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## From NAMAs to Low Carbon Development in Southeast Asia: Technical, Mainstreaming, and Institutional Dimensions

### Key Messages

-  Despite conceptual ambiguity and diverse contents, Nationally Appropriate Mitigation Actions (NAMAs) offer a practical opportunity to set countries on a pathway to low-carbon development in the context of sustainable development, rather than being seen as simply a burdensome outcome of UNFCCC negotiations.
-  Fulfilling technical, mainstreaming and institutional dimensions of NAMAs formulation is essential for low-carbon development. These dimensions provide a systematic framework to assess the preparedness for NAMAs in developing countries.
-  To address areas for improvement for these three dimensions of NAMAs formulation, it is crucial that developing country policy-makers devote resources to expanding in-house technical capacity; create clear incentives and increase awareness level among domestic stakeholders; and strengthen coordination between agencies involved in NAMA formulation.
-  International donors could further facilitate the NAMAs formulation process by incorporating in-house technical capacity development into their strategic priorities, facilitate mutual learning and promote South-South-North collaboration within the region, and streamline and harmonise NAMA-related support.
-  NAMAs formulation is not a one-off event, but is a continuous process through which developing countries can expand the scope of activities over time. Countries could initiate with sectoral NAMAs, then change to an economy-wide target at a later stage.



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## I Introduction

In response to the Copenhagen Accord and subsequent request by the 16<sup>th</sup> and 17<sup>th</sup> Conferences of the Parties (COP16 and COP17) to the United Nations Framework Convention for Climate Change for additional submissions, more than 50 developing countries have submitted information on their Nationally Appropriate Mitigation Actions (NAMAs). Many other developing countries are in the process of preparing their NAMAs. While there is a general understanding that NAMAs aim to achieve a deviation from business as usual (BAU) emissions in 2020 in developing countries, the definition of NAMAs has remained ambiguous, leaving ample room for different interpretations. This has led to diversity in submitted NAMAs in terms of type and scope, ranging from project-based actions to sector-based policy and measures, and to economy-wide targets (Fukuda and Tamura 2010). Despite

ambiguity of the concept and diversity in the scope of submitted NAMAs, the core feature of NAMAs is that they are formulated “in the context of sustainable development”, and provide significant opportunities for low-carbon development in developing countries.

Against this backdrop, this policy brief assesses the NAMA formulation process in selected Southeast Asian countries (Cambodia, Indonesia, Lao PDR, Thailand, Viet Nam), and analyses how much progress they have made in formulating NAMAs. Many of the findings presented in this policy brief are based upon interviews conducted between April and September 2012. Interviewees included government officials and researchers involved in the NAMA formulation in the five countries as well as international donors and non-governmental organisations (NGOs).<sup>1</sup>

## 2 Three Essential Elements for NAMA Formulation: Technical, Mainstreaming and Institutional Dimensions

For NAMAs to serve as a low-carbon tipping point, three dimensions of NAMA formulation are essential; technical, mainstreaming and institutional (Figure 1). These three dimensions constitute an analytical framework against which we can assess the status of NAMA formulation in each of the selected countries.

**Technical Dimension:** NAMAs need to be based on a good understanding of the current and future GHG emissions trends, possible measures and their cost implications. This requires 1) understanding of current GHG emissions and projection of future GHG emissions; 2) identification and prioritisation of mitigation options; and 3) cost estimates of mitigation options. This dimension provides a basis for required Measurement, Reporting and Verification (MRV).

**Mainstreaming Dimension:** NAMAs need to be

embedded in national development priorities. This dimension consists of three components: 1) inclusion of climate change mitigation agenda in national development plans and priorities; 2) the identification of priority sectors and policies and measures; and 3) the development of mitigation action plans with operational details.

**Institutional Dimension:** NAMAs need to be formulated through a cross-ministerial decision-making process which can coordinate and reconcile diverse domestic interests. This consists of three components: 1) the establishment of national, cross-ministerial decision-making processes for climate change mitigation planning; 2) the coordination in institutional arrangements for mitigation efforts; and 3) task allocation of NAMAs formulation and implementation among appropriate ministries and other stakeholders.

<sup>1</sup> The authors would like to sincerely thank all interviewees who candidly shared their knowledge, views, insights, opinions without which this brief could not have been possible. Reflecting requests from some of them, they remain anonymous.

