance.

Focus of the fast-start finance is on the building sector and on small and medium-sized enterprises (SMEs) in the bricks and ceramics industries (with a third industry to be identified). Co-funding of USD 7.5 million for this part of the VNEEP programme comes from the Government of Vietnam. In addition, co-funding from the private sector is expected for the actual investment projects. Emphasis is on government to government cooperation and exchange of experience, on setting up of a robust MRV system, and achieving measurable emission reductions on establishing a long-term sustainable financing mechanism for implementing energy-efficiency investments in SMEs and on further strengthening bilateral ties between Denmark and Vietnam. A total of 150–250 energy-efficiency projects in brick and ceramic and other sectors will be implemented as part of the fast-start finance support. The expected GHG emission reductions from these projects will be estimated during the inception phase (Spring 2013) but based on experience from a previous UNDP funded programme for the SME's, one can expect an annual GHG reduction of at least 0.2–0.4 million tonnes of CO₂e once the projects are up and running. Additional emission reductions can be expected if

the programme succeeds in replicating itself in other areas of the country as planned.

With Danish support, SMEs in pilot provinces will have access to energy audits, a MRV system, and a financing mechanism for investing in energy efficiency and conservation projects. In the building sector, Danish support will focus on facilitating the implementation of the Building Code, coupled with access to state-of-the-art technology.

A comprehensive set of both quantitative and qualitative indicators and outputs have been agreed bilaterally by Denmark and Vietnam, building on indicators already developed under the wider national VNEEP programme. Further improvements to the MRV framework are planned as part of project implementation. Next steps to improve the MRV framework include development of methodologies for measuring the GHG mitigation and co-benefit impacts, including gender aspects as well as other aspects of sustainability, such as replicability, revolving funding, and maintaining a robust MRV system. This will be integrated into the VNEEP national programme in close cooperation with Ministry of Industry and Trade and other stakeholders. For more information, please see <http://www.ens.dk/en-US/ClimateAndCO2/LCTU/>.

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The views expressed in this research letter are those of the authors and do not reflect the views or opinions held by the institute.

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