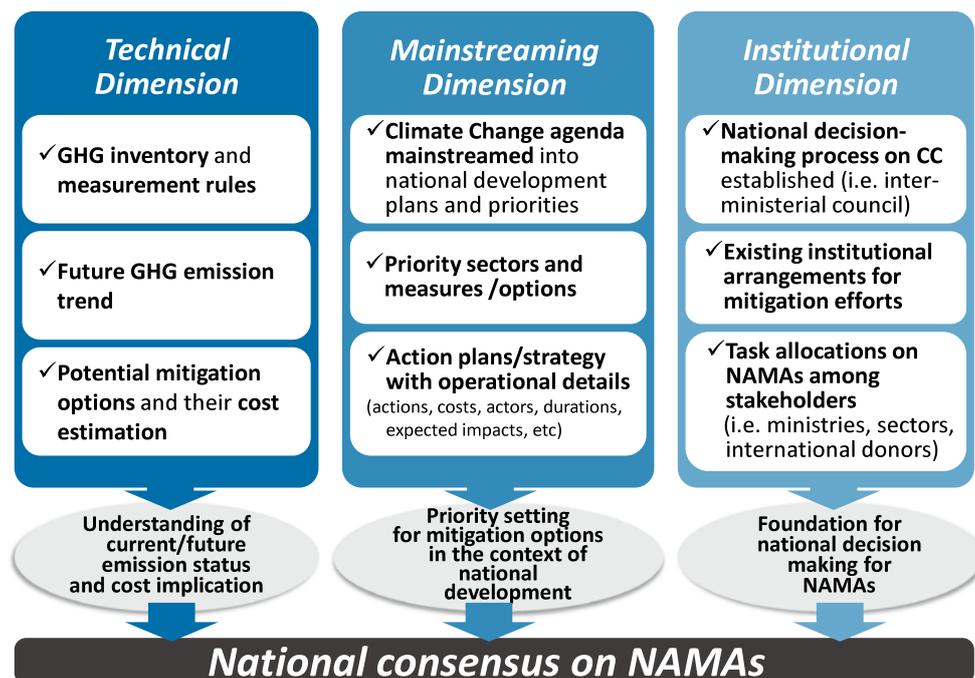


Figure 1 Essential Elements of Formulating a NAMA: Three Dimensions

### 3 Country Cases

#### 3.1 Cambodia

While Cambodia as a least developed country (LDC) is given understandable flexibility in NAMA submission, the country has started formulating NAMAs in the energy sector under the initiative of the Climate Change Department of the Ministry of Environment (MOE/CCD). This initiative reflects the country’s aspiration to harness international support to move the domestic mitigation agenda forward. However, a question remains concerning whether to regard existing national submission to the UNFCCC Secretariat on REDD+ measures as NAMAs or not, reflecting national consensus on NAMAs formulation is a challenge for the Cambodian government yet to overcome.

From a technical perspective on the Cambodian NAMAs development process, Cambodia has thus far provided an estimation of national emissions forecast up to 2050, along with the identification of mitigation potentials in the main mitigation sectors including the Agriculture, Forestry and Land use Change (AFOLU) and the Energy sector through National Communications and GHG Inventories development

processes. Cambodia also considered options for mitigation technologies through conducting the GHG mitigation technology assessment in 2003 (Cambodian government, 2003). Regarding the cost estimation of the potential mitigation measures identified, however, while the National Strategy for Development Plan Update (USDP Update 2009-2013) specified overall environmental conservation budget, it did not include a breakdown figures on individual mitigation actions. In the current energy NAMAs formulation process, four priorities (the introduction of bio-digesters, biomass power generation, solar power generation and energy efficiency) have been selected, where Cambodia has years of experience and has more confidence in measuring emission reductions. Lack of domestic technical capacity, including the limited role of domestic academia and research institutions in forecasting emissions, emission potential and associated costs, remains a major technical challenge. Technical capacity building in the form of training is therefore anticipated to play a significant role in strengthening technical capacity needed to formulate MRV-able mitigation actions.

From the mainstreaming perspective, placement of environmental sustainability broadly capturing climate change as one of the major pillars in the Rectangular Strategy (RSII), as well as incorporation of climate change into the National Developmental Strategies and Plans (NDSP Update 2009-13) both indicate that climate change mainstreaming into developmental agenda is progressing. Further progress on mainstreaming is anticipated with the Cambodian Climate Change Strategic Plans (CCCSP) currently being finalised, which is expected to accommodate a list of priority mitigation measures both in the energy and non-energy sectors (Ponlok 2011). Establishing clear linkages with the budget and CCCSP will be the next step for ensuring its effectiveness. In parallel, Cambodia also actively promotes a Green Growth agenda through its Roadmap as a means to facilitate formulation of sectoral policies and actions in the context of low-carbon economic growth. These efforts altogether help create national momentum towards climate change mainstreaming. Regarding the prioritisation of mitigation actions, the four priority areas of the NAMA formulation in the energy sector reflect the national needs for enhancing rural electrification and meeting distributed power demand. It is ideal that measures such as introduction of bio-digesters be accompanied by health and safety standards to capture both mitigation and developmental benefits.

From the institutional perspective, Cambodia has recently established a National Climate Change Committee (NCCC) as an inter-ministerial decision making body. While NCCC is expected to develop, coordinate and monitor the implementation of climate change related policies, strategies, regulations, plans and programmes, further observation is required of its engagement in national NAMA development and implementation process. In order for NAMAs to proceed in the national context, enhanced support may be needed from the MOE/CCD which serves as the chair of the committee and is expected to play a role in coordinating the more than 20 line ministries within the Committee.

### 3.2 Lao PDR

Being positioned as a LDC, overriding national

priority of Lao PDR is to fulfil fundamental developmental agenda. In this regard, Lao PDR has signalled its intent to graduate from LDC status by 2020 in the seventh National Growth and Poverty Eradication Strategy (NGPES). Domestically, because Lao PDR is endowed with significant hydropower potential and rich forest cover, the country has enjoyed the status of a net CO<sub>2</sub> sequester, where the amount of national carbon removal surpasses the overall amount of emissions in the Initial National Communication. Nonetheless, an increase in overall national GHG emissions is anticipated along with stable economic growth and reductions in forestry cover. From the sustainability point of view, it is therefore crucial for a country in the early stage of development to take early mitigation actions to avoid anticipated carbon lock-in resulting from resource-intensive infrastructure development and rapid urbanisation. In this context, NAMAs provide a practical opportunity for Lao PDR to transition to a low-carbon developmental path. Indeed, Lao PDR is in the process of considering developing NAMAs in the transport sector. Such an effort is conducted jointly by the Ministry of Forestry and Environment (MONRE) and the Ministry of Public Works and Transport (MPWT).

From a technical perspective, identification of national GHG emission profile and review of existing mitigation measures taken are captured by the National Communications and GHG Inventories development process. The National Strategy on Climate Change (NSCC) of Lao also identifies priority mitigation actions in the agriculture, Land Use Change and Forestry (LUCF), industry, energy/transport, and urban sectors. For the forestry sector, many pilot initiatives have been implemented in Laos both by bilateral and multilateral donors to support the government's target to restore 70% forest cover by 2020, including capacity building support for strengthening forestry accounting. Nonetheless, Lao PDR is still in the initial stage of enhancing understanding of NAMAs and providing interpretations to the concept, and identification of national and sectoral mitigation potential, BAU setting and cost estimation of anticipated measures are yet to be developed. Further reinforcement of domestic technical capacity with international support and capacity

building is therefore crucial for building a sound technical basis for developing and operationalising NAMAs.

From the mainstreaming perspective, the climate change agenda is concisely captured in the National Socio-Economic Development Plan (NSEDP7 2011-15), along with the NSCC which was also designed to mainstream climate change into national developmental planning. In this regard, it is inferred that climate change mainstreaming is making steady progress. This trend is expected to continue further, with the development of National Action Plan for Climate Change (NAPCC) at national level, and recent developments of sectoral strategies recognising climate change mitigation such as renewable energy development strategy and a strategy for agricultural development 2011-2020. Establishing a clear linkage between budget allocations and expenditures on this strategy and action plans is a further challenge -- a challenge which will be critical in the face of these expected impacts.

From the institutional perspective, Lao PDR established the National Steering Committee on Climate Change (NSCCC) in 2006 as an inter-ministerial decision making body on climate change. Chaired by the deputy prime minister, the NSCCC involves more than 20 line ministries, along with seven technical working groups on priority sectors. At this point, further observation is required to identify the level of engagement of the NSCCC and the energy technical working group in the ongoing NAMA development process in the transport sector. Inter-ministerial coordination capacity of the Department of Natural Disaster Management and Climate Change of the Ministry of Natural Resources and Environment may also need be strengthened with international support. Sectorally, the REDD+ taskforce plays a central role for coordination, and institutional rearrangement to proceed with national REDD+ is underway.

### 3.3 Viet Nam

The Socio-Economic Development Strategy 2011-2020 sets a mid-term vision that by 2020 Viet Nam will become an industrialised country, and a low-carbon development pathway is seen as an opportunity for Viet Nam to transform resource-intensive growth to

a more resource-efficient and competitive development path. The 2012 National Green Growth Strategy (NGGS) sets several GHG emissions reduction targets. One of which is, for example, to reduce GHG emissions from energy activities by 10% from BAU and by additional 10% with additional international support between 2011 and 2020. As of writing, the Vietnamese government has not submitted such targets to the UNFCCC Secretariat as NAMAs. However, several initiatives for assisting the NAMA formulation in various sectors are ongoing in Viet Nam.

On the technical dimension of NAMA formation, data gathering posed a serious challenge in the preparation of the second National Communication (SNC), but the Vietnamese government is now constructing national institutional arrangements for GHG inventories, which are expected to smooth out the process. In addition to national GHG emission profiles, Viet Nam's SNC also provided 28 mitigation options in three major emitting sectors (energy, agriculture, and LULUCF) with BAU projection, mitigation options, and cost estimation. In preparing for the NGGS, several emission projections were conducted. As part of the ongoing NAMA-related support in various sectors, the detailed analyses of sectoral mitigation potentials and cost estimates have also been conducted. However, there is still a challenge as to how to integrate these analyses into policies and examine their implications at the national level (Nguyen 2012).

On the mainstreaming dimension, Viet Nam has made significant headway. The National Target Programme to Respond to Climate Change (NTPRCC) of 2008 set specific targets for mainstreaming with a timeline: legal documents on mainstreaming to be developed by 2010; the 2010-2020 mainstreaming initiatives to be completed by 2015; and the assessment of the mainstreaming process to start in 2015. The National Climate Change Strategy (NCCS) of 2011 also provided that by 2015 sectoral and local socio-economic strategies and plans will be adjusted in order to incorporate climate change concerns. It is also worth noting that the NTPRCC and the NCCS clarified that the Ministry of Planning and Investment (MPI) takes the lead in developing a climate change integration framework.

With regard to the prioritisation of mitigation actions, the SNC focuses broadly on three sectors (Energy, agriculture and LULUCF), and the NCCS identified six prioritised areas; forestry, new and renewable energy, energy efficiency, transportation, agriculture and solid waste management. Regarding detailed action plans for mitigation, the NTPRCC requested ministers, sectors and localities to complete the development of action plans by 2010, and start to implement them by 2015. In addition, under the NCCS, National Climate Change Action Plan is to be formulated soon.

While the Vietnamese government has made great efforts at mainstreaming, there is one caveat: a lack of sufficient engagement by the Ministry of Finance. This leads to a concern among local and sectoral officials that the preparation of action plans does not necessarily ensure appropriate allocation of national budget for actual implementation. This concern was at least partially alleviated by the NGGS that mandates the Ministry of Finance to ensure the budget for actual implementation at the ministerial and sectoral levels.

On the institutional dimension, the National Climate Change Committee (NCCP) was established in 2011, with the mandate to formulate uniform policies and legislation, to develop and conduct the monitoring, reporting and evaluation system. With regard to the existing institutional arrangements, MONRE is responsible for the implementation of the NCCS and the MPI takes the lead in mainstreaming and developing the NGGS. Regarding task allocation for developing NAMAs, there are many internationally-supported sectoral mitigation initiatives, which can become NAMAs. MONRE is assigned to develop instructions for low-carbon development and NAMAs.

Though MONRE is expected to play a coordination role in NAMA formulation, there is a concern as to whether it will be able to serve in that role. In particular, it is a major challenge for MONRE to coordinate various donor-led mitigation initiatives and align them with national developmental priorities. It is also necessary to distinguish NAMAs formulation from the NGGS.

### 3.4 Indonesia

Indonesia is one of the few Association of South-East Asian Nations (ASEAN) countries to have already pledged its economy-wide emissions reduction target (26% reduction from BAU by 2020 with domestic resources, and 41% with international support). The Indonesian approach to NAMAs, setting economy-wide emissions reduction targets established via a political top-down decision, also provides an additional insight into how developing countries could approach NAMAs. This stands in sharp contrast to bottom-up approach to design mitigation measures for specific sectors. To proceed with NAMAs, Indonesia has issued a Presidential Regulation on National Action Plan for GHG Emissions Reduction (RAN-GRK) in 2011, followed by developing local action plans for GHG emissions reduction (RAD-GRK) by local municipalities.

From a technical perspective, Indonesia has successfully identified mitigation potential and measures in six major mitigation sectors (energy, industry, forestry, peat, agriculture, and waste) in its SNC (2010). SNC also provides sectoral projections of GHG emissions and BAU estimations by 2020, along with cost estimations (mainly in the energy and forestry sectors). Although its status as a working document is subject to future update, the RAN-GRK also provides an estimation of costs for mitigation measures for targeted sectors. Indonesia therefore possesses a stronger technical basis for planning, formulating, and implementing NAMAs. The national GHG inventory system is also mentioned in the presidential regulation as providing a framework with clear roles and duties for relevant stakeholders; the technical and institutional basis for MRV is also said to be making progress. One of the remaining technical challenges, however, is the uncertainty associated with the emissions from LULUCF sector (including peat fire, which makes up more than 62% of the total national emissions). Purely from a technical standpoint, continuing efforts may be needed to improve the accuracy of emissions forecasts and BAU baselines.

From a mainstreaming perspective, climate change is successfully captured in the mid-term national

development plan (RPJM 2010-14) as well as other relevant policy documents, including the National Action Plan Addressing Climate Change (2007), Yellow Book, and Indonesia Climate Change Sectoral Roadmap (ICCSR 2010). ICCSR also lists mitigation measures for the 2010-30 time period. Sectoral mainstreaming is also observed, as exemplified in An Integrated Program for Reducing Emission from Fossil Fuel Burning (REFF-BURN), Vision 25/25 to reach a 25% share of the renewable energy in total energy consumption by 2025, and Formulation of National REDD+ Strategy. One of the challenges is to find complementarities across numerous relevant policy documents under the umbrella of NAMAs.

From an institutional perspective, Indonesia set up the National Council on Climate Change (DNPI) established under the Presidential Regulation in 2008, which also serves as a national focal point to the UNFCCC. One of the distinct characteristics of institutional arrangement for NAMA development in Indonesia is that unlike other countries, the National Development Planning Ministry (BAPPENAS) takes the leading role for NAMAs development instead of the Ministry of Environment. While Bappenas has years of experience of inter-ministerial coordination in development, involvement of a larger pool of different domestic stakeholders with sometimes overlapping roles could be a significant bottleneck. Avoidance of sectionalism and finding solutions to streamlining institutional arrangement for NAMA development and overall climate agenda may require additional efforts.

### 3.5 Thailand

The draft National Master Plan on Climate Change 2011-2050 presents a long-term vision that Thailand will become a low-carbon society in the next 40 years. Under the 11<sup>th</sup> National Economic and Social Development Plan (NESDP) for 2011 to 2016, low-carbon economy is part of the national development strategy. As such, relevant ministries and municipalities are expected to undertake GHG mitigation activities. Despite these proactive domestic policies, however, the Thai government has yet to submit NAMAs. One of the reasons is the uncertain nature of NAMAs which has led politicians and government officials to

be cautious about their development. However, discussion on NAMA formulation has been ongoing in Thailand.

From a technical perspective, quantitative assessments of mitigation potentials and costs are already in progress. The Thai SNC of 2011 does not provide any projection of future GHG emissions, but describes GHG mitigation potentials and costs of existing policies. Sector-specific policies, such as the Renewable Energy Development Plan (REDP) 2008-2022 and the Energy Efficiency Plan (EEP) 2010-2030, include detailed analyses of mitigation options and costs. In addition, under the Thai Voluntary Emissions Reduction (T-VER) scheme to be launched in 2014, accounting rules for GHG emissions reduction and verification process are being prepared. Using an integrated model, the Thai GHG Management Organization (TGO) considers NAMAs in terms of mitigations costs: i.e., mitigation options with low costs are regarded as domestically supported NAMAs and those with high costs as internationally supported NAMAs.

Despite progress in the technical dimension, there remain several challenges. For example, the majority of GHG-related data is scattered among various authorities, which adds to the technical challenge of compiling accurate data and is a major problem (Chamornmarn 2012).

With regard to mainstreaming, as mentioned above, the long-term vision toward a low-carbon society is outlined in the draft National Master Plan on Climate Change 2011-2050. The 11<sup>th</sup> NESDP prescribes a strategy for low-carbon economy, and also provides the detailed description of priority sectors for mitigation. There are specific targets for renewable energy and energy efficiency: namely to increase the share of RE in the total energy consumption to 20.3% by 2022, and to reduce energy intensity by 25% compared with 2005 levels by 2030.

As to the institutional dimension, the National Climate Change Committee (NCCC), chaired by the Prime Minister, was established in 2006. The NCCC has mandated to develop a National Climate

Change Strategy and make strategies, guidelines and mechanisms for international cooperation on climate change. The NCCC consists of representatives from relevant ministries but also NGOs and the private sector. Though the NCCC can function as a forum for making national decisions on climate change, the NCCC is convened on a non-regular basis, personnel and financial resources of the Office of climate

Change Coordination under the Ministry of Natural Resources and Environment (MONRE), which serves as a Secretariat of NCCC, are limited. To enhance coordination among line ministries, the Thai government designated Climate Change Convention Officers (CCCO) to serve in all 19 line ministries and 11 other related agencies in 2009 (UNISDR 2012).

## 4 Comparative Assessment and Practical Challenges

This section provides a comparative assessment of the NAMA formulation processes in the selected ASEAN countries across the three analytical dimensions.

### 4.1 Technical Dimension of NAMA Formulation

There are differences in the level of in-house capacity. While Cambodia and Lao PDR lack domestic technical capacity to fulfil necessary technical expertise, other countries enjoy greater technical capacity. However, each country has room for further improving technical capacity to capture GHG emissions trends with BAU estimations, mitigation potentials, and associated costs. This technical capacity needs to be enhanced to further the sense of ownership of NAMAs.

Data collection and data sharing across different ministries also pose a challenge in all the five countries. There are several initiatives to address this issue. For example, Indonesia established a legal basis for national GHG inventories, and Viet Nam is also in the process of establishing institutional arrangements to support developing inventories. In addition, Indonesia and Thailand are now constructing voluntary emission reduction schemes with robust accounting rules and systems for emission reductions. These rules and systems are intended to streamline data collection and sharing. Hence neighbouring countries can learn from the experience of these countries.

### 4.2 Mainstreaming Dimension of NAMA Formulation

The progress in the mainstreaming process is observed in all the five countries. But there is a contrast in terms of leading entities of the mainstreaming among the five countries. While developmental ministries are assigned to play a leading role in Indonesia

and Viet Nam, environmental ministries and agencies are in charge in Cambodia and Thailand. Further analysis is necessary to assess how and to what extent such differences in leading entities has implications for actual implementation of the mainstreaming process.

By using the existing sectoral policies and programmes (energy efficiency, renewable energy, forestry, agriculture) as a starting point for considering NAMAs, most of the countries try to ensure NAMAs' contribution to sustainable development. Such an approach is understandable, but a challenge remains as to how to further enhance domestic mitigation efforts and expand their scope over time. This is an area where the mainstreaming dimension interacts with two other dimensions (technical understanding of mitigation potentials and cost estimates, and institutional arrangements for decision-making and implementation). Strengthening the integration between the three dimensions is a continuous process, rather than a one-off event, through which developing countries can increase the level of mitigation actions and expand the scope of mitigation activities.

### 4.3 Institutional Dimension of NAMA Formulation

All five countries examined have established high-level cross-ministerial decision-making processes. But, further analysis is necessary to examine how they actually work. In particular, a question of how the design and formulation of NAMAs are discussed is still not determined in some countries.

“Institutional congestion” is observed in most of the countries examined. Many NAMAs-related initiatives and similar but not identical initiatives, such low-

emission development strategies (LEDS) and national green growth strategies are simultaneously emerging in each country. This could potentially create sound competition among various initiatives, but in reality there are unnecessary duplication and fragmentation

of resources. To reduce this congestion, both improvement in the capacity of domestic coordinating bodies among various sectoral initiatives and streamlining of various NAMA-related support through harmonisation efforts among international donors is needed.

## 5 Conclusions and the Way Forward

This policy brief revealed that while NAMA formulation processes are progressing, various practical challenges remain on technical, mainstreaming and institutional dimensions. It was also made clear that NAMAs require concerted and coordinated efforts among domestic stakeholders during their formulation stage to fill in conceptual ambiguity and to accommodate diverse mitigation needs. Nonetheless, NAMAs could serve as a tipping point for low-carbon development. For LDCs, like Cambodia and Lao PDR, NAMAs provide an opportunity to harness the late-comer's advantage by taking early actions at an early stage of development and avoid carbon lock-in associated with status-quo developmental pathways and urbanisation. Likewise, for middle-income countries, including Indonesia, Thailand and Viet Nam, NAMAs could serve as one of the critical drivers to depart from the so-called middle-income trap by transforming resource-intensive growth to a more efficient pathway.

It is also worth pointing out that formulating NAMAs is not a one-off event, but rather a continuous process through which developing countries can increase the level of mitigation actions and expand the scope of mitigation activities over time. The former includes the adoption of more ambitious mitigation targets and/or activities. The latter includes integrating GHG mitigation with other sectoral activities, and inclusion of climate-related actions with high developmental co-benefits (e.g. abating short-lived climate pollutants (SLCPs) with health benefits). By doing so, NAMAs could truly be designed in the context of sustainable development.

In order to further accelerate the NAMAs formulation process and thereby collectively promote low-carbon development in the ASEAN region, it is crucial that developing country governments realise the benefits attached to NAMAs. Strategic thinking is

therefore needed in developing country governments in how to harness NAMAs to attract more international finance, technologies and capacity building to support domestic technical capacity which could also enable future MRV, all contributing to the achievement of sustainable development. In other words, NAMAs are not simply burdensome outcome of the international negotiations, but rather as opportunities for transformation.

The NAMAs formulation process can also be enhanced by addressing existing challenges and promoting improvements. In this context, the policy brief offers the following:

### 1) Recommendations for Developing Country Policymakers and Stakeholders

**Resource allocation for expanding in-house technical capacity and human resources:** To ensure ownership of NAMAs, building their capacity to perform technical requirements associated with NAMAs (future emissions forecast estimation, mitigation potential and mitigation options) is ideal. While availability of in-house capacity and resources, and the degree of reliance on external capacity vary across countries, resources should be allocated for building in-house technical capacity and recruitment of qualified domestic individuals.

**Clear incentives and a higher level of awareness:** In order to ensure active participation of key domestic stakeholders and realise expected mitigation impacts of NAMAs, incentives should be provided, for instance, through ensuring budget allocations for sectoral strategies and action plans. Awareness raising activities on the associated benefits of NAMAs at the inter-ministerial scale should also be promoted to address the knowledge gaps and enhance the level of engagement among stakeholders and line ministries.

**Strengthening institutional arrangements for NAMAs:** Aside from the Indonesian case, many other countries assigned the environment ministry as the leading government agency for national NAMA development. Because climate change divisions in these agencies have often undergone institutional upgrading recently, coordinating capacity of such agencies needs to be strengthened by increasing resources.

2) Recommendations for International Donors

**Prioritising human resource development:** More consideration should be given to direct resource allocation to accumulate in-house technical capacity and know-how. This requires reviewing existing strategic priorities for support by donor agencies.

**Facilitating mutual learning within the region:** Each country’s effort to formulate NAMAs can provide good lessons from which neighbouring countries could learn. Proving fora to enhance South-South-North collaboration to facilitate mutual learning within the region could help a great deal.

**Ensuring coordination and complementary relationships among various NAMA-related supports:** More effort for coordinating and harmonising NAMA-related support is anticipated for donors. Closer consultation may be useful to map out how each NAMA-related support fits into national plans for low-carbon development of recipient country.

**Table 1 Summary of NAMAs Formulation Status for Selected ASEAN Countries**

Progress Indicator		Lao PDR	Cambodia	Viet Nam	Indonesia	Thailand
Submission Status of NAMAs (INF document)		Not Yet Submitted	Submitted	Not Yet Submitted	Submitted	Not Yet Submitted
Technical Dimension	Identification of Mitigation Potential	<ul style="list-style-type: none"> <li>●<b>INC:</b> identified priority mitigation areas and measures without mitigation potential amount.</li> <li>●International supports for REDD+ including forestry accounting</li> </ul>	<ul style="list-style-type: none"> <li>●<b>INC:</b> mitigation potential calculated</li> <li>●<b>SNC</b> (under development): mitigation potential calculated for major sectors (energy, transport, LUCF)</li> <li>●<b>GHG mitigation technology assessment report:</b> mitigation potential estimated for non-energy sector</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> identified 28 GHG mitigation measures/ options over mitigation sectors (Energy, LUCF, Agriculture)</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> mitigation potential analyzed for 6 sectors (Energy, Industry, Forestry, Peatland, Agriculture, Waste)</li> <li>●<b>National Action Plan for Reducing Greenhouse Gas Emissions (RAN-GRK):</b> mitigation potential by sectors estimated</li> <li>●<b>Local Action Plan for Reducing Greenhouse Gas Emissions (RAD-GRK):</b> in progress</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> Analysis of GHG reduction potential and cost of existing policies</li> <li>●<b>Renewable Energy Development Plan (REDP) 2008-2022 and Energy Efficiency Plan (EEP) 2010-2030:</b> Analysis of mitigation options and cost</li> </ul>
	Future Projection and BAU for domestic GHG Emission	<ul style="list-style-type: none"> <li>●<b>INC, SNC (under development):</b> no description for future projection and BAU</li> </ul>	<ul style="list-style-type: none"> <li>●<b>INC:</b> GHG emission projection up to 2020 estimated</li> <li>●<b>SNC</b> (under development): GHG emission projection up to 2050 estimated, along with BAU estimation</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> BAU estimation for each GHG mitigation option</li> <li>●<b>Vietnam Green Growth Strategy (VGGS):</b> BAU estimates for 2020 and 2030</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> GHG emission projection up to 2020 estimated</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> No future projection of GHG emissions</li> </ul>
	Understanding of Costs for Mitigation Measures	<ul style="list-style-type: none"> <li>●No observed descriptions in existing policy documents</li> </ul>	<ul style="list-style-type: none"> <li>●<b>National Development Strategic Plan Update (NDSP Update, 2009-13):</b> overall budget for environmental conservation area identified, but no specifics figures for individual measure.</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> BAU estimation for each GHG mitigation option</li> </ul>	<ul style="list-style-type: none"> <li>●<b>RAN-GRK:</b> estimated costs for identified lists of measures</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC:</b> Analysis of GHG reduction potential and cost of existing policies</li> <li>●<b>REDP 2008-2022 and EEP 2010-2030:</b> Analysis of mitigation options and cost</li> </ul>

Progress Indicator		Lao PDR	Cambodia	Viet Nam	Indonesia	Thailand
Mainstreaming Dimension	Climate Change Mainstreaming	<ul style="list-style-type: none"> <li>●<b>Seventh National Socio-Economic Development Plan (NSEDP7, 2011-15)</b>: inclusion of domestic climate change measures</li> <li>●<b>National Strategy for Climate Change (NSCC, 2010)</b>: Priority sectors and measures identified</li> <li>●<b>Sector specific climate change mainstreaming</b>: Renewable Energy Development Strategy (2011), Agricultural Development Strategy (2011-20)</li> </ul>	<ul style="list-style-type: none"> <li>●<b>Rectangular Strategy II (RSII)</b>: Environmental Sustainability as a Pillar</li> <li>●<b>National Development Strategic Plan Update (NDSP Update, 2009-13)</b>: Inclusion of climate change measures</li> <li>●<b>Green Growth Roadmap (2011-)</b>: formulation of sectoral policies and actions in the context of low carbon growth</li> </ul>	<ul style="list-style-type: none"> <li>●<b>National Target Program for Climate Change (NTPRCC) and National Climate Change Strategy (NCCS)</b>: Clarification of schedule and lead agency for mainstreaming</li> </ul>	<ul style="list-style-type: none"> <li>●<b>Mid-term National Development Plan (RPJM 2010-14)</b>: described climate change as cross-cutting measures</li> <li>●<b>ICCSR</b>: identified measures for major mitigation sectors</li> <li>●<b>Sector-specific climate change mainstreaming</b>: REFF-BURN, Vision 25/25, REDD+ Strategy</li> </ul>	<ul style="list-style-type: none"> <li>●<b>Draft National Master Plan on Climate Change (NMPCC) 2011-2050</b>: Long-term vision for being a low-carbon society in next 40 years</li> <li>●<b>11th National Economic and Social Development Plan (NESDP: 2012-2016)</b>: Low-carbon economy as a national development strategy</li> </ul>
	Identification of Priority Sectors	<ul style="list-style-type: none"> <li>●<b>National Strategy for Climate Change (NSCC, 2010)</b>: Priority sectors and measures identified</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NSDP Update 2009-13</b>: identified priority sectors and measures</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NCCS</b>: Identification of prioritized sectors and measures with 2020 and 2030 targets</li> </ul>	<ul style="list-style-type: none"> <li>●<b>RAN-GRK</b>: Listed mitigation sectors for achieving reduction target</li> <li>●<b>ICCSR</b>: major mitigation sectors prioritized (primary sector, secondary sector)</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NESDP and draft NMPCC 2011-2050</b>: Identification and description of prioritized sectors and policies for mitigation</li> </ul>
	Development of Climate Specific Strategy and/or Action Plans	<ul style="list-style-type: none"> <li>●<b>National Action Plan for Climate Change (NAPCC)</b>: under development</li> </ul>	<ul style="list-style-type: none"> <li>●<b>Cambodian Climate Change Strategy and Plans (CCCSP)</b>: under development</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NTPRCC</b>: line ministries, sectors and local governments are requested to develop action plans</li> </ul>	<ul style="list-style-type: none"> <li>●<b>RAN-GRK</b>: placing the reduction target under the presidential regulation</li> </ul>	<ul style="list-style-type: none"> <li>●<b>REDP2008-2022 and EEP2010-2030</b>: Specific targets</li> </ul>
Institutional Dimension	Securing a forum for cross-ministerial decision making	<ul style="list-style-type: none"> <li>●<b>National Steering Committee for Climate Change (NSCCC)</b> established (2006)</li> <li>●<b>REDD+ Task Force (2008)</b>: preparing for establishing REDD+ Office</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NCCC</b> established (2006)</li> <li>●<b>Cambodian REDD+ Task Force (2010)</b>: transitioning to formal setup</li> </ul>	<ul style="list-style-type: none"> <li>●<b>National Climate Change Committee (NCCP)</b> established (2011)</li> <li>●National REDD+ Steering Committee (2011)</li> </ul>	<ul style="list-style-type: none"> <li>●<b>DNPI</b> established (2008)</li> <li>●<b>REDD+ Task Force (2010)</b>: preparing for establishing a REDD+ agency</li> </ul>	<ul style="list-style-type: none"> <li>●<b>National Climate Change Committee (NCCC)</b>, under the Office of Natural Resources and Environmental Policy and Planning (ONEP) of the Ministry of Natural Resources and Environment established (2006)</li> </ul>
	Grasping Existing Implementation Framework	<ul style="list-style-type: none"> <li>●<b>NSCC</b> established</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NSDP Update 2009-13</b> established</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NCCS</b>: Coordination by the Ministry of Planning and Investment</li> <li>●<b>VGGS</b>: Coordination by MPI</li> </ul>	<ul style="list-style-type: none"> <li>●<b>SNC</b>: description of existing measures</li> </ul>	<ul style="list-style-type: none"> <li>●<b>NESDP and draft NMPCC 2011-2050</b></li> </ul>
	Task Demarcation among Stakeholders for NAMAs Implementation	<ul style="list-style-type: none"> <li>●Depends on the scope of envisaged NAMAs: Currently MONRE considers transport NAMAs</li> </ul>	<ul style="list-style-type: none"> <li>●Depends on the scope of envisaged NAMAs: Currently MOE-CCD considers energy NAMAs</li> </ul>	<ul style="list-style-type: none"> <li>●Depends on the scope of envisaged NAMAs</li> <li>●<b>Various international supports for designing NAMAs and REDD+</b></li> <li>●<b>MONRE</b>: Coordination of NAMA formulation</li> </ul>	<ul style="list-style-type: none"> <li>●<b>RAN-GRK</b>: Identified roles and responsibilities among ministries, sectoral allocation for GHG emission reduction amount</li> <li>●<b>RAD-GRK</b>: currently under development</li> </ul>	<ul style="list-style-type: none"> <li>●Depends on the scope of envisaged NAMAs</li> <li>●<b>Thai GHG Management Organization (TGO)</b> is taking the lead in considering NAMAs</li> </ul>

